UNIVERSITY STUDENT EXPERIENCES WITH FOOD INSECURITY DURING THE COVID-19 PANDEMIC

Brittney A. Gedeon

An Undergraduate thesis submitted to the Faculty of the department of biology in partial fulfillment of the requirements for the degree of Bachelor of Science in Biology

Boston College
Morrisey College of Arts and Sciences

May 2022

University Student Experiences with Food Insecurity During the COVID-19 Pandemic

Brittney Gedeon
Advisor: Summer Sherburne Hawkins, PhD, MS

Background: The COVID-19 pandemic has exacerbated food insecurity among American households. There is limited knowledge on how university students, who were vulnerable to food insecurity prior to the pandemic, have been impacted by COVID-19. This study aimed to measure the prevalence of food insecurity at a private university during the pandemic and identify student coping strategies.

Methods: An online survey was distributed via REDCap to university undergraduates. The U.S. Department of Agriculture's Food Security Survey was utilized to determine the prevalence of food insecurity during the fall 2021 semester and 2020-2021 academic year. The survey collected information on student demographics and strategies students used to obtain food. Interviews were conducted with 6 survey participants to gather richer information about student experiences.

Results: 292 student responses were analyzed. The prevalence of food insecurity during fall 2021 was 36.7%, and 34.6% during the 2020-2021 academic year. The strongest predictors of food insecurity (in fall 2021) were working 11+ hours/week (OR: 4.42, 95% CI: 1.73-11.7), previous participation in the National School Lunch Program (OR: 4.04, 95% CI: 1.43-12.2), and receiving financial aid (OR: 3.79, 95% CI: 1.70-8.86). Themes highlighted in interviews included barriers to accessing food, the impact food insecurity has on overall wellbeing, and programs that students would like implemented.

Conclusions: Approximately one third of undergraduates at this university experience food insecurity, with financially disadvantaged students being at highest risk. Barriers to obtaining food for university students needs to be addressed with institutional, statewide, and federal policies.

TABLE OF CONTENTS

List of Figures

List of Tables

Acknowledgements

First and foremost, I would like to thank my advisor, Dr. Summer Hawkins, for her excellent guidance during the research process, and helping me with the development and writing of this manuscript. I would also like to thank the Boston College Fellowships office for awarding me with the Senior Thesis Advanced Study Grant, and making this important work possible. Additionally, I would also like to express my appreciation for all of the students who participated in this survey, as well as the interviewees who were gracious enough to let me understand their experiences with food insecurity. Lastly, I would like to thank my parents, my siblings, and my friends for their continued support throughout the thesis research and writing process.

Introduction

Food insecurity is defined as "a lack of consistent access to enough food for an active, healthy life" due to lack of financial resources or social support (USDA, 2022). Approximately 12% of all American households were considered food insecure in 2019, with about 5% of households experiencing severe food insecurity (Nikolaus et al., 2020). Emerging literature suggests that college students are a vulnerable population for food insecurity (Nikolaus et al., 2020; Baker-Smith et al., 2020; Riddle et al., 2020). Studies across two and four-year institutions in the United States (U.S.) have reported the prevalence of food insecurity between 14 and 59%, making students up to five times more food insecure than the average American household (Riddle et al., 2020). College students are susceptible to food insecurity for a myriad of reasons, such as reduced social support from family, being financially illiterate, and limited nutritional knowledge (El Zein et al., 2019). Students experiencing food insecurity during their education can have many negative physical and mental health effects, including obesity, hypertension, depression, and lowered GPA (Reeder et al., 2020; Holben & Berger Marshall, 2017).

With the onset of the COVID-19 pandemic in March of 2020, food insecurity increased dramatically, with 23% of all American households experiencing food insecurity in the first year of the pandemic (Schanzenbach & Pitts, 2020). College students also became more food insecure as well, with over half of students reported having to skip meals due to budget constraints, and lack of easy accessibility and availability to food (Manboard et al., 2021; Hagedorn et al., 2022). While there is research regarding correlates of food insecurity in "normal" times, there is a lack of work surrounding how the COVID-19 crisis has impacted the way college students obtain food. Therefore, the purpose of the study is to examine how the prevalence of food insecurity may have changed over the duration of the COVID-19 pandemic, and identify ways that students

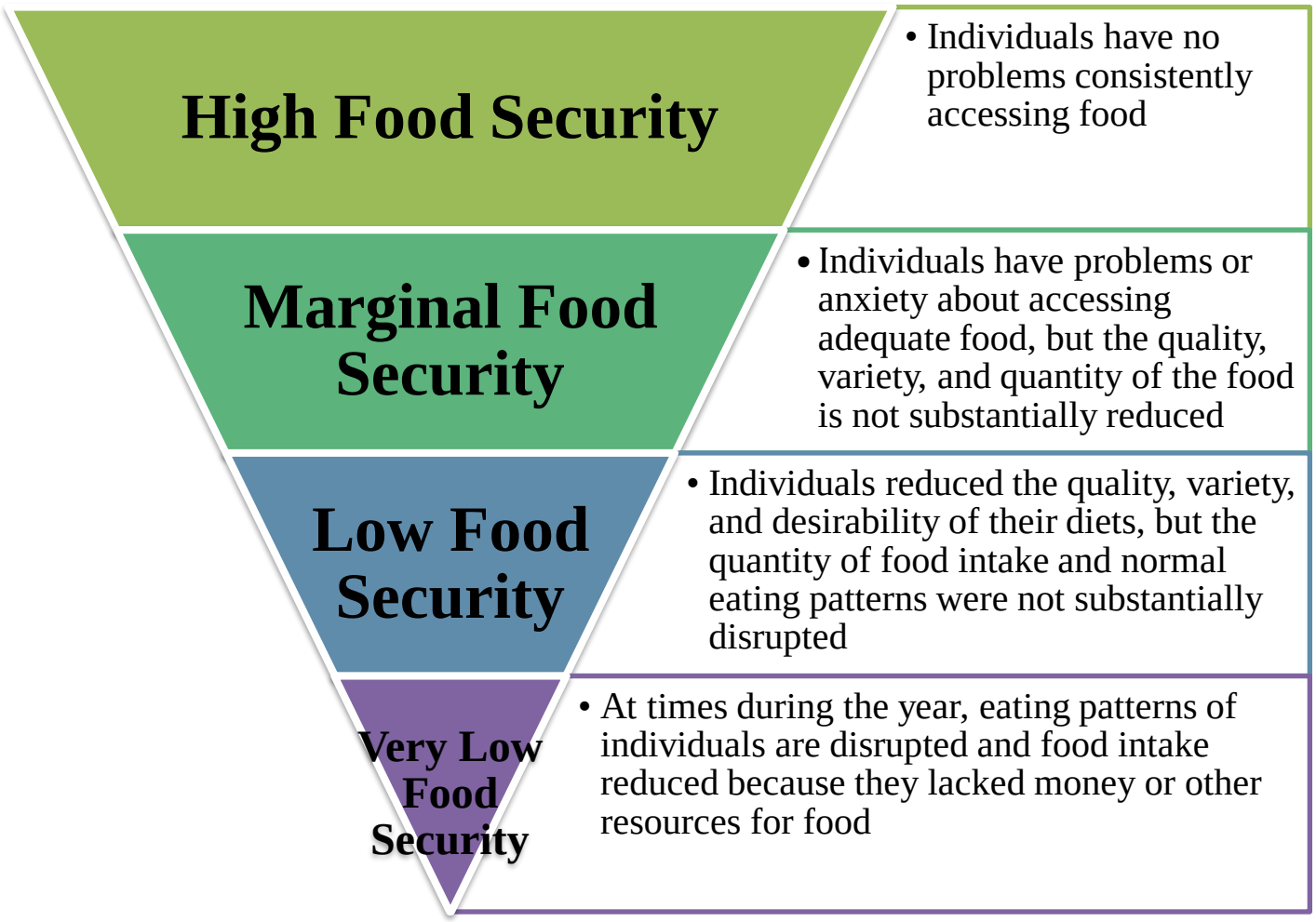
have coped with their lack of access to food. Ultimately, this work seeks to utilize these findings to create a proposal of interventions that university administration can implement to ameliorate the issue among the student body.

Literature Review

What is Food Insecurity?

Food insecurity is defined by the U.S. Department of Agriculture (USDA) as "a lack of consistent access to enough food for an active, healthy life" (USDA, 2022). The USDA has four classifications to describe food insecurity: high food security, marginal food security, low food security, and very low food security (USDA, 2022). Figure 1 shows the breakdown of the levels of food security. High food security means that a household has regular access to food, and no anxiety obtaining it. Those who are marginally food secure may have some concerns accessing food, but are able to procure foods that they desire and align with their diet. Individuals who experience low food security will often have to reduce or completely sacrifice foods they desire for those that are lower in quality or nutritional value. Very low food security encompasses individuals who will have irregular eating patterns due to lack of consistent resources to food (USDA, 2022). Food insecurity is a complex state, and is mediated by a variety of social and environmental determinants, like poverty, unemployment, discrimination, and neighborhood conditions, and may be chronic or transitory (Healthy People 2020, 2021).

Figure 1: Breakdown of Food Security (information adapted from USDA, 2022)



The U.S. government began to have a vested interest in assessing food insecurity when the National Nutrition Monitoring and Related Research Act was passed in 1990, which sought to define food insecurity, and obtain the prevalence of food insecurity in the country (USDA, 2021). The passage of this Act led to the development of the Food Security Supplement, which was developed in 1995 as part of the U.S. Census Bureau's Current Population Survey (USDA, 2021). This 10-item questionnaire assesses food insecurity by asking an individual's ability to afford food, as well as coping mechanisms that a food insecure person may use, such as skipping or decreasing the size of meals (USDA, 2012). Any responses answered in the affirmative are

used to determine food insecurity. Zero to two affirmative responses indicate high food security, three to five are representative of low food security, and six to 10 affirmative answers indicate very low food insecurity (USDA, 2012). Figure 2 represents the questions to determine food insecurity.

Figure 2. Questionnaire to Determine Food Insecurity (From Billings et al., 2021; USDA, 2012).

FOOD SECURE	FOOD INSECURE
▲ 0-2 affirmative responses	▼ Low food security: 3-6 affirmative responses ▼▼ Very low food security: 6-10 affirmative responses

Note: Affirmative response defined as "often" or "sometimes" for questions 1-3, "yes" for questions 4 and 6-9, and "almost every month" or "some months but not every month" for questions 5 and 10.

1. "We worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for you in the last 12 months?
2. "The food that we bought just didn't last and we didn't have money to get more." Was that often, sometimes, or never true for you in the last 12 months?
3. "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 12 months?
4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? (Yes/No)
5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
6. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? (Yes/No)
7. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food? (Yes/No)
8. In the last 12 months, did you lose weight because there wasn't enough money for food? (Yes/No)
9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No)
10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

Food insecurity is composed of four main dimensions: availability, accessibility, stability, and utilization (Gross et al., 2000). Food availability is a state where individuals have a steady and sufficient source of food at their disposal (Gross et al., 2000). When there is sufficient availability, there is efficient and sufficient export, trade, and transportation of food domestically and internationally. The natural environment also has a profound influence on food availability, due to the increase in global temperature, which has caused rising sea levels and more extreme weather patterns (Jägermeyr et al., 2021). These changes in weather patterns have caused increased flooding and droughts, and could affect crop yields from anywhere from 10% to 24% for maize and wheat respectively, impacting how much food may be available for millions of people across the world (Jägermeyr et al., 2021). Food accessibility is defined as possessing the resources to obtain food. This can involve having the monetary ability to buy food, or having reliable transportation to obtain food from a grocery store or food bank (Ashby et al., 2016). Barriers along socioeconomic lines, gender, income, or race and ethnicity, may also make it difficult to obtain food readily (Simon, 2012). Utilization refers to having safe and sufficient food that fits any dietary, nutritional, or cultural needs, and the ability to be able to prepare these foods with the appropriate cooking tools or techniques (Ashby et al., 2016). Nutrition is an especially important part of utilization, as the body needs to be able to metabolize essential micronutrients to remain healthy (Gross et al., 2000). Finally, food stability refers to the temporality of all of the aforementioned dimensions that determine whether an individual is experiencing transitory or chronic food insecurity. Transitory food insecurity is a state when food may be hard to obtain over a certain amount of time for a myriad of reasons (Anderson, 2019). For example, a natural disaster, such as drought or flood, can cause crop failure leading to decreased food availability (Anderson, 2019). Conversely, chronic food insecurity is when there

is long term lack of available food that meets the individual's needs (Anderson, 2019). Both states of food insecurity are linked. If an individual experiences multiple occurrences of transitory food insecurity, they are more likely to become chronically food insecure (Anderson, 2019).

Food Insecurity Among College Students

Food insecurity among college students is a dire public health concern that can have adverse physical and mental health effects and persist for decades after a student graduates. While the literature among this population is still growing, researchers have estimated that between 14-59% of all college students are food insecure, which is up to five times higher than the national average (Nikolaus et al., 2020; Hagedorn & Olfert, 2018). These numbers have fluctuated greatly due to the different measurement tools used to assess college food insecurity, as well as research being done among different demographic groups.

One reason for this phenomenon is the increasing financial burden that is associated with pursuing higher education. In the past 15 years alone, tuition at private and public colleges has increased approximately 30%, and the price of living expenses, such as rent, transportation, and books have increased as well (Freudenberg et al., 2019). While 43% of full time and 81% of part time students are employed while in school, these jobs are usually do not pay enough to cover the costs of tuition and other expenses, forcing students to make challenging decisions about their spending habits (U.S. Department of Education, 2020; Freudenberg et al., 2019). In addition, college students in the past 15 years have come from more diverse financial backgrounds. College students can either be classified as dependent, or independent. Dependent students are under the age of 24 and receive financial assistance from their families, whereas independent students are older than 24 and support themselves financially (Fry & Cilluffo,

2019). In 2016, 20% of dependent students and 42% of independent students came from families who were living below the poverty line, compared to 20 years prior, where these figures were 12% and 29%, respectively (Fry & Cilluffo, 2019). Students who live below the poverty line may receive aid in the form of institutional scholarships and federally funded Pell Grants to be able to afford tuition and other associated costs, but this aid usually does not suffice, as the purchasing power for these grants has decreased over time (Freudenberg et al., 2019). When the Pell Grant program was introduced in 1972, the funds were able to cover over 80% of the average four-year college cost of attendance, and all of community college tuition and fees (Freudenberg et al., 2019). Since the cost of college and value of Pell Grants and other federal funding have not increased at the same rate, Pell Grants today only cover 30% and 60% of 4-year and community college costs, respectively (Freudenberg et al., 2019). The lack of high paying jobs, the growing share of low-income students in higher education, and the insufficient aid all work in concert to make the financial situation of a high proportion of college students difficult, and can increase their risk of becoming food insecure.

Entering college for the first time can be a large period of social and emotional change and growth. It can also bring new pressures and stressors for young adults who have not yet lived on their own, and may not know how to approach how to obtain food for themselves, or cook nutritious meals. Many young people may not possess the knowledge, skillset, or sufficient resources to be able to procure the necessary foods to prepare healthy and nutritious food for themselves (Gaines et al., 2014). A recent study conducted by Knol et al. (2019) concluded that students who were food insecure were more likely to report feeling less confident about their cooking skills, and did not know how to shop for nutritious and affordable food. This led students to skip meals frequently and have a lower quality diet reliant on pre-packaged,

nutritionally lacking foods (Knol et al., 2019). However, this phenomenon is most pertinent for students who live in off campus housing. For those who live on campus, students often have a meal plan where they can procure meals from dining halls or other on campus vendors (van Woerden et al., 2019). While there may be misconceptions that students who have access to easy meals may not face food insecurity, this notion has shown to be incorrect, due to insufficient meals or funds on the meal plan, and limited hours in dining halls, making students either find off campus options for food, or forgo having a meal at all (van Woerden et al., 2019). One study has suggested that students who have meal plans that may only allow for 14 meals a week are more likely to face food insecurity because they use up all of their meals early on in the week, leading them to face difficulties of finding meals on the weekends (van Woerden et al., 2019). Interestingly, in one study, students with an unlimited meal plan reported being food insecure due to the meals being inaccessible to them because of the hours of operation and distance from dorms or academic buildings (van Woerden et al., 2019). Students may be food insecure because they do not have access to food at all times, or may not know how to prepare food.

Food Insecurity Risk Factors

Race & Ethnicity

Not all students experience food insecurity equally. Racial and ethnic minorities are at high risk for being food insecure (Baker-Smith et al., 2019). White students have the lowest prevalence of food insecurity at 34%, compared to Indigenous, Black, and Hispanic students, with estimates of 60%, 54%, and 47%, respectively (Baker-Smith et al., 2019). Multiple studies have found that Black students are anywhere between 2 to 3.5 times more likely to be food insecure than students from other racial/ethnic backgrounds (Reeder et al., 2020; Laska et al., 2021; Bruening et al., 2017). These trends among college populations mirror the general American public, where 20.7% of Black adults in 2020 experienced food insecurity, compared to

just 7.1% of white adults (Halder & Roque, 2021). Students of color struggle more with food insecurity because of the compounding adversities of economic disadvantage and systemic racism in higher education (Manboard et al., 2021). Additionally, students who are racial or ethnic minorities are more likely to come from families who are impoverished and also may be food insecure (Laska et al., 2021). Because of this, they may not have as much financial support from their families if they are in need of food while in school, resulting in students of color to have higher levels of food insecurity than other populations (Laska et al., 2021).

International students are also more likely to be food insecure compared to domestic students (Mialki et al., 2021). At many universities, international students have higher tuition than in-state students, and are not eligible for federal loans, such as Pell Grants (El Zein et al., 2018). There is additional struggle for students who come from developing countries, where exchange rates between their home countries' currency and the U.S. dollar are high, causing further financial stress (El Zein et al., 2018). There are also cultural differences that international students have to contend with, such as having difficulty adjusting to eating times and patterns in the U.S., as well as not having access to traditional foods from their home countries that fit their cultural, religious, and personal preferences (Alakaam et al., 2015). The financial struggles and cultural acclimation are two important factors to the high prevalence of food insecurity among international students.

