PREVALENCE AND CORRELATES OF FOOD AND HOUSING INSECURITIES AT A HISTORICALLY BLACK COLLEGE

by

Melissa M. Lockard

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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APPROVED BY:

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ABSTRACT

The purpose of this quantitative, predictive correlational study was to determine the prevalence of food and housing insecurities at one historically Black college and explore whether these insecurities influence students' academic performance or their mental health quality. The study also explored possible predictors of students at risk of experiencing these basic needs challenges. A convenience sample of 175 participant surveys was collected in the fall 2021 semester at the small, private, liberal arts college in urban South Carolina. The instruments used in the survey included the USDA's 6-item Household Food Security Survey Module, the Housing Insecurity and Homelessness Module, the Center for Epidemiologic Studies Depression Scale, and traditional student demographics. Descriptive statistics were used to summarize the overall prevalence of these insecurities and multiple regression analysis was conducted to determine if possible predictive relationships between predictor and outcome variables exist. The results revealed more than three quarters of the students experienced food insecurity in the past month and more than one third experienced housing insecurity. The regression model showed no statistically significant relationship between students' experiences with the two basic needs insecurities and their self-reported GPA. However, a statistically significant relationship was found between food and housing insecurity and reported depressive symptoms. The six predictor variables, gender, student classification, race/ethnicity, first-generation college student status, parental level of education, financial aid eligibility, and employment status were not statistically significant predictors of students at risk of experiencing these insecurities. Future studies may examine alternative predictors while focusing on the high level of reported depressive symptoms.

Keywords: food insecurity, housing insecurity, higher education, African American population, depression, historically Black college

Copyright Page

Dedication

This manuscript is wholeheartedly dedicated to my Mom and Dad, the two strongest individuals I know and who instilled in me the greatest level of determination and perseverance to achieve my dreams. Thank you for believing in me.

Acknowledgments

There are so many individuals that without whom this journey would not have been possible.

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Thank you to the students of [redacted]. Without your honest and sincere responses to my survey, this manuscript would not exist.

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To my husband, Jason, I have countless "thank yous." Thank you for the comfy office you built me and allowed me to spend countless uninterrupted hours while you tended to the children's needs. Thank you for taking on the massive responsibility of evening baseball and

softball practices. Thank you for keeping the family happily fed with your amazing cooking and grilling. I couldn't have done it without you. The best news…we owe ourselves a BIG vacation! Merci de tout mon cœur.

And to my extraordinarily awesome and encouraging children, Elle and Luke. The level of understanding and acts of support you both offered me over the past few years were well beyond your young years. Elle, I thoroughly enjoyed all our conversations and how you would work in the office recliner right alongside me. And Luke, your surprise appearances to give quick hugs and kisses just to say hello melted my heart every time. Thank you both for just being you.

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List of Abbreviations

Beck Depression Inventory II (BDI-II)

Body Mass Index (BMI)

Center for Epidemiological Studies Depression Scale (CES-D)

City University of New York (CUNY)

College and University Food Bank Alliance (CUFBA)

Free Application for Federal Student Aid (FAFSA)

Grade Point Average (GPA)

Historically Black College/University (HBCU)

Household Food Security Survey Module (HFSSM)

Institutional Review Board (IRB)

Los Angeles Homeless Services Authority (LAHSA)

National Association for the Education of Homeless Children and Youth (NAEHCY)

National Institute of Mental Health (NIMH)

Positive and Negative Affect Schedule (PANAS)

Predominantly White Institution (PWI)

Social Mobility Index (SMI)

Supplemental Nutrition Assistance Program (SNAP)

United States Department of Agriculture (USDA)

United States Housing and Urban Development (USHUD)

Variance Inflation Factor (VIF)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this quantitative, correlational study was to determine if a Historically Black College or University (HBCU) student's food and housing status are accurately able to predict their level of academic success or their risk of experiencing depressive symptoms. Additionally, the study aimed to determine if demographical characteristics are accurate predictors of students at risk of experiencing these basic needs insecurities while enrolled in college. Chapter One of this manuscript provides a background of the prevalence of food and housing insecurities experienced by higher education students across the United States and the supporting conceptual framework is discussed. The problem statement asserts how the African American population is considered at-risk for experiencing these insecurities, yet not adequately investigated in the current literature. The significance statement suggests how this research study may contribute to determining best practices to reduce the levels of food and housing insecurity on HBCU campuses. Finally, the four research questions and relevant definitions are listed to conclude the chapter.

Background

The cost of undergraduate tuition, room, board, and other fees at both public and private institutions increased by 31% and 23%, respectively, between the years 2008 and 2018. (National Center for Education Statistics, 2020). The price of attending college continues to climb steadily each year, leaving less money for students to allocate for needs such as nutritious food and alternative off-campus housing. For this reason, food and housing insecurities have become serious and growing public health concerns among the college population. Securing

these needs for students must be considered a priority to ensure academic success and the mental health of these young adults are sufficiently protected.

In the 2018-2019 academic year, more than 70,000 students in the United States self-reported as being homeless or at risk of becoming homeless on the Free Application for Federal Student Aid (FAFSA) form, a 17.7% increase from just two years prior (National Center for Homeless Education, 2020). However, this number is suspected to be much higher in actuality, as students may fear reporting housing insecurity due to stigma, potential repercussions, or because they believe their status may be only temporary (Gupton, 2017; Hallett & Freas, 2017; Ringer, 2015; Silva et al., 2017). It has also been reported that college students, as a generally transient population, are often overlooked and not included in United States Census calculations that study poverty levels (National Governors Association, 2020; United States Census Bureau, 2017). Unstable housing conditions are not the only challenges facing today's college students. Another hardship many students face is inadequate sources of healthy food. The United States Department of Agriculture (USDA) found 11% of the general population's households in the United States in 2018 reported either low food security or very low food security status (USDA, 2019b). Moreover, food insecurity is becoming more prevalent specifically among the young college population. Studies have found alarming rates of food insecurity on college campuses across the Nation. As many as one in three students at four-year institutions nationwide have found to be affected by food insecurity (National Governors Association, 2020). Some campuses observe much higher rates than others, however the problem transcends geographical location and is prevalent across the United States (Goldrick-Rab et al., 2017).

Historical Overview

Food insecurities have been correlated to many negative effects, both academic and health related. Students experiencing food insecurities report more feelings of depression, unhealthy eating habits, fatigue, poor sleep quality, and overall fair or poor health (Bruening et al., 2016; Bruening et al., 2017; El Zein et al., 2019; Payne-Sturges et al., 2018). However, one study by Thompson et al. (2018) found no correlation between food insecurity and body mass index (BMI) on one historically Black college campus. Academically, those students experiencing hunger due to inadequate food supply are more likely to have a lower grade point average than food secure students (Camelo & Elliott, 2019; El Zein et al., 2019; Maroto et al., 2015; Morris et al., 2016; Patton-López et al., 2014; Payne-Sturges et al., 2018). These statistics strongly suggest the need for further examination of basic needs insecurities in higher education.

The rising price of college tuition and the impact of student loans is causing increased financial burden so that students are often left with insufficient funds for food and housing (Baker et al., 2017; El Zein et al., 2019; Silva et al., 2017). Food and housing insecurity expert, Sara Goldrick-Rab and colleagues assert that despite the steady increase in costs of attending college, including tuition and living expenses, over the past few decades, state and federal need-based aid has remained stagnant (2016). According to Hege et al. (2021), the cost of attending an institution of higher education has grown three times the rate of inflation, making fiscal matters a great burden for these young adults. This devastating issue is even more evident among those students identifying as first-generation college students and those with low socioeconomic status, compounding their risk of experiencing basic needs insecurities during college (Allen & Alleman, 2019). These food and housing insecurities are known to negatively affect students in a multitude of ways. Specifically, fatigue, weight gain, anxiety, inability to concentrate, and other

behavioral and emotional problems have all been correlated with food insecurity and hunger in children (Kleinman et al., 1998; Winicki & Jemison, 2003). Although food insecurity is known to be an ongoing public health issue that negatively affects student success, the tertiary education realm has received much less attention in academic literature (Bruening et al, 2016; Gaines et al., 2014; Silva et al., 2017). According to expert, Sara Goldrick-Rab, prior to 2015 when her team began surveying colleges en masse, regular and systematic data collection of insecurities among college students did not exist (National Governors Association, 2020). Housing insecurity is also a prevalent challenge among higher education institutions, yet few supports are in place to accommodate these students' needs (Broton & Goldrick-Rab, 2018).

Some colleges and universities are more likely to have students experiencing these insecurities than others, based on student demographical factors and socioeconomic status. For this reason, it is critical for institutions to determine the prevalence of these insecurities among their specific student population to ensure adequate support services and resources are provided. There is a growing concern that the number of college students experiencing food and/or housing insecurities is increasing each year, preventing them from being able to attend classes, focus on academic work, and even persist to the next term (El Zein et al., 2019; Hallet & Freas, 2017; Mirabitur et al., 2016; Payne-Sturges et al., 2018; Silva et al., 2017). Specifically, on HBCU campuses these insecurities may be more prevalent due to the students' sociodemographics attending these institutions. Historically Black colleges are recognized for their service to first-generation college students, families of low socioeconomic status, and disabled students (Sullivan et al., 2010). Many studies have found that racial minorities, specifically African Americans, are at greater risk of experiencing food and housing vulnerabilities while enrolled in college (Broton et al., 2018; Camelo & Elliott, 2019; El Zein, 2019; Maroto et al., 2015; Morris

et al., 2016, Payne-Sturges et al., 2018; Phillips et al., 2018). For these reasons, this population of students deserves emphasis placed on them and their specific needs.

Theoretical and Conceptual Framework

The conceptual framework driving the need to study these insecurities among college students is supported by Abraham Maslow's (1943) theory of human motivation and Katherine Alaimo's (2005) human development model, which has recently been modified to more accurately fit the college population (Broton et al., 2018). Maslow's (1943) theory classifies and orders the basic human needs in a hierarchy of prepotency with food and shelter being placed on the two lowest, most foundational levels. Alaimo's (2005) model incorporates the importance of understanding the risk factors, potential consequences, and coping strategies of these insecurities. Examining the issue from the concept of fulfilling human needs and determining a link between risk factors of food and housing insecurities for students is necessary to determine how institutions can most effectively provide services to meet these needs. Some of the existing provisions for assistance include food pantries, gardens on campus, and some colleges are suggesting the revision of the eligibility guidelines for the government's Supplemental Nutrition Assistance Program (SNAP) to be more accommodating for college students' inclusion (Broton et al., 2018; Patton-López et al., 2014). Increasing this federal support has potential implications to improve academic success among college students in the same way it has among schoolchildren (Goldrick-Rab et al., 2016).

Problem Statement

The number of college students experiencing food and/or housing insecurities is growing each year, preventing them from being able to attend classes, focus on academic work, and even persist to the next term (El Zein et al., 2019; Hallet & Freas, 2017; Mirabitur et al., 2016; Payne-

Sturges et al., 2018; Silva et al., 2017). The drastic rising price of tuition is causing increased financial burden so that students are often left with insufficient funds for food and housing and other basic living expenses (Baker et al., 2017; El Zein et al., 2019; Silva et al., 2017). Because it is unlikely the cost of tuition will significantly fall in coming years, it is important for institutions to identify the levels of these insecurities present on their campuses in order to provide the best assistance and support for these students' physical health, mental health, and academic success. The study described in this manuscript aimed to determine the prevalence and correlates on one HBCU campus in order to determine the specific needs for this HBCU's student body.

Mental health concerns among students of color have been found to be higher than other groups and this population also reports a lower tendency to seek help or treatment for such issues (DeFreitas et al., 2018; Lipson et al., 2018; Masuda et al., 2012). Studies have also shown a correlation between food and housing needs and student success at multiple institutions (El Zein et al., 2019; Hallet & Freas, 2017; Mirabitur et al., 2016; Payne-Sturges et al., 2018; Silva et al., 2017). Past studies have analyzed the individual pieces of the problem, but have failed to address a very important at-risk population and their possible correlations. The problem is that the African American population has been found to be at-risk of experiencing food and housing vulnerabilities at higher rates than other populations, yet the current literature inadequately addresses the impact these basic needs insecurities have on academic success and mental health on HBCU campuses. Historically Black higher education institutions are known for their distinct efforts to target the specific needs of the African American student, therefore the study conducted for this dissertation was necessary to address this gap in the literature and strive to better serve the students of one historically Black college.

Purpose Statement

The purpose of this quantitative research study was to ensure one HBCU in South Carolina was aware of the prevalence of insecurities on its campus so that these students' basic physiological needs may be adequately met so that its students are able to focus on education, and other higher-level needs that support their mental and physical health. For this study, the independent variables for two of the research questions were the levels of food insecurity and housing insecurity reported by the students. The United States Department of Agriculture (USDA) (2019a) categorizes a household's food security into four levels: high, marginal, low, and very low food security. Food insecurity is defined by the USDA (2019a) as a household-level economic and social condition of limited or uncertain access to adequate food, that includes both the low food security level and the very low food security level. A six-item USDA (2019b) Household Food Security Survey Module (HFSSM) is a validated and reliable instrument to measure the level of food security an individual is experiencing (Blumberg et al., 1999). Housing status does not have such clear distinct categorization, but is defined by the McKinney Vento Homeless Assistance Act, Subtitle VII-B, as lacking fixed, regular, and adequate nighttime residence or sharing accommodations with others due to loss of previous shelter (Wong et al., 2009). Dependent variables for these two research questions included students' self-reported grade point average (GPA) and current level of depressive symptoms. Depressive symptoms were measured using the Center for Epidemiologic Studies Depressions Scale (CES-D). The National Institute of Mental Health (NIMH, 2018) defines depression as a common, yet serious mood disorder that affects one's feelings, cognitive abilities, and how one manages daily activities such as sleeping, eating, and working. The 20-item CES-D scale aims to measure the

levels of individuals' symptoms including restless sleep, poor appetite, and feelings of loneliness (Radloff, 1977).

Sociodemographic data and student characteristics served as predictor variables in the other two research questions. The sociodemographic data collected included gender, student classification, race/ethnicity, first-generation college student status, parental level of education, financial aid eligibility, and employment status. These data were collected using questions adapted from the Demographic Questions for Survey Projects developed by the University of Wisconsin-La Crosse's Office of Institutional Research, Assessment, and Planning (2019). Specifically, for the item referencing race/ethnicity, the participant chose one of six choices, "White," "Hispanic, Latinx, Spanish Origin," "Native American or Alaskan Native," "Hawaiian Native or Pacific Islander," and "Other." For the second demographic question, the participant chose their gender preference from the following items: "Woman," "Man," "Trans or transgender," "A gender not listed here," or "Prefer not to answer." The item addressing student classification, the participant had choices of, "Freshman (0-29 credits)," "Sophomore (30-59 credits," "Junior (60-89 credits)," and "Senior (90+ credits). The next demographic item inquired about either of the participants' parental (or guardian) level of education. For this question, the options included, "Did not finish high school," "High school diploma or GED," "Attended college but did not complete degree," "Associates degree," "Bachelor's degree," "Master's degree," and "Doctoral or professional degree." The fifth demographic item asked the participant if their financial aid package included a Federal Pell Grant, to which the participant answered from one of the following choices, "Yes," "No," or "I don't know." The item pertaining to employment status of the participant asked if the student is currently working. The participant chose either, "No" or one of the three affirmative answers including, "Yes, 1-10 hours per

week," "Yes, 11-20 hours per week," or "Yes, 20+ hours per week." The final item in this portion of the survey asked the participant to self-report their current grade point average. The response choices included, "A (4.0)," "B (3.0)," C (2.0)," "D (1.0)", and "F (0.0)."

Considering the study took place on the campus of an HBCU, the majority of the sample population was expected to be African American. However, students not identifying as African American were not excluded from the study. This was in attempt to collect a sample homogenous to the actual study body composition. The overall population of students at the time of the study was 1,731 students with 93% of them receiving some form of government assistance for tuition, such as Pell grants or student loans (CollegeFactual, 2020; DataUSA, 2017). The gender ratio was 44:56, males to females (CollegeFactual, 2020). A large percentage of the student body are first-generation college attendees, come from low socioeconomic backgrounds, and are adjusting to the autonomous college lifestyle with little guidance from family members, making them contenders for experiencing the basic needs insecurities, and important subjects for this study.

Significance of the Study

Studies on college campuses across the Nation have examined the relationships between food security and student demographics, housing status, financial aid recipients, overall health, academic success, among others. Overall, a recurring theme that has emerged is that students who self-identify as African American or other racial/ethnic minority are significantly more likely to experience food insecurity than their counterparts (Broton et al., 2018; Bruening et al., 2017; 2018; Camelo & Elliott, 2019; El Zein et al., 2019; Maroto et al., 2015; Mirabitur et al., 2016; Morris et al., 2016; Payne-Sturges et al., 2018; Phillips et al., 2018; Thompson et al., 2018). Specifically, Mirabitur et al. (2016) established that underrepresented minorities (grouped

as a whole) were 2.73 times more likely to experience food insecurities than White students. Phillips et al. (2018) and Maroto et al. (2015) found that of those students who reported experiencing food insecurity, African American students reported low food security status at a rate more than two times that of other races. While there are no studies on housing insecurity specifically on the campus of an HBCU, Thompson et al. (2018) classifies the African American population as an at-risk population of insecurities due to low-income levels, low levels of education, and high unemployment. These factors exhibit the critical need for studying the basic needs challenges among students attending an HBCU.

This study places specific focus on the understudied HBCU student population to determine the prevalence and risk factors present on one particular South Carolina campus. The results reveal some important evidence for practical implications for supports, services, and specific actions that this population of students need to be able to succeed in their academic careers. The results also can be used to assist in determining how the institution should best allocate resources to prevent students from experiencing these insecurities. The results from this research study could help improve an array of aspects including student retention rates, graduation rates, GPA, and overall physical and mental health of these students.

Research Questions

RQ1: Is there a predictive relationship between the criterion variable (GPA) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college?

RQ2: Is there a predictive relationship between the criterion variable (Depressive Symptoms Score) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college?

RQ3: Is there a predictive relationship between the criterion variable (Food Insecurity Score) and the predictor variables (Student Demographics) among the student population at one historically Black college?

RQ4: Is there a predictive relationship between the criterion variable (Housing Insecurity Score) and the predictor variables (Student Demographics) among the student population at one historically Black college?