Institution Type

There is data to support that college students who attend two-year community colleges are more likely to be food insecure than those who attend four-year institutions (Blagg et al., 2017). According to a study conducted by the Hope Center for Community, College, and Justice (2021), 39% of community college students were food insecure compared to 29% of all four-

year college and university students in 2020. The reason for this disparity in food insecurity may be due to the differences in demographics between the average community college and four-year university student. Community colleges are the most accessible points of entry into the world of higher education because of their affordable cost of tuition, and proximity to urban and rural settings across the country (Goldrick-Rab et al., 2017). Since community colleges are often more accessible than four-year universities, they tend to enroll higher percentages of students of a nontraditional age (above the age of 25), low-income, and first-generation students (Goldrick-Rab et al., 2017). Additionally, community colleges tend to disproportionately attract Black and Hispanic students compared to four-year institutions (Huynh, 2021). Since community colleges already enroll students who come from backgrounds who are more likely to be food insecure (such as those who live below the poverty line or are racial/ethnic minorities), overall prevalence of food insecurity on such campuses will be inflated (Huynh, 2021).

Geographic Location

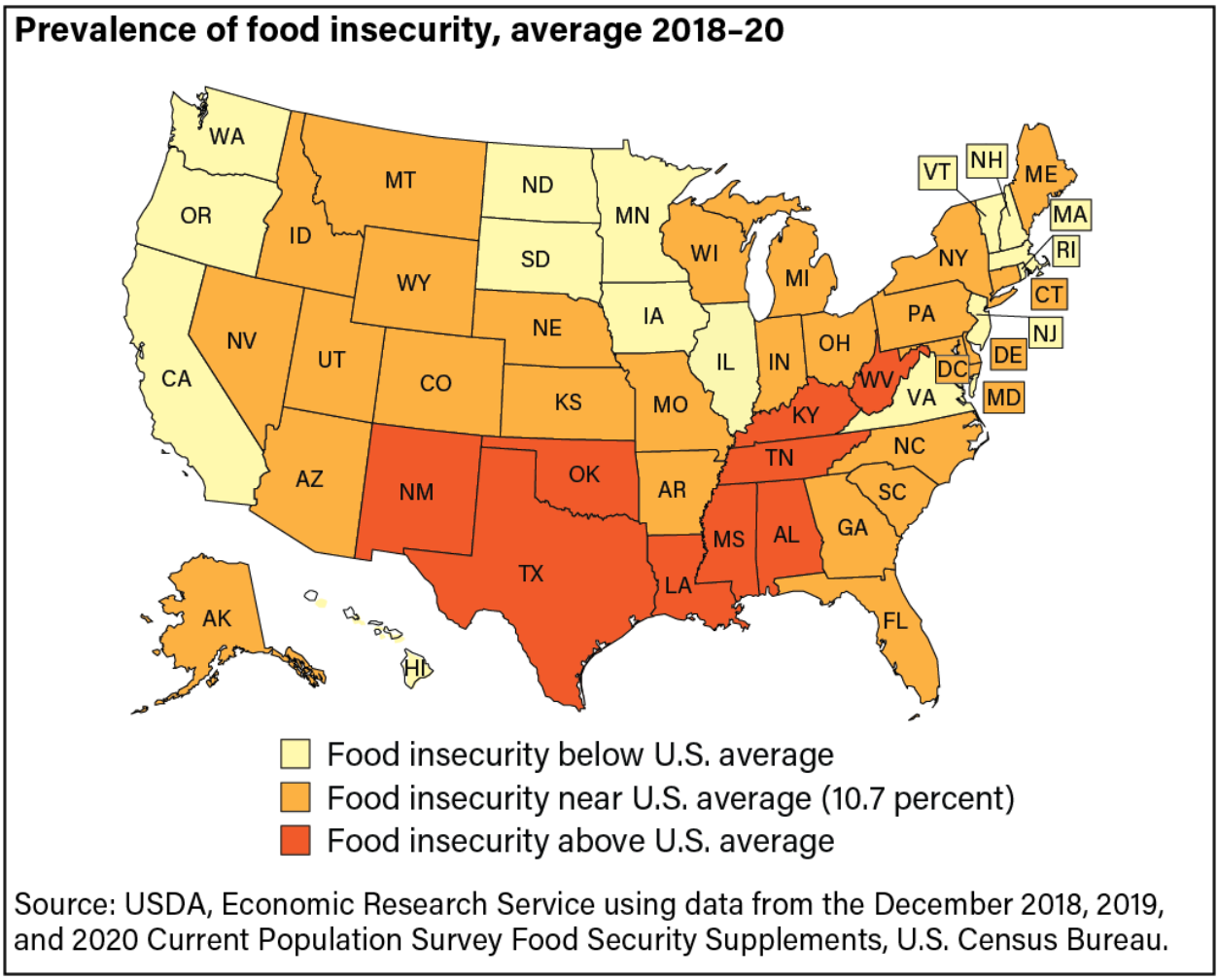
Living in certain areas of the country can increase the risk of an individual being food insecure. Data from Feeding America has shown that states in the South and across Appalachia have the highest prevalence of food insecurity in the U.S., higher than the national average of 12% (2021b). Figure 3 shows the prevalence of food insecurity across the country in 2021 (USDA, 2021). Mississippi had the highest prevalence of food insecurity in 2019, with 18.7% of the population having trouble accessing food, with Arkansas and Alabama following closely behind, with 16.6% and 16.1% (Feeding America, 2021b). States in the Midwest tend to have lower food insecurity prevalence, with 6.7% of North Dakota's population facing food insecurity in 2019, well below the national average (Feeding America, 2021b). One reason for these stark differences in food insecurity across the country because of the higher rates of poverty in the

South (Food Research & Action Center, 2021). Additionally, three states in the South (Arkansas, Virginia, and Kentucky) are among the top 10 lowest Supplemental Nutrition Assistance Program (SNAP) participating states in the country, and these states also have lower than average participation in the School Breakfast Program and Summer Nutrition Program for children (Food Research & Action Center, 2021). The patterns we see in high poverty rates and low participation in these assistance programs is not due to a lack of need, but the inefficient structures that exist in these Southern states that prevent families from enrolling. Taken together, this suggests the true rate is likely higher.

There is also a divide in food security among urban and rural areas in the U.S. Figure 3 shows the prevalence of food insecurity across the U.S. (USDA, 2021). While rural areas cultivate most of the country's food supply, these parts of the country consistently have higher prevalence of food insecurity when compared to urban areas, with 87% of counties in the U.S. with the highest prevalence of food insecurity being in rural localities (Feeding America, 2021c). This pattern holds true with college campuses as well, with one study at a rural university in Oregon showing that 59% of their students experienced food insecurity, while other studies at colleges in urban areas in New York, Arizona, and Hawaii estimated between 32-45% of their students were food insecure (Patton-López et al., 2014; Chaparro et al., 2009; Bruening et al., 2016). Consistent with the patterns in the South, rural areas have higher concentrations of people living below the poverty line or are underemployed or unemployed, contributing to the economic strains of affording food (Piontak & Schulman, 2014). Additionally, because these areas are sparsely populated, there are fewer grocery stores and supermarkets, a lack of reliable public transportation to get to stores, and less infrastructure for charitable organizations such as food

pantries, causing many residents to struggle to access food regularly (Piontak & Schulman, 2014).

Figure 3. Prevalence of Food Insecurity in the United States in 2021 (from USDA, 2021).



Financial Status

Poverty is one of the strongest indicators of being food insecure (Gundersen et al., 2011; Feeding America, 2018). Approximately 35% of households living below the Federal poverty line are food insecure compared to 12% of all households in the U.S. (U.S. Economic Research Service, 2021). Among studies conducted on college populations, students who come from low-income households and are financially independent are more likely to have low or very low food security (Bruening et al., 2017). However, income is not the sole factor in determining food

security status, as 59% of households who experience food insecurity live above the poverty line (Carman & Zamarro, 2016; Coleman-Jensen et al., 2017). This phenomenon is still seen in college students, where student or household income is not the main determinant of food insecurity, indicating that other facets of one's financial situation that must be in play (Gaines et al., 2014; Payne-Sturges et al., 2017).

Several studies among college students have shown that receipt of financial aid is positively associated with food insecurity (Gaines et al., 2014; Payne-Sturges et al., 2017; Bruening et al., 2017). While students' federal or institutional aid should defray the costs of tuition, books, and other living expenses, such as food, these findings demonstrate that this aid does not sufficiently meet the financial demands that they face (Gaines et al., 2014; Freudenberg et al., 2019). A study conducted by Meldrum and Willows (2006) found that students in Canada who received federal aid needed at least $100 extra each month to receive a nutritionally-sufficient diet, showing that financial aid should increase in order for students to be food secure.

Another hypothesis for students being food insecure is that they may not have adequate financial literacy and management skills to make smart choices when purchasing food. Financial literacy is defined as having an understanding of topics surrounding personal financial management, such as budgeting, saving, and investing, and being able to leverage this knowledge in everyday financial decisions (Carman & Zamarro, 2016; Remund, 2010). American households with higher levels of financial literacy have shown a reduction of food insecurity risk of up to 27%, with those who are below the poverty line showing similar reduction of risk (Carman & Zamarro, 2016). College students, on the other hand, do not have extensive knowledge on basic financial topics. A study conducted by the Brookings Institute has shown that only 28% of college students answered all questions correctly on a financial literacy

questionnaire, compared to 53% of non-student adults (Conzelmann & Lacy, 2018). Students have most trouble budgeting, with a great proportion of students prioritizing tuition and housing costs, clothing, and alcohol over food when they are choosing where to spend their money (Castellanos & Holcomb, 2020). However, university students have expressed that they would like to improve their financial literacy skills, and as one study noted, they believe that it is a university's responsibilities to teach students on how to "better allocate their money" so they can "afford to eat 100% right every day" (Watson et al., 2017).

Year in School & Nontraditional Student Status

A student's class year in school is a predictive factor for food insecurity. In several studies of food insecurity on college campuses, those who are in their third or fourth years have higher prevalence of food insecurity compared to underclassmen (Riddle et al., 2020; Chaparro et al., 2009). This phenomenon has been termed the "junior year effect" in where a majority of third, fourth, and fifth year students will reside in off-campus housing and apartments, and may not have meal plans (Riddle et al., 2020). As students acclimate to their new living situations, they may have issues with not knowing how to plan or prepare meals that are suitable for their nutritional needs (Riddle et al., 2020). If off-campus students do not have a meal plan to utilize on-campus eatery options, they will be more likely to be food insecure compared to their on-campus counterparts (Riddle et al., 2020).

Additionally, students' age may play a substantial role in a student becoming food insecure. The traditional age range of a college student is between the ages of 18 and 24 (Remenick, 2019). However, over the past three decades, the share of students who are considered "nontraditional" has increased dramatically, to where 75% of undergraduate students across all institution types are considered to have at least one nontraditional characteristic

(Remenick, 2019). While being over the age of 24 has been one of the primary factors of being considered a nontraditional student, the U.S. Department of Education recognizes an additional six characteristics in their definition: delayed enrollment in college by a year or more after high school, part time course enrollment, financially responsible for themselves or their families' having dependents other than a spouse, being a single parent, working full time while enrolled, or not possessing a high school diploma (Remenick, 2019). Because of these complex barriers, nontraditional students in general are more likely to be food insecure compared to those who come from traditional backgrounds (Beam, 2020). For example, 43% of students who are parents are food insecure compared to 34% of students without children (Beam, 2020). Student-parents report higher levels of food insecurity because they are focused on providing for their family, and decrease their portions for meals to ensure that their children have enough to eat (Beam, 2020). In addition, nontraditional students who work more than 20 hours a week are susceptible to food insecurity due to the difficulties of balancing work and school (Beam, 2020). Students who work more than 20 hours may not have sufficient time to plan, prepare, or eat substantive meals, resulting in food insecurity (Beam, 2020). However, when just considering age as a factor of a nontraditional student, 55% of those 26 and older faced food insecurity, compared to just 36% of those aged 19 and younger (University of California Office of the President Global Food Initiative, 2017).

Sexual Orientation & Gender Identity

Those who identify as members of the lesbian, gay, bisexual, transgender, or queer (LGBTQ) community are more likely to experience chronic food insecurity compared to heterosexual populations (Diamond et al., 2019; University of California Office of the President Global Food Initiative, 2017). Within the LGBTQ community, those who identify as women or

outside the traditional gender binary faced the highest levels of food insecurity (Diamond et al., 2019; Haskett et al., 2020). While the reasons for these disparities are poorly understood, it has been hypothesized that if student services and other campus partners collaborate with LGBTQ resource centers and clubs to provide resources to individuals, then this disparity could be mitigated (Haskett et al., 2020).

Outcomes of Food Insecurity

Physical Health Outcomes

Food insecurity is associated with a host of both adverse physical and mental health outcomes (Riddle et al., 2019). Some of the most harmful negative physical effects are increased risk for malnutrition, obesity, diabetes, and hypertension (Riddle et al., 2019). Those who are food insecure may choose to skip meals, which results in the inability to follow adequate dietary patterns that are sustainable for providing sufficient nutrition to the body (Holben & Marshall, 2017). Additionally, those who are food insecure may buy cheaper, unhealthier foods to try and stretch their budget, and forgo more expensive and nutritionally dense foods like fruits and vegetables, decreasing their essential nutrient intake, and increasing average calorie consumption (Holben & Marshall, 2017). Even if students receive food items from pantries or other charitable organizations, they are more likely to obtain nonperishable items and canned goods, which have high sodium content and lack the essential nutrients needed to maintain good health (Holben & Marshall, 2017). The lack of sufficient nutrient intake for students facing food insecurity leads to a host of chronic diseases, such as diabetes, hypertension, and cardiovascular disease, all of which decrease quality of life and increase likelihood for poor general health (Holben & Marshall, 2017). One chronic disease that is particularly of note is obesity, which is more common in women who are food insecure (Darling et al., 2015). Women are particularly at risk for being overweight because they are more likely to experience disordered eating and other

eating habits, where a constant cycle of either over- and undereating, depending on food availability, leads to obesity (Darling et al., 2015).

Mental Health Outcomes

Poor mental health outcomes are also associated with food insecurity (Holben & Marshall, 2017). A recent study concluded that food insecure university students are 3 times as likely to experience psychological distress, and 2 times as likely to have very poor self-perceived mental health status than their food secure counterparts (Becerra & Becerra, 2020). Students who lack reliable access to food may face a range of mental health problems, such as anxiety, depression, suicidal ideation, and insomnia (Reeder et al., 2020). However, there still lacks clear directionality between mental health outcomes and food insecurity. Researchers believe that the relationship between food insecurity and poor mental health outcomes is bidirectional, where food insecurity may cause mental health disorders, and mental illness may prevent one from being able to regularly obtain food, or having healthy food habits (Reeder et al., 2020). The mental health stressors that food insecure college students face may also exacerbate their physical health. Several studies have found an association between food insecure college students and disordered eating behaviors (El Zein et al., 2019; Barry et al., 2021; Darling et al., 2015). Food insecure students often face heightened psychological stress, which may lead them to adopt abnormal eating patterns, such as restricting meal portions, skipping meals, or using appetite suppressing methods (Darling et al., 2015). Some food insecure students may employ a "feast or famine" strategy dependent on food availability, where they may overeat in periods of food abundance, and intentionally restrict meals when resources are scarcer (El Zein et al., 2019). These disordered eating habits can cause physical health concerns, such as obesity, and associated comorbidities, such as hypertension, diabetes, and hyperlipidemia (Darling et al.,

2015). Further, obesity is correlated with mood disturbances and other mental illnesses (Nagata et al., 2019). The stress associated with food insecurity causes elevated levels of cortisol in the body, resulting in severe physiological deregulation that can influence the development of anxiety, depression, digestion issues, and high blood pressure (Nagata et al., 2019; McEwen, 2008).

Outcomes in Post-Graduate Adulthood

Experiencing food insecurity during university can profoundly affect future success and productivity (Reeder et al., 2020; Nagata et al., 2019). Food insecurity-related depression, anxiety, and insomnia can negatively impact cognitive functioning, and in turn, have detrimental personal economic ramifications (Nagata et al., 2019). Depressed young adults may have difficulty maintaining a job or managing finances, which can cause a positive feedback loop between perpetuating food insecurity and mental health issues (Nagata et al., 2019). Additionally, those who face mental illness are more likely to have trouble sustaining their physical health and will have greater healthcare costs, further perpetuating the cycle between financial instability, food insecurity, and mental illness (Reeder et al., 2020). Mental illness associated with food insecurity has also shown to greatly hamper academic success (Hagedorn & Olfert, 2018; Weaver et al., 2019). If a student is experiencing mental distress, they may be less likely to perform well on assignments and attend class, which puts them at higher risk from withdrawing from courses completely, negatively impacting grade point average (Hagedorn & Olfert, 2018). Additionally, a lack of adequate nutrients may impact sleep quality, concentration, and cognitive ability, which can greatly hinder students' academic performance (Weaver et al., 2019). Students facing food insecurity may even sell their textbooks to afford to buy food, or

skip classes to attend events that may be offering a meal, further diminishing their academic success (Weaver et al., 2019).

While most studies about food insecurity among college students has been cross-sectional in nature, there is one longitudinal study recently published by Leung and colleagues (2021), that has explored food insecurity's long term effects on college students. Individuals who were food insecure during college were almost 1.5 times as likely to be food insecure during adulthood, with the risk being closer to 2 times higher if the student was economically independent from their parents (Leung et al., 2021). Additionally, those who were food insecure during college had significantly lower incomes than those who were not, and were more likely to be non-white (Leung et al., 2021). These associations provide further evidence for the influence of food insecurity on psychosocial health and academic success, where lower academic success is associated with diminished earning power after graduation (Leung et al., 2021). These findings suggest that food insecurity is a state that can continue as a chronic cycle if not addressed by social or policy interventions.