Definitions

1. *Coronavirus Disease-19 pandemic* – A respiratory disease caused by SARS-CoV-2, a new coronavirus discovered in 2019 (Centers for Disease Control and Prevention, 2021).
2. *Depression* – a common, yet serious mood disorder that affects one's feelings, cognitive abilities, and how one manages daily activities such as sleeping, eating, and working (National Institute of Mental Health, 2018).
3. *First-generation college student* – Undergraduate college student with parent(s) or guardian(s) that never enrolled in postsecondary education (Nunez et al., 1998).
4. *Food security* – a household-level economic and social condition that enables individuals to have little to no food-access problems or limitation. Includes both high food security and marginal food security levels as defined by the United States Department of Agriculture. (USDA, 2019a).
5. *Food insecurity* – a household-level economic and social condition of limited or uncertain access to adequate food, includes both low food security level and very low food security level (USDA, 2019a).

6. *Free Application for Federal Student Aid (FAFSA)* **–** the federal form that students and/or families of students must complete to apply for financial aid to pay for college. The form is used by the federal government to determine eligibility for grants, loans, and work-study opportunities (Kagan, 2020).
7. *Grade Point Average (GPA)* – a number that represents the average value of the final grades earned in a student's courses over time. It is calculated by adding all final grades and dividing that number by the number of grades awarded. The resulting calculation is an average of all final grades (The Glossary of Education Reform, 2013).
8. *High food security* – a categorization that refers to households in which the individuals have no reported indications of food-access problems or limitations (USDA, 2019a).
9. *Historically Black College/University (HBCU)* – a primarily Black institution that was established prior to 1964, retains the primary mission of educating Black Americans, and is accredited by a nationally recognized agency or determined by the Secretary of Education to be reasonably working toward accreditation. These schools offer all students, regardless of race, an opportunity of education (United States Department of Education, n.d.).
10. *Housing insecurity* **–** the lack of a fixed, regular, adequate nighttime residence or sharing residence with others due to the loss of previous shelter (Wong et al., 2009).
11. *Hunger* – individual-level physiological condition that may result from food insecurity (USDA, 2019a).

12. *Low food security* – one of the two categories of food security that classifies a household as being food insecure and is associated with reports of reduced quality, variety, or desirability of diet. Previously titled “Food Insecurity Without Hunger” (USDA, 2019a).
13. *Marginal food security* – a category of food security in which individuals of a household have one or two reported indications of shortage of food in the house and is associated with little or no indication of changes in diets or food intake (USDA, 2019a).
14. *Mental health* – a combination of a person’s emotional, psychological, and social well-being. It affects thinking, feelings, and actions. Multiple factors can contribute to mental health issues, such as biological factors, life experiences, or family histories of mental health problems (MentalHealth.gov, 2020).
15. *Mental health stigma* – This special type of stigma is defined as a set of negative attitudes directed toward individuals with a potential psychological disorder or treatment of such a disorder (DeFreitas et al., 2018; Masuda et al., 2012).
16. *Pell Grant* **–** a federal need-based grant awarded to students for post-secondary education. Unlike student loans, Pell Grants typically do not need to be repaid (Dollarhide, 2020).
17. *Self-concealment* **–** one’s personal disposition to withhold important, yet potentially shameful or demeaning personal accounts due to fear of experiencing mental health stigma (Larson & Chastain, 1990; Masuda et al., 2012).
18. *Socioeconomic status* **–** the social standing of an individual or group that is measured by a combination of factors including level of education, income, and occupation.

Status often reveals privilege, power, control, or inequities of resources (American Psychological Association, 2020).

19. *Stigma* – a complex phenomenon with both individual and social elements that acts as a barrier to health care and quality of life in health management; involves othering, blaming, and shaming (Deacon, 2006).
20. *Student loans* – funds borrowed from either the government or private lender to finance an individual's education. This type of loan is typically referred to as good debt as they can increase the recipient's overall earning power over time (OppLoans, 2020).
21. *Title IV* – prohibits discrimination on the basis of race, color, or national origin in any program or activity that receives federal funds or other federal financial assistance (Civil Rights Act, 1964). In addition, as it pertains to this manuscript, administers federal aid disbursement timelines (Hallett & Crutchfield, 2017).
22. *Very low food security* – The most severe category of food security, defined by a household with multiple indications of disrupted eating patterns and reduced food intake. This category was previously referred to as "Food Insecurity With Hunger" (USDA, 2019a).

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter Two of this manuscript contains a literature review surveying the existing scholarly resources on food and housing insecurities within the realm of higher education. The chapter begins with an overview of the conceptual framework underpinning the research topic, followed by a discussion of the related literature on each of the two insecurities and their prevalence on college campuses, beginning with an overview of poverty levels, both in the United States and the state of South Carolina. The review then transitions to describe the potential detrimental effects food and housing insecurities may have on the mental health condition and academic consequences for today's college students. Stigma is discussed as an overarching theme that emerges amongst the literature, pertaining to insecurities, coping mechanisms, as well as mental health illness, especially among African Americans. Within each section, a focus has been placed specifically on the African American population and how they may be disproportionately affected by these insecurities. The disastrous effects of the COVID-19 global pandemic and how it has impacted today's college students is mentioned briefly throughout, as well as an overview near the closure of Chapter Two. Understanding how these basic needs insecurities are impacting today's students' academic outcomes and mental health is necessary to provide the supports and services they need to succeed. This chapter is concluded with an overall view of the insecurities and the practical implications of studying them.

Theoretical and Conceptual Framework

This study is framed by Abraham Maslow's (1943) theory of human motivation converged with a conceptual model of food insecurities, developed by Katherine Alaimo in 2005. Maslow's theory posits that there are five sets of goals, or basic needs, which are directly

related to one another and are arranged in a hierarchy of prepotency. When the most pivotal goal is reached, the next higher need then emerges. Thus, “man is a perpetually wanting animal” (Maslow, 1943, p. 370). Each of the needs in the hierarchy is related to the state of satisfaction of previously met needs, not isolated from the others. At the base of the hierarchy, Maslow placed humans’ physiological needs including food, water, air, and sleep. According to this theory, these foundational needs must be adequately met before one is able to focus on the next higher-level needs. As posited by this widely accepted theory, students that are experiencing hunger, due to inadequate nutrition, assuredly will be unable to focus on academia.

On the second level of the hierarchy, Maslow (1943) placed humans’ need for safety. This level includes the need for safe shelter, safety of one’s health, property, and resources. Only when the physiological needs are met is one able to proceed to this tier. This theory strongly suggests the importance of studying the prevalence of food and housing insecurities among today’s young adult college students. Ensuring students are provided sufficient resources to fulfill these two levels of basic needs will allow them the opportunity to advance to the higher levels which include love, esteem, and ultimately self-actualization (Maslow, 1943). This highest level is the realization or complete fulfillment of one’s potential, for example, attaining a post-secondary degree.

The USDA (2019) defines food insecurity as a lack of consistent access to enough food for an active, healthy life due to the lack of available financial resources for food at the household level. The extreme individual-level physiological condition of hunger refers to a personal, physical sensation of discomfort, resulting from food insecurity (USDA, 2019). For individuals not having experienced hunger, perhaps the best description of what hunger feels like is by Maslow himself. He states, “For the man who is extremely and dangerously hungry, no

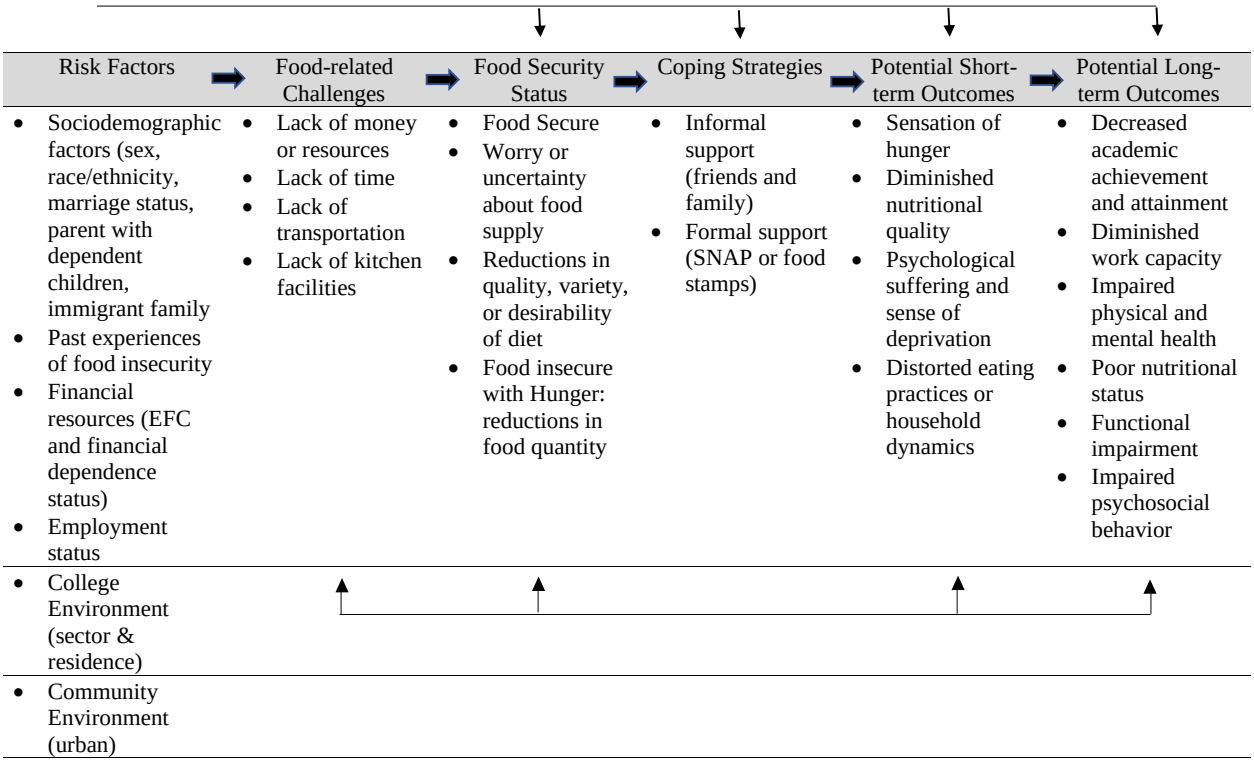
other interests exist but food. He dreams food, he remembers food, he thinks about food, he emotes only about food, he perceives only food and he wants only food" (1943, p. 373). This theory strongly suggests that establishing basic needs security is critical before an individual or student is able to transition to higher level needs and engage in self-actualization behaviors required for academic success (Maslow, 1943).

A conceptual model of food insecurities developed by Alaimo in 2005 and revised by Broton et al. in 2018 to better fit the college student population, offers a contemporary understanding of the predictors and outcomes of food insecurity (see Figure 1). The model posits that the risk factors for experiencing basic needs insecurities are sociodemographic elements including sex, race, marital status, dependency, immigration, past experiences with the insecurity, financial resources, and employment status. These risk factors can predict food-related challenges including lack of money, time, transportation, or facilities for preparing food. These challenges help determine whether an individual is food secure, worries about food supply, has reduced quality of food or desirability of food, or is considered to be food insecure with feelings of hunger. The model also describes possible coping strategies, such as friends and familial supports or formal supports such as the Supplemental Nutrition Assistance Program (SNAP). From these factors, the model delineates both short-term and long-term outcomes of food insecurity. The short-term outcomes include feelings of hunger, reduced nutritional quality of food, psychological distress, and distorted eating behaviors. The possible long-term outcomes of experiencing food insecurity are much more severe, including lower academic achievement, impaired physical, mental, and psychosocial health, and overall poor nutritional status (Alaimo, 2005). These risk factors, coping strategies, and potential outcomes distinctly outline the dire importance of determining the prevalence of food insecurity on college campuses. Understanding

the manifestations of material hardships experienced by students and how these challenges vary across backgrounds can assist institutions in allocating resources and putting in place support programs to better assist students in need.

Figure 1

Broton et al. (2018) Conceptual Model of Food Insecurity, adapted from Alaimo (2005) to fit the college context.



Related Literature

College students in the United States comprise an extremely diverse population with a variety of backgrounds and personal experiences. For many students entering higher education, earning post-secondary credentials is considered one of the only ways of escaping a life of poverty (Broton & Goldrick-Rab, 2018). A study conducted in 2015 predicted that by the year 2020, 65% of all jobs in the U.S. will require education and training beyond a high school

education (Goldrick-Rab et al., 2017). The percentage of 18- to 24- year-olds entering higher education continues to grow each year, with 40.9% enrolling in 2018 (Digest of Education Statistics, 2019a). However, the graduation rate within six years at public and private institutions is only 61% and 67%, respectively (Digest of Education Statistics, 2019b). Compounding these statistics, significant graduation gaps emerge when disaggregated by family income level. A report from the Pell Institute for the Study of Opportunity in Higher Education and the Alliance for Higher Education and Democracy at the University of Pennsylvania proclaims that 58% of students from the higher-income quartile graduate with a bachelor's degree by the age of 24, while only 11% of students from the lowest-income quartile will attain graduation success, a five-fold difference between these two classes of students (Dedman, 2018). First-generation college student status also exists as a contributing factor. In 2012, 21% more students enrolled in college that had a parent with at least some level of college education compared to those students with parents who never attended (Dedman, 2018). Considering the majority of the population of students attending an HBCU fit into these categories, these findings strongly support the need for a study focused specifically on these individuals, such as the one conducted for this manuscript.

Poverty in the United States of America

To fully understand the devastating effects and underlying roots of these basic needs insecurities, one must first acknowledge the severity of poverty across the United States of America. The latest report on household food insecurity states that more than 35 million people in America struggled with hunger in 2019, the most severe form of food insecurity (Feeding America, 2021). Of these, more than 11 million are children. This equates to one in every nine Americans and one in seven children struggled with hunger during the 2019 year. However, due to the current COVID-19 global pandemic, these numbers are estimated to be drastically higher,

as many as 50 million individuals (one in six people), including 17 million (one in four) children are currently struggling with hunger issues (Feeding America, 2021). Even before the pandemic, African American households reported experiencing hunger and poverty rates as high as double that of White, non-Hispanic households (Feeding America, 2021). Therefore, one can safely assume that the effects of the pandemic have certainly exacerbated the risk of living in poverty for this already at-risk population.

Poverty in South Carolina

The state of South Carolina, which houses the Historically Black College as the subject of this research study, ranks as the tenth highest state in the U. S. in regard to households living in poverty (WelfareInfo, 2019). The latest report found that one in six residents, equaling more than 4.7 million individuals, live below the poverty line, which is two percent higher than the national average of 16.6 percent (WelfareInfo, 2019). Of the 46 counties in South Carolina, Richland County, home to the HBCU in this study, ranks 14th highest regarding individuals living in poverty. The report also shows that the African American population in this county experiences poverty (26.2%) at a rate more than twice that of the White population (11.2%), providing strong evidence that this population deserves distinct efforts to provide assistance programs to lower these statistics (WelfareInfo, 2019). In addition, more than 57,000 individuals are enrolled as undergraduate college students in the state of South Carolina, and more than a quarter (25.9%) of them reported living below the poverty line in the year 2019 (WelfareInfo, 2019). Unfortunately, as previously discussed, the COVID-19 pandemic, which shut down colleges in March 2020, has potentially caused these numbers to rise substantially (Laska et al., 2020). According to Laska and colleagues (2020), this drastic increase is likely due to factors such as unexpected unemployment, campus closures limiting school resources available to them,

as well as continued student restrictions for SNAP eligibility and other assistance programs, discussed under the following heading.

Financial Aid

The surging costs for attending college have risen by an average of 148%, across public and private institutions, over the past 45 years (Dedman, 2018). However, the amount of federal support for low-income students, in the form of Pell Grants, has only increased by 20%, as adjusted for inflation (Dedman, 2018). The maximum Pell Grant in the 2016-2017 academic year was approximately $17,000 less than the average undergraduate full-time student costs for attending college, including tuition, fees, room, and board (Dedman, 2018). Ultimately, a large remainder is left for the students and their families to fund. Dwyer et al. (2012) found that educational debt in excess of $10,000, actually reduces the probability of students' graduating compared to lower debt levels, due to the impending burden of repayment. These numbers demonstrate that fewer students from low-income families are graduating, they are forced to leave college with great debts and no college credentials, thus furthering the existing gap among these socioeconomic groups.

In addition to the increasing costs of higher education, the overall structure of the financial aid system causes many limitations that prevent students in need from obtaining assistance. Any student under the age of 24 is legally considered a dependent unless they meet certain criteria. These restrictive criteria, unfortunately, do not apply to the majority of college students, especially those entering postsecondary education immediately after graduation from high school. The specific categories include individuals that have served in the military, are married, have children of their own or other dependents, have been emancipated by the court, or if both parents are deceased (Federal Student Aid, 2021). Qualifying as a dependent means that a

student, therefore, is required to include their parents' financial information on the Free Application for Federal Student Aid (FAFSA) form, which can severely limit the aid for which they may qualify (Henry, 2017). This becomes even more of an issue for students that are entering college financially independent, yet do not qualify as such status according to the FAFSA regulations. Henry (2017) also reported that some parents may not be willing to share their fiscal information, thus disqualifying the student from receiving any federal aid assistance.

Another limitation within the financial aid structure has emerged since the establishment of the Title VI provisions (Hallett & Crutchfield, 2017). In an effort to prevent students from accepting aid, yet never attend the institution, Title VI, in part, regulates the timeline of when colleges are allowed to disburse aid to the students (Hallett & Crutchfield, 2017; Webb, 2019). For example, colleges are not able to disperse any federal Title VI funds more than 10 days before classes begin (Hallett & Crutchfield, 2017). Additionally, first-time borrowers are not able to receive Direct Loans until 30 days after classes begin (Hallett & Crutchfield, 2017). These restrictions may cause some students to fall behind on rent and bills or they may be unable to pay a housing deposit before a new academic term begins, causing stress and undesirable consequences before they even initiate their college education (Hallett & Crutchfield, 2017).

The Historically Black College/University (HBCU) Environment

Among the many different types of post-secondary institutions, the HBCU has its own unique attributes that have been specifically designed to best accommodate the African American population and their needs. In doing so, HBCUs have graduated some of the most legendary leaders in America's history including Rev. Dr. Martin Luther King, Jr, Thurgood Marshall, and Ms. Rosa Parks (Johnson et al., 2017). There are currently 107 HBCUs in the United States that serve more than 300,000 students of all racial, ethnic, and socioeconomic

backgrounds (Johnson et al., 2017; The Hundred-Seven, 2018). The overarching mission and vision of HBCUs places focus beyond the academic realm of higher education. They also act as a community that encourages cultural identity, self-efficacy, physical and mental well-being, in addition to academic success and perseverance (Johnson et al., 2017). Many in academia support the offering of fictive kin relationships among the African American population (Brooks & Allen, 2016). For this reason, HBCUs promote the importance of social integration within higher education and place focus also on religion and spirituality, which studies have shown that African Americans consider strengths (Brooks & Allen, 2016). One study even found that HBCUs rank higher on the Social Mobility Index (SMI) than many Predominantly White Institutions (PWIs) (Hardy et al., 2019). This is likely, at least in part, due to these targeted strategies of accommodating the culture of the African American college student population.