COVID-19 and Food Insecurity

Since March of 2020, the COVID-19 pandemic has changed how people access food due to stay-at-home orders, social distancing, and capacity restrictions. It is estimated that food insecurity nearly tripled in the U.S., with at least 23% of all households in the country experiencing food insecurity in 2020 (Schanzenbach & Pitts, 2020). Specifically in Massachusetts, food insecurity increased from 8.2% pre-pandemic, to nearly 20% in May of 2020 (Project Bread, 2021). However, college students had higher food insecurity prevalence than the general public, with 38% of college students missing meals regularly during the COVID-19 outbreak (Sumekh, 2021).

The precarious financial situation of college students has been exacerbated by the pandemic, leading to increased food insecurity. Americans between the ages of 18 and 24 were the most likely to be unemployed during the pandemic, due to these individuals working part-time, food service and retail jobs, which were impacted greatly due to stay-at-home orders and social distancing efforts, leading to decreased income (US Department of Labor, 2020). Additionally, due to the pandemic, many college students had to leave their campuses and move back with family members, removing them from their on-campus employment, and to a possible lack of employment opportunities in their hometowns (Hagedorn et al., 2021). While many adult Americans received some financial relief during the pandemic with Federal stimulus checks, a vast majority of college students were ineligible for this funding due to their tax status as dependents, losing the chance to have supplemental income that could be spent towards food (Hagedorn et al., 2021).

The availability and accessibility of food during the pandemic has also contributed greatly to the increase of food insecurity among college students. Social distancing measures and closures of food processing facilities and meat packing plants, has decreased the number of items on shelves at the grocery store, which has caused an increase in price of these important staple items (Johansson, 2021). Due to these supply issues, some products, such as eggs, meats, and grains have increased in price anywhere from 4-16% during the pandemic, making it difficult for college students to afford going grocery shopping (Johansson et al., 2021). Access to food has also greatly decreased during the pandemic, especially for college students who live in food deserts. The USDA defines a food desert as an area that is more than one mile from a supermarket, but it can be any neighborhood that has little to no access to affordable, healthy food (Ver Ploeg et al., 2011). Students may have to use public transportation to get groceries, but

during the pandemic, people have been told to avoid crowded public transportation to mitigate the risk of being infected (Jamerson, 2020). This has forced students to instead purchase food from local convenience stores which may lack affordable, fresh produce, further exacerbating food insecurity (Jamerson, 2020).

Another important reason why college students were more likely to face food insecurity during the COVID-19 pandemic is because of the lack of food assistance programs available to this population. While over 700 campuses across the country have food pantries on-campus for students, when many of these students were sent home in March 2020, these resources were no longer readily available, and students did not know where to turn to for their next meal (Flannery, 2021). Even before the pandemic, college students rarely utilized on-campus food pantries due to associated stigma of using this form of assistance, but also due to limited pantry hours and lack of knowledge of its existence (El Zein et al., 2019). Federal programs, like the Supplemental Nutrition Assistance Program (SNAP), exist to provide funds to assist families with purchasing food, but students have been largely left out of this program, and are not eligible for these benefits if they attend school more than part-time or work less than 20 hours a week (Manboard et al., 2021). However, during the pandemic, the federal government changed eligibility requirements, and is allowing full-time students who qualify for federal work study and Pell Grants to receive SNAP benefits (Massachusetts Law Reform Institute, 2021). Although this extension in eligibility has made more than 3 million more students eligible for SNAP, a majority of newly eligible college students do not know about this new benefit (Granville, 2021). Prior to the pandemic, many college students were uncertain about the eligibility requirements for SNAP, because of the confusing way these requirements are written (Freudenberg et al.,

2019). Even if college students were eligible SNAP, many were deterred from applying due to the daunting amount of paperwork and documentation needed (Freudenberg et al., 2019).

With the lack of knowledge of how food insecurity has impacted students during the COVID-19 pandemic, there needs to be additional exploration of this topic. In order to assess food insecurity at Boston College, I conducted a study of undergraduate students consisting of a survey and participant interviews. The purpose of this study is to examine the prevalence of food insecurity at BC over the course of the COVID-19 pandemic, as well as to identify which demographic characteristics are associated with food insecurity. Additionally, the study sought to explore the experiences of college students who are food insecure, as well as to identify ways to ameliorate the issue at BC.

Methods

Study Design and Procedure

This cross-sectional study examined undergraduate students 18 years and older attending Boston College between December 2021 and March 2022. All subjects came from a convenience sample that were recruited via email, in-class announcements, and flyers. Participants were incentivized to be part of the study with a chance to win one of four $50 gift cards to an online retailer through a raffle. If interested in this raffle, participants entered their name and contact information following completion of the survey. Contact information remained separate from the results of the survey to protect participant identity. The informed consent page was the first screen of the survey, and participants were encouraged to read this information to learn more about any associated risks and confidentiality. Clicking the "next page" button, indicated that they consented to participate in the study.

A second component of this study was conducting qualitative interviews with six survey participants to further understand personal student experiences with food insecurity. If students were interested in being interviewed by the researcher, they indicated so on a form after the conclusion of the survey, and provided their contact information. Students were incentivized to participate in this portion of the study with a $25 gift card to an online retailer if they completed the interview. Participants were selected for the interview based on class year, gender identity, and ethnic background. Interviews were conducted via the Zoom video conferencing platform. The researcher (BG) reviewed the consent form with students prior to the interview to ensure they understood the protocol. Informed consent from the students was obtained verbally prior to starting the recording, and students were asked to keep their cameras off and names were changed (ex. Student 1) to ensure anonymity. Once the recording started, verbal consent was asked once again. Interviews lasted between 25 and 30 minutes.

This study protocol was approved by the Boston College Institutional Review Board under expedited approval (IRB #: 22.144.01).

Survey & Interview Design

The 82-item survey was built and administered utilizing REDCap, and consisted of six sections (Appendix A). The first section of the survey asked for students to report demographic data. Demographic variables, including age, class year, gender identity, race/ethnicity, sexual orientation, and first-generation student status were collected. Students were also asked to report their receipt of institutional financial aid, employment status, participation in extracurricular activities, living arrangement, and participation in the Federal free or reduced school lunch program in high school.

The purpose of the second portion of the survey was to determine student food insecurity status during the fall 2021 semester, and retrospectively, during the 2020-2021 academic year. Food insecurity was measured over these two time periods in order to determine how the course of the pandemic, with the growing availability of vaccines, adapting to the pandemic, as well as differing COVID-19 protocols on campus, may affect availability and accessibility to food. Food insecurity was determined using the USDA's Household Food Security 6-item survey (USDA, 2012). The screener measures an individual's circumstances around obtaining food and frequency and size of meals. Responses were grouped into four categories based on affirmative responses ranging from high food security and very low food security. Participants were asked all six screener questions twice, in regards to their feelings about their food attainment in the 2020-2021 academic year, and the fall 2021 semester. If participants taking the survey were freshmen, they were only prompted to answer the food insecurity module for the fall 2021 semester.

The third section of the survey asked 14 closed-ended questions about the four dimensions of food insecurity as it related to food provided by on-campus dining halls and nearby off-campus grocery stores. Students were asked if they had a meal plan, and how often they received food from the dining hall. If students answered that they obtained food from a dining hall at least once a week, they were asked their opinions on the food options and affordability of on-campus eateries on a 5-point strongly disagree to strongly agree Likert scale. Students were also presented with multiple choice responses of what they would do if they were to run out of meal plan money. If students responded that they had done grocery shopping at least once a month, they were asked their opinions on the affordability, availability, accessibility, and comfortability with off-campus stores using a 5-point Likert scale, ranging from strongly disagree to strongly agree.

The fourth section of the survey asked participants 15 closed-ended questions about their participation in food assistance programs, and ways that they may improve their access to food. Four statements from a previous study were adapted to assess the barriers students may face to using income-based food programs and food pantries (Niles et al., 2020). Students were also presented with eleven strategies that they are currently using, or would use, to obtain food. Seven of these statements were adapted from a previous study (Niles et al., 2020), and the rest were created by the researcher. Five-point Likert scales ranging from strongly disagree to strongly agree were employed to gauge student concerns on using food assistance programs, as well as assess which strategies would be the most useful in improving food access. Both questions were adapted from a previous study (Niles et al., 2020). Questions from the researcher were developed asking students their awareness of the Supplemental Nutrition Assistance Program (SNAP), and college students' eligibility for the programs. Additionally, a 5-point Likert scale ranging from

strongly disagree to strongly agree was employed to inquire about opinions on potential assistance programs the university can implement in order to improve food access for students.

The fifth section of the survey asked 11 closed-ended questions focusing on behavioral and psychosocial responses to being food insecure. Students were asked to indicate on a 5-point Likert scale, from strongly disagree to strongly agree, about their level of agreement with the statements regarding their feelings on their own food insecurity. Three statements were utilized from a previous study about emotional eating and utilizing food to cope with loneliness (Niles et al., 2020). The remaining statements were created by the researcher to obtain information about if students felt that their food security status affected them academically, socially, and whether they were using appetite suppressing methods to deal with their food intake.

The sixth section of the survey included three open-ended questions developed by the researcher that offered participants an opportunity to include their personal thoughts and opinions about their experiences with food insecurity. The first question asked students to enumerate their personal experiences with food insecurity while at Boston College. The second question sought to understand what students think the Boston College administration should do to address food insecurity among the student body. The third question asked students to include any other additional thoughts about food insecurity that was not covered in the rest of the survey.

For the interviews, six students were selected from those who completed the online survey (Appendix B). Ten open-ended interview questions were created. Seven questions were adapted from a previous study (Meza et al., 2019), and three questions were personally developed by the researcher. The seven questions adapted from the Meza et al. 2019 study asked about students' specific experiences with food insecurity and what resources, if any, they are using to access food. In addition, students were asked about the emotional and social

ramifications of their food insecurity, and how it has affected their academic performance or social life (Meza et al., 2019). Questions were created by the researcher about their awareness of SNAP and how the university should raise awareness about the food program. Additionally, students were asked about how COVID has impacted their experiences with accessing and obtaining food, and how they believe the university administration should intervene.

Data Confidentiality

Survey data were collected and managed using REDCap electronic data capture tools hosted at Boston College (Harris et al., 2009; Harris et al., 2019). REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources. Data from the online survey were stored on the secure REDCap platform, and was exported to a secure server in the Boston College School of Social Work for data analysis.

Confidentiality was maintained during interviews by having participants turn their camera off for the Zoom recording, and removing their names. Zoom recordings and transcripts were saved on a secure server in the Boston College School of Social Work.

Data Analysis

Descriptive statistics were computed as percentages for all demographic variables obtained from the online survey. Food security status was determined from the 6-question USDA Household Food Security Survey. Per the protocol, zero or one affirmative answers reflected

high or marginal food security, two to four affirmative answers indicated low food security, and five or six affirmative answers indicated very low food security (USDA, 2012).

Logistic regression models were implemented to examine the associations between the binary outcome of food insecurity (yes/no) and categorical characteristics (race, gender, grade level, first generation college student status, sexual orientation, financial aid status, employment status, living arrangement, and participation in the federal free school lunch program in high school). Data analysis was conducted using RStudio Version 1.4.1717 (RStudio Team, 2020). Statistical significance was determined at $p \leq 0.05$.

Descriptive statistics (percentages) was collected for questions asked in sections three to five from the online survey. Patterns across survey responses were assessed among demographic characteristics. The open-ended responses from the three questions in section six of the online survey were read by the researcher. After reviewing these responses, themes were created for each question. Responses were then categorized for thematic elements that matched with each theme created.

To analyze the findings from the interviews, a six-step inductive qualitative analysis approach was employed according to Braun and Clarke's (2006) protocol. First, the researcher listened to the audio recordings of each interview, and corrected any errors that were on the automatic transcription document created by Zoom. Next, each interview was read line by line, and initial codes were generated by pulling out any ideas of note from quotes in each interview. Each code was then read, and was collated together to create themes. Themes were created by organizing any codes that were similar, and creating a broader, overarching theme that would illustrate the main facets of food insecurity. Themes were then read over a second time, and

broad categories were created, with subthemes created under each category. From this analysis, seven broad categories were created, with between two to six subthemes within each category.

Results

Quantitative Survey Results

Survey Participant Characteristics

Over the 12-week period the survey was available to students, a total of 343 respondents completed the survey. After removing participants who opened the survey but did not respond to any of the demographic questions (n=51, 14.9%), 292 respondents were used for data analysis. The majority of participants in the survey were white (n=200, 69.4%) and female (n=219, 75.8%) (Table 1). White and female students were overrepresented when compared to the proportion of students reported by the Boston College factbook (65.7 and 53.3%, respectively) (Boston College, 2021). Freshmen and sophomores were slightly overrepresented in the sample compared to upperclassmen (58%), which explains the high representation of those who live in traditional double, triple, or quad housing (41.5%). A small fraction of the students surveyed were international (3.4%), which is lower than the 7.6% undergraduate international population of the university. First-generation college students were oversampled in this study (24.3%), as 10% of the student body at the university are first-generation. Over half of students surveyed received some financial aid from the university, and out of those receiving financial aid, 32.5% of students were part of the Montserrat Coalition. Over half of all students sampled were employed, with the majority of those who are employed (67.1%) work 1-10 hours each week.

Table 1: Prevalence of food insecurity and demographics during the 2020-21 academic year and fall 2021 among undergraduates at Boston College

		2020-21 AY		Fall 2021 Semester		
	Total Sample	**Low Food Security**	**Very Low Food Security**	**Low Food Security**	**Very Low Food Security**	**P-Value**
N	292	31	33	45	50	0.313
Year in School (%)						0.001
Freshman	90 (31.1)			22.2%	13.3%	
Sophomore	78 (27.0)	16.7%	12.8%	9.0%	17.9%	
Junior	57 (19.7)	14.0%	22.8%	12.3%	26.3%	
Senior	64 (22.1)	15.6%	15.6%	15.6%	10.9%	

First Generation Student = Yes (%)	71 (24.3)	5.6%	22.5%	21.1%	42.3%	0.062
Race (%)						0.941
Asian	50 (17.4)	12.0%	12.0%	20.0%	20.0%	
Black	20 (6.9)	10.0%	35.0%	0.0%	55.0%	
White	200 (69.4)	11.0%	8.5%	14.5%	13.0%	
Other	18 (6.2)	5.6%	16.7%	27.8%	11.1%	
International Student = Yes (%)	10 (3.4)	0.0%	10.0%	30.0%	10.0%	0.635
Gender (%)						0.982
Female	219 (75.8)	10.5%	9.1%	15.5%	14.2%	
Male	64 (22.1)	10.9%	17.2%	17.2%	23.4%	
Other	6 (2.05)	16.7%	33.3%	0.0%	66.7%	
Sexual Orientation (%)						0.780
Heterosexual	225 (77.9)	8.9%	9.8%	13.3%	14.2%	
Bisexual	39 (13.5)	23.1%	17.9%	25.6%	28.2%	
Queer	25 (8.6)	8.0%	16.0%	20.0%	28.0%	
Housing Arrangement (%)						0.001
On Campus Traditional Housing	120 (41.5)	3.3%	5.0%	18.3%	16.7%	
On Campus Suite Style Housing	61 (21.1)	14.8%	16.4%	11.5%	16.4%	
On Campus Apartment Housing	73 (25.3)	17.8%	16.4%	13.7%	15.1%	
Off Campus Apartment/Parent Guardian Home	35 (11.1)	14.3%	14.3%	17.1%	25.7%	
Financial Aid & Montserrat Status						0.291
Financial Aid (Y) & Montserrat (Y)	94 (32.5)	12.8%	24.5%	22.3%	38.3%	
Financial Aid (Y) & Montserrat (N)	65 (22.3)	9.2%	4.6%	18.5%	10.8%	
Financial Aid (N) & Montserrat (N)	125 (42.8)	10.4%	4%	8.0%	4.8%	
Participation in Free Lunch Program = Yes (%)	51 (17.5)	7.8%	29.4%	21.6%	51.0%	0.303
Employment Status (%)						0.696
Unemployed	128 (44.3)	10.2%	5.5%	13.3%	13.3%	
1-10 Hours per Week	108 (37.4)	7.4%	10.2%	13.9%	13.9%	
11+ Hours per Week	53 (15.9)	18.9%	28.3%	24.5%	34.0%	

Food Security

During the 2020-21 academic year, 34.6% of all students surveyed were classified as food insecure (Table 1). Among the food insecure students, 48.4% were classified as having low food security, and 51.6% were classified as having very low food security. In the fall 2021

semester, 36.7% of students were classified as food insecure. Among those who were food insecure, 47.4% were classified as having low food security, and 52.6% were classified as having very low food security. As shown in Table 1, the differences in prevalence of food insecurity were not statistically significant between the 2020-21 academic year and the fall 2021 semester ($p=0.313$). Year in school and housing arrangement were statistically different at the bivariate level between 2020-21 academic year and the fall 2021 semester.

In order to determine the demographic and socioeconomic factors affecting student food insecurity, multiple predictors—year in school, first generation status, race, international student status, gender, sexual orientation, housing arrangement, financial aid status, participation in the National School Lunch Program, and employment status—were included in a logistic regression model (Table 2). Those who participated in the National School Lunch Program in high school were 4.04 times as likely to be food insecure than those who did not participate in the program (95% CI: 1.43-12.02). Additionally, those who worked 11+ hours per week were nearly 4.5 times as likely to be food insecure compared to those who are unemployed (OR 4.42; 95% CI: 1.73-11.7). Those who receive financial aid from the university were over four times as likely to be food insecure than those who do not receive financial aid (OR: 4.04; 95% CI: 1.70-8.86). Those who identified as bisexual were also more likely to be food insecure than those who are heterosexual, with a odds ratio of 2.57 (95% CI: 0.99-6.70). Of note, while slightly above the significance value of $p \leq 0.05$, being a first-generation college student is associated with 2.31 increased odds of being food insecure (95% CI: 0.91-5.87).