Historically Black colleges often have an open-enrollment admission policy and do not require some of the testing standards on which many other colleges and universities base their entrance qualifications (Joonas, 2016). This allows greater college access for those students that are considered to be economically underprivileged and may not have the resources to complete such requirements. Essentially, the mission of HBCUs dates to the progressive era and the Carnegie Foundation (1971) states that race should not determine socioeconomic nor political status and that colleges and universities across America should agree to share to that goal. “The colleges founded for Negros have always had this goal” (Carnegie Commission on Higher Education, 1971, p.1).

Food Insecurity

Food insecurity is defined by the USDA as “a household-level economic and social

condition of limited or uncertain access to adequate food" (2019, para. 3). The most recent data from the USDA finds that the prevalence of food insecurity in households across the U.S. is 10.5 percent (2020). In addition, 4.1% of households reported very low food security, described as the consumption of food by some members of the household was reduced and normal eating was negatively affected due to insufficient resources for obtaining food (USDA, 2020). Notably, the USDA recognizes that these data are not reflective of the impacts due to the Coronavirus Disease (COVID-19) which began in 2020, therefore, suggesting the numbers may now be considerably higher (2020).

These general population statistics are not necessarily applicable for the current college student population. Previous research has shown that food insecurity rates among college students is significantly higher than the general population, even before the COVID-19 pandemic, ranging from 14% to 56% across the United States (Gaines et al., 2014; Maroto et al., 2015). Nazmi et al.'s 2019 systematic review of food insecurity found that the college student population experiences food insecurities at a rate three times higher than the average American household, possibly affecting one in every two students, prior to the pandemic. Since the onset of COVID-19, recent studies have found the impact of the pandemic significantly affects students of higher education and their experiences with food insecurity (Lederer et al., 2020; Owens et al., 2020). Specifically, occurrences such as losing work hours and changes in living situations due to the pandemic were the most significant predictors of students experiencing food insecurity as a direct result of COVID-19 (Owens et al., 2020). According to Lederer et al., (2020) it is likely that the current pandemic is further intensifying the already disproportionate numbers of minority students and low-income students experiencing basic needs insecurities.

Food insecurity among college students has been studied on multiple campus types across the Nation, most notably in the last decade (Nazmi et al., 2019). Although numerous campus studies have been conducted, the college student population still has limited research in this area compared to households and children (Bruening et al, 2016; Nazmi et al., 2019; Silva et al., 2017). Some of the lowest levels of food insecurity have been reported at the University of Alabama at 14%, a large Mid-Atlantic university at 15% with an additional 16% at risk of the insecurity, and the University of Hawaii at Manoa at 21% (Chaparro et al., 2009; Gaines et al., 2014; Payne-Sturges et al., 2018). While these lower rates remain extremely important for these institutions, many other areas of the United States have found much higher prevalence. These include 39% at Western Oregon University, 39.2% at The City University of New York (CUNY), and 56% among two community colleges in Maryland (Freudenberg et al., 2011; Maroto et al., 2015; Patton-López et al., 2014). As discussed in detail later in the chapter, the potential embarrassment and stigma associated with the circumstance may prevent some affected students from accessing available resources or avoid discussing their needs with colleagues (Henry, 2017; Wood et al., 2016). One of the largest studies on food insecurity, to date, including 66 institutions across 20 states, with more than 43,000 student participants, found that 36% of college students experienced food insecurity at some time within the month preceding the survey (Goldrick-Rab et al., 2017). This inclusion of campuses across the U.S. reiterates that food insecurity goes beyond simply geographical location. Also noteworthy, from a study at the University of Texas at Austin, researchers found that of those students reporting food insecurity, an astonishing 96% of them reported no history of material hardship prior to matriculation (Forman et al., 2018). However, a conflicting study found that more than half of food insecure

students at the University of California had experiences during childhood with low or very low food security (Martinez et al., 2016).

In addition to examining the prevalence that college students experience food insecurity, as suggested by Alaimo's (2005) human development model, it is also important to determine risk factors that may be used as predictors for specific populations at risk of being food insecure. Analyses of student demographics repeatedly reveal that students of color are significantly more likely to experience food insecurity than their counterparts (Blagg et al, 2017; Bruening et al., 2017; El Zein et al., 2017; El Zein et al., 2019; Camelo & Elliott, 2019; Crutchfield & Maguire, 2018; Dubick et al., 2016; Freudenberg et al., 2011; Maroto et al., 2015; Martinez et al., 2018; Mirabitur et al., 2016; Morris et al., 2016; Payne-Sturges et al., 2018; Phillips et al., 2018; Thompson et al., 2018; Wood & Harris, 2018). Most significantly, two studies, one of community college students in Maryland and one from a large Midwestern university, both found that African American students or those identifying as multiracial were more than two times as likely to experience food insecurity than White students (Maroto et al., 2015; Mirabitur et al., 2016). Similarly, another study at a large Midwestern university found that 35.7% of African American students were food insecure while only 13.4% and 12.8% of White and Asian students, respectively, reported the insecurity (Phillips et al., 2018).

Among the other factors that have been correlated with food insecurity, living arrangements also emerged as a common theme. Students that live off campus and those living with dependents are more likely to report food insecurity than those living on campus or without dependents (Broton et al, 2018; Bruening et al, 2016; Bruening et al., 2017; El Zein et al., 2017; El Zein et al., 2019; Maroto et al., Mirabitur et al., 2016; 2015; Morris et al., 2016; Phillips et al., 2018). This is likely due to on-campus food provisions such as meal plans and easier access to

healthy food sources. Students that receive multiple forms of financial aid and are classified as Pell Grant eligible also report higher levels of food insecurity than other student populations (Broton & Goldrick-Rab, 2018; Broton et al., 2018; Camelo & Elliott, 2019; El Zein et al., 2019; Morris et al., 2016; Payne-Sturges et al., 2018). Students that are employed and financially independent from their parents have been found to be at a significantly higher risk of experiencing food insecurity than those living with parents or relatives (Broton et al., 2018; Bruening et al., 2017; Patton-López, 2014; Phillips et al., 2018). Camelo and Elliott (2019) and Phillips et al. (2018) both found first-generation students to be more at risk of experiencing food insecurity than those with higher education in their family histories, making this an important characteristic to study.

Supplemental Nutrition Assistance Program

The USDA's federally funded Supplemental Nutrition Assistance Program (SNAP) is available to offset food insecurity, however, the strict eligibility requirements limit many needy college students from qualifying for the program. In general, full-time students are not considered eligible to receive SNAP benefits unless they meet certain exemptions such as working a minimum of 20 hours per week in addition to their full-time student status, have dependents between five and 12 years old and no available childcare, participate in work study programs, or are physically or mentally unfit, just to name a few (USDA Food and Nutrition Service, 2020). Most of these exemptions are difficult or impossible for full-time college students to meet, thus disqualifying them the program. These SNAP exclusions were implemented during a time when the vast majority of students enrolled in postsecondary education were thought to be of privileged, college-educated, middle-to-upper class families

(Laska et al., 2020). Today's statistics, in regard to college students' overall demographics indicate this is no longer accurate.

Some researchers suggest the revision of the SNAP eligibility restrictions, making the program more accessible for college students (Bruening et al., 2017; Patton-López et al., 2014). A few states have acted on these suggestions, such as Illinois and Hawaii, which have expanded their SNAP eligibility requirements to include students in technical education and training programs (Laska et al., 2020). In addition, New Jersey and Michigan have begun the legislative process of SNAP expansion, however, the COVID-19 pandemic has unfortunately caused many of these initiatives to be postponed (Laska et al., 2020). During the 2020 campus shut down, many states solicited waivers from the USDA to temporarily suspend SNAP's work requirements, due to the drastically increasing unemployment rates, yet these requests were all denied (Laska et al., 2020).

Freudenberg et al. (2011) found that although 18% of the students at CUNY met the eligibility requirements to receive SNAP benefits, only 6.4% actually took advantage of the opportunity. Among those receiving the provision, 63% of them expressed that this alone was not sufficient to provide food security status (Freudenberg et al., 2011). Crutchfield and Maguire (2018) found this low number of students enrolling in the SNAP program may be due to students not being aware that the program exists, or Broton et al. (2018) suggests it is possibly due to stigma associated with receiving such assistance. A similar program available to California State University students, termed CalFresh, returned similar results. Of the students that were eligible in 2016, only 20% were enrolled in the program and most of the students that reported experiencing food insecurity did not meet eligibility requirements (Bianco et al., 2016). Revision

of these eligibility qualifications presents as a practical implication the state of California may need to consider.

Food Pantries

Many college campuses also have food pantries or other similar programs available for student use. In 2012, the College and University Food Bank Alliance (CUFBA) was originated to focus on lessening college student food insecurity by serving as a resource and clearinghouse for the creation of college campus food banks. As of 2018, the organization had nearly 600 campus members (Cady & White, 2018) and a total of more than 900 college food pantries existed across the United States (Laska et al., 2020). Food pantries have been shown to be a valuable provision for many food insecure college students. One ethnographic and qualitative research study found that of the food insecure participants, 85% of them discussed the advantages of a campus food pantry, including the close proximity, and having easily accessible resources (Henry, 2017). Another qualitative study, found that almost three-quarters of the food insecure participants reported using at least one type of provision to access food, including SNAP, food pantries, soup kitchens, among others (Zigmont et al., 2019). While these findings suggest the positive effects food pantries can have for students in need, there are conflicting findings as well.

Just as the results of the SNAP program showed low participation, the same shows true for some college food pantries. Freudenberg et al. (2011) found that only 7.2% of food insecure students made use of the food pantry on CUNY campuses. Similarly, El Zein et al. (2019) found in a multi-institutional study that 56.4% of all participants were aware of the existence of a food pantry on campus, however, only 22.2% of students experiencing food insecurity actually utilized the provision. Some researchers express the idea that food pantries, while beneficial, are only a short-term solution and that longer-term, more upstream strategies are necessary to

decrease barriers and improve supports for students (Nazmi et al., 2019; Laska et al., 2020; Willis, 2021). There is no evidence supporting the continual and lasting effects of such a provision (Laska et al., 2020). Several studies also found that students admit that while food pantries could be a beneficial resource, many may not use them due to stigma, embarrassment, and shame associated with being seen at the facility and would like the pantry to be discrete (Allen & Alleman, 2019; Fincher et al., 2018; Henry, 2017).

Meal Plans and Meal Share Programs

Colleges and universities are known to be establishments with copious amounts of food, much of which goes to waste while many students are suffering from food insecurity or hunger (Willis, 2021). One organization, Move For Hunger (2021), estimates that as many as 22 million pounds of food are wasted on college campuses every year. Meal plans and meal share programs are two common strategies offered by some colleges and universities to try to alleviate the food waste and instead go toward students in need of good nutrition. While meal plans have been shown to be effective in decreasing a student's likelihood of experiencing food insecurity (University of California, 2017), some negative issues have also been determined. For example, a study at the University of Kentucky found that 43% of students had a meal plan, but the two most commonly purchased plans were the ones offering the lowest number of meals, with only seven to 10 meals available per week (Hege et al., 2021). This is considered to be an insufficient number of meals for an individual to remain healthy and achieve physical and mental wellness (Hege et al., 2021). In addition, it cannot be assumed that purchasing a meal plan provides full protection against a student experiencing food insecurity in college. vanWoerden et al. (2019) found that many students experiencing food insecurity, in fact, have unused meals remaining on

their meal plan. This is likely due to food insecure students working unconventional hours that conflict with the campus food resources' hours of operation (vanWoerden et al., 2019).

A relatively new initiative, meal sharing programs, such as Swipe Out Hunger that began in 2010, and the food bank program, Swipe It Forward, originating in 2017, allow students to donate unused meals from their meal plan to students in need (Laska et al., 2020; Hickey et al., 2019). According to Hickey and team (2019), there is a lack of scholarly evidence to strongly demonstrate the success of such programs, but the Swipe Out Hunger organization reports that 52% of students participating in the meal share program claim to have seen an improvement in their academic grades (Hickey et al., 2019). While the meal share initiative seems to have been supported by many students, Henry (2017) found that many students experienced issues receiving the donated meals as sharing meals with peers was not permitted by the institution. Another limitation to the meal share programs is that some schools set a limit of how many meals are allowed to be shared, thus inhibiting the program's results (Laska et al., 2020).

Housing Insecurity

Housing insecurity does not have an official federal definition; however, the McKinney-Vento Homeless Assistance Act, Subtitle VII-B, defines it as the lack of a fixed, regular, adequate nighttime residence or sharing a residence with others due to the loss of previous shelter (Wong et al., 2009). College students often have the option of living in on-campus housing to circumvent this insecurity; however, many institutions do not offer this opportunity to undergraduate students (Silva et al., 2015). Broton and Goldrick-Rab (2018) found that at least one-third of two-year college students are housing insecure, and up to 14% are homeless. This disparity may be due to two-year institutions not offering dormitory style housing as frequently as four-year schools. Among four-year students, the researchers found that between 11% and

19% experience housing insecurities (Broton & Goldrick-Rab, 2018) while Silva et al. (2017) also found disproportionately high rates of housing instability at one urban university. One study out of California found that housing insecurity disproportionately affects African American students, with 48.4% of Black men respondents and 41.4% of Black women respondents reporting the insecurity (Wood et al., 2016). This important finding reiterates the critical need of studying insecurities experienced by HBCU students.

Unstable housing situations have been correlated to lower academic success. Silva et al. (2017) found that students reporting housing insecurity are 13 times more likely to have failed a course and 11 times more likely to withdraw or fail to register for further courses. Relatedly, Hallett and Freas (2017) found it takes some housing insecure students between 15 and 17 semesters to complete an associate degree and frequently drop out for a period of time. In addition to lower academic success, one trauma-focused qualitative study found students with insecure housing were at risk of participating in dangerous, risky behaviors (Hallett & Freas, 2017). Participants in this study admitted to living outside in tents, sneaking into friends' homes, and finding parties on social media in the hopes of being able to stay there for the evening (Hallett & Freas, 2017). While there are no studies on housing insecurity specifically on the campus of an HBCU, Thompson et al. (2018) classifies the African American population as an at-risk population of insecurities due to low-income levels, low levels of education, and high unemployment. These factors make this population worthy of studying housing insecurity experiences. And, even though multiple studies suggest students of color are significantly more at risk of experiencing food and housing insecurities than other races, a study specifically on an HBCU campus addressing both basic needs insecurities is not included in the current peer-reviewed literature.

College Housing and Residence Halls

Colleges and universities often offer some on-campus residency options which has been found to increase educational opportunities to these students (Hallett & Crutchfield, 2017). A downfall to the on-campus option is the increased costs of living, with federally funded financial aid rarely providing enough funding to cover them (Hallett & Crutchfield, 2017). On average, the room and board fees at a public, four-year institution account for more than half of the total cost of attending college (Hallett & Crutchfield, 2017). Compounding this astounding number, is the notion that many institutions of higher education deliberately advertise a lesser cost of living in order to attract students and appear comparable to other schools (Hallett & Crutchfield, 2017; USHUD, 2015) When students are unaware of the actual costs of attending college, they may overestimate how much their financial aid will cover, leading to mistaken decisions on how to budget their finances (Goldrick-Rab et al., 2017). According to the United States Housing and Urban Development (USHUD), while it seems beneficial to offer on-campus housing to students, the costs associated may be significantly more than alternative housing options (Hallett & Crutchfield, 2017; USHUD, 2015).

The Intersection of the Two Insecurities

Food and housing insecurities among college students have been found to overlap, intensifying the potential negative outcomes of such experiences. One recent quantitative study at the University of Kentucky found that of the 43% of participants that qualified as food insecure, they were 18 times more likely to also present as housing insecure (Hege et al., 2021). Another recent study reported that food and housing insecurities are collaboratively correlated to academic performance, measured by grade point average (Leung et al., 2021). The Global Food Initiative's 2017 findings support the intersection of insecurities as they found that of those

students who identified as homeless, 77% of them also reported experiencing food insecurity (University of California, 2017). One very large study of more than 4,000 undergraduate students at 10 community colleges spanning seven states reported that one-half of these college students were struggling with food insecurity, housing insecurity, or both (Goldrick-Rab, et al., 2017). These astounding results strongly suggest that the two insecurities are linked and thus need to be studied as such. Leung and colleagues' (2021) study incorporated a third insecurity, financial insecurity, and found that students experiencing any one of the three insecurities were more likely to report feelings of depression, anxiety, fair or poor overall health, and lower academic performance than students with basic needs security.

Mental Health

College students' mental health remains a growing public concern across the country (Lipson et al., 2018). Rates of lifetime diagnoses increased 14% from 2007 to 2017 (Lipson et al., 2018). Multiple studies have found a correlation between food and/or housing insecurities and mental health status. One qualitative study found that students experiencing homelessness or housing insecurity report higher levels of psychological stress and shame (Hallett & Freas, 2017). Maroto et al. (2015) determined that students with inadequate access to nutritious food expressed adverse effects on their cognitive abilities. In addition, Payne-Sturges et al. (2018) determined that students experiencing food insecurity reported more incidences of having little interest, feeling down or tired, and feeling bad about oneself. Similarly, El Zein et al. (2017) discerned that food insecure freshmen students reported higher odds of disordered eating, perceived stress, and poor sleep quality. A study by Zigmont et al. (2019), found that the stress caused by not having enough to eat resulted in even more negative feelings, including the desire to eat much more or less than they should, feeling physically ill, or exhausted. Mental and

physical fatigue related to food insecurity have been shown to cause the inability to concentrate on one's studies, which negatively effects a student's overall academic performance (Cady, 2014; Maroto et al., 2015). A recent study analyzed the differences between genders as food insecurity is related to mental health well-being and found females are more at risk of developing psychological distress caused by food insecurity (Becerra & Becerra, 2020). All of these mental, cognitive conditions are important, however, across the literature, specifically depression emerges as a recurring theme due to these insecurities.