Table 2: Multivariable logistic regression model examining the association between food insecurity and student demographic characteristics

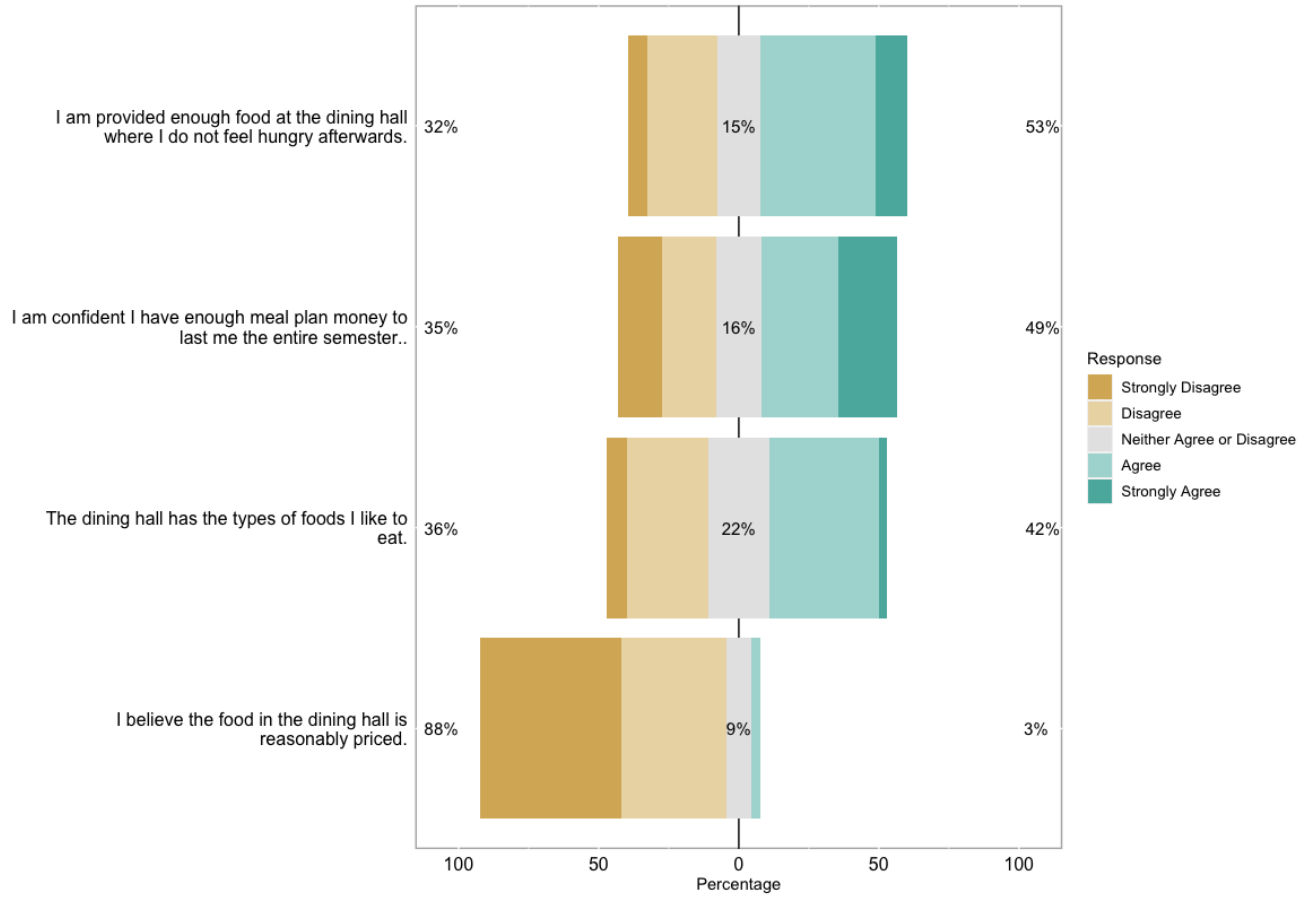
Demographic Variables	**Odds Ratio**	**95% Confidence Interval**	**P-Value**
Year in School			
Freshman	1.00 (ref)	1.00 (ref)	1.00 (ref)
Sophomore	1.27	0.38-4.06	0.69
Junior	1.06	0.26-4.23	0.94
Senior	0.66	0.17-2.37	0.53
First Generation Student = Yes	2.31	0.91-5.87	0.08
Race			
White	1.00 (ref)	1.00 (ref)	1.00 (ref)
Asian	1.08	0.44-2.58	0.87
Black	0.8	0.19-3.39	0.76
Other	0.56	0.13-2.35	0.43
International Student = Yes	2.89	0.53-15.5	0.21
Gender			
Female	1.00 (ref)	1.00 (ref)	1.00 (ref)
Male	1.50	0.67-3.31	0.32
Other	1.19	0.13-15.3	0.88
Sexual Orientation			
Heterosexual	1.00 (ref)	1.00 (ref)	1.00 (ref)
Bisexual	**2.57**	**0.99-6.70**	**0.05**
Queer	1.97	0.60-6.40	0.25
Housing Arrangement			
On Campus Traditional Housing	1.00 (ref)	1.00 (ref)	1.00 (ref)
On Campus Suite Style Housing	0.66	0.20-2.26	0.50
On Campus Apartment Housing	0.59	0.17-2.04	0.37
Off Campus Housing	2.06	0.51-8.41	0.31
Financial Aid Recipient = Yes	**3.79**	**1.70-8.86**	**0.01**
Participation in Free Lunch Program = Yes	**4.04**	**1.43-12.2**	**0.01**
Employment Status			
Unemployed	1.00 (ref)	1.00 (ref)	1.00 (ref)
1-10 Hours per Week	0.684	0.30-1.51	0.35
11+ Hours per Week	**4.42**	**1.73-11.7**	**0.002**

Student satisfaction with BC Dining Halls

A majority of survey respondents had a meal plan (65%, n=166), and therefore used the dining hall at least four times a week. Figure 4 below illustrates the satisfaction with the dining hall. A majority (53%) of students agreed or strongly agreed that the portions of food provided

by the dining hall were sufficient. Nearly half (49%) of students are confident that they will have enough meal plan money to last the full semester. However, very few (3%) students agree or strongly agree that the food available in the dining hall is reasonably priced.

Figure 4: Student satisfaction with BC dining halls

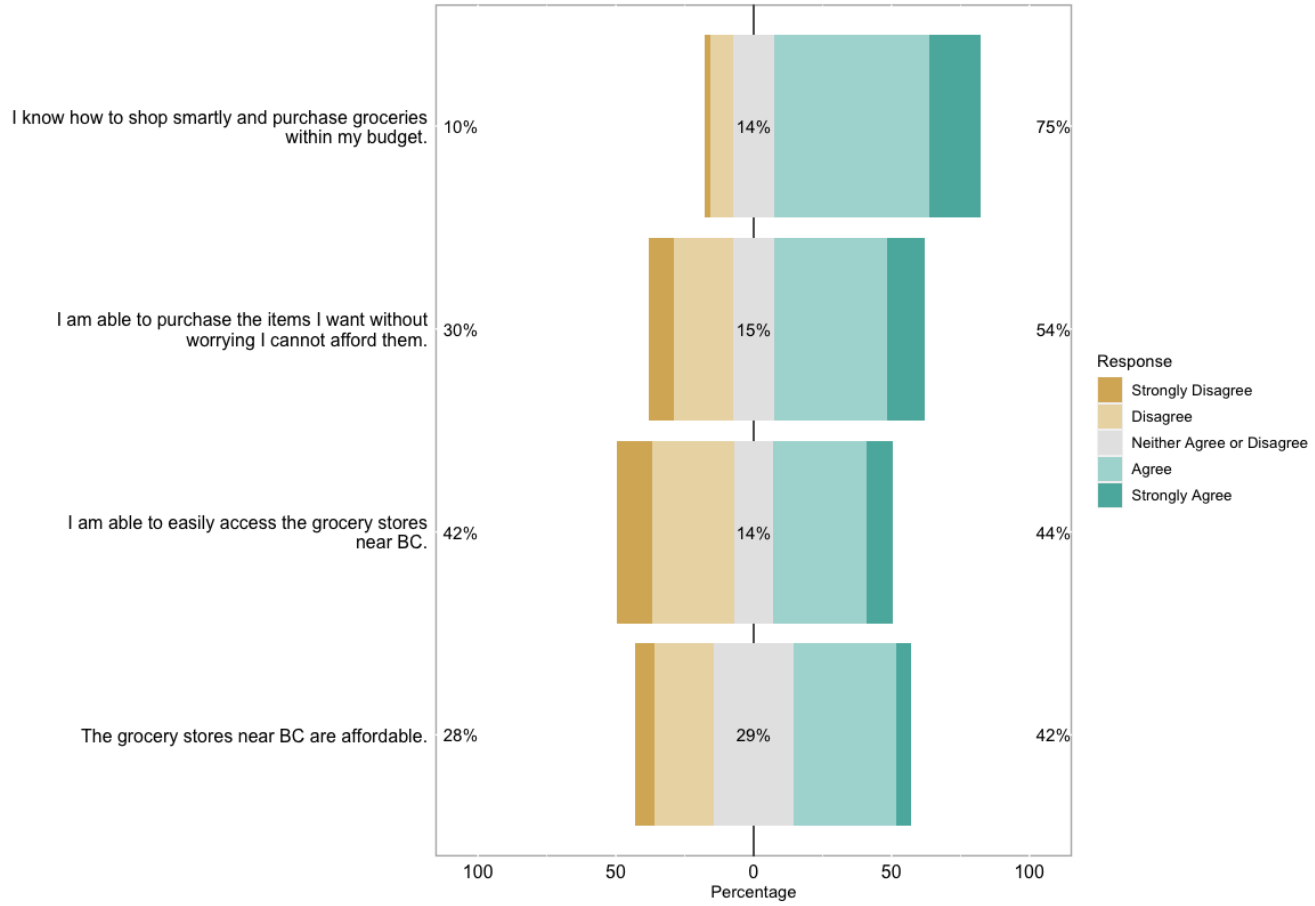


Student Satisfaction with Area Grocery Stores

A majority of survey participants (78%, n=200) responded that they went grocery shopping at least once a month. A vast majority (75%) of survey respondents agreed or strongly agreed that they knew how to grocery shop according to their budget, while a smaller majority (54%) agreed to some extent that they can purchase the items they want without worrying that they can afford them (Figure 5). An almost equal proportion of students agreed (44%) and

disagreed (42%) that they can easily access the grocery stores close to BC. Less than half (42%) of students agree to some degree that the grocery stores near BC are affordable.

Figure 5: Student satisfaction shopping at area grocery stores



SNAP Awareness & Barriers to Income-Based Food Program Sign-Up

A majority (68%, n=163) of survey respondents were aware of what SNAP is (Figure 6). However, only 21% of respondents knew that college students were eligible for the program.

Figure 6: BC Student Awareness of SNAP

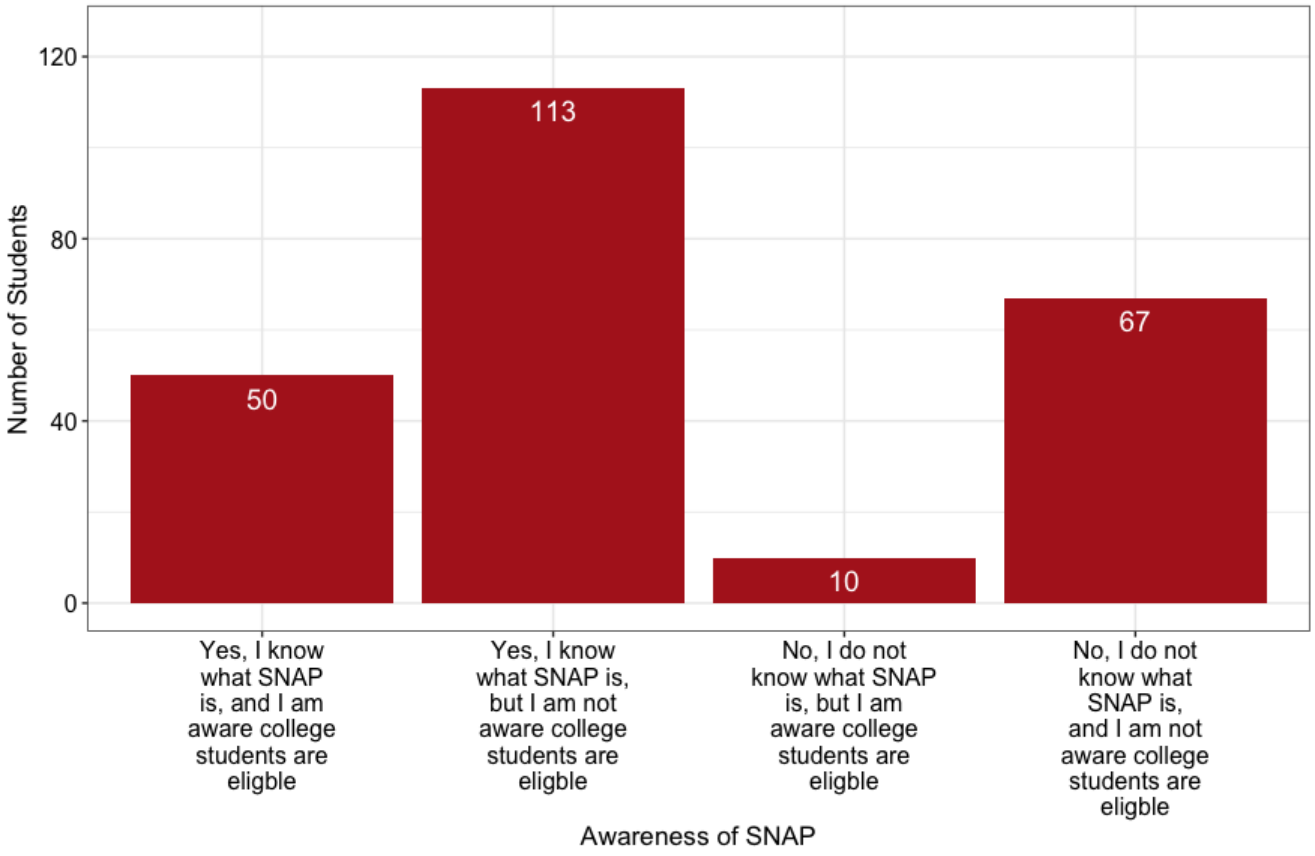
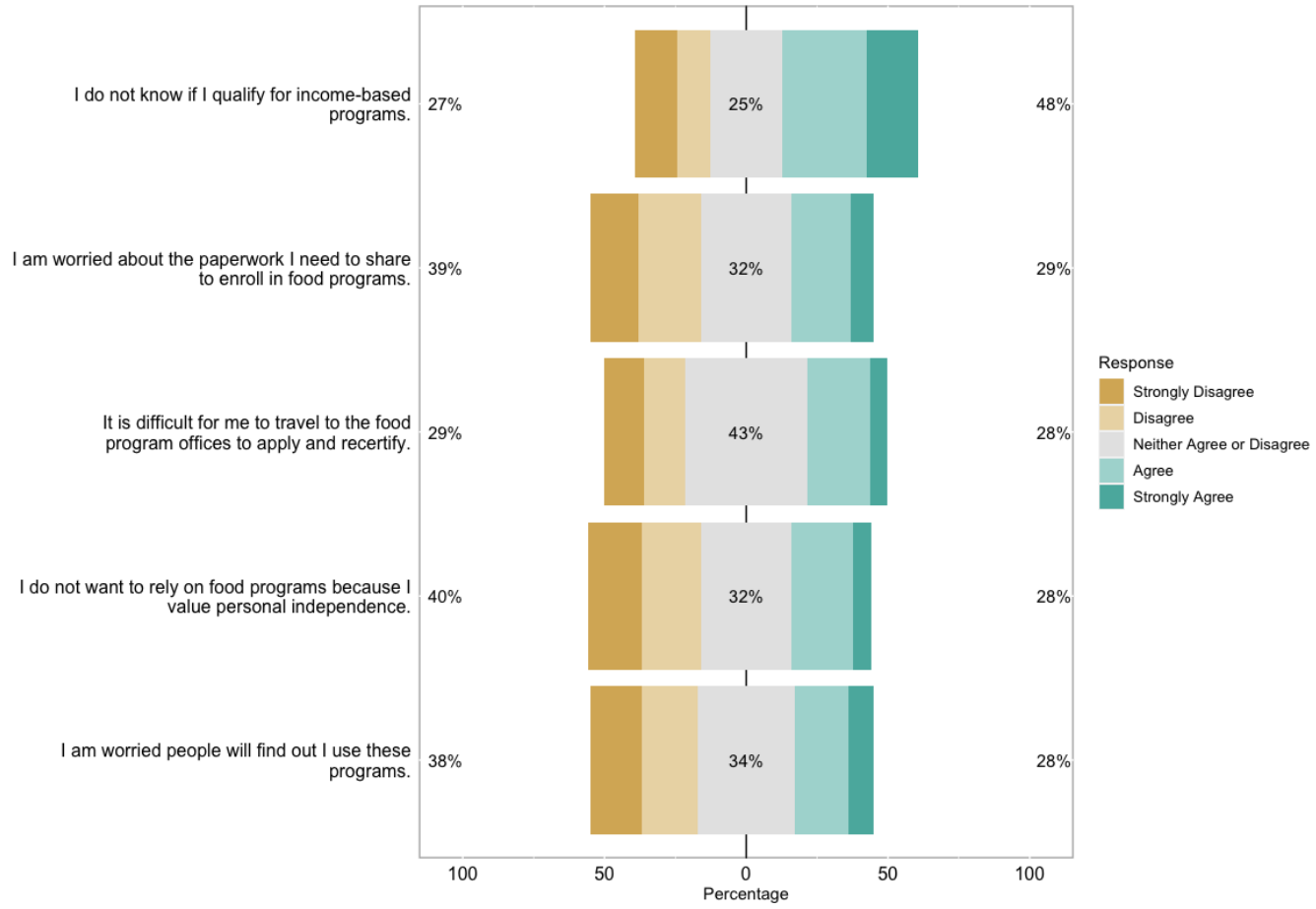


Figure 7 indicates students' level of agreement on barriers to signing up for income-based programs. Almost half (48%) of students do not know that they are eligible for income-based programs. A similar proportion of students (28-29%) agree or strongly agree that their barriers to signing up for income-based programs are due to concern regarding what paperwork is needed, traveling to the program offices, being independent, or people finding out that they use these programs.

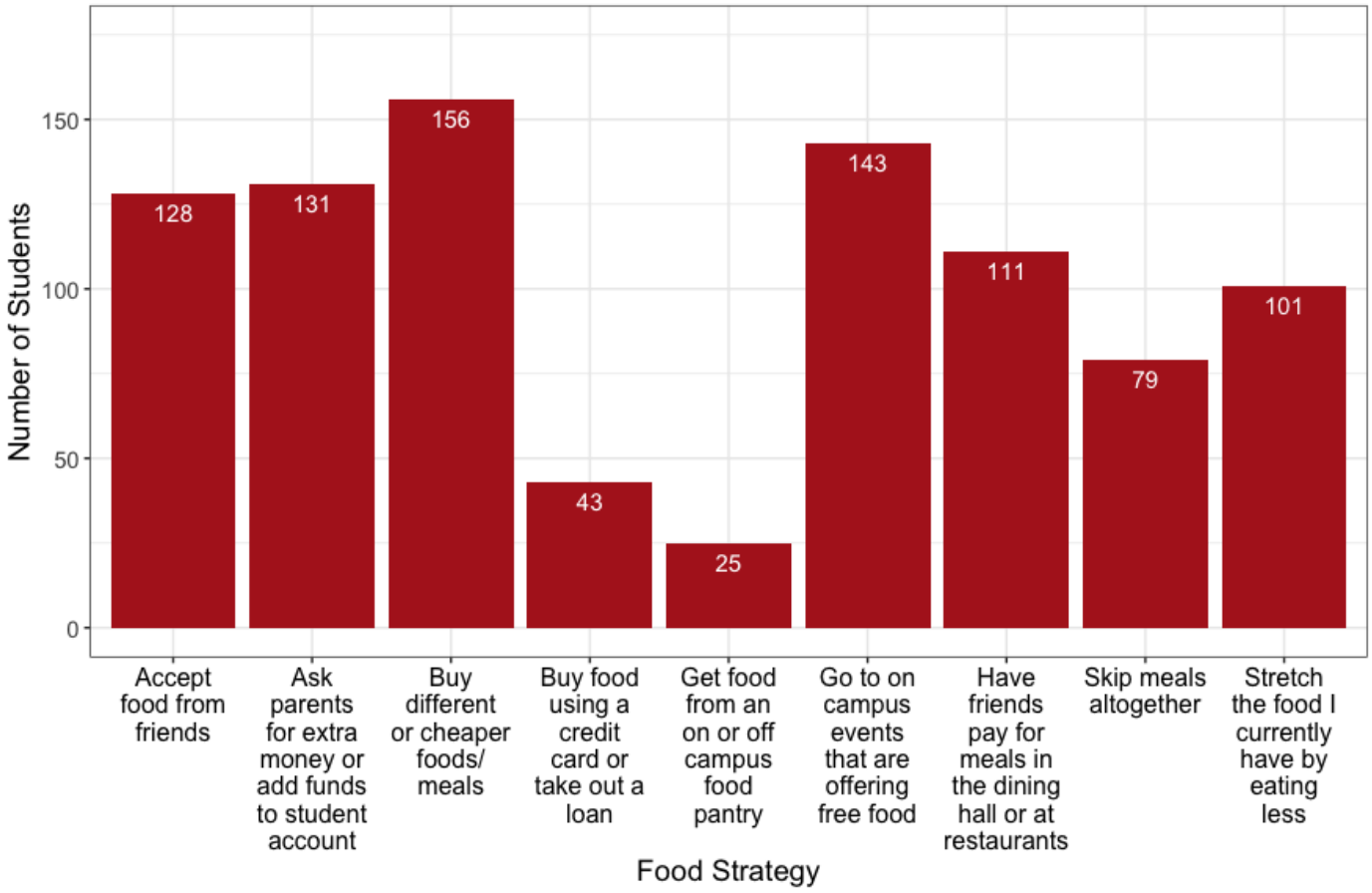
Figure 7: Student perceptions of barriers to using income-based food programs



Coping Strategies

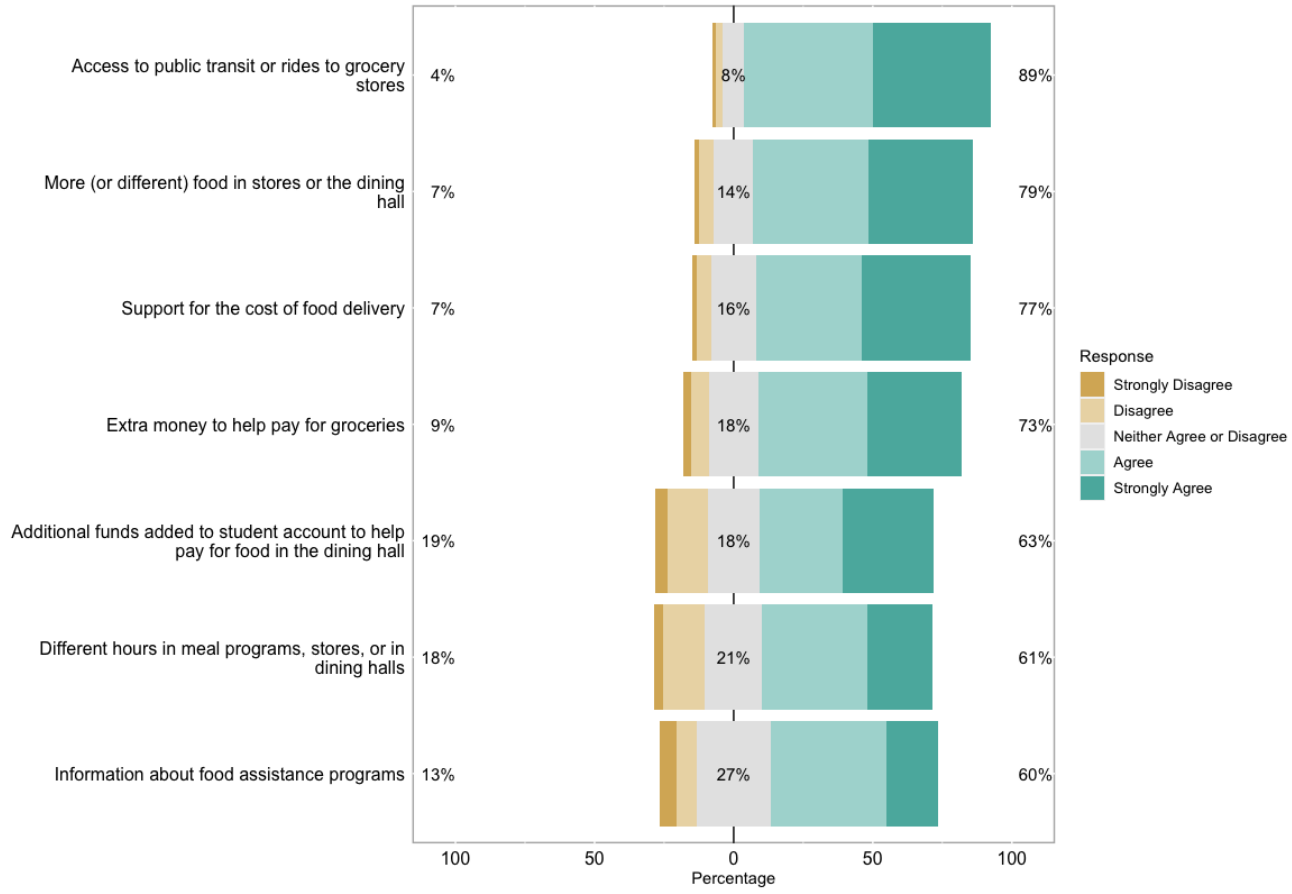
There is a wide selection of coping strategies that BC undergraduates are currently using, or would use, to obtain food (Figure 8). The most common strategies that survey respondents preferred were buying cheaper foods or meals, going to on-campus events that are offering free food, asking parent/guardians for extra money for food or add money onto the student account, and accepting food from friends. Notably, very few (11%) students said they use or would use an on- or off-campus food pantry to obtain food.

Figure 8: Food attainment strategies BC students currently use or would use to obtain food



Students were also asked their level of agreement on whether or not the following strategies would help their ability to obtain food (Figure 9). A majority (89%) of students agree or strongly agree that expanded access to transportation to area grocery stores would help with obtaining food. Other ways that students felt would be helpful to improve their access to food was a wider selection of food in the dining hall, and direct funds provided by the university for students to support the cost of food delivery, groceries, and additional funds added on student accounts for on-campus dining halls.

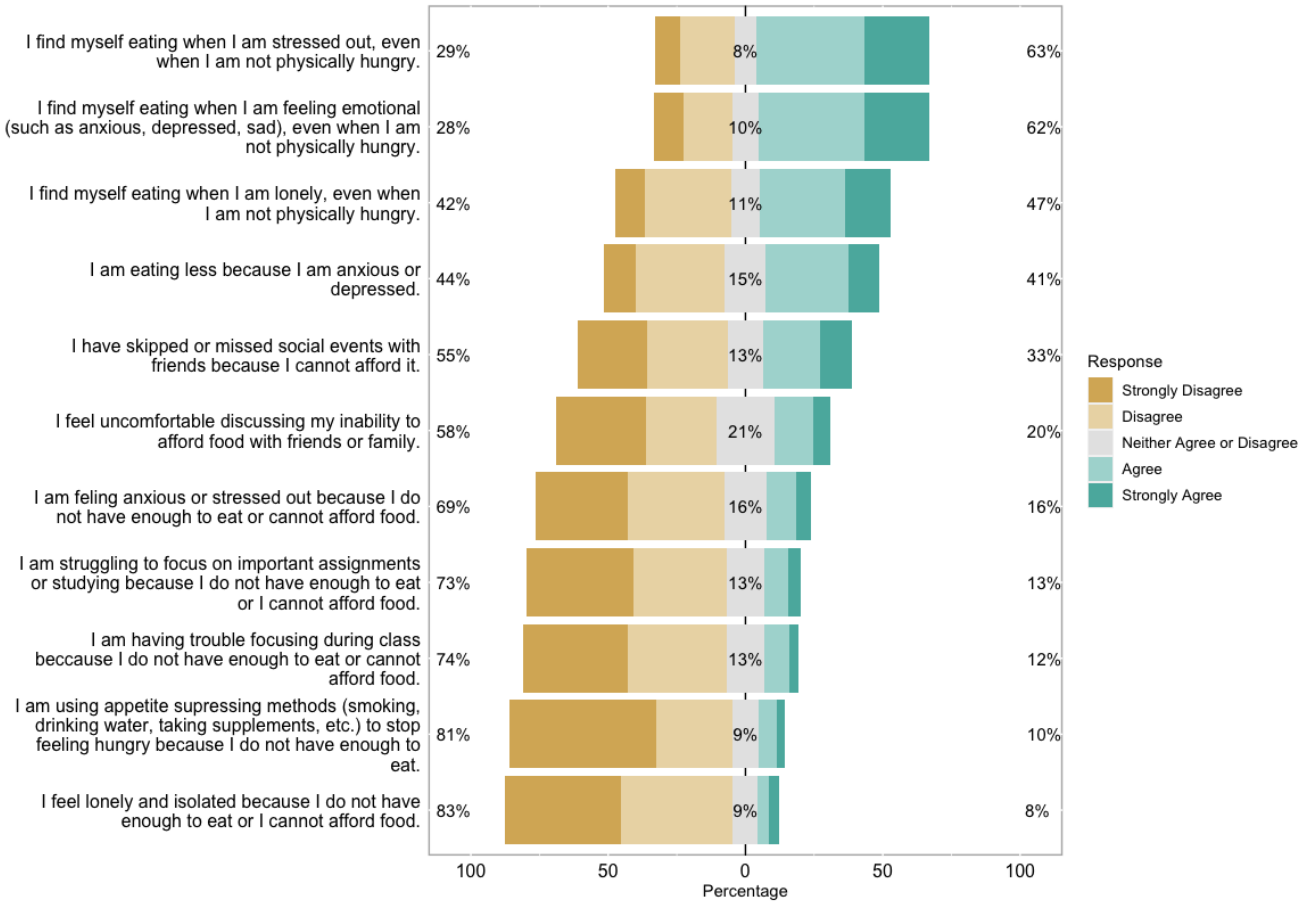
Figure 9: Strategies students believe would improve their access to food



Mental Health Effects

Students were asked if they faced any mental health effects tied to their situation with obtaining food (figure 10). Over half (63%) of survey respondents agree to some degree that they eat when experiencing intense feelings (stress, anxiety, depression, etc.), even though they do not feel physically hungry. Additionally, almost half (47%) of students either agree or strongly agree that they eat when they are lonely, even if they may not be hungry. On the other hand, a small proportion (8%) of students responded that they feel lonely or isolated due to not affording food, and a similar share (10%) use appetite suppressing methods, like drinking water or taking supplements, to stop feeling hungry.

Figure 10: Student perceptions of mental health effects



Open-Ended Survey Results

At the end of the survey, students were provided with free-text boxes to respond to the following three questions: 1) If you have experienced food insecurity while at BC, please describe your experience; 2) How do you believe BC should address food insecurity on campus? and 3) If you have any other thoughts about food insecurity, and food availability or accessibility at BC, please share them here.

Table 3 displays student responses to the first question about their experience with food insecurity while at BC. Student responses were organized according to three thematic elements: the physical & mental health toll of food insecurity, issues with meal plan & dining hall, and difficulties affording food at groceries and restaurants.

Physical & mental health toll of food insecurity

A selection of students reported experiencing detrimental physical and mental health effects due to food insecurity. Students felt anxiety around not being able to afford food, and this anxiety also manifested into physical effects, such as “dizziness, stomach aches, and occasional vomiting”. Additionally, due to not being able to obtain food, students have reported “chronic pain”, as well as “severe, unintentional weight loss”.

Issues with meal plan & dining hall

Many respondents reported being food insecure due to issues with on-campus dining halls and the mandatory meal plan. Students expressed frustration with the high prices of meals in the dining hall, and the meal plan not being sufficient enough to account for their needs. One respondent remarked how the $2,600 meal plan allotment each semester “only lets you eat twice a day if you plan to make it last”, and that the meal plan should be adjusted such so that students can “eat all 3 meals every day at the dining hall without breaking [their] budget[s]”. Survey participants especially found issues with how healthier options in the dining hall, such as fresh fruits and vegetables, cost significantly more than meals with less nutritional value. Students expressed that these products need to be more affordable so they are accessible to a wider audience.

Difficulties Affording Groceries

Many survey respondents remarked on how difficult it is to reach grocery stores near BC’s campus. Students have said that without having a car and needing to rely on public transportation or the BC run shuttle, it is a “severe struggle to grocery shop”. Additionally, respondents have noted that the grocery stores nearby campus, such as Star Market or Wegmans, are very expensive, and that they have to buy cheaper foods, like pastas and cereals, to afford something to eat. They also reported having to spend large amounts of money on their grocery

bill, but due to the high costs of living in the Boston-Newton area, this would only amount to a small portion of food that would only last them a week or two.

Table 3: Student responses to free response question one

Theme	Student Response
Physical & mental health toll of food insecurity	"My anxiety around food is heightened due to the cost of dining hall food and I am unable to eat balanced meals because I am concerned about the cost.
	"I have struggled to afford food, particularly since the pandemic. Although it is not a problem every week, during the weeks that it is, I feel anxious, tired, and struggle with dizziness, stomach aches, and occasionally, vomiting."
	"I've lost weight and experienced years of chronic pain because of lack of food and support. I'm hungry is my experience, and everyone just says the degree will feed me."
	"Bad allergies and BC dining hall doesn't accommodate – resulted in severe, unintentional weight loss."
Issues with meal plan & dining hall	"Every semester I have almost run out. It always gets down to between $20-$60. I am not an excessive eater. I eat 3 meals a day every day, and sometimes snacks. I guess I don't eat out or over food a lot, but I don't feel like I should need to do that to stay within my budget. I think I should be able to eat all 3 meals every day at the dining hall without breaking my budget. What about kids who pay for a meal plan but can't afford take-out? It really seems unreasonable."
	"While I was on the meal plan I ran out of money by eating 3 meals a day. The meal plan only lets you eat twice a day if you plan to make it last. I'm off the meal plan now and end up spending a lot on meals. Now close to finals I have ran out of money for food. And will be selling some personal items to make it through. Worried I will not be able to afford next semester."
	"Inflated prices at this school are obscene. For everything, but specifically the meal plan I paid eight bucks for two sausages – that's insane. I budgeted throughout the semester, but do not eat three meals a day nor do I consume enough calories for a man of my size and for how active I am. I have Celiac Disease, and finding food at food pantries can be tricky — plus I don't have access to a kitchen as a first year student."
	"At the end of the semester, I tend to run out of meal plan money to buy food and so I ask friends to use their meal plans (because they buy groceries and don't use their meal plans) or I go across campus to Playa or Crazy Dough. I don't feel comfortable asking my parents for extra money because they already pay for so much, including my education."