Depression

The National Institute of Mental Health (NIMH) defines depression as a common, yet serious mood disorder that affects one's feelings, cognitive abilities, and how one manages daily activities such as sleeping, eating, and working (2018). Depression has been analyzed in multiple basic needs studies, all of which found a relationship between the variables (Blagg et al., 2017; Bruening et al., 2016; Bruening et al., 2018, Crutchfield & Maguire, 2018; Freudenberg et al., 2011). Specifically, Freudenberg et al. (2011) determined that students with reported depressive symptoms were more than two times as likely to also report low food security than those students without depressive symptoms. A recent study at a rural university in Oregon found that the average score of depressive symptoms on the 10-item CES-D scale in students with food security to be 9.92, while the food insecure students reported an average score of 13.55. This 3.78 increase in depressive symptoms score was significantly associated with food insecurity (Willis, 2021). A large study including more than 8700 students found 28% to 55% of participants reported feelings of sadness, loneliness, and depression to the point of interfering with normal functioning and those that reported experiencing food insecurity had significantly higher numbers of mental health indicators compared to food secure students (Martinez et al., 2020).

Crutchfield and Maguire (2018) termed these “inactive days” and found that students who reported food insecurity, homelessness, or a combination of them experienced more “inactive days” than their counterparts (p. 12). Students reported their poor physical or mental health interfered with performing schoolwork, taking care of oneself, and/or other everyday activities (Crutchfield & Maguire, 2018). Similar findings by Hege and researchers (2021) found that food insecure students reported depressive-type symptoms at a rate twice that of food secure students. The compilation of these findings strongly suggest that depression and depressive symptoms need to be measured among college students experiencing material hardship insecurities.

Stigma

Stigma is a complex phenomenon with both individual and social elements that acts as a barrier to health care and quality of life in health management which involves othering, blaming, and shaming (Deacon, 2006). Basic needs insecurities are often referred to as an invisible issue, partially because the individuals experiencing these challenges often want to remain out of sight due to the stigma associated with them, feelings such as shame, embarrassment, or guilt (Allen & Alleman, 2019; Cady, 2014). These feelings will often cause students in need to shy away from seeking the help that they need (Fincher et al., 2018; Hallett & Crutchfield, 2017; Hege et al., 2021). Henry’s (2017) qualitative study found students reported feeling awkward around their friends when they could not afford to order food at a restaurant. One student was quoted as explaining coping with these negative feelings as a silent struggle that is necessary in order to retain his/her dignity (Henry, 2017). Many students expressed coming up with excuses, such as being on a diet or studying, as ways to avoid social interactions (Allen & Alleman, 2019). Multiple studies found that students expressed positive perceptions of the use of campus food banks, but at the same time expressed concern that food insecure students may be reluctant to use

such a provision due to the stigmatization that surrounds being classified as poor or food insecure (Allen & Alleman, 2019; Fincher et al., 2018; Henry, 2017; Laska et al., 2020). Research indicates that this type of social stigma related to economic instability is relatively common among the college population.

Mental Health Stigma and Self-Concealment

This negative phenomenon of stigma is not only associated with basic needs insecurities, but it surrounds the mental health domain as well. This specific type of stigma is defined as a set of negative attitudes directed toward individuals with a potential psychological disorder or treatment of such a disorder (DeFreitas et al., 2018; Masuda et al., 2012). Studies have found that the African American college student population experiences greater mental health stigma than individuals from other racial groups (Masuda et al., 2012). In addition, these negative feelings result in fewer individuals with mental health concerns seeking treatment due to the fear of being treated maliciously by others in the community (Masuda et al., 2012; Stansbury et al., 2011). Scholarship by Stansbury et al. (2011) discusses findings that revealed as many as one-third of their African American college student participants tended to view certain mental health problems, such as depression, as a type of self-weakness and that spirituality rather than pharmacology is the better method of treatment. Masuda et al. (2012) revealed similar findings that African American students preferred to seek counseling and advice from clergy members or family as compared to mental health clinical professionals. Feelings such as these lead to less treatment-seeking behaviors for this group of students despite research that suggests they are at an increased risk for such mental health concerns (Stansbury et al., 2011).

Self-concealment is defined as one’s personal disposition to withhold important, yet potentially shameful or demeaning personal accounts due to fear of experiencing mental health

stigma (Masuda et al., 2012; Larson & Chastain, 1990). Masuda et al. (2012) discusses research findings in which African Americans college students were shown to act with more self-concealment behaviors than students of other racial backgrounds. Perhaps the fear of being stigmatized as one with a personal weakness could be an underlying cause of such behavior. Both self-concealment as well as fear of mental health stigma were found to be predictors of whether African American college students seek treatment for mental health issues, although more research is necessary to fully understand the complexities of these factors (Masuda et al., 2012). In contrast, one recent Indiana University study has found the first evidence of a decrease in public stigma surrounding depression, especially among the millennial birth cohort (Percosolido et al., 2021). This decrease may possibly be due to an increase in awareness in public education or the prevalence of effective prescription medications.

Academic Success

Academic performance and success can be measured in a number of different ways, most commonly as a calculation of grade point average (GPA), but also can be assessed by one's ability to re-enroll for the following term, attendance in class, frequency of dropping classes, or discontinuing an academic program, both short-term or permanently. In the case of GPA, studies have found that students experiencing food insecurity are significantly more likely to have a GPA less than 3.0 (El Zein et al., 2017, 2019). Maroto et al. (2015) found that community college students with a GPA between 2.0 and 2.49 were more likely to report experiencing food insecurity than students with a 3.5 to 4.0 grade point average. Similarly, a study at the University of Illinois found that students with a GPA score between 2.00 and 2.99 reported higher levels of food insecurity than students in other GPA ranges (Morris et al., 2016). In addition, Camelo and

Elliott (2019) found a negative association between food insecurity and GPA score while Patton-López et al. (2014) found that a good GPA score was inversely associated with food insecurity.

Considering alternative ways of measuring academic performance, Dubick et al. (2016) found that among students reportedly experiencing housing or food insecurity, 32% of them stated that these challenges negatively impacted their education. Among those students, more than half of them claimed that they were unable to purchase their textbooks and they missed classes due to their hardships. In addition, a quarter of them admitted to dropping a class due to these basic needs insecurities (Dubick et al., 2016). In more extreme cases, food insecure students stated that they were forced to suspend their studies due to financial difficulties (Martinez et al., 2018). Specifically, Gallegos et al. (2014) determined that food insecure students were three times more likely to defer their studies due to financial hardship than students with suitable food access. Moreover, food insecure participants from one qualitative study conducted at a private institution expressed they were often forced to sacrifice academics in order to secure food (Allen & Alleman, 2019). These findings suggest and support the need for basic needs insecurities to be assessed in attempt to assist students' academic success and degree attainment.

Coping Mechanisms for Basic Needs Insecurities

Several qualitative studies have investigated some of the ways students attempt to cope with basic needs insecurities while enrolled in college, however, more research is necessary for colleges to fully understand the best supports to offer their students (Hege et al., 2021). For example, the existing research on these coping strategies focuses primarily on food insecurity rather than housing instability. Many of the current studies revealed parallel findings including food insecure students tend to buy the most inexpensive foods available and also try to buy in

bulk when possible (Hege et al., 2021; Zigmont et al., 2019) from stores such as Walmart, Kroger, or Dollar General (Henry, 2017). Students shared that they ate unhealthy foods such as from fast food restaurants or gas stations within close proximity to campus (Zigmont et al., 2019; Hege et al., 2021) because transportation posed a problem for many (Henry; 2017). Some students admitted they would intentionally not pay certain bills some months or not pay the full amount as means to have enough money left in their budget for food (Hege et al., 2021; Henry, 2017). Several participants of the qualitative studies stated that they would often attend on-campus events that offered free food and also relied on family or friends for support (Hege et al., 2021; Henry, 2017; Zigmont et al., 2019). Other coping mechanisms and supports mentioned included eating snacks rather than full meals, skipping meals, waiting to eat later in the day (Zigmont, 2019), using friends' meal plans, stealing, and taking out payday loans (Henry, 2017). Food pantries and other on-campus services were discussed, but not as one of the primary strategies. In fact, stigma was, once again, raised as a concern that students feared regarding the shame associated with their coping strategies as a remedy for their needs (Henry, 2017; Hege et al., 2021).

Regarding housing insecurity, the primary coping mechanisms mentioned in the qualitative studies were moving in with friends in attempt to save money (Hege et al., 2021) or as many as half of participants discussed temporarily staying on friends' couches (Henry, 2017). This unstable housing condition is one of the ways college students are not included in the national census calculations that study poverty levels and homelessness, which causes the numbers to inaccurately account for how many young adults are actually housing insecure and in need of assistance. Additionally, Henry (2017) found that 45% of participants admitted to living

in unfavorable circumstances due to affordability. These included dirty environments, racially charged situations, abusive parents, or living out of one's vehicle.

Employment of College Students

Employment status emerges as a contributing factor when examining basic needs insecurities among college students. Dubick et al. (2016) found that among the food insecure participants in their study, 56% had a paying job, 38% of which worked more than 20 hours a week in addition to carrying out their academic studies. Moreover, this astounding number is actually on the lower end of the findings in the existing literature. Zigmont and researchers (2019) found almost 58% of students with food insecurity were working an average of 21 hours a week, Hege and researchers (2021) reported 61% from their recent study, and Henry (2017) determined that a staggering 67% of food insecure students were working at least one job while attending college. Surprisingly, food insecure college students are actually more likely to hold jobs while enrolled in school than their food secure counterparts (Broton & Goldrick-Rab, 2018). For this reason, experts in the field of basic needs insecurities suggest that college timelines for prospective graduation may need to be restructured considering the overwhelming number of students requiring employment to afford the living expenses associated with attending a higher education institution (Goldrick-Rab et al., 2016).

Impact of Coronavirus-19 Disease on Basic Needs of College Students

Throughout this manuscript, the devastating effects of the current COVID-19 global pandemic have been briefly discussed. While it is evident that the coronavirus statewide shutdowns and government mandated college campus closures negatively impacted college students on a global level, the extent of such impact is not yet fully understood. The scholarship on basic needs insecurities among college students presented in this manuscript provide strong

evidence that America's postsecondary education population is at greater risk for experiencing these basic human needs than the general population. The COVID-19 pandemic has likely exacerbated the effects to a presently unknown magnitude. Effects of the pandemic contributing to the massive rise in insecurities include closure of campus supports for students, such as residence halls, cafeterias, food banks, medical care, and counseling centers, among others. The stay-at-home orders and business closures that were state mandated caused many businesses to temporarily or even permanently close, causing great increases in unemployment (Owens et al., 2020). Many of the businesses forced to close were those in the food industry and retail, both of which employ a high percentage of college students.

Some of the seminal studies on this crucial topic have found students are reporting increased rates of mental health issues as well as concerns of their ability to succeed academically that are directly related to the effects of COVID-19. More specifically, one mixed methods study found that 71% of participants reported increased stress, anxiety and depression since the pandemic and 82% reported concerns regarding their academics (Son et al., 2020). In addition, a research study conducted on a population similar to the student demographics at the institution of focus in this manuscript revealed devastating findings. The study was conducted near the beginning of the coronavirus outbreak during the months of April and May and examined the effects of COVID-19-related stressors and the impact they caused on anxiety and depression levels (Rudenstine et al., 2020). The urban, low-income public university students who reported high levels of COVID-19 stressors also reported high levels of depression and anxiety. Particularly, 63% of students in the high stressor category reported increased depression and 52% reported increases in anxiety (Rudenstine et al., 2020). These astonishing results are

upsetting, however, considering the early timeframe in which the study was conducted, today's results are potentially even more unfortunate.

Prior to the pandemic, it seemed as though some state legislation efforts were making forward progress in addressing some student needs, such as the SNAP eligibility revisions to expand college students' inclusion criteria. However, these efforts have been forcibly postponed even while the insecurity levels continue to climb, due to same COVID-19 effects (Laska et al., 2020). Students' requests to qualify for SNAP despite being unable to work due to the pandemic were denied by the USDA, leaving them with no food provision while also unemployed (Laska et al., 2020). The compounded intensity of the effects of COVID-19 placed upon college students is by far one of the most devastating features of the pandemic. College students are struggling at an exponential rate, yet their supports, provisions, and assistance are declining in-parallel.

Summary

Overall, the current literature is in agreement that the prevalence of basic needs insecurities on college campuses is both higher than the general population and negatively impact students in a multitude of ways. Many studies have examined the relationship between food insecurity and the effects it has on students, however only a few studies have analyzed a combination of food and housing insecurities and the impact they have college students' mental health and ability to succeed in college. The potential effects cover a broad-spectrum, all of which are important to study, from academic performance, mental health condition, physical health, perceived stress level, among others. More research is needed to fully understand how the combination of basic needs insecurities is impacting tertiary students, particularly among minority students.

Racially-minoritized students are of particular importance as they emerge as an at-risk population for experiencing these insecurities and mental health issues across the board in the existing scholarship. In addition to race, students who are first-generation college students are also more at-risk. Moreover, basic needs insecurities are social disparities that impact students from low-income backgrounds at a higher rate than other income classes. Considering the cost of attending college is rising at a rate faster than inflation and need-based financial aid is remaining stagnant, the effect on low-income students is compounded as they enter college as an at-risk population of students for experiencing these insecurities. As HBCUs serve a large number of first-generation, minority students, many coming from low-income families, studying the prevalence and effects of these insecurities on an HBCU campus is critical to ensure these young adults have the supports to succeed through matriculation. Developing a better, more focused understanding of how specifically the African American college student community is affected by, manages, and views these challenges will ultimately allow HBCU institutions to place distinct efforts and resources toward offering the provisions these students need and will use.

The current COVID-19 global pandemic and its effects are worthy of consideration in such research. The economic impact due to COVID-19 has been extraordinary on all levels. The pandemic has caused many students to lose their jobs, leaving significantly less money for nutritious food, and in some cases even displaced families from their homes. In addition to families, colleges and universities across the Nation have suffered as a direct result of the pandemic. Students have been forced to withdraw from classes for a number of reasons. Some are unable to access sufficient technological tools such as computers and Internet service. Others have had to obtain employment rather than attend classes to help pay for the family's bills. When students are not enrolled in college, the campus-based resources available to them to offset basic

needs insecurities decreases significantly, including food pantries, meal plans, dormitories to live in, health centers, counseling centers, and other support services. For this reason, it is now more important than ever for colleges and universities to assess the needs of their current students in order to provide all the resources necessary for them to persist and succeed through graduation.

CHAPTER THREE: METHODS

Overview

The purpose of this quantitative, predictive correlational study was to report the prevalence of food and housing insecurities at one HBCU in South Carolina and explore whether these insecurities have an effect on students' academic performance and their mental health, specifically depressive symptoms. The researcher aimed to determine if predictive relationships exist among the independent variables, food and housing insecurity, and students' grade point average (GPA) or level of depression. The researcher also strived to determine if individual student characteristics may act as accurate predictors to determine those students who may be at risk for experiencing these challenges. This chapter discusses the specific research design, the four research questions, hypotheses, participants, instruments used, and procedures for data collection and analysis.

Design

A quantitative, predictive correlational research design was appropriate for this study in several ways, as discussed here. According to Gall et al. (2007) correlational research is appropriate to discover both direction and strength of relationships between each predictor variable and each criterion variable by way of a numerical expression. A significant relationship between variables means that a change in one variable appears to create some change in another, more than simply occurring by chance alone. The inter-relationship between variables can be positive, negative, or non-existent, and can range from -1.0 to +1.0, with the value determining if the correlation is strong or weak (Warner, 2013). A correlational research design was also appropriate to predict the possibility of an event occurring based on current data and knowledge (Curtis et al., 2016). Due to its passive nature, correlational research is used when a researcher

seeks to determine if two variables are related to one another, however correlational studies do not establish causation (Curtis et al., 2016; Gall et al., 2007). Overall, correlational research is widely used in the social sciences and is generally considered an appropriate starting point when researching a phenomenon for the first time (Curtis et al., 2016). As discussed, these characteristics suggest that a correlational research design was of best fit for the present study on food and housing insecurities on an HBCU campus. This design allowed the researcher to examine whether a student's experiences with these basic needs insecurities are indicative of an increased risk of experiencing depression and also if these challenges are related to students' ability to succeed academically. The predictor variables, food insecurity and housing insecurity, were used to determine how accurately the dependent variables, grade point average and depressive symptoms, are predicted from a student's experiences with the two basic needs challenges. These investigations were addressed by research questions one and two.

In addition to these investigations, a correlational design was also used to determine if a predictive relationship exists between the predictor variables, a student's demographical factors (gender, race, classification, first-generation college student status, parental level of education, financial aid eligibility, and employment status) and the dependent variables, level of food security and level of housing security. These correlations were analyzed by research questions three and four.

Research Questions

The research questions addressed by the current study are as follows:

RQ1: Is there a predictive relationship between the criterion variable (GPA) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college?

RQ2: Is there a predictive relationship between the criterion variable (Depressive Symptoms Score) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college?

RQ3: Is there a predictive relationship between the criterion variable (Food Insecurity Score) and the predictor variables (Student Demographics) among the student population at one historically Black college?

RQ4: Is there a predictive relationship between the criterion variable (Housing Insecurity Score) and the predictor variables (Student Demographics) among the student population at one historically Black college?

Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no statistically significant predictive relationship between the criterion variable (GPA) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college.

$H_0$2: There is no statistically significant predictive relationship between the criterion variable (Depressive Symptoms Score) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college.

$H_0$3: There is no statistically significant predictive relationship between the criterion variable (Food Insecurity Score) and the predictor variable (Student Demographics) among the student population at one historically Black college.

$H_0$4: There is no statistically significant predictive relationship between the criterion variable (Housing Insecurity Score) and the predictor variable (Student Demographics) among the student population at one historically Black college.

Participants and Setting

Population

The study took place at a relatively small, private, historically Black, liberal arts institution in South Carolina. The college is located in a downtown, urban setting. The overall population of 1,731 students is comprised of 91.8% identifying as African American, 55.7% females, and 44.3% percent males (CollegeFactual, 2020). There is a medium sized population of International students, 128 in the 2019-2020 academic term (CollegeFactual, 2020). Of the total number of students, 93% qualify for some form of federal grant aid, averaging $11,565 per qualifying student (CollegeFactual, 2020).

Participants

For the present study, the participants were drawn from a convenience sample of the overall student population. According to Gall et al. (2007), the minimum number of participants for a correlational study is 66 when assuming a medium effect size with an alpha (α) level of significance of .05 and statistical power at the .7 level. The total number of participants for the study was 175 completed surveys, therefore was considered an acceptable sample size for data analysis. The eligibility requirements for the study were a.) 18 years of age or older, and b.) enrolled in the current academic term. The online survey was administered from November 2 through November 16 in the Fall 2021 academic semester.