	"I have not felt like I have been able to afford adequate meals here at BC for the past 3 months."
	"The pricing of food is egregious. $26 a day is roughly two full meals. For an 18 year old male, this is simply impossible, yet this amounts to $2600 in the semester. The prices need to be cheaper, or they need to implement a meal swipe system."
	"My bill was overdue and my dining was revoked. Every semester I've spent at BC has started with at least 1 week of not being able to eat."
	"It is a bit exhausting to go through the process of determining how much you can eat, how much you can spend on food, whether you have to skip meals etc."
	"I have a disability that prevents me from going to the dining hall often, but disability services put me in a dorm with traditional housing and thus a required meal plan. Because of the money I sunk into a meal plan that is difficult for me to use, I am often hungry."
	"My meal plan has almost run out, but I was able to make it last by skipping meals and choosing less expensive options."
	"My food insecurity is rooted in an eating problem that was developed well before I got to BC. The food that is served here and the residential dining plans do not help in accommodating me. My biggest struggle is having too much money left over after the school year because I don't end up eating as much as I should throughout the year."
	"I have to eat vegetables to maintain proper bowel movements. Adding vegetables to one of the meals increasing the price to 20 dollars which is nearly the amount of money the school recommends I spend in a day."
	"While I think the food in the dining hall is very overpriced (especially for things like cereal which isn't even being made), and I worry that I will run out of meal plan money, I always have friends with a ton left on their accounts that would otherwise go to waste."
	"At the beginning of the semester, I ration my funds very tightly and don't eat enough and skip meals to make sure it will last me the full semester."
	"Throughout my time at Boston College, I have run out of funds on my meal plan almost every semester when using the required residential meal plan - for the most part this typically occurred by the middle of the semester. In the spring of my sophomore year the financial aid office provided assistance in the form of an additional grant to assist me in affording food, however, during my first three semesters I was unaware/afraid to ask for assistance and would often go hungry."
	"Mostly toward the end of the semester I have to really figure out how I will make my meal plan last, as eating 3 real meals a day is just not possible without adding money to your meal plan (which begins at a minimum of $800)."

	"The cost of dining hall foods for the small portion sizes makes it very difficult to make the meal plan stretch all semester, and because so many people at BC do not experience any food or financial insecurity, there is little discussion about struggling with this problem on campus."
	"I heavily depend on my meal plan. By this I mean that I get all of my meals from the dining hall unless there is a situation that prevents me from going to the dining hall (ex: when I go to work off campus). I finished my meal plan by the time thanksgiving break began, both last semester and last year. I did not have money in my meal plan to buy food. I tried buying cereal and oatmeal from the grocery store to try and support myself."
	"The only food insecurity I have felt at BC was last semester I realized I used much more of my dining plan than freshman year. I don't know why last semester was different but I did worry that I might not have enough for full semester. I ended up having enough money."
	"I have never directly faced food insecurity at BC because I work 20 hours a week in order to pay for my groceries. If I did not work this much, I would have more trouble affording food."
	"For me, the hardest thing was getting to a grocery store. When I do have the time to walk 20 minutes to the nearest grocery store, I then find myself struggling to carry 4 bags of groceries 20 minutes back to my dorm."
Difficulties affording food at grocery stores/restaurants	"Having a kitchen this semester has been tough; since my financial aid package has covered my meal plan for the past two years, I have had to pay out of pocket this semester for food."
	"I was never able to afford the food at Star Market or Wegman's and they are the more easily accessible stores to BC. I found myself asking for rides from friend to the closest Market Basket because it would cut my grocery cost nearly in half."
	"My food insecurity more comes during the weekends when Uber Eats or eating out happens. I feel perfectly secure with the food plan at BC, though I do wish it was cheaper per meal. I just run into problems when I personally have to pay with my own money for food because I cannot afford to do it if I want to use my money to pay bills."
	"I am a low-income student, and the only place I can afford to eat is the dining hall. I don't have enough disposable income to go to restaurants or order food, so I pretty much restricted to the dining hall food."
	"It is difficult to access grocery stores because of the distance from campus. additionally the costs are much higher in this area."
	"Working around 12 hours a week, but having to pay for my monthly tuition really just leaves me with about 30 dollars a week for groceries, which means I have to really minimize spending."
	"BC students have such little access to affordable food options. The nearest grocery store is over a mile away with one bus route that may or may not be running on BC's whim. Without my own means of transportation (car, living off campus) it would be a severe struggle to grocery shop."

	"Now that I do not have a meal plan this year and had to buy my own groceries, it's been hard to get the appropriate foods because the grocery bill is so expensive. I am not able to afford groceries sometimes which leaves me to buy food like ramen or ravioli that is affordable and filling."
	"When I don't have easy access to a grocery store but need groceries and can't comfortably afford the dining hall food. There are cheap ways to get to grocery stores (i.e. the T) but then the time it takes out of my day impacts my time to do homework and therefore impacts my grades."
	"During the COVID year, I lived in senior housing that had a kitchen, which meant I wasn't going to get a meal plan. I always had a meal plan before so it was easy to just go to the dining hall and go get food, but when that is not an option you have to start improvising. I also didn't have a job for the first time. I had one ever since I started my freshmen year than I got laid off because of COVID. Thus, I was in a dire situation I was never in before. I have no meal plan and I have no job to pay for food to make in the kitchen. I had some money left over in the beginning so I was able to buy groceries and couple of times but that was never going to last. Eventually, I found some friends that helped and we combined our money together to get food. We would go to all the BAIC events just so we can get a nice free meal. I asked Montserrat and they gave us gift cards but those wouldn't even pay for all my groceries for the week. I asked Campus Ministry and sometimes they helped us out here and there."

For the second question, respondents suggested initiatives that the BC administration should implement to alleviate food insecurity among the student body. Table 4 details the five themes that appeared from student responses: changing the structure of the meal plan, implementation of financial assistance programs, eliminating social stigma related to food insecurity, providing transportation to nearby grocery stores, and creating an on-campus food pantry.

Changing Structure of Meal Plan

Many respondents have expressed frustration with the high prices of food in the dining halls, and do not believe it is fair to be consistently concerned if they can afford to eat three meals a day. Many students have said they have to skip meals regularly to ensure that they have enough money to last the whole semester. For example, one student remarked that they have "to

skip breakfast in order to make the meal plan last the whole semester due to the high meal prices". Students believe that due to the high costs of a meal in the dining hall, many of their peers run out of meal plan funds before the conclusion of the semester. To alleviate this issue, students have suggested that the university either lower the average cost of meals at the dining halls, or increase the allotment of funds students get for the meal plan each semester. Additionally, many respondents suggested that the meal plan should be switched from an a-la-carte system to a swipe system. In this meal plan system, students can swipe into the dining hall, and get as much food as they would like, without having to worry about the price of every individual portion of the meal.

Financial Assistance Programs

Student believe there should be programs that support students' financial ability to afford food. One suggestion was if they were to run out of funds on their meal plan, the financial aid office would provide additional funds to purchase food at on-campus dining halls. Additional suggestions included being able to apply for funds to purchase groceries or food delivery. Several students also emphasized the importance of the administration paying special attention to low-income and Montserrat students, where these vulnerable populations should be receiving some financial support from the university, whether it be funds for food provided by on-campus eateries, or off-campus restaurants and grocery stores. One student remarked how important these programs would be for Montserrat students, and how these potential programs need to be discreet:

> *"In addressing food insecurity, BC ought to pay particular attention to ensuring that the funds offered to low SES students do not outwardly appear different from other students… If programs to address food insecurity are implemented, it is important that*

students are still able to use their Eagle ID card to make students not feel insecure in using these services".

Eliminating social stigma related to food insecurity

Students believe that if the stigma surrounding food insecurity were to be eliminated, then students would not feel as embarrassed to talk about the issue, and the administration could properly address their concerns. Due to the wide disparity in income and financial security on BC's campus, there is an assumption that not many students deal with food insecurity, where in reality, the population who is food insecure is sizeable. However, students suggest, if there are more ways to learn about how food insecurity affects their peers, whether that be through a "Ted Talk"-style program, or clubs and other organizations creating forums to talk about it, then students who are suffering from food insecurity would feel more empowered to discuss their concerns. Students hypothesize that if there is more discourse regarding food insecurity on campus, then administration will understand this is a matter that needs to be addressed.

Providing Transportation to Nearby Grocery Stores

Many students have expressed frustration with how difficult it is to get to nearby grocery stores. A majority of the nearby grocery stores are not within walking distance and are not accessible via public transportation. Additionally, only a small proportion of students have cars on campus, making obtaining groceries a challenge for most students. Survey respondents suggested that BC should expand their Wegmans grocery shuttle service, so that it can run other days and times besides Sunday mornings. Other suggestions made were that administration should provide funds for students to either use Uber or Lyft to go grocery shopping, or provide free T-passes to students to be able to go to grocery stores along MBTA train or bus lines.

Creating an on-campus food pantry

Many students appreciated the food closet offered by the Montserrat office. However, students have suggested that this program be expanded to a full-fledged food pantry with more perishable and non-perishable options, so that it can serve a wider range of student nutritional needs, as well as support a larger number of students.

Table 4: Student responses to open-response question 2

Theme	**Student Quote**
Changing structure of meal plan	"Offer more affordable meals and not make people pay for the mandatory meal plan since it is so expensive."
	"The dining hall prices need to change and there need to be better options for foods that are healthier without being super expensive."
	"Offer reduced price options for students who are lower-income."
	"More gluten-free options would solve my issue above. Regarding food insecurity, though, fruits/veggies need to be less expensive at BC. It's like twice the price to get a salad and side of fruit as to get a burger and fries."
	"I think that prices in the dining hall are ridiculously high. I think that making all students without kitchens have mandatory meal plans that they do not get back is unfair. I think that cutting off access to meal plans for forgetting to get COVID tested is abysmal; some students are able to use their parent's credit card without worrying about anything, while other students cannot afford to use their own money. Students who use their own money because their mandatory meal plan was shut off are not reimbursed. It seems like a decision that was made without the best interest of students' health and safety in mind."
	"I think BC should address food insecurity on campus by lowering the prices of meals. It costs more to eat in the dining hall than ordering out."
	"If they can, lowering food prices would be great. I understand there's going to be a difference in how much a certain meal costs or that sometimes bigger things cost more. However, I shouldn't have to pay $20+ dollars for my dinner. Especially when the $20 is also the only healthy option."
	"The price of some of the foods in the dining halls is much higher than the ingredients actually are. It would be helpful if students did not have to pay as much for food on campus."
	"The food in dining halls is ridiculously overpriced. We need a swipe system. We also need more options because, if you don't like the very limited selection of meals served that day, you're out of luck."
	"Lower the pathetic, discriminatory price of meals or provide more financial supplementation so that the basic right of three (balanced) meals a day is

	actually possible for low-income, high need students who cannot simply call home to ask that money be added when it runs out. I've had to budget and watch what I consume. It's stressful and alienating. And exhausting.”
	“I think that BC should either reduce the cost of meals in the dining halls or provide more funding to the meal plan, especially for students who may be at risk for or are currently experiencing food insecurity.”
	“Offer more money on the meal plan for free, reduce the pricing of meals, and add better food options with actual seasoning. Maybe switch to a buffet style or one time swipe style for food.”
	“Every student is allocated the same amount of money for meals, which is just a ridiculously stupid system. It blows my mind that BC does not have a swipe plan where students can enjoy as much food as they want at every meal. Every student eats differently, and students that burn more calories and are larger will in no way have enough money to support themselves through the whole semester, while students who eat less have a ton of left over money. BC scams its own students with the dining plan by forcing us to be a part of it. I would rather have my parents give me the same amount of money for food so that I can eat off campus every day.”
	“They need to lower prices. I don't have any particular qualms with quality of food, as it does surpass most other colleges. However, the prices are absurdly high, especially relative to portions. A very small bowl of pasta with meatballs should not be $10. When I was home, I used to think that eating Chipotle was treating myself , because it would be around $11 dollars for a burrito bowl. That is literally the price for pretty much every meal here. It’s disgusting and absurd. The burrito bowls in the Eagles Nest, with worse quality ingredients and smaller portions, are the same price as a burrito bowl from Chipotle. I honestly can't believe how bad this college is with food. Students should organize a hunger strike, it's the only thing that will effect change. Every single day is a struggle with a meal plan. $26 a day cannot be a standard. That equates to about 2 and 1/2 very moderately sized meals. That is not sustainable or healthy for an 18 year old male.”
	“Lowering their prices or even adapting buffet-style dining like Northeastern University. The latter's just wishful thinking but I often think about how much healthier I'd be if I went to Northeastern instead of BC. Also, if BC doesn't do this already, directly notifying students if they are eligible for certain food/financial programs.”
	“I think that BC should reduce the prices of some of their meals. While I understand that some meals are more expensive to make, all meals should not that costly. I also think that the cost barriers that arise because of BC's a-la-cart system, and the fact that many of the places on campus that serve food do not take residential money, because food inaccessibility.”
	“BC could also decrease the price of meals, as even with the meal plan, I find myself having to skip breakfast in order to make the meal plan last the whole semester due to the high meal prices.”

Financial assistance programs	"I would hope there were programs students could sign up for to either grant dining hall money, or provide on campus groceries for the week. Even if a local food bank provides food, a student has to pay for transport there and back, its expensive and timely."
	"BC should be much more aware of the struggles that many students on this campus face. Accommodations should be made for students with demonstrated financial need once they are no longer provided with a meal plan."
	"I think including more food assistance under Montserrat might be helpful. The food pantry there is a great resource, but not always helpful to those without a meal plan. Having assistance for meal plan payment may be helpful, especially since all first and second year students are required to be on full meal plans. I am also able to get meal coupons through work which has been helpful in my budgeting and grocery shopping. This might be helpful for other students working on campus jobs."
	"I think BC should start by decreasing the prices at the meal plan. Then they should offer food assistance programs to students in Montserrat. I also think if I was allowed to have a car on campus, my ability to get food and earn money (through DoorDash) would tremendously help my problems with food."
	"Directly approaching students that fit the criteria without broadcasting it."
	"Provide more money to Monserrat to build out their food pantry and/or make that a separate thing so that more attention can be paid to it instead of spreading Montserrat staff thin."
	"I believe, if possible, BC should try to aid these students with money or dining hall money in order to help with food insecurity."
	"I think that BC needs to implement programs to make meal plans more affordable, both for students living on campus who may run out of funds, and for students living off campus who cannot afford to eat. In addressing food insecurity, BC ought to pay particular attention to ensuring that the funds offered to low SES students do not outwardly appear different from other students. For example, in prior years at BC, the Montserrat tickets for the sports 'Gold pass' used to be identical to other students, with everyone simply showing a pass on their phone. The past three years, however, Montserrat has had to have students come pick up physical tickets, making students of low SES backgrounds 'stick out' from the rest of the student body. If programs to address food insecurity are implemented, it is important that students are still able to use their Eagle ID card to make students not feel insecure in using these services."
	"They should be able to support people with food insecurity by adding extra to their meal plan, covering the cost of groceries or delivery fees."
	"BC should give the option of letting students apply for grocery money so that they don't need to spend out of pocket and also have the ability to feed themselves if the dining hall isn't providing adequate food for them."

	“I think that students struggling should be able to have meal plans at a reduced cost or get access in other ways such as stipends.”
	“Provide assistance to those who need it. Give these students money for groceries, or free meal plan money. Students need it. BC can afford it. Having food to eat is more important than nice-looking grass on campus.”
	“There should be an option to provide additional dining hall funds for low-income/high financial need students who can potentially run out of their meal plan. Once the student lets the office know that they are running out or have run out of meal plan balance, then that is when the additional funds can be applied.”
	“Give Montserrat students more money and more accessible transportation to go buy groceries. Provide Montserrat students with apt style housing with a partial meal plans
	I also think that BC dining should have at least one 'free' day per week or every two weeks where students can receive meals at the dining halls at no cost to help those who cannot afford the dining hall meals.”
Eliminating social stigma related to food insecurity	“Food insecurity should be addressed on campus. Just because Boston College is a predominantly white and wealthy campus, that tends to make people ignore that there are students on campus that are facing food insecurity and don't have enough money to feed themselves.”
	“Sometimes we are so immersed in our own experiences that we forget that others are going through different struggles like food insecurity. I became aware that food insecurity is a reality because I had one of my friends explain her situation in high school. I think that a 'Ted Talk' experience where students can share their experience would be moving and help them feel comfortable in a community that's more supportive.”
	“Host information sessions to inform students on resources available to them and/or methods to cope with food insecurity concerns on campus.”
	“I believe there should be more resources (websites, public speakers, school-wide emails) to spread the information to students and faculty.”
	“BC should talk about it more freely instead of making financial aid and support services seem like a secret or something to be embarrassed about.”
	“Maybe pointing out to the student public to be more sensitive about eating out like it is a given when it really is a privilege not everyone can afford.”
	“Information on dorm bulletin boards, email notifications, more information in general.”
	“Yes, I believe it is a 'hidden issue' meaning that it is happening but people aren't talking about it or aware of it.”
	“I also think that more education around food assistance programs would be helpful in addressing food insecurity on campus. I did not know that college students may be eligible for these resources.”
	“I think that there are a lot of great resources in newton and the Boston community that BC could share with students and yet it is something I rarely hear BC talk about.”
	“I think food insecurity is taboo on campus, and some are ignorant that this is a topic that people struggle with.”

	"The school should be reaching out to students, rather than wishing students would reach out. Food insecurity can be embarrassing for some, and they may be too anxious to ask for help."
Providing transportation to nearby grocery stores	"BC should also provide more regular transportation to grocery stores. I know that there's a bus to Star Market, but that's a pretty expensive grocery store and I'm sure there are students who would prefer to shop somewhere cheaper."
	"Provide access to grocery stores with lower prices by having public transportation (ex. buses) running to these places."
	"It's not feasible to install a grocery store on campus and BC would overcharge anyway. There should be more frequent bus trips to Star Market/Wegmans in Chestnut Hill, not just on Sundays."
	"Make the grocery stores more accessible! It is so hard to get to and from any of them, there is no convenient way."
	"Offer more options for transport to more affordable grocery stores."
	"Access to grocery stores around campus remains an issue for those without a car or funds for rideshares. BC should bring back the Star Market shuttle that was present pre-COVID, and it should expand the Wegmans shuttle (perhaps to an on-demand basis instead of two days a week)."
	"Transportation to grocery stores near campus. Chestnut Hill is a food desert, and most students don't have a means of transportation. BC needs more shuttles to places like Star Market and Wegman's."
Creating an on-campus food pantry	"I think BC should host an on-campus food pantry for students who need it. There could be collection boxes in the dining halls and res halls and these could be given to Montserrat."
	"I believe BC should offer a food pantry on campus accessible for all students. Montserrat has been such a great help with their food pantry and I wish they would be able to receive more funds from BC to make the pantry accessible on a wider scale. I also would love BC stop the stigma of food assistance programs and talk more highly of the benefits that students can receive if they are dealing with food insecurity."
	"BC should have a food pantry for food insecure students. They should also provide financial assistance to students who can't afford food."

Students were asked if they had any other thoughts about food insecurity at BC. Table 5 shows the three themes that arose from this open response question: changing the meal plan structure, creating more diverse options in the dining hall, and the importance of implementing food programs.

Changing meal plan structure

As reported in the last question, students have expressed their dissatisfaction of the current meal plan system, and have requested an overhaul of the system. Currently, the meal plan allotment of $2,600 allows students to eat approximately 2 meals a day. Several students believe that this is insufficient, as many students need to eat three meals a day to have their nutritional needs met. Several students believe that the meal plan needs to be more flexible, and there needs to be options for students to either buy a full meal plan, or portions of it in order to fit their needs. One student wrote:

> *"All of the students that I have talked to wish that the mandatory dining plan was more flexible. For people like me, we end up forcing ourselves to drink or eat more than we can in order to try and spend the money that our parents were required to pay for. If we do not do so, the money is taken. This harbors a lot of anxiety throughout the year, especially for families that cannot afford to lose that money."*

Creating more diverse options in dining hall

Many respondents reported being frustrated with the limited options of food in the dining halls. Students believe that there are not enough options for meals, and if the main dish being served does not meet their preferences or needs, they to resort to skipping that meal altogether. Respondents also reported that if they have a dietary restriction, it is very challenging to find meals that are meet their needs. One student, who is a vegetarian, wrote about their experiences finding meals in the dining hall:

> *"BC needs more filling, more nutritious meals, especially for students who do not have a traditional diet (e.g., vegan, vegetarian, gluten free, etc.). On campus dining leaves me hungry, and the meals are in no way balanced; that is, they are generally processed and lack supplements like fruits and vegetables. I can't afford to spend $1.50-3.00 on an*

apple or a banana every meal, and I definitely can't afford to pay for a full entree just to get an adequate serving of vegetables (to the extent they are even serving them on a given evening...). I'm biased, but I think this issue is more acutely felt by vegetarians and vegans on campus since vegetarian/vegan meals usually consist of some soy product and rice and do not come with any sides. Over the years, I've fallen into the habit of buying a bag of chips to help me feel full, which is terrible. I know this is different from food insecurity, but I think it's still relevant. BC effectively makes students spend more on more filling/better foods."

Implementing on-campus programs

Respondents have expressed being upset with how there could be more done to alleviate the issue of food insecurity on campus. For those who have kitchens on campus and have to go grocery shopping, respondents suggested having more transportation to nearby grocery stores. One student suggested having discounted or free T passes for students so that they would be able to travel without thinking about the cost burden of having to take public transportation. Additionally, students have suggested that having an on-campus food pantry or more on-campus markets would assist with students having greater accessibility to food.

Table 5: Student responses to open-response question 3

Theme	**Quote**
Changing meal plan structure	"I also think it is ridiculous that there are separate plans for some other places on campus such as Coro cafe, the chocolate bar, etc. I should be able to use my residential plan on all on-campus locations."
	"I feel that it would be beneficial for BC Dining to allow meal plan money to go toward any of the dining halls/ cafes on campus including Hillside and CoRo that it did during COVID. Hillside has many different food options including personal yogurt packages and a diverse array of sandwiches and fruit that is not available at a dining hall. We only get $175 toward residential cafes which I personally feel is absurd since it is our money. We should choose where it goes."

	“Students shouldn't feel like they're having to ration their food in order to survive the semester. They also shouldn't be struggling to make their meal plan last for the semester, or lose the money they haven't spent in the dining hall because they weren't able to eat the food that's there. Students shouldn't be required to get a meal plan if they don't want to because the university doesn't provide food that everyone can eat. It's completely inequitable to have to pay for a meal plan that won't be used, and then also have to pay for groceries to cook or pay for eating out.”
	“All of the students that I have talked to wish that the mandatory dining plan was more flexible. For people like me, we end up forcing ourselves to drink or eat more than we can in order to try and spend the money that our parents were required to pay for. If we do not do so, the money is taken. This harbors a lot of anxiety throughout the year, especially for families that cannot afford to lose that money.”
	“The standard meal plan should be enough for 3 meals a day. Two meals a day is not enough food for college kids, especially guys. Last semester, I had almost all of my male friends texting me because they ran out of funds and did not have enough money to pay for meals.”
	“I would like the meal plan to be structured towards being enough for three full meals per day. Right now, if someone ate three meals a day, they would run out of meal plan before the end of the semester. When I was on the meal plan, I ended up limiting my meals freshman year and used not wanting to ask my parents to add funds as an excuse for why I ate less. I knew my parents would be okay with adding funds, the underlying problem was that it was difficult to compare myself with others who complained about having too much meal plan money left since they didn't eat enough.”
	“Please lower prices or implement a swipe system, or offer other restaurants and food vendors on campus. BC dining is scamming the students here every day by having a monopoly and charging egregiously overpriced and very small 'meals.'”
	“Food is overpriced, and people with flex plans cannot afford it.”
	“One of my friends who graduated from BC last year grew up in a low-income, food insecure household. She didn't have a job until a couple months after she graduated, and she felt very stressed about that and constantly worried about paying rent and paying for groceries. I noticed that while she was a student and after she graduated, she would tell me that she wouldn't go grocery shopping for long periods of time (over two weeks) because she didn't want to/couldn't spend the little money she had. So, she would not eat for the entire day because she didn't have food in her apartment, and then she would order Uber Eats. I thought this was concerning because the food she got delivered would cost up to $20, and so this seemed unsustainable and expensive to me. However, I think that in her mind, the smaller Uber Eats bills were easier to pay than a larger grocery store bill. I thought that it was striking how she would wait until she was extremely hungry/needed food immediately and then pay for a smaller quantity of more costly food rather

	than going grocery shopping, and I wonder if that is a characteristic of food insecurity."
	"The price of food at the dining hall is very expensive when evaluated on portion size. I get a small portion size of food but still get charged a lot of money. The salmon is a very small portion but costs almost $18 with tax. It does not fill me up at all and I then get hungry in a short amount of time and have to buy more food from the dining hall which is going to be another $15-18 dollars. There are also other examples of how the food is so overpriced for such small portions it is frustrating that BC uses this system of meal plan instead of just a swipe into the dining hall and obtaining the food necessary for each person's dietary needs."
	"I think inflation related food costs are going to be the biggest challenge as we graduate; meals also get skipped not because of coast but because dining hall does not have enough foods that fit allergy or diet."
	"Though not a particular issue for myself, I understand that sometimes the prices of food can be a lot for those struggling. The prices can add up a lot of over time, which might strain some students' financial capacities."
Creating more diverse food options in dining halls	"The food is not good at BC, there needs to be more diverse food options available. It stinks that on a day when I don't like the rotated food item I have to then get chicken and a side. Also any dish with rice is treated like rice is the main part of the meal and whatever protein is the side. I'm sick of eating rice."
	"BC needs more filling, more nutritious meals, especially for students who do not have a traditional diet (e.g., vegan, vegetarian, gluten free, etc.). On campus dining leaves me hungry, and the meals are in no way balanced; that is, they are generally processed and lack supplements like fruits and vegetables. I can't afford to spend $1.50-3.00 on an apple or a banana every meal, and I definitely can't afford to pay for a full entree just to get an adequate serving of vegetables (to the extent they are even serving them on a given evening...). I'm biased, but I think this issue is more acutely felt by vegetarians and vegans on campus since vegetarian/vegan meals usually consist of some soy product and rice and do not come with any sides. Over the years, I've fallen into the habit of buying a bag of chips to help me feel full, which is terrible. I know this is different from food insecurity, but I think it's still relevant. BC effectively makes students spend more on more filling/better foods."
	"We need to meet the dietary needs of all people and not push them aside to figure it out."
	"Students should be able to find meals that are nutritious, healthy, and also enjoyable to eat on campus, and within the budget of the meal plan that they receive. A vegan student shouldn't have to settle for eating fruits and vegetables every day. A Muslim or Jewish student shouldn't have to question what types of meal have been on the same grill as the food they're about to eat. BC dining is not comfortable for many students, and the university doesn't seem to care, despite years of complaints."

Implementing on-campus programs	"I think it would be beneficial for some group on campus (unsure who) to host some kind of event where they talk about how to budget money for grocery shopping."
	"For those of us who do have kitchens, having grocery staples available to buy somewhere on campus would be helpful. I have to wait until someone with a car is going grocery shopping and sometimes it is weeks after when I should go."
	"I wish the extra money from dining hall plans could be used towards helping with food insecurity of others."
	"I think Montserrat students, especially ones without a meal plan, should receive a stipend for groceries and/or food delivery."
	"Access to a food pantry. Free Charlie card funds so that students can get to off campus grocery stores Easier. There is a lack of accessibility at Boston College, and I can't afford to Instacart, that is not the world or a reality that I am in anyway a part of. It's insane how discriminatory this institution is."
	"Although these programs will likely not benefit me, as I will be graduating, I sincerely hope that BC considers implementing services to help those struggling to afford food so that they do not have to feel uncertain where their next meal will come from. I would just echo the thoughts I already shared. I think if CAB could come up with more promos with delivery services that would be fantastic. Additionally, I think a swipe system would benefit students who struggle with food insecurity so they could afford to eat more per swipe than having to pay flat rates for everything."
	"I would love to see a Montserrat food assistance program that helps students afford their groceries if they face food insecurity.
	Food accessibility programs at BC should be implemented at all the dining halls! It would be a great program that could help those suffering from food insecurity be comfortable to ask for help."

Interview Results

A total of six students were interviewed regarding their experiences with food insecurity at BC. Two students were sophomores, two students were juniors, and two were seniors. Half of the sample identified as female, and the other half as male. Two students identified as white, two as Hispanic, one as Asian, and one as Black. One interviewee was an international student.

Six large overarching themes were discussed among all interviews: the barriers to achieving food security, coping mechanisms that students used to alleviate food insecurity, perceptions of the SNAP program, how food insecurity has impacted their overall wellbeing and

health, how COVID has affected food insecurity, and programs that should be implemented to eliminate food insecurity at BC.

Barriers to Achieving Food Security

When asked about their experiences with food insecurity, interviewees pointed to two main causes of their inability to access food: issues with accessing food via on-campus dining halls, and difficulties with accessing food at off-campus eateries or grocery stores.

Challenges with accessing food on campus

One large issue that was brought up in all interviews was the obstacle of obtaining food from on-campus dining halls due to the structure of the meal plan. With students having to buy each individual portion of their meal, all interviewees recalled the stress associated with having to budget their meal plan to ensure that they would not run out of money before the end of the semester. For example, one student, a current junior, recalled his experience during his first year at BC:

> *"At the beginning of freshman year, it was kind of tough because the first couple of months I would really be, you know, looking at the prices in the BC dining halls and see okay, I can buy this or I can't buy this. And that's obviously different from a lot of universities who just have the universal swipes at least for freshmen, where they can just go in and get whatever they want, so that was a bit of an adjustment for me."*

Another large issue with the dining hall that students remarked about are the limited options of food that is offered by BC Dining. There is a lack of options for those who have dietary restrictions, like being vegetarian or vegan, and that if you have one of these dietary restrictions, your meals are very limited. Many of the interviewees felt as if many of the meals offered in the dining hall lacked substantive nutritional value, and there is a lack of fruits and

vegetables integrated into the meals. To receive a balanced meal, students have to go out of their way to ensure that they got a fruit or vegetable in their meals by going to the salad or fruit bar, but this would be associated with an additional cost that would cause an increased burden to their concerns with the meal plan. One current senior recalled her experience with obtaining nutritious meals her freshman year:

> *"There's not a lot of fresh fruit, so there are nutrition limitations at the dining hall. I think a lot of the fruit there is frozen, and there's not a lot of variety. The actual dishes don't have a lot of fruit or vegetables in them. When I was a freshman, it was very difficult to get a balanced meal, because you'd have to buy a main dish, and then you'd also have to try to get a side of fruit and vegetables to go with it."*

Lastly, many of the interviewees were frustrated with the accessibility of the dining halls. A few students said that the hours the dining halls were very limited, and that they generally did not line up with their schedules. With work, sports practices, jobs, and other extracurriculars, the dining hall would not be open during the times that they needed them. This resulted in skipped meals, or purchasing food from off-campus grocery stores to store it in their room for something quick to eat. One sophomore student recalled:

> *"I joined the rowing team, and I felt like I was hungry constantly, and because of my practice times, the dining hall wasn't open after my practice. So, I could not go to the dining hall to eat. Then, I either had to buy extra food before, which was usually breakfast, because our practice slots go for 11 to 3pm. I was hungry a lot, and the dining hall was not open when I needed the food, so I had to either buy food outside or go to the grocery store and keep something in my dorm room, which was a little frustrating."*

One student also remarked how the dining hall is not accessible due to the location of her dorm. Her dorm was not on the immediate main campus, and she is not able to go to the dining hall often, but still is required to have the full mandatory meal plan. She believed that this was an unfair policy because she was required to buy the meal plan, but she does not use it very often due to how far the dining halls are:

> *"I have a mandatory meal plan, but I am located kind of far from campus. I was placed in a dorm that has a kitchen, because I have a disability that makes going to the dining hall difficult sometimes. So, I was not allowed to drop the meal plan, even though it's not something that's accessible to me. So, a lot of the time I find myself unable to get to the dining hall to get food, and because I've sunk a lot of money into the meal plan, I don't really have money to buy food that's accessible to me here."*

Challenges with accessing food off-campus

All interview participants discussed the difficulties of accessing food off-campus. One common thread between all participants was the challenging logistics of getting to local grocery stores from BC's campus. With none of the interviewees having cars on campus, they either had to rely on friends who had cars, or on public transportation to go grocery shopping. One student remarked on that without a car, being able to get groceries proves to be nearly impossible:

> *"I think having a car is huge. I feel like if you didn't have a car, or know someone who had a car, you really obviously struggle to get food, because the Star Market within walking distance is pretty small."*

Multiple students also remarked how juggling a full course load, along with extracurricular activities, is difficult to find the time to be able to go grocery shopping. Especially having to coordinate with friends, or taking public transportation, going grocery

shopping takes students upwards of two hours or more roundtrip, which caused stress for students, who believed that this time would be better spent studying or completing homework:

> *"I'll use the weekend, for studying for an exam, let's say, and going to the grocery store takes, like at least two hours out of my day, just like getting there, seeing what I need to get and then leaving. So, it can be pretty time-consuming doing that."*

Lastly, the major barrier for students when accessing food off-campus was the high prices associated with buying groceries. A majority of students interviewed had jobs that they used to support the cost of tuition, books, and other bills, which left them with a small portion of their paycheck to pay for groceries. One student remarked that with her income, she is only able to go shopping once a month, making the choices she makes at the grocery store very limited. With only a few dollars to spend on groceries, students remarked how they would buy cheap and filling items, such pasta, rice, and cereal. Students desired to be able to purchase nutritious foods, like fresh produce, but did not believe that this was possible due to their strict budget restraints. Additionally, students remarked that with the high cost of living in the Newton area, food at nearby grocery stores is very expensive, and that if it was possible, they would travel to other parts of the Greater Boston area to get groceries.

Coping Mechanisms

Interviewees brought up several different coping mechanisms that they used to manage food insecurity: help from friends and family, using on-campus assistance, and utilizing financial assistance programs.

Help from friends and family

Many students expressed how instrumental their friends and family have been in helping them obtain food. For students who face food insecurity, having supportive friends is something

that is essential in their ability to obtain food. Students have recalled times when they would have friends pay for food in the dining hall, purchase food at off-campus eateries, or go to friends' dorms in between classes to grab a quick bite to eat. One student talked about her relationships with her closest friends, and how she feels that there is a sense of community and duty to help their friends who are having challenges obtain food:

> *"Some of the friends I'm close to will actually send me food sometimes. I have a few friends that they'll sometimes buy me food outside of the dining hall, and I'll buy them a meal inside the dining hall. So, I think there's a fair amount of camaraderie about it, for the most part, with the people I'm very close to."*

Additionally, many students recalled how they have been able to have their parents or other family members help them financially when they are having issues affording food. Their parents would either give them money to buy groceries, or add money to their student accounts to buy food in the dining hall if their meal plan funds were running low. One student recalls a time when they were able to have their parents add money to their student account after having a conversation about their worries surrounding food:

> *"I chatted with my parents and they said, 'Just don't worry about the prices of things, get what you want, make sure you're fed, make sure you're eating.' And then they said they can pay for any kind of upgrades [on the meal plan] that I might need."*

One student also discussed how his mother would help him by sending him food, and bringing him grocery shopping when she could:

> *"My saving grace was if I could call my mom, and she would bring me something, help me go grocery shopping. But, she works full time, and I'm a first generation student, so I*

can't ask her for support that often. But, when she hears that I haven't eaten, she stops everything she's doing and does what she can."