Instrumentation

For the present study, three validated survey instruments were used for data collection. To determine the level of food insecurity, the United States Department of Agriculture's (USDA) six-item Short Form Household Food Security Survey Module (HFSSM) was used (2019c). To determine participants' level of experiencing depressive symptoms, the 20-item Center for

Epidemiologic Studies Depressions Scale (CES-D) was used, and the level of housing insecurity experienced by students was measured using an instrument that experts, Katherine Broton and Sara Goldrick-Rab (2017, 2018) have employed in very large prior research studies. The voluntary survey was administered via an online format, using Survey Monkey, and was projected to take approximately 10 minutes to complete all questions. Each of the instruments used are discussed in more detail.

Food Insecurity

The USDA HFSSM is an instrument used to measure the severity of food access problems among households (2019c). The survey was originally developed in 1995 as an 18-item survey with the primary purpose to assess food insecurity experienced at the household level annually in the United States (2019c). Since then, Blumberg et al. (1999) reported a shortened form of the survey was a valid and unbiased tool in measuring food security. This short form of the HFSSM has been used in numerous studies and produced meaningful results (Camelo & Elliott, 2019; Forman et al., 2018; Phillips et al., 2018). The shortened six-item form has been shown to have reasonably high specificity and sensitivity, yielding results comparable to that of the 18-item version. Specifically, results of Blumberg et al.'s (1999) study found that 97.7% of households were correctly identified using the shortened six-item form and only underestimated the overall prevalence of food insecurity by 0.3 percentage points. A study conducted in Iran to test the internal validity of the USDA's HFSSM used data from the Isfahan Food Security Survey for comparison (Rafiei, 2009). Using item-fit statistical methods, the study found that the HFSSM provides internally valid measures of food insecurity among households (Rafiei, 2009). The scale's internal reliability was analyzed in a 2004 study by Gulliford et al., and the Cronbach's alpha was determined to be .87, which according to the UCLA Institute for Digital

Research and Education, a score above .7 is considered acceptable in most social science research institutions (Bruin, 2006).

The items that were excluded from the original version of the survey were those that addressed only individuals with children, thus making the short form more applicable to the majority of college students. Two of the six items have response choices in the form of, “Often True,” “Somewhat True,” “Never True,” and “Don’t Know.” Three items have response choices in the form of “Yes,” “No,” and “Don’t Know.” One question asks about the frequency of skipping meals if the participant answered “Yes” on the previous question. For this question, the response choices were, “3 days or more,” “1-2 days,” or the option to skip the question.

The resulting food security status, from the six participant responses, were then assigned a score according to the USDA guidelines. If a participant answered, “Often” or “Sometimes,” the responses are counted as a “Yes.” For the question that asked about frequency of skipping meals, the response is counted as a “Yes” only if the choice of “3 days or more” was chosen. The total number of affirmative answers determined the level of food security, with a raw score ranging from zero to six. According to the HFSSM system of scoring, higher raw scores indicate lower levels of food security. Most notably, scores between two and four indicate low food security, while a score of five or six indicates very low food security. A list of the six-item HFSSM questions and a table of the classification of food security is provided (see Appendix A). This portion of the survey was expected to take less than three minutes to complete.

Housing Insecurity

Housing insecurity among college students is more difficult to measure than food insecurity. This is, in part, due to the differing forms of housing insecurity for different age groups and special circumstances (Goldrick-Rab et al., 2017). There are surveys administered by

the government to measure housing insecurity and homelessness for households. However, college students often do not live with the parents within the household and those students that are currently experiencing this insecurity may be inadvertently overlooked in such surveys (National Governors Association, 2020; United States Census Bureau, 2017). This element of the study was measured with an instrument created by experts in the field with questions that align with definitions from the McKinney Vento Homelessness Assistance Act (2006; Crutchfield & Maguire, 2017). The items within the survey were developed to accommodate definitions from both the U.S. Housing and Urban Development (HUD) and the U.S. Department of Education. In addition, representatives from the National Association for the Education of Homeless Children and Youth (NAEHCY), Schoolhouse Connection, and the Los Angeles Homeless Services Authority (LAHSA) were consultants in the development of this instrument. One expert in the field of basic needs assessments among college students stated during a video presentation for the National Governors Association that this instrument is a validated tool to survey college students on their housing experiences both in the last month and in the past 12 months (2020). Reliability for this instrument is not reported in the literature, therefore, the researcher of the current study calculated Cronbach's alpha in SPSS using all 11 items ($\alpha > 0.80$) which according to Gall et al., (2007) suggests good internal consistency for the module. The survey instrument has been used multiple times in very large studies across campus types and produced consistent findings each time (Broton, Goldrick-Rab, 2018; Bruening et al., 2018; Goldrick-Rab et al., 2017).

This survey contains 11 items which relate to participants' housing experiences within the past 30 days. Nine of the items relate to housing insecurity and two relate specifically to homelessness. Ten of the 11 questions are answered by responding either, "yes" or "no." The

second item in the homelessness category has 13 sub-items (labeled a through m) in which the participant checks all that apply to their housing situation. According to the developers of the survey, one affirmative answer to the housing insecure items indicates that an individual should be classified as "housing insecure." Moreover, the individual is classified as "homeless" if the first item (question 10) in the homelessness portion is an affirmative response *or* any one of the items labeled e through m are marked affirmatively. The final scoring of the module could result in a score of "housing secure," "housing insecure," or "homeless." This portion of the voluntary survey was expected to take less than three minutes to complete. A table of the 11 items and 13 sub-items is provided (see Appendix B).

Mental Health

Depressive symptoms are traditionally assessed using the Center for Epidemiological Studies Depression Scale (CES-D), developed by Lenore Sawyer Radloff in 1977. The primary purpose of this scale is to measure an individual's symptoms of depression using a self-report configuration (Radloff, 1977). The scale has been found to be reliable ($\alpha > 0.85$) in a 1999 research study assessing depressive symptoms in cancer patients (Hann et al., 1999). Another study, conducted in 2015 that used the scale to measure depressive symptoms in suicide attempters compared to level of depressive symptoms in other residents in China reported Cronbach alpha values of 0.94 and 0.895, respectively among the two groups (Yang et al., 2015). A third, more recent study of Chinese university students also reported good reliability of the instrument with a reported Cronbach's alpha score of 0.87 (Jiang et al., 2019).

Jiang et al. (2019) also addressed the validity of the instrument. The researchers used the Beck Depression Inventory II (BDI-II) and the Positive and Negative Affect Schedule (PANAS) to evaluate its internal validity. The comparisons and analyses found a positive association

between the scores of the BDI-II and the CES-D. The negative affect scores were negatively correlated with positive affect scores, thus suggesting acceptable criterion validity of the CES-D instrument (Jiang et al., 2019).

This 20-item survey lists ways students may have felt or behaved in the past week. The response choices are, "Rarely or None of the Time (Less than 1 Day)," "Some or a Little of the Time (1-2 Days)," "Occasionally or a Moderate Amount of Time (3-4 Days)," and "Most or All of the Time (5-7 Days)." The overall score is the sum of the 20 questions, using the chart provided by the CES-D scale. The possible range of scores is zero to 60, with 60 being most severe depressive symptoms. If more than four items are not answered, the questionnaire is deemed invalid and a total score of 16 or higher classifies an individual as "depressed" (Radloff, 1977). Four of the 20 questions are reverse scored as a way to ensure consistency of responses. This portion of the voluntary survey was expected to take approximately five to six minutes to complete. A list of the 20 items is provided (see Appendix C).

Student Academic Performance and Sociodemographic Data

The questionnaire also included seven questions in which study participants were asked to self-report data about their personal background and academic performance. The first five questions were structured using Demographic Questions for Survey Projects developed by the University of Wisconsin-La Crosse's Office of Institutional Research, Assessment, and Planning (2019). Variables included gender, race/ethnicity, parental education level, first-generation college student status, financial aid eligibility, and current employment status. The sixth question, regarding employment status, was not developed from the aforementioned sample questions. Instead, it was structured based on previous research studies on the subject (Broton & Goldrick-Rab, 2018; Dubick et al., 2016; Hege et al., 2021; Henry, 2017; Zigmont et al., 2019).

First-generation college student status was obtained from the question regarding parental education level. If the participant answered either of the first two responses, “Did not finish high school” or “High school diploma or GED” the participant was deemed a first-generation college attendee. Student participants were also asked to self-report their current cumulative grade point average as a measure of academic performance and whether they are receiving government aid to pay for tuition and other college costs (See Appendix D). These certain sociodemographic factors were chosen based on past research studies that have found correlations between these and food and housing insecurities (Broton et al., 2018; Camelo & Elliott, 2019; El Zein, 2019; Maroto et al., 2015; Morris et al., 2016, Payne-Sturges et al., 2018; Phillips et al., 2018; Silva et al., 2017).

Procedures

A research proposal was submitted during the Summer 2021 semester and successfully defended during the Fall 2021 term. Before data collection, the researcher secured research approval through the Liberty University Institutional Review Board (IRB) during the Fall 2021 semester (see Appendix E) as well as received site permission and IRB approval from the college under examination (see Appendix F). After approval was granted from both Liberty University’s IRB as well as the institution at the focus of the study, the researcher posted the link on the college’s learning platform website for students to access at their convenience.

An announcement email was sent to students making them aware of the survey, its purpose, and request voluntary participation (see Appendix G). The survey was made available for two weeks. Once the survey was removed from the website, the researcher collected the data and entered the responses into IBM’s SPSS software worksheet for data analysis.

Data Security

At all stages of the data collection and analysis procedures, participant responses were protected using a multifaceted approach. First, no student identifiers, such as names, email addresses, or student identification numbers were collected. All responses were completely anonymous. Data were stored on a password-protected computer that only the researcher can obtain access. When not in use, the personal computer was stored in a home office of the researcher, inside a locked desk drawer. The data will be retained for a period of three years after the completion of the research study, upon which all data from the study will be permanently deleted.

Data Analysis

Data analysis for this study utilized four multiple regression analyses to examine the predictive relationship between the predictor and outcome variables. According to Gall et al., (2007) a multiple regression is appropriate to determine if two or more independent variables contribute to a single dependent variable. Specifically, multiple regression is used to analyze two or more independent variables that are either continuous or categorical and one continuous dependent variable (Lane et al., 2020). In addition, multiple regression analysis allows the researcher to determine the overall fit of the regression model. In other words, the model is able to determine the relative contribution of each predictor variable to the overall variance (IBM Corp., 2020). The incorporation of multiple predictor variables (i.e., food and housing insecurity) allows the researcher to determine the how accurately the criterion variable(s) may be predicted by the model.

Data Screening and Assumption Testing

Data screening and assumption testing are critical to ensure the accuracy of predictions one makes from the data set and tests how well the regression model fits the data. Preliminary data screening was conducted by the researcher to remove any incomplete data sets. In addition, a visual screening of the data was conducted to determine any extreme outliers or unexpected values. According to Laerd Statistics (2015), the six assumption tests for multiple regression include the assumption of independence of residuals, assumption of linearity between the predictor and dependent variables, homoscedasticity of residuals, non-multicollinearity among the predictor variables, multivariate normal distribution, and the assumption of no bivariate outliers, high leverage points, and highly influential points within the data set (IBM Corp., 2020).

The first assumption, independence of observations (residuals), tests for first-order autocorrelation, which represents a degree of similarity or correlation between observations. This assumption was checked using the Durbin-Watson Statistic in the SPSS output. The Durbin-Watson statistic can range from zero to four, with an approximate value of 2.0 indicating that no correlation between residuals is occurring among observations (IBM Corp., 2020, Laerd Statistics, 2015). The assumption of homoscedasticity of residuals, is also known as equal error variances. This assumption was checked using a scatterplot, and the researcher ensured that the variances along the line of best fit remain stable along the entire line (IBM Corp., 2020).

Multicollinearity is observed when the independent variables are highly correlated with one another. The presence of this condition prevents a researcher from determining the actual effects that the independent variables have on the outcome variable, making it difficult to accurately interpret the resulting model. The assumption of non-multicollinearity was examined

via inspection of the correlation coefficients and the reciprocal Tolerance/Variance Inflation Factor (VIF) values. First, using the correlations matrix in the SPSS output, the researcher checked that none of the independent variables have values of 0.7 or greater. In addition, the reciprocal Tolerance and VIF values were also be examined. A Tolerance value greater than 0.1 and the reciprocal VIF value of less than 10 ensured that multicollinearity did not exist among the independent variables (IBM Corp., 2020; Laerd Statistics, 2015).

To satisfy the assumption of bivariate outliers, high leverage points, or highly influential points, several aspects of the SPSS output were examined. First, outliers were checked using the Casewise Diagnostics table, if one was created. A standardized residual value greater than ±3 standard deviations were classified as outliers and the researcher determined if the points needed to be removed from the data set. Next, leverage points were checked using the Leverage Values column created by SPSS. Values less than 0.2 were considered safe values, 0.2 to less than 0.5 were classified as risky, and those values above 0.5 were considered cases which exhibit high leverage in the data set. Lastly, influential points were checked using a measure of influence known as Cook's Distance. A Cook's Distance value greater than 1.0 indicated the presence of an influential point in the data (IBM Corp., 2020, Laerd Statistics, 2015).

Outliers tend to have a stronger effect on normal distribution in smaller sample sizes, therefore ensuring the assumption of bivariate outliers is tenable is directly related to the assumption of normal distribution in multiple regression. To determine that the variables met the assumption of normal distribution, a histogram was created with a superimposed normal curve and a P-P plot in the SPSS output was used as confirmation (IBM Corp., 2020). The assumption of normal distribution in a multiple regression analysis is important to meet because this distribution is considered ubiquitous and tends to occur naturally in most social phenomena.

Therefore, to ensure this assumption is tenable, most of the scores should be found around the center of the continuum, with a gradual, symmetrical decrease of frequency on either side.

Analysis for Research Question 1

In the current study, multiple regression analysis was the statistical analysis for research question one. The criterion variable for the first research question was a student's self-reported GPA and the predictor variables were the student's food insecurity score and housing insecurity score. The criterion variable, GPA, was measured on a continuous scale, and the predictor variables, food and housing insecurities, were dichotomous, making multiple regression a fitting analysis for this research question. Multiple regression aimed to predict whether a student's experiences with food and housing insecurities may influence the student's ability to succeed academically at one particular historically Black college.

Analysis for Research Question 2

The second research question was also addressed using a multiple regression analysis. For this research question, the criterion variable was the participant's depressive symptoms score, reported by the student's responses on the CES-D scale, and the predictor variables remained as food insecurity and housing insecurity, both categorical in measure. The criterion variable, depressive symptoms, was measured on a continuous scale, and the predictor variables were dichotomous, thus multiple regression is a fitting statistic for research question two. This multiple regression analysis aimed to predict whether a student's experiences with food and housing insecurities may influence their risk of depression on the campus of one historically Black college.

Analysis for Research Question 3

Research question three was also examined by the multiple regression statistical analysis. The criterion variable in this analysis was the student's food security score on the HFSSM survey questions. The predictor variables in this analysis were the six student demographical factors, all of which were categorical in measure. This multiple regression aimed to determine if a student's demographics may act as predictors of whether a particular student is at risk of experiencing food insecurity while enrolled in college, specifically on the campus of one historically Black college.

Analysis for Research Question 4

Research question four was analyzed similarly to research question three, using a multiple regression analysis. The predictor variables remained as the six student demographic factors; however, the criterion variable was the student's housing insecurity score. This statistical analysis examined whether a student's demographical data can act as predictors of whether a student may be at risk of experiencing housing insecurity while enrolled in one particular historically Black college.

Interpreting the Null Hypotheses

To determine if a predictive relationship existed between the variables, the researcher used a significance level of .05. The null hypotheses set the coefficients equal to zero, indicating no association existed between the variables. The significance level of .05 indicated a 5% risk of concluding that a correlation existed, when in fact, there was no actual correlation. If the *p*-value was less than .05, the null hypothesis was rejected and if the *p*-value was found to be greater than the significance level, the researcher failed to reject the null hypothesis.

CHAPTER FOUR: FINDINGS

Overview

Chapter Four of this manuscript presents the data analysis for each of the four multiple regressions performed. The findings in this chapter include descriptive statistics of both the criterion and predictor variables, data screening procedures, results of assumption testing, each of the four multiple regressions along with tables and figures to support the findings. The research questions and null hypotheses are also presented.

Research Questions

RQ1: Is there a predictive relationship between the criterion variable (GPA) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college?

RQ2: Is there a predictive relationship between the criterion variable (Depressive Symptoms Score) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college?

RQ3: Is there a predictive relationship between the criterion variable (Food Insecurity Score) and the predictor variables (Student Demographics) among the student population at one historically Black college?

RQ4: Is there a predictive relationship between the criterion variable (Housing Insecurity Score) and the predictor variables (Student Demographics) among the student population at one historically Black college?

Null Hypotheses

$H_0$1: There is no statistically significant predictive relationship between the criterion variable (GPA) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college.

$H_0$2: There is no statistically significant predictive relationship between the criterion variable (Depressive Symptoms Score) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at one historically Black college.

$H_0$3: There is no statistically significant predictive relationship between the criterion variable (Food Insecurity Score) and the predictor variable (Student Demographics) among the student population at one historically Black college.

$H_0$4: There is no statistically significant predictive relationship between the criterion variable (Housing Insecurity Score) and the predictor variable (Student Demographics) among the student population at one historically Black college.

Descriptive Statistics

The researcher collected and analyzed 175 completed surveys. The participants' descriptive demographics are depicted in Table 1, including frequencies for gender, race, student classification, first-generation college student status, Pell Grant status, employment status, and self-reported grade point average. Grade point average is included in the frequency table even though it was used as a criterion variable while the other demographics were predictor variables. The sample was disproportionately weighted with female respondents with 74.3% classifying as female, 24.6% male, and 1.1% categorizing themselves as "other," although the actual student population is also primarily female at almost 56 percent. The race category was broken down into six sub-categories on the questionnaire, but for data analysis five of the sub-categories were

combined to form a dichotomous variable for race, with 95.4% Black/African American and the remaining 4.6% were combined into a category entitled “Other.” Student classification was disproportionately freshmen at 56.6% with the other three categories having between 13% and 16% each. First-generation college student status resulted in approximately half of the respondents in each category and the majority of students reported not being employed (68%) and just under 10% reported working more than 20 hours per week while enrolled in the college. The distribution of GPA was approximately normally distributed with skewness toward the higher end, with most respondents reporting a B average (54.3%).

Table 1

Demographic Frequencies

	Frequency	Percent
Gender:		
Male	43	24.6
Female	130	74.3
Other	2	1.1
	175	100
Race:		
Black/African American	167	95.4
White	2	1.1
Hispanic, Latinx, Spanish Origin	2	1.1
Native American/Alaskan Native	2	1.1
Hawaiian Native or Pacific Islander	1	0.6
Other	1	0.6
	175	100
Student Classification:		
Freshman	99	56.6
Sophomore	28	16.0
Junior	23	13.1
Senior	25	14.3
	175	100
First-Generation College Student Status:		
Yes	87	49.7
No	88	50.3
	175	100
Pell Grant Recipient:		

Yes	94	53.7
No	62	35.4
Don't Know	19	10.9
	175	100
Employment Status:		
Not Working	119	68.0
Employed 1-10 hours/wk	18	10.3
Employed 11-20 hours/wk	21	12.0
Employed 20+ hours/wk	17	9.7
	175	100
Self-Reported Grade Point Average:		
A (4.0)	55	31.4
B (3.0)	95	54.3
C (2.0)	20	11.4
D (1.0)	2	1.1
F (0.0)	3	1.7
	175	100

Prevalence of Food Insecurity

As part of the goal of the research study, the prevalence of basic needs insecurities on a Historically Black College campus was assessed. Using a dichotomous measure of food insecure students versus food secure students, the results found that of the 175 participants, 134 (76.6%) classified as food insecure, and 41 (23.5%) classified as food secure in the past 30 days. According to the USDA, the scores from the six-item Household Food Security Survey Module (HFSSM) can be disaggregated into more specifically three, mutually exclusive categories. Of the 76.6% of food insecure respondents, 41 (23.5%) were in the high or marginal food security category, meaning they did not experience challenges with food in the past 30 days. Ninety-two (52.6%) were categorized as having low food security, and 42 (24%) were categorized as the most extreme form of food insecurity, referred to as very low food security. Participants in this extreme category answered "yes" to either five or six of the six items on the survey. The results can be viewed in Table 2.

Table 2

Frequency Table of Dichotomous Food Security Status and Disaggregated by Level

	Frequency (*n*)	%
Food Security Status:		
Food Insecure	134	76.6
Food Secure	41	23.4
Total	175	100
USDA Food Security Level:		
Very Low Food Security	42	24.0
Low Food Security	92	52.6
High or Marginal Food Security	41	23.5
Total	175	100

Prevalence of Housing Insecurity

Housing insecurity can also be measured as a dichotomous variable as well as disaggregated into a three-level analysis. Of the 175 participants, 67 (38.3%) reported experiencing housing insecurity, while 108 (61.7%) reported stable housing conditions in the past 30 days. Of those 67 participants that classified as housing insecure, 22 (12.6%) fell into the category of homeless, and the remaining 45 (25.7%) have experienced insecure housing conditions in the past 30 days, meaning they answered "yes" to at least one of the housing insecure categorization items on the survey. To be classified as homeless, the individual either answered "yes" to the item that asks if they have been homeless since enrolling in college or they marked that they have lived in one of the unstable forms of housing listed on item 11 (e through m) of the Housing Insecurity and Homelessness Module. These frequencies can be viewed in Table 3.

Table 3

Frequency Table of Dichotomous Housing Security Status and Disaggregated by Level

	Frequency (*n*)	%
Housing Security Status:		

Housing Insecure	67	38.3
Housing Secure	108	61.7
	175	100
Housing Security Level:		
Homeless	22	12.6
Housing Insecure	45	25.7
Housing Secure	108	61.7
	175	100

Results from the Center for Epidemiologic Studies-Depression Scale (CES-D)

The CES-D scale measures a respondent's level of depressive symptoms based on their answers to 20 items with answer choices, "rarely," "some," "occasionally," and "most." Four of the items are reverse coded to ensure a participant gives reliable and consistent answers. The scores range from zero to 60, with a score above 16 classified as someone who is "depressed," based on their reported experiences. The results from this portion of the survey are presented in Table 4 below.

Table 4

Frequency Table of CES-D Results

	Frequency (*n*)	%
Depressive Symptoms:		
Depressed	136	77.7
Not Depressed	39	22.3
	175	100

Results

Data Screening

Prior to running SPSS data analysis, the researcher conducted data screening to inspect for any inconsistencies or missing values. No missing values were observed. However, upon entering the survey responses into SPSS, the researcher determined one respondent's answers to

be of concern. Four of the 20 items on the CES-D portion of the survey were reverse coded as a method to check for inconsistencies in participant answers. It appeared as though one participant had not carefully read the questions and marked answers on the reverse coded items inconsistent with his/her other answers. For this reason, this participant's survey was removed from the data set. The researcher did not find any other inconsistencies among any of the variables.

Assumption Testing for Research Question 1

The first two assumptions for a multiple regression are to ensure the variables are suitable for this type of analysis. For research question one, the dependent variable was self-reported GPA, measured at the continuous level and the predictor variables were food security status and housing security status. More specifically, the dichotomous, categorical measure for each of the two predictors were used in the analysis. These variables were deemed appropriate for a multiple regression to be conducted.

Next, the independence of observations assumption was assessed by the Durbin-Watson statistic, which was calculated at 1.998, which is very close to the desired median value of 2.0, therefore deemed tenable. The model summary can be viewed in Table 5.

Table 5

Model Summary for Predicted Grade Point Average

Model	*R*	R^2	ΔR^2	Std. Error of the Estimate	Durbin-Watson
1	.100[a]	.010	-.001	.786	1.998

a. Predictors: (Constant), Housing Status, Food Status
b. Dependent Variable: Self-Reported Grade Point Average

The researcher did not need to check for linearity between the dependent variable and independent variables individually because the two independent variables for this analysis were

both categorical in measure. Tolerance values were all observed to be greater than 0.1 and no correlation values were greater than 0.7, therefore the assumption of non-multicollinearity was met (see Table 6 and Table 7).

Table 6

Collinearity Statistics for Self-Reported Grade Point Average

Model		Collinearity Statistics	
1		Tolerance	VIF
	(Constant)		
	Food Status	.942	1.062
	Housing Status	.942	1.062

Dependent Variable: Self-reported grade point average

Table 7

Correlations for Self-Reported Grade Point Average

		Self-Reported Grade Point Average	Food Status	Housing Status
Pearson Correlation	Self-Reported GPA	1.000	-.003	.096
	Food Status	-.003	1.000	.241
	Housing Status	.096	.241	1.000
Sig. (1-tailed)	Self-Reported GPA		.486	.102
	Food Status	.486		.001
	Housing Status	.102	.001	
N	Self-Reported GPA	175	175	175
	Food Status	175	175	175
	Housing Status	175	175	175

In the output of SPSS, a casewise diagnostics table presented three possible outliers with standardized residuals greater than ±3 standard deviations. The three cases were 38, 99, and 109, which were the only three participants that reported having a 0.0 grade point average. This self-reported GPA is the cause of the why the prediction was so far from the observed value, although completely plausible that the student does, in fact, have a 0.0 grade point average. For this reason, the researcher decided to keep the three cases in the data set but also determined whether they should be removed based on if they also had high leverage values and/or influence based on Cook's Distance value for the three cases, discussed below. Sorting leverage values in the SPSS data view window in descending order, the researcher determined all values were less than 0.2, which according to Huber (1981), is considered a safe value for determining cases with leverage. In addition, the Cook's Distance value column was sorted descending and no values above 1.0 were observed, thus indicating the data set was free of influential points (Cook & Weisberg, 1982). Based on the leverage values and Cook's values for cases 38, 99, and 109, the researcher made the decision to keep the three cases that were reported in the SPSS caseswise diagnostics table in the data set. These values can be viewed in Table 8 and Table 9 below.

Table 8

Casewise Diagnostics Table for Self-Reported Grade Point Average

Case Number	Std. Residual	Self-Reported Grade Point Average	Predicted Value	Residual
38	-4.075	0.0	3.20	-3.201
99	-3.863	0.0	3.04	-3.035
109	-4.075	0.0	3.20	-3.201

Table 9

Residual Statistics for Self-Reported Grade Point Average

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	.000	.078	.006	.012	175
Centered Leverage Values	.007	.036	.011	.007	175

Lastly, the assumption of approximate normal distribution of the residuals was analyzed by a histogram with a superimposed normal curve and confirmed by a P-P plot. The histogram revealed approximate normal distribution, and the P-P plot showed approximate alignment along the diagonal line. However, according to Laerd Statistics (2015), regression analysis is fairly robust to deviations from normality, therefore grade point average was deemed to be near normally distributed (see Figure 2 and Figure 3).

Figure 2

Histogram of Approximate Normal Distribution of Self-Reported Grade Point Average

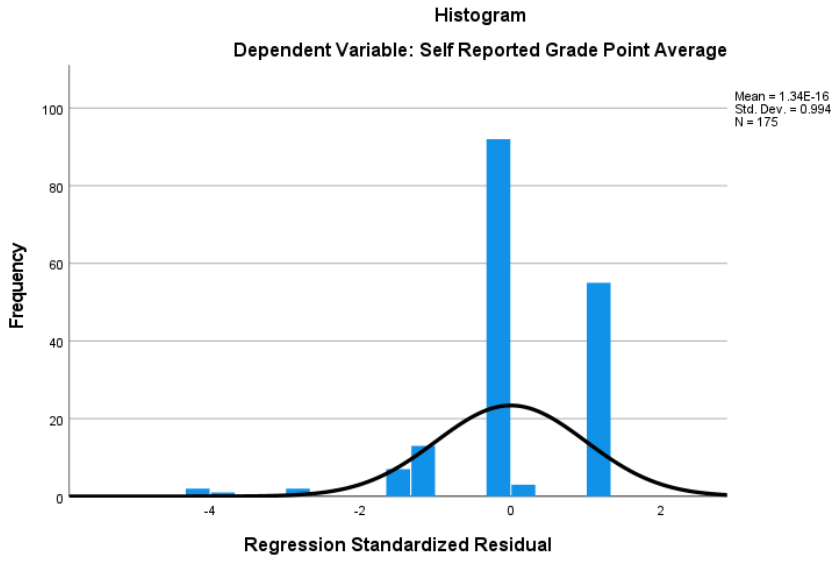
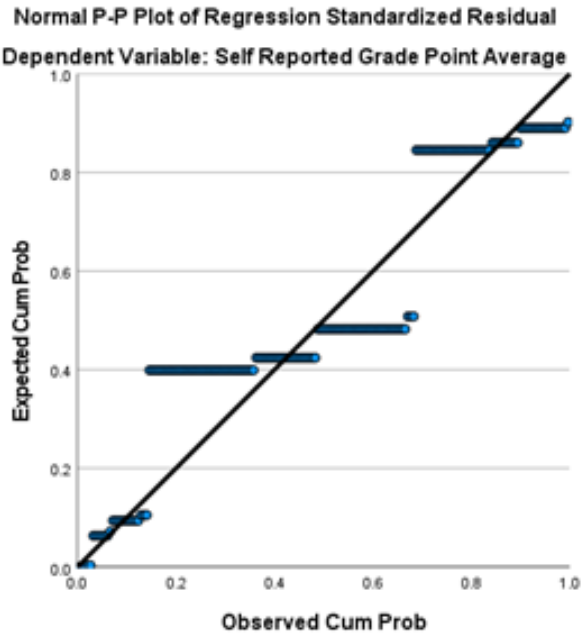


Figure 3

Normal P-P lot of Regression Standardized Residuals for Self-Reported Grade Point Average



Results for Null Hypothesis 1 ($H_0$1)

A multiple regression analysis was conducted to determine if a statistically significant predictive relationship exists between a student's GPA and their food and housing status. The researcher failed to reject the null hypothesis stating that there is no statistically significant predictive relationship between the criterion variable (GPA) and the predictor variables (Food Insecurity Score and Housing Insecurity Score) among the student population at this particular historically Black college, $F(2, 172) = .870$, $p = .421$, adj. $R^2 = -.001$. Cohen (1988) categorizes this as a very small effect size. Regression coefficients and standard errors can be viewed in Table 10 below.

Table 10

Multiple Regression Results for Predicted Grade Point Average

GPA	*B*	95% CI for *B*	*SE B*	β	R^2	ΔR^2

			LL	*UL*			
Model						.01	-.001
Constant	2.92	2.44	3.40	.24			
Food Status	-.051	-.34	.23	.14	-.03		
Housing Status	1.66	-.08	.42	.13	.10		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

Due to the results of the multiple regression analysis for research question one being not statistically significant, a regression equation was not created.

Assumption Testing for Research Question 2

The variables for the second research question included the dependent variable as the participant's score on the CES-D portion of the questionnaire, which measures depressive symptoms on a continuous scale. The independent variables were the same food status and housing status from the previous research question, both categorical variables. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.099 (see Table 11).

Table 11

Model Summary for Predicted Depressive Symptoms CES-D Score

Model	*R*	R^2	ΔR^2	Std. Error of the Estimate	Durbin-Watson
1	.403[a]	.163	.153	10.765	2.099

a. Predictors: (Constant), Housing Status, Food Status
b. Dependent Variable: Score on the CES-D

There was no evidence of multicollinearity, as assessed by tolerance values (and reciprocal VIF values) greater than 0.1 and no correlations greater than 0.7 (see Table 12 and Table 13).

Table 12

Collinearity Statistics for Participant CES-D Score

Model		Collinearity Statistics	
1		Tolerance	VIF
	(Constant)		
	Food Status	.942	1.062
	Housing Status	.942	1.062

Dependent Variable: Score on the CES-D

Table 13

Correlations for Participant CES-D Score

		Score on CES-D	Food Status	Housing Status
Pearson Correlation	Score on CES-D	1.000	-.326	-.309
	Food Status	-.326	1.000	.241
	Housing Status	-.309	.241	1.000
Sig. (1-tailed)	Score on CES-D		<.001	<.001
	Food Status	.000		.001
	Housing Status	.000	.001	
N	Score on CES-D	175	175	175
	Food Status	175	175	175
	Housing Status	175	175	175

There were no studentized deleted residuals greater than ±3 standard deviations as no casewise diagnostics output table was produced by SPSS. No leverage values were greater than 0.2 and values for Cook's distance were all above 1.0, indicating no influential points in the data set (see Table 14).

Table 14

Residual Statistics for CES-D Scores

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	.000	.068	.006	.008	175
Centered Leverage Values	.007	.036	.011	.007	175

The assumption of normality was met, as assessed by a histogram with superimposed normal curve and confirmed using a P-P plot of the standardized residuals. The histogram and plot can be seen below in Figures 4 and 5.

Figure 4

Histogram of Normal Distribution of CES-D Scores

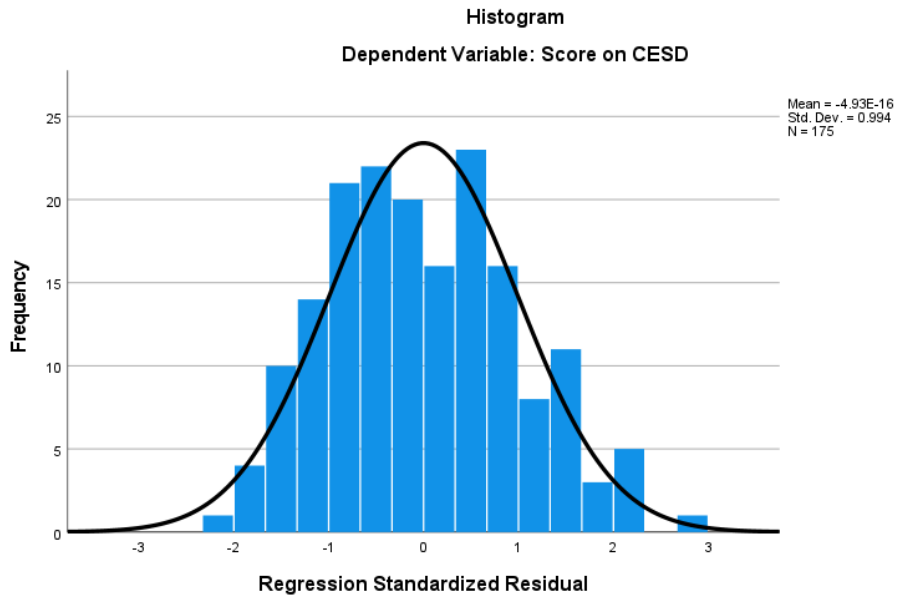
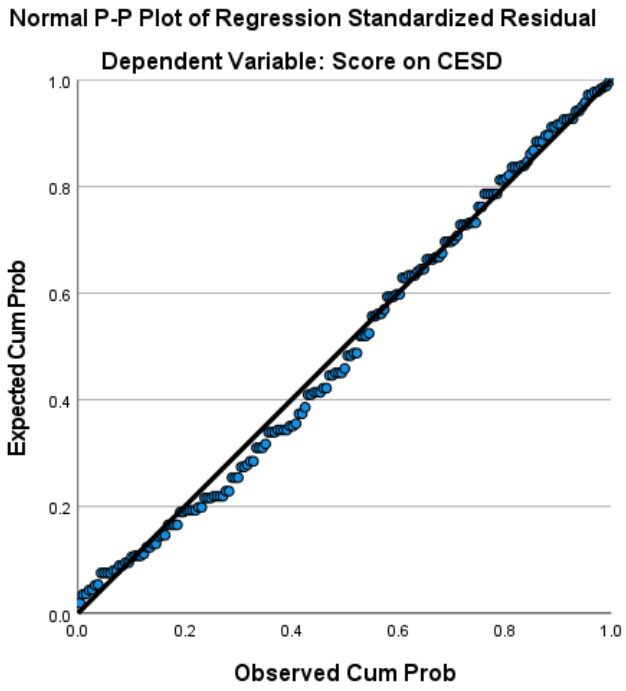


Figure 5

Normal P-P Plot of Regression Standardized Residuals of CES-D Scores



Results for Null Hypothesis 2 ($H_0$2)

A multiple regression was conducted to predict a participant's depressive symptoms score from food and housing status among college students at a historically Black college. The regression model shows sufficient evidence to reject the null hypothesis and conclude that food and housing status did significantly predict a student's depressive symptoms score, $F(2, 172) = 16.69$, $p < .001$, adj. $R^2 = .153$. This indicates a small effect size according to Cohen (1988). Regression coefficients and standard errors can be viewed in Table 15 below.

Table 15

Multiple Regression for Predicted Depressive Symptoms CES-D Score

Depressive Symptoms	*B*	95% CI for *B*		*SE B*	β	R^2	ΔR^2
		LL	*UL*				
Model						.16	.15***
Constant	44.55***	37.97	51.13	3.34			

Food Status	-7.34***	-11.25	-3.43	1.98	-.27***
Housing Status	-5.88***	-9.28	-2.47	1.73	-.25***

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2. *p < .05. **p < .01. ***p < .001

A general multiple regression equation follows the format:

$$Y_i = b_0 + b_1 X_{1i} + b_2 X_{2i} + \ldots + b_k X_{ki}$$

Given the statistical significance of this model, a regression equation for research question two, is derived as follows:

$$Y_{\text{food status}} = 44.55 - (7.34 \text{ x food status}) - (5.88 \text{ x housing status})$$

In SPSS, "food insecure" status was coded as 1 and "food secure" was coded as 2. Therefore, for a student who classifies as food secure, the model predicts their CES-D score to be 7.34 points lower than a student that classifies as food insecure. These results are logical as a lower score on the CES-D indicates lower depressive symptoms, thus one would theoretically predict that an individual without challenges with food would report fewer depressive symptoms.

"Housing insecure" status was coded as 1 in SPSS and "housing secure" status as coded as 2. Similar to the food status findings, for a student that classifies as housing secure, the model predicts their CES-D score to be 5.88 points lower than that of a student with housing insecurity. Again, this finding is logical as a lower CES-D score indicates lower depressive symptoms experienced by the individual. Thus, one would theoretically assume that an individual without housing insecurity would report a lower score of depressive symptoms.

Assumption Testing for Research Question 3

The dependent variable for the third research question was food security status. Instead of using the dichotomous level of measurement as in the previous two analyses, this time food

status was measured on a continuous scale using the USDA's scale from 0-6. The USDA codes the scores from the HFSSM as 0 and 1 as "high or marginal food security," 2-4 as "low food security," and 5 and 6 as "very low food security." The scores are obtained from the number of affirmative answers on the six items. However, for the purpose of this study, the researcher implemented reverse coding so that the low numbers, 0 and 1, code for "very low food security," 2-4 still code for "low food security," and the higher values, 5 and 6, code for "high food security." This allows for clearer interpretation of results and also is in line with the low to high scoring method of housing status. The independent variables for this analysis are the participant's demographics, including gender, race, student classification, first-generation college student status, employment status, and whether the student received a Pell Grant as part of their financial aid package. The variable for race originally contained six categories, however, for clearer interpretation of results, the researcher combined 5 of the categories into one, creating a dichotomous variable for race, either "Black/African American" or "Other." First-generation college student status was also a dichotomous variable and was determined by the participant answering either "Did not finish high school" or "High school diploma or GED" on the item asking the highest level of education completed by either of their parents (or those who raised them). These responses were coded 1 in SPSS as "yes" and any other response was coded 2 for "no."

For multiple regression analysis, the independent variables can be either continuous or nominal. Dichotomous, nominal variables, such as the two discussed in the previous paragraph can easily be entered into the model. However, the other independent or predictor variables in this study, including gender, student classification, employment status, and Pell Grant status, each were polytomous. For this reason, the researcher had to create indicator variables,

commonly referred to as “dummy variables” to stand for the different categories within the variable. For gender, three dummy variables were created, for student classification, four dummy variables were created, for employment status, four dummy variables were needed and for Pell Grant status, three dummy variables were required. Once these dummy variables were created, they could be used in SPSS very similarly to how dichotomous variables are used and allowed the independent variables to be suitable for a multiple regression analysis.

When the multiple regression analysis was conducted in SPSS, the assumption of non-multicollinearity was not tenable, in that the female and male absolute correlation value was .97, well above the accepted level of 0.7 (see Table 16).

Table 16

Correlations Indicating Removal of Gender from the Demographics for RQ3 and RQ4

Pearson Correlation		Female	Male	Other
	Female	1.000	-.970	-.183
	Male	-.970	1.000	-.061
	Other	-.183	-.061	1.000
Sig. (1-tailed)	Female		.000	.008
	Male	.000		.210
	Other	.008	.210	
N	Female	175	175	175
	Male	175	175	175
	Other	175	175	175

According to Laerd statistics (2015) SPSS statistics guide, this can be a very difficult problem to manage, and the simplest way is to drop the offending variable from the analysis. For this reason,

gender was removed from the multiple regression analysis and assumption testing was re-performed.

A new multiple regression to predict a student's experience with food insecurity based on student demographics was conducted. Independence of residuals was assessed by a Durbin-Watson statistic of 1.902 (see Table 17).

Table 17

Model Summary for Predicted Food Status

Model	*R*	R^2	ΔR^2	Std. Error of the Estimate	Durbin-Watson
1	.383[a]	.147	.094	1.724	1.902

a. Predictors: (Constant), First Generation College Student Status, Race Dichotomous, StudClass=Sophomore, StudClass=Junior, StudClass=Senior, PellGrant=Non Pell Grant Recipient, PellGrant=Don't Know, Employment=Yes (1-10 hrs/week), Employment=Yes (11-20 hrs/week), Employment=Yes (20+ hrs/week)
b. Dependent Variable: Food Status Reverse Score

There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1 (see Table 18 below) and removing the independent variable, gender, from the model resulted in no correlation values greater than 0.7.

Table 18

Collinearity Statistics for Predicted Food Status

Model		Collinearity Statistics	
1		Tolerance	VIF
	(Constant)		
	Race Dichotomous	.905	1.105
	Sophomore	.790	1.266
	Junior	.834	1.198
	Senior	.819	1.222

Non Pell Grant Recip	.833	1.201
Pell Grant DK	.864	1.157
Employ 1-10 hrs/wk	.849	1.178
Employ 11-20 hrs/wk	.835	1.197
Employ 20+ hrs/wk	.826	1.210
1st generation status	.921	1.086

Dependent Variable: Food status reverse score

The output from SPSS did not produce a casewise diagnostics table suggesting that there were no studentized deleted residuals greater than ±3 standard deviations. This was also checked for by sorting the studentized deleted residuals column in the SPSS data view window by both ascending and descending to ensure no values were greater than ±3.0, and in fact, there were none. No leverage values greater than 0.2 indicated there were no leverage points and no Cook's distance values greater than 1.0 indicated no points with influence (see Table 19).

Table 19

Residual Statistics for Predicted Food Status

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	.000	.134	.006	.012	175
Centered Leverage Values	.019	.216	.057	.041	175

Dependent Variable: Food status reverse score

The assumption of normality was met, as assessed by a histogram with superimposed normal curve and confirmed with a P-P plot with residuals aligned along the diagonal, as seen in Figures 6 and 7 below.

Figure 6

Histogram of Normal Distribution of Reverse Scoring on USDA 6-item HFSSM

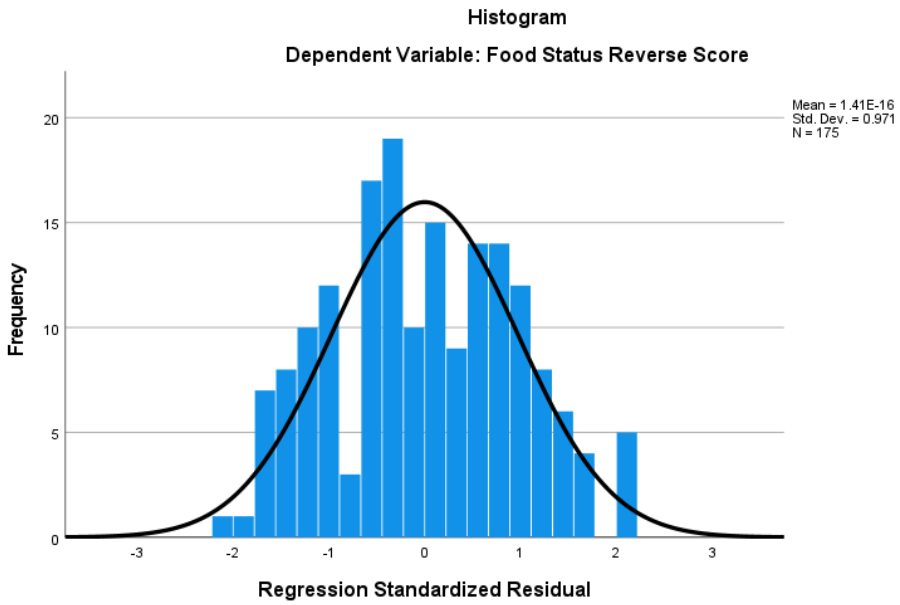
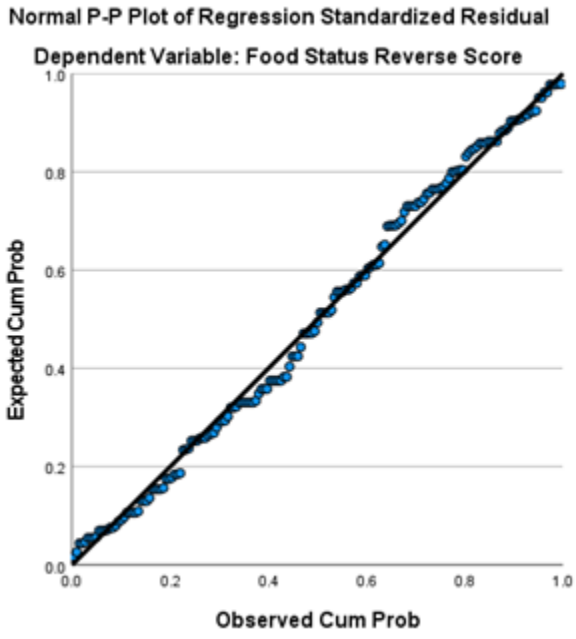


Figure 7

Normal P-P Plot of Regression Standardized Residuals for Reverse Scoring of Food Status on USDA's 6-item HFSSM



Results for Null Hypothesis 3 ($H_0$3)

A multiple regression was conducted to predict food status score from the individual's demographics among college students at a historically Black college. The researcher rejects the null hypothesis and concludes that food security status is able to be predicted by the independent variables, $F(10, 164) = 2.71$, $p < .004$, adj. $R^2 = .089$. This indicates a small effect size according to Cohen (1988). Regression coefficients and standard errors can be viewed in Table 20 below.

Table 20

Multiple Regression for Predicted Food Status

Food Status	*B*	95% CI for *B*		*SE B*	β	R^2	ΔR^2
		LL	*UL*				
Model						.14	.09**
Constant	4.32***	2.90	5.74	.72			
Race	-1.17	-2.47	.12	.66	-.14		
Sophomore	-.52	-1.31	.27	.40	-.11		
Junior	-.26	-1.09	.58	.42	-.05		
Senior	.59	-.22	1.40	.41	.11		
No Pell Grant	-.21	-.80	.38	.30	-.06		
DK Pell Grant	1.37**	.48	2.26	.45	.23**		
Employed 1-10	-.61	-1.53	.31	.46	-.10		
Employed 11-20	.18	-.69	1.05	.44	.03		
Employed 20+	-.62	-1.58	.33	.49	-.10		
First-Gen Stud	-.40	-.92	.13	.27	-.11		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.
*p < .05. **p < .01. ***p < .001
Excluded variables: StudClass = Freshman, PellGrant = Pell Grant recipient, Employment = Not employed

The variables for “Freshman”, “Pell Grant recipient”, and “Not employed” are left out of the equation as they were used as reference variables in the regression model. From this regression model, the regression equation for research question three is as follows:

$$Y_{\text{food status}} = 4.29 - (1.18 \times \text{race}) - (.54 \times \text{sophomore}) - (.25 \times \text{junior}) + (.61 \times \text{senior}) - (.22 \times \text{non-Pell Grant recipient}) - (1.32 \times \text{DK Pell Grant}) - (.67 \times \text{employed 1-10hrs/wk}) + (.19 \times \text{employed 11-20hrs/wk}) - (.61 \times \text{employed 20+hrs/wk}) - (.30 \times \text{first-gen status})$$

Although many of the independent variables did not have statistically significant values, the researcher kept them in the regression equation based on theory from previous peer-reviewed studies on the topic of food security among college students. For example, the independent variable, race, was coded as “Black/AA” = 1 and “Other” = 0 in SPSS. Thus, from this model, an individual that is classified as “Black/AA” is predicted to score 1.18 points lower on the food security scale, indicating lower food security than those individuals in the “Other” category. This finding, while not statistically significant in this model, corresponds to previous studies’ findings, presented in Chapter Two of this manuscript. Similarly, “Non-first-generation college students” = 0 and “First-gen” = 1 in SPSS. Therefore, this model predicts that first-generation college students will score .30 points lower on the food security scale, indicating lower food security than their non-first-generation counterparts. This finding also, while not statistically significant in the model, corresponds to previous studies’ findings on the topic of food security among college students.

Assumption Testing for Research Question 4

The dependent variable for the fourth research question was housing security status, measured on a continuous scale. The independent variables were the same student demographics as were used in analysis of the third research question. These variables are appropriate for conduction of a multiple regression analysis. Once again, the independent variable, gender, was

removed due to multicollinearity issues. Independence of observations was assessed by a Durbin-Watson statistic of 2.164 (see Table 21).

Table 21

Model Summary for Predicted Housing Status

Model	*R*	R^2	ΔR^2	Std. Error of the Estimate	Durbin-Watson
1	.208[a]	.043	-0.15	.715	2.164

a. Predictors: (Constant), First Generation College Student Status, Race Dichotomous, StudClass=Sophomore, StudClass=Junior, StudClass=Senior, PellGrant=Non Pell Grant Recipient, PellGrant=Don't Know, Employment=Yes (1-10 hrs/week), Employment=Yes (11-20 hrs/week), Employment=Yes (20+ hrs/week)
b. Dependent Variable: Housing Level

There was no issue with multicollinearity as no studentized deleted residual values were greater than ±3 standard deviations, no leverage values were greater than 0.2, and values for Cook's distance were all above 1.0 (see Table 22 and Table 23).

Table 22

Collinearity Statistics for Predicted Housing Status

Model		Collinearity Statistics	
1		Tolerance	VIF
	(Constant)		
	Race Dichotomous	.905	1.105
	Sophomore	.790	1.266
	Junior	.834	1.198
	Senior	.819	1.222
	Non Pell Grant Recip	.833	1.201
	Pell Grant DK	.864	1.157
	Employ 1-10 hrs/wk	.849	1.178

Employ 11-20 hrs/wk	.835	1.197
Employ 20+ hrs/wk	.826	1.210
1st generation status	.921	1.086

Dependent Variable: Housing level

Table 23

Residual Statistics for Predicted Housing Status

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	.000	.106	.007	.012	175
Centered Leverage Values	.019	.216	.057	.041	175

Dependent Variable: Housing Level

The assumption of normality was assessed by a histogram with superimposed normal curve. The histogram showed approximate normal distribution and the P-P plot of regression standardized residuals show points approximately aligned along the diagonal (see Figure 8 and Figure 9 below).

Figure 8

Histogram of Approximate Normal Distribution of Housing Level on the Housing Insecurity and Homelessness Module

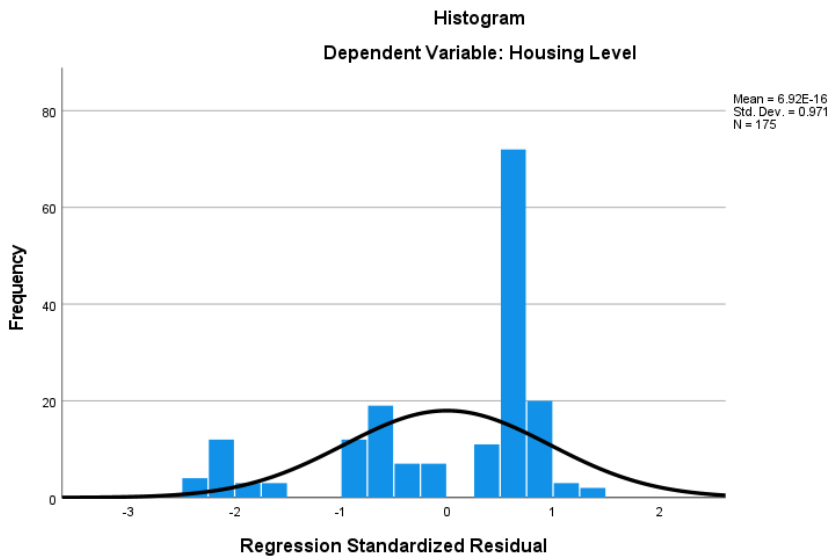
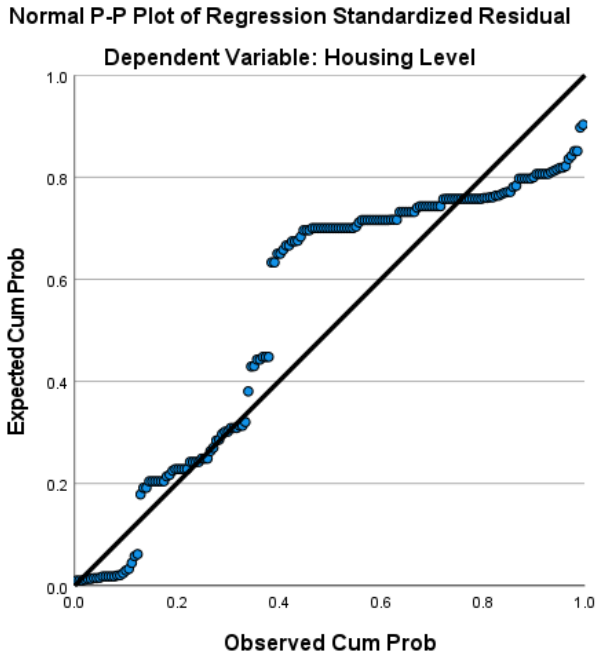


Figure 9

Normal P-P Plot of Regression Standardized Residuals of Housing Level on the Housing Insecurity and Homelessness Module



Results for Null Hypothesis 4 ($H_0$4)

A multiple regression was conducted to predict a student's housing status based on their individual demographic factors at a historically Black college. The researcher failed to reject the null hypothesis and there is no statistically significant predictive relationship between variables, $F(10, 164) = .762$, $p = .665$, adj. $R^2 = -.014$. Cohen (1988) categorizes this as a very small effect size. Regression coefficients and standard errors can be viewed in Table 24 below.

Table 24

Multiple Regression for Predicted Housing Status

Food Status	*B*	95% CI for *B*		*SE B*	β	R^2	ΔR^2
		LL	*UL*				
Model						.04	-.01
Constant	1.50	.91	2.09	.30			
Race	.05	-.49	.59	.27	.01		
Sophomore	-.46	-.46	.19	.17	-.07		
Junior	.13	-.21	.48	.18	.06		
Senior	-.16	-.50	.18	.17	-.08		
No Pell Grant	.09	-.15	.34	.12	.06		
Don't Know PG	.06	-.31	.42	.19	.03		
Employed 1-10	-.03	-.41	.35	.19	-.01		
Employed 11-20	-.05	-.41	.31	.18	-.02		
Employed 20+	-.28	-.67	.12	.20	-.17		
First-Gen Status	-.06	-.28	.16	.11	-.04		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2. Excluded variables: StudClass = Freshman, PellGrant = Pell Grant recipient, Employment = Not employed

Due to the results of the multiple regression analysis for research question four being not statistically significant, a regression equation was not created. The results of all four multiple regressions will be further discussed in the final chapter.

CHAPTER FIVE: CONCLUSIONS

Overview

The previous chapter outlined the statistical findings of the four multiple regressions conducted in response to the four research questions associated with this study. This chapter further discusses these findings and their importance. Some implications are presented as well as some limitations to the current research. The final chapter will close with some recommendations for further research on this topic.

Discussion

The purpose of this study was multi-faceted as it aimed to discover the prevalence of food and housing insecurities on one historically Black college, while also determining if there were possible predictors for students experiencing these challenges, and additionally determining if experiencing these insecurities may be linked to academic nonsuccess or depressive symptoms. The prevalence of these basic needs insecurities and the rate of depressive symptoms fall in accordance with, and somewhat higher than previous studies at all campus types around the Nation.

Food Insecurity

The study found that 134 of the 175 respondents (76.6%) reported experiencing food insecurity in the last month. Of those with food insecurity, 24% of them fell into the lowest, most severe category of food security, meaning they answered at least five of the six items affirmatively on the USDA HFSSM. Food insecurity was not found to be correlated with academic nonsuccess, measured by self-reported GPA, but did reveal a statistically significant correlation with those students experiencing higher levels of depressive symptoms. A student's individual demographics factors, overall, did not seem to have strong predictive power, however,

it was observed that students identifying as Black/African American scored, on average, 1.18 points lower on the food security survey than other races. Notably, the "Other" race category had only eight individuals, therefore an extremely small sample to compare. In addition, first-generation college students, on average, were found to score .30 points lower than non-first-generation college students. This finding is in accordance with previous studies conducted on food insecurity. A difference of .30 may seem insignificant, but considering the scale is only six total points, a difference of .30 could make a significant variation in the result. Student classification and employment status did not seem to correlate with students experiencing food insecurity.

Housing Insecurity

The prevalence of housing insecurity also was found to be in accordance with previous studies of college students across campus types. It was found that of the 175 participants 67 (38.3%) reported being housing insecure in the past 30 days. Of those, 22 of them qualified as being homeless, the most severe of the three levels. There was no correlation between housing insecurity and lower GPA, however there was as statistically significant correlation with higher CES-D scores, indicating these students report higher scores of depressive symptoms than their counterparts. There were no statistically significant demographic factors to predict those students that may experience housing insecurity while enrolled in college.

Depressive Symptoms

The level of depressive symptoms reported by students was not the primary focus of the current study, rather it was to determine if the level of basic needs insecurities may be correlated to depression. However, upon scoring the Center for Epidemiologic Studies Depression Scale (CES-D) portion of the survey, the number of students reporting depressive symptoms was

remarkable and worthy of being reported separately. Of the 175 student respondents, more than three-quarters (77.7%) of them classified as depressed by the CES-D scoring method. This is significantly higher than any study analyzed in the literature review for this manuscript. The researcher presents two possible reasons for this finding. First, as presented by Becerra and Becerra (2020), females are more likely to develop psychological distress caused by food insecurity and this current study's sample was somewhat disproportionately weighted with female respondents. Secondly, the current COVID-19 global pandemic has been found to be significantly negatively impacting the mental health of today's college students, in the forms of both depression and anxiety (Rudenstine et al., 2021; Son et al., 2020). Considering depressive symptoms score was statistically significantly predictable from both food and housing insecurity experiences, depression presents as a crucial factor to consider in the implications of this study and further research on the topic.

Implications

This study contributes to the body of literature on food and housing insecurity and acts as a foundational study on these basic needs insecurities at a historically Black college. While aspects of this study complement much of the current literature, it is also unique for its focus on the African American population of college students. The researcher selected the demographic variables for this study based on previous studies in which these variables were found to have a significant correlation with these basic need insecurities. However, in this study these particular variables did not prove to act as significant factors for this group of students. Perhaps, this population of students has drastically different predictors, such as non-traditional student factors, including students with children, military enrollment, part-time students, or caregivers of family members while attending college. The number of students reporting depressive symptoms was

drastically higher than previous studies. This could be due to the oversampling of females or the COVID-19 pandemic, as previously discussed (Becerra & Becerra, 2020; Rudenstine et al., 2021; Son et al., 2020). Nevertheless, the number of students reporting depressive symptoms is considerable and concerning, despite the gender reporting them. In addition, one recent survey has found that the stigma surrounding depression, especially among the today's college age students, has shown to have decreased over the past two decades (Pescosolido et al., 2021). This may be attributed to an increase in public education surrounding mental health or the use of effective prescription medications. According to Pescosolido and colleagues (2021), drug advertisement messaging and increase in awareness by mental health providers and advocacy groups may also play a part in this reduction of stigma.

The current body of literature is lacking when it comes to studying basic needs insecurities among this marginalized group of students. This study aimed to address this literature gap as this population of students is known to be understudied, yet also a group with higher needs. From the findings of this study, it is clear that the prevalence of basic needs insecurities is presenting at remarkable rates and also correlate to depression in this population of students. These results are significant and provide a solid foundation for future studies.

Limitations

Correlational research design is limiting in nature as it is unable to determine causality between variables (Gall et al., 2007). While it can show the strength and direction of a linear relationship between two variables, it is unable to suggest that one variable is the cause that another variable occurs (Gall et al., 2007). Similarly, correlational designs are unable to account for extraneous or confounding factors that may be influencing an observed relationship between variables. In addition, in correlational research, there is no variable manipulation conducted as in

true or quasi-experimental research designs, thus further limiting the interpretation of results. However, correlational research in the social sciences is still considered to be an appropriate starting point when researching a phenomenon for the first time and is a useful descriptive and inferential statistic (Curtis et al., 2016).

Other limitations in this study with regards to the sample include an oversampling of females and freshman students, in addition to a relatively small sample size, even though the sample was much larger than the minimum goal of 66 participants as suggested by Gall et al. (2007). One way to correct for gender bias would be to randomly select 89 participants from the "female" and "other" race categories to make the male to female ratio equal, however this essentially cuts the sample size in half which is also not desirable. The same type of procedure could also be used for student classification to result in a more even disbursement of participants.

Another limitation to this study is that it was only conducted on one HBCU campus. Expanding the sample to multiple HBCUs in the same region, or beyond, would allow comparison across campuses. This could yield more rigorous and comprehensive results surrounding this population and these students' needs so that they could be more accurately targeted. Additionally, the COVID-19 pandemic has caused an increase in basic needs insecurities among college students. This has been shown to be due to factors such as unexpected unemployment and campus closures, which limited school resources available to them including campus housing, cafeterias, and meal plans (Laska et al., 2020). A limitation of this study is the lack of comparison of pre-COVID-19 levels of insecurities experienced by these students. This survey only is able to report the levels of insecurities that are continuing to be negatively affected by the pandemic, as many students have still not been able to return to campus. Without being on

campus, students are unable to utilize the cafeterias, dormitories, counseling centers, and other provisions offered to students to reduce these insecurities.

The dependent variable, GPA, was self-reported by the participants. Only 25 of the 175 14.3%) respondents reported having a "C" average or lower. This variable can be considered a limitation and could be more accurately reported if the survey was linked to the students' registrar information. For data security purposes and anonymity of the survey responses, the researcher opted for a self-reporting option. This type of variable typically follows a more normally distributed curve with a peak in the middle and gradual, symmetrical decrease on either tail. This was only approximately observed in the self-reported GPA histogram and was skewed to the higher end of the scale.

Recommendations for Future Research

There are many paths in which future research studies could expand the current work. Due to some of the predictor variables' statistical insignificance, alternative variables could be useful to study this population. These could include students that have children, are caretakers, are enrolled in the military, are enrolled part-time at the college, those that are financially independent, among others. Historically Black colleges are known for their efforts to serve non-traditional students (Carnegie Foundation, 1971; Hardy et al., 2019; Joonas, 2016;), thus these factors could yield significant results. Expanding this type of work to multiple HBCUs would allow across-campus comparisons to discern if other institutions of similar demographical organization are experiencing the same challenges. A collaborative effort to implement more substantial, and more targeted supports could be a result of a multiple institution study.

Considering the statistically significant correlation between food and housing insecurities with depressive symptoms, further research could include determining how to accommodate

these insecurities to relieve their negative impact on these students' mental health. Ensuring that healthcare and counseling services are available for all students, regardless of insurance status, is crucial, but also addressing the insecurities as a root of the problem is necessary. For food insecurity, formation of a food pantry on campus could be a fundamental starting point, although multiple sources say this is only a short-term solution and that long-term strategies are ultimately necessary to alleviate food insecurity more permanently (Nazmi et al., 2019; Laska et al., 2020; Willis, 2021). Development of an office that offers students support in completing the forms necessary to receive Supplemental Nutrition Assistance Program (SNAP) or other governmental programs could bring awareness to students that are unfamiliar of such supports or uncertain how to obtain them. Creation of food share programs using meal plans have also been shown to be beneficial. Meal sharing with anonymity may reduce the stigma surrounding food insecurity thus potentially increasing the number of students that would participate.

To address housing insecurity, students may benefit from counseling on financial independence, how to manage paychecks, paying bills, or other fiscal skills while they are adjusting to a new autonomous lifestyle. There are numerous supports and services, offered across campus types, that assist in accommodating basic needs insecurities and mental health concerns for college students. While the results of this study show supports need to be implemented, more research is necessary to determine best allocation of college resources to most effectively serve these students in need.

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APPENDIX A

United States Department of Agriculture 6-item Household Food Security Survey Module

Item	Measure	Responses
In the last 30 days, would you say the following statement was often, sometimes, or never true for you? 1. The food that I bought just didn't last, and I didn't have money to get more.	Ordinal	Often True = 1 Somewhat true = 1 Never True = 0 Don't Know = 99
In the last 30 days, would you say the following statement was often, sometimes, or never true for you? 2. I couldn't afford to eat balanced meals.	Ordinal	Often True = 1 Somewhat true = 1 Never True = 0 Don't Know = 99
3. In the last 30 days, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?	Dichotomous	Yes = 1 No = 0 Don't Know = 99
4. If yes above, in the last 30 days, how many days did this happen?	Continuous	3 days or more = 1 1 -2 days = 0
5. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?	Dichotomous	Yes = 1 No = 0 Don't Know = 99
6. In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?	Dichotomous	Yes = 1 No = 0 Don't Know = 99

Food security status is assigned as follows:

Raw score 0-1—High or marginal food security (raw score 1 may be considered marginal food security, but a large proportion of households that would be measured as having marginal food security using the household or adult scale will have raw score zero on the six-item scale)

Raw score 2-4—Low food security

Raw score 5-6—Very low food security

APPENDIX B

Housing Insecurity and Homelessness Module

Housing Insecurity Items	Measure	Responses
1. In the past 30 days was there a rent or mortgage increase that made it difficult pay?	Dichotomous	Yes = 1 No = 0
2. In the past 30 days, did you not pay or underpay your rent or mortgage?	Dichotomous	Yes = 1 No = 0
3. In the past 30 days, did you not pay the full amount of a gas, oil, or electricity bill?	Dichotomous	Yes = 1 No = 0
4. In the past 30 days, have you moved three times or more?	Dichotomous	Yes = 1 No = 0
5. In the past 30 days, did you move in with other people, even for a little while, because of financial problems?	Dichotomous	Yes = 1 No = 0
6. In the past 30 days, did you live with others beyond the expected capacity of the house or apartment?	Dichotomous	Yes = 1 No = 0
7. In the past 30 days, have you received a summons to appear in housing court?	Dichotomous	Yes = 1 No = 0
8. In the past 30 days, did you have an account default or go into collections?	Dichotomous	Yes = 1 No = 0
9. In the past 30 days, did you leave your household because you felt unsafe?	Dichotomous	Yes = 1 No = 0
Homelessness Items	**Measure**	**Responses**
1. Since starting college, have you been homeless?	Dichotomous	Yes = 1 No = 0
2. In the past 30 days, have you slept in any		

of the following places? Please check all
that apply.

a. Campus or university housing
b. Sorority/fraternity house
c. In a rented or owned house, mobile home, or apartment (alone or with roommates or friends)
d. In a rented or owned house, mobile home, or apartment with my family (parent, guardian, or relative)
e. At a shelter
f. In a camper
g. Temporarily staying with a relative, friend, or couch surfing until I find other housing
h. Temporarily at a hotel or motel without a permanent home to return to (not on vacation or business travel)
i. In transitional housing or independent living program
j. At a group home such as halfway house or residential program for mental health of substance abuse
k. At a treatment center (such as detox, hospital, etc.)
l. Outdoor location (such as street, sidewalk, or alley, bus or train stop, campground or woods, park, beach, or riverbed, under bridge or overpass)
m. In a closed area/space with a roof not meant for human habitation (such as abandoned building, car or truck, van, RV, or camper, encampment or tent, or unconverted garage, attic, or basement; etc.)

APPENDIX C

Center for Epidemiologic Studies Depression Scale (CES-D)

Below is a list of some ways you may have felt or behaved. Please indicate how often you have felt this way during the last week by checking the appropriate space. Please provide one answer to each question.

Items	Measure	Responses
1. I was bothered by things that usually don't bother me.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
2. I did not feel like eating; my appetite Was poor	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
3. I felt that I could not shake off the blues even with help from my family or friends.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
4. I felt I was just as good as other people.	Continuous	Rarely (less than 1 day) = 3 Some (1 -2 days) = 2 Occasionally (3 -4 days) = 1 Most (5 -7 days) = 0
5. I had trouble keeping my mind on what I was doing.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
6. I felt depressed.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
7. I felt that everything I did was an	Continuous	Rarely (less than 1 day) = 0

effort.		Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
8. I felt hopeful about the future.	Continuous	Rarely (less than 1 day) = 3 Some (1 -2 days) = 2 Occasionally (3 -4 days) = 1 Most (5 -7 days) = 0
9. I thought my life had been a failure.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
10. I felt fearful.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
11. My sleep was restless.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
12. I was happy.	Continuous	Rarely (less than 1 day) = 3 Some (1 -2 days) = 2 Occasionally (3 -4 days) = 1 Most (5 -7 days) = 0
13. I talked less than usual.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
14. I felt lonely.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
15. People were unfriendly.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
16. I enjoyed life.	Continuous	Rarely (less than 1 day) = 3 Some (1 -2 days) = 2

		Occasionally (3 -4 days) = 1 Most (5 -7 days) = 0
17. I had crying spells.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
18. I felt sad.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
19. I felt that people disliked me.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3
20. I could not get going.	Continuous	Rarely (less than 1 day) = 0 Some (1 -2 days) = 1 Occasionally (3 -4 days) = 2 Most (5 -7 days) = 3

Scoring:

Questions 4, 8, 12, and 16

Rarely (less than 1 day) = 3
Some (1 -2 days) = 2
Occasionally (3 -4 days) = 1
Most (5 -7 days) = 0

All other questions:

Rarely (less than 1 day) = 0
Some (1 -2 days) = 1
Occasionally (3 -4 days) = 2
Most (5 -7 days) = 3

The score is the sum of the 20 questions. Possible range is zero to 60. If more than four questions are missing answers, do not score the CES-D questionnaire. A score of 16 points or more is considered depressed.

APPENDIX D

Demographic Questions

Items	Measure	Responses
1. What is your race/ethnicity?	Categorical	White Hispanic, Latinx, Spanish Origin Black or African American Native American or Alaskan Native Hawaiian Native or Pacific Islander Other
2. Which term best describes your gender identity?	Categorical	Woman Man Trans or transgender A gender not listed here Prefer not to answer
3. What is your student classification?	Categorical	Freshman (0-29 credits) Sophomore (30-59 credits) Junior (60-89 credits) Senior (90+ credits)
4. What is the highest level of education completed by either of your parents (or those who raised you)?	Categorical	Did not finish high school High school diploma or GED Attended college but did not complete degree Associates degree (A.A., A.S., etc.) Bachelor's degree (B.A., B.S., etc.) Master's degree (M.A., M.S., etc.) Doctoral or professional degree (Ph.D., J.D., M.D., etc.)
5. Did you receive a Federal Pell Grant as part of your financial aid package?	Categorical	Yes No I don't know
6. Are you currently working?	Categorical	No Yes 1-10 hours per week Yes 11-20 hours per week Yes 20+ hours per week
7. To the best of your knowledge, what is your current GPA?	Categorical	A (4.0) B (3.0)

C (2.0)
D (1.0)
F (0.0)

APPENDIX E

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

November 1, 2021

Melissa Lockard
Vivian Jones

Re: IRB Exemption - IRB-FY21-22-249 Prevalence and Correlates of Food and Housing Insecurities at a Historically Black College

Dear Melissa Lockard, Vivian Jones,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at [redacted]

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office

APPENDIX F

[redacted] Institutional Review Board (IRB) for the Responsible Conduct of Research and Use of Human Subjects
Division of Academic Affairs,
[redacted]

October 12, 2021

APPROVAL LETTER AND SITE PERMISSION BY EXPEDITED REVIEW

Title: Prevalence and Correlates of Food and Housing Insecurities at a Historically Black College
Principle Investigator: Melissa M. Lockard, School of Arts and Sciences, [redacted]

Dear Ms. Lockard:

Your proposed project to be performed using [redacted] students as sources of information has been approved by expedited review under provisions of the [redacted] Institutional Review Board (IRB) for the Responsible Conduct of Research and Use of Human Subjects. The decision was based on the determination that the research, procedures and protocols detailed in the proposal do not constitute more than minimal risk to human subjects in accordance with Health and Human Services (HHS) regulations (45 CFR 46) and with [redacted] policies.

This letter of certification authorizes you to proceed with this research and gives site permission for the research to be performed at [redacted] You must inform the committee of any changes to protocols, surveys or data collection involving human subjects. Records must be maintained for a minimum of three years. Please provide an annual report of progress and activities.

Good luck!!
[redacted]

Rush Oliver, Ph.D.
IRB Committee Chair,
[redacted]

APPENDIX G

Dear [redacted] Student:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a Doctor of Philosophy degree in Higher Education Administration. The purpose of my research is to examine the impact that food and housing insecurities may be having on students' academic success and mental health, and I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older and currently enrolled at [redacted]. Participants, if willing, will be asked to answer a set of 45 questions related to access to food and housing, current grade point average (GPA), level of depressive symptoms, and individual student demographic data. The survey should take approximately 5-10 minutes to complete. Participation will be completely anonymous, and no personal, identifying information will be collected.

In order to participate, please click the link: [redacted]

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please click the link to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the survey.

Participants will not be compensated for completing the survey. However, participation is greatly appreciated and may be used to benefit future students of the College.

Sincerely,

[redacted]

Melissa M. Lockard
Doctoral Candidate, Liberty University
Biology Instructor, [redacted]