Utilizing on-campus assistance

Students who are experiencing food insecurity utilize on-campus programs run by campus organizations. Both the Thea Bowman Intercultural Office (BAIC), as well as the Montserrat office have food pantry-like programs that students have gone to receive snacks, non-perishable foods, and toiletries:

"I do know that the [BAIC has] the Sister Thea's Hospitality closet. I think with that it's actually very helpful because I believe they have stuff that aren't just grocery-related, but I think they have things like shampoo or tampons or things that are just necessary but maybe present a barrier to some students."

While students are appreciative of these services, there still is a desire for these organizations to expand their food pantry services, and provide a wider range of food, as well as provide gift cards for local grocery stores, and discount codes for food delivery apps.

Using income-based programs

Two students interviewed reported using SNAP benefits to support their ability to go grocery shopping. One student discussed how she learned about SNAP through a friend, and with their help, was able to sign up for the program. Since receiving SNAP benefits, she has been able to afford getting groceries, however, prior to receiving the benefits, she had a difficult time purchasing appropriate and nutritious food:

"It was just a friend who told me about [SNAP]. And the friend was really nice, and sent it around to students he knew who were in Montserrat, or sending it to people who he knew might benefit from it. For me, I am in Montserrat so it was very helpful…So I applied to get an EBT card and I was granted it…I did buy food in the meantime while I

was waiting [for the SNAP benefits], but I was a little more mindful of what I was buying. When I did get the EBT card, though, it made buying groceries a lot easier. I have used Amazon delivery services because the SNAP benefits work through that, so it just gets delivered."

Perceptions of SNAP

When asked about SNAP, all interviewees had heard of the program, but more than half did not know college students were eligible. When asked about the specifics of the program and what populations it serves, students knew that SNAP benefit eligibility relied on an individual's income, but did not know more than that:

"Yeah, so I know SNAP is the Supplemental Nutrition Assistance Program. I know it's federally run and then they have state and local branches I think. Based on my understanding of it, it's for people with different incomes, and if you have a certain income you qualify for the program. And then you get, I think it's a certain amount of money per month to purchase food. I don't know the full extent of the program, though."

Upon learning that college students were eligible for SNAP benefits, interviewees thought that this information should be disseminated widely among the student body, so to make students aware of the program, and to encourage students to sign up for the program. Students believed that campus organizations, such as Montserrat or the Office of Financial Aid, should identify students who may qualify, and make them aware of the program:

"I feel like it could have been something that could have been told to us, fairly easily, with our like financial aid package. That probably wouldn't have been too difficult to have done."

"I feel like it would be actually very helpful if maybe the Montserrat office publicized it to its students who are juniors, seniors, because I feel like it would make more people utilize it. I feel like it is definitely a stressor to be a college student, and then work jobs. Some students have multiple jobs, some just work one job. Then they also use that money to either pay for food or also like saving for tuition/paying tuition. So, I feel that if more students were aware that they would apply. But, I feel like it may be just that students aren't aware of it, so they don't apply, but specifically to students who are in Montserrat. I don't know what other offices would be good, per se, to publicize it, but I feel like definitely for Montserrat students, it would be kind of a helpful thing to be aware of."

Overall Health & Wellbeing

When talking about their experiences with food insecurity, students mentioned a host of psychosocial and physical health effects tied to their experiences with being food insecure. These effects include: feeling left out and alone, detriment to academic performance, stress, and the physical manifestations of food insecurity.

Feeling left out

Interviewees facing food insecurity reported feeling somewhat ostracized from their peers who may not have as much issues obtaining food. These students felt like they were not able to relate as much to their peers, and were not comfortable talking about their inability to afford food. Additionally, interviewees felt self-conscious in social situations with friends who may want to eat out or go to dinner frequently. If they did not have money to afford these outings, they felt as if they could not participate, and felt out of place in their friend groups. One student talked about how even if there is not active judgement coming from their friends when they choose to go out to dinner, it can still feel very isolating to be the only one not participating:

"Yeah, I mean, it's fairly common, especially when I have friends who want to go out to eat, or just want to order food all the time, that's just not really an option for me. It's not like they're proclaiming active judgment about it, but it's a silent thing that is there. And you can still kind of feel it, that you're kind of being left out, and that you're being judged, and there's some silent assumptions going on."

Detriment to academic performance

Students reported that food insecurity has negatively affected their academic performance because they spent more time thinking about when or how they would get their next meal than on their academic responsibilities. One student mentioned how that due to his class schedule, he could not go to the dining hall before one of his morning classes, leaving him hungry and sluggish during the class, and not being able to focus. Several students also mentioned how going grocery shopping is a large burden for them, because they feel as if it takes up a significant portion of their day when they can use that time to study or finish homework. One student talked about how they know getting enough food is important, but their academic success takes precedent in their life at BC:

"I often just [do not go grocery shopping] because my workload is just so much. I just cannot afford to go, because at the end of the day, I'm here to study, but at the same time it is so frustrating. Sometimes, when I'm studying, I'm really hungry so, then sometimes, if I don't eat because the dining hall is closed, or their options for not like suited to what I am trying to eat or something like that, I just find myself thinking constantly about how hungry I am, instead of focusing on my homework. So, it ends up backfiring."

Stress

Interviewees felt as if their experience with food insecurity has caused undue stress, due to having this issue be on their minds 24/7. For those who rely on the dining hall, they felt that

the stress of having to budget their meal plan has affected their mental health negatively, and feel as if that this should not be something that should be normalized across the student body, because of all the other stressors that college students face. Interviewees who go grocery shopping regularly felt stressed consistently due to having to worry about budgeting their income to have enough money to go grocery shopping, as well as having to deal with the logistics of getting to the grocery store. One student discussed how before she got SNAP benefits, she was stressed with the daunting task of having to afford getting groceries:

> *"I think I only went shopping once between the time that I applied and when I actually got the SNAP benefits, so it did last me long enough for however long that time span took. But, I will say I think I was stressed waiting. I think at the end, actually I probably was running low on groceries, and wanted to buy different things. But, I did want to wait until my application got approved. So, I think it was kind of a mix of it was fine and it worked, and I ate everything, but then near the end I did kind of want to go shopping again but use the benefits."*

Physical manifestations of food insecurity

Interviewees reported feeling a host of different physical responses due to not getting enough food throughout the day, or not getting enough nutritious foods regularly. Some students discussed that because they have had to regularly ration food, they have lost substantial amounts of weight, and has affected how others perceive them. Multiple students recalled how they regularly had very little energy and being tired due to not being able to have enough food throughout the day. One student talked about how the feeling of low energy is not new to them, but still impacts their day immensely:

> *"Yeah, I think, I'm kind of used to it, in some sense, because I grew up in a low income household. So it's not exactly new to me, but it does get difficult sometimes when I'm very*

hungry during class or during a test, that gets kind of hard to ignore. There have been times when I've started to realize that my blood sugar is probably very low and it's dipping right when I'm supposed to be in a class, and then I start getting dizzy when I'm supposed to be in a class, and that definitely does affect it. I try to push through as best as I can, but there's just some biophysical reactions that can't really be pushed through."

COVID-19

Students remarked that the COVID-19 pandemic has affected the way they choose what to eat, and how they obtain food. The main ways that the pandemic has exacerbated food insecurity is less options in the dining hall, social distancing measures, and fewer options in grocery stores.

Less options in the dining hall

All students interviewed remarked how due to the pandemic and supply chain issues, there have been less options in the dining hall. Several students have seen the dining hall advertising that they may be missing a few key ingredients, like meats and fruits, due to supply chain issues and backorder, and that they are trying to supplement these gaps with other options. However, the lack of these foods has impacted how students choose their meals, and that what the dining hall may be serving does not fit their needs:

"The options were very limited. You wouldn't be able to choose your sides at all, it would just be that you choose your main course and then they fill up your compostable container with whatever sides they had, which was kind of tough because sometimes you get lucky and sometimes you wouldn't and you still pay the money for it anyway, so either you eat it or throw it away. But, yeah I think last year was difficult. I definitely felt like I

got less nutrition for sure last year, just because they didn't have any of the self-serve stations, so it was harder to get access to that, and the options were just more limited."

Social distancing measures

During the 2020-2021 academic year, the on-campus dining halls implemented social distancing measures to slow the spread of COVID-19. This included de-densification and capacity limits in the dining hall, which resulted in very long lines that would go out the door during popular meal times. Because of these long lines, students recalled that it may have taken them upwards of an hour to get their meals, and that you would have to prepare to take extra time out of your day to get dinner. Additionally, to slow the spread of the virus, students were not allowed to eat inside the dining hall, and would have to take their meals to their dorm rooms. Students felt as if this was a lonely and isolating experience because they had more meals by themselves, when before the pandemic, eating meals with friends was a regular social pastime.

Fewer Options in Grocery Stores

For students who regularly went grocery shopping, they noticed that there were less options in stores due to supply chain issues. One student remarked how there have been differences in items that she used to regularly get from the grocery store prior to the pandemic:

"I've had a few items get swapped out or dropped. I have an emotional support animal, and his food is often not in stock, I've noticed. There have been items that are pretty critical that aren't there."

Implementing programs to alleviate food insecurity

When asked about potential programs the school can implement to alleviate food insecurity among the student body, interviewees proposed several options: changing the meal plan system, adding more food options in the dining hall, increasing support from Montserrat and

the BAIC, adding more mental health counseling, and addressing it among the entire student body.

Changing the meal plan system

All interviewees were frustrated with the current meal plan system, and felt as if the a-la-carte system does not support the needs of students. They believed that because the average cost of a meal is so expensive, many students are vulnerable to running out of meal plan funds before the end of the semester. To fix this issue, interviewees believe that the administration should either lower the average cost of a meal, or overhaul the meal plan system entirely and implement a swipe-based system, where students would swipe to enter the dining hall, and food would be served all-you-can-eat style. One student described how a swipe system even implemented during a student's freshman year can help with the transition into college:

> *"I really think that at least for freshman year or first semester freshman year people should just be able to go into the dining hall and not have to worry about the prices of things that they're buying, and just be able to buy whatever they want. I know some kids have more of a problem with running out of meal plan money than others. I know I was one of those who generally had a problem with running out of money. Some people don't deal with that, but I feel like it would have been just less of something to think about if I had a situation where I could just go to the dining hall, swipe my card, get breakfast or whatever. It doesn't have to be like, swipe and I can get an unlimited amount of food. Maybe what I can get is limited, and that's fine, but just to be able to swipe and not have to be reading the prices of things while I'm picking them would be a big help."*

Students also mentioned that if the administration at BC did not completely change the meal plan system, they could add more flexibility to the dining program. Those who live in traditional or suite style housing are required to buy the full mandatory meal plan, but one

interviewee believed that if a student has access to a kitchen in their dorm, they should not be required to spend the astronomical cost of the meal plan, as well as buy groceries:

> *"I think we should have more flexibility with the meal plan, especially students who have access to kitchens, to suites, there's more options for them. Anyone who has a suite or is in a dorm that has a shared kitchen, like I do, has to have the mandatory meal plan, the whole thing, and that's kind of a lot. Yeah, I do think there should be more flexibility with it."*

With this added flexibility with the meal plan, students also believe that having all eateries and markets on campus accept the mandatory meal plan would increase students' accessibility to food. Currently, items in on-campus markets like CoRo Café, are only available to purchase through "Flex Dollars" which students are only allotted $175 each semester, compared to the $2,600 in mandatory meal plan dollars that are accepted at dining halls such as McElroy. Students believe that distinguishing between these two types of meal plan dollars should be eliminated, and that all markets and dining halls on campus should accept the mandatory meal plan:

> *"I think there are places on BC's campus, like The Market and CoRo. Both of those are little markets, but they're not on the mandatory meal plan. I think if they were on the mandatory meal plan, that could help because they have a lot of items that sometimes the grocery stores don't have, and they are right on campus, so they're much more easily accessible. The thing is, that they're on the Flex Plan, like the ones that you don't get a lot of money for, you get a 100 and something dollars a semester. So, you can't really afford to be buying things from there regularly."*

Adding more food options in the dining hall

Students believe that there are not enough options in the dining halls, and believe that the dishes that they serve can be very repetitive. In addition, students are frustrated with the lack of nutrition that the meals provided in the dining halls, and believe that there should be more innovative meals, with more fresh produce integrated into them. They believe that if the school made more of an effort to provide more well-rounded meals, then students would not have to spend more money attempting to integrate more fresh produce into their diets by purchasing separate fruits and vegetables from the salad bar. One student noted their frustration with the current lack of nutritious options in the dining halls:

> *"I think we should have more cooked vegetables. The other day I tried to order chicken and two sides, and they didn't have vegetables that that I needed to eat. So, I went to the salad bar, and I used like same size and the same portion that they put for the cooked vegetables, but I just got them from the salad bar. The person at the checkout wanted me to pay chicken and two sides, even though I didn't have two sides, plus vegetables from the salad bar. Which is like, $8 for a few pieces of carrots and I was like, 'Isn't this the same as steamed vegetables?' Like, come on. And yeah, they're a little bit overpriced, but also the cooked options are for vegetables are really limited, so maybe if they expanded that, then it would be really helpful."*

Additional funding for Montserrat and BAIC

Interviewees who have utilized the food programs provided by the Montserrat and BAIC offices expressed their appreciation for the services, and how it has helped them access essential staples at moment's notice. However, students believe that to be able to serve more of the student body, these organizations need to be given more funding to supply their food pantries with more food items, as well as other non-food items, like toiletries and feminine hygiene products. One

student remarked about what other programs these offices could implement if they had extra funding:

> *"I mean, I love Montserrat. I love all that they do, but I think that they could definitely use more administrative backing, that they shouldn't have to be trying to do everything on their own. So, like a larger food pantry program, especially because I know it's not just low income students that struggle with food, that it's a thing throughout campus. So, having a much larger food pantry program, having more funding for grocery budgets, potentially even having financial aid cover some grocery budgets, that would be nice."*

Mental health counselling

Several students interviewed noted how food insecurity can detrimentally affect one's mental health, and can cause increased anxiety, stress, and depression when one is constantly thinking about where they will get their next meal, on top of the stigma they may feel from peers. To combat this issue, interviewees believe that there should be additional counselors available in University Counseling Services to aid students who are facing food insecurity in discussing their feelings with a professional, and provide assistance with being connected to outside services, like SNAP and off-campus food pantries. One student discusses the mental health ramifications her friend is facing due to her food insecurity, and how they may be alleviated if she was able to see a counselor:

> *"I think that maybe counseling service could do something about this, because sometimes when you're food insecure, you're going to feel a lot, and you're not perfectly comfortable with sharing about it with other people. So maybe just having counseling services, try to be more open about supporting students that are food insecure. I think that would help my friend because she often just bottles up all her emotions about this because she doesn't feel understood."*

Acknowledgement of food insecurity

All interviewees have mentioned how food insecurity is a significant issue among the student body, but is something that is not talked about enough due to perceived stigma and lack of awareness about the issue to certain sectors of the student body as well as to faculty and staff. To make it an issue that is more widely acknowledged at the university, students believe that there needs to be more education around the topic. One student suggested having students who face food insecurity talk about their experiences to the student body for their peers to understand their struggles:

> *"I think, maybe like just sharing some resources for students, without labeling any student as food insecure would be good. I also think that there's a TEDx program at BC. I think encouraging students that are food insecure to talk about it there would be good. It is hard, especially with all the stigma surrounding it, by encouraging other students and empowering them to go up and tell their story and their struggles, and their lives, I think that would be really helpful for the community to just learn."*

Additionally, interviewees believe that if food insecurity is talked about on a wider scale, then faculty, staff, and administrators would understand the struggles faced by those who are food insecure. All students interviewed felt as if their experiences are not validated because they feel as if the administration is not doing enough to understand that being food insecure is something that affects all facets of a student's life – from their social life, personal struggles, and academic performance. The table below shows quotes from students who believe that there should be extended dialogue about food insecurity on campus.

Table 6: Interviewee responses to acknowledging food insecurity on campus

Theme	Quote
Acknowledgement of food insecurity on campus	"But, it's kind of tough, taking these rigorous classes, and being expected to do so many things outside of just eating, sleeping and other human necessities. So, it is kind of difficult for administrators or professors to understand what kind of pressure students are really under, and what kind of strain it has on our overall mental health."
	"I think there's also a fair population size at BC that is from a wealthy background, whose parents pay full tuition, and probably help them out with food if they need it. So, I think that there probably is a fair amount of people who are struggling, and a fair amount of people who aren't, and have no idea that there is a struggle going on. I think that disconnect is an issue."
	"Maybe they should be aware that buying food can be a real stressor for students, because they have to balance so much already with their classes and maybe work. So, having the awareness that some students do experience food insecurity would maybe make them more sympathetic, or just make them more aware that they do have students who face that problem, so they can address their needs, by either highlighting the resources, or creating resources for students who do have this problem."
	"What goes into your body, how you treat your body, especially the food you nurture it with, is the main thing that's going to give us the energy and the motivation to get through things like this. The fact that so many students are struggling in silence over not being able to find a meal to eat at night is indicative of the greater issues we have socially at BC."
	"We need change the culture, how we narrativize people who need help. You know what I mean? Like, there's a greater, dominant culture at BC amongst the students that's unspoken, but everybody is suffering from it, even if you benefit from it. I think it would be better for us if we create a space, or spaces, where people are supported and are given the proper resources to accommodate everybody, because it's possible."
	"It's a real issue that it's not just that we're college students and we're broke, so we'll get through it and we'll figure it out eventually, because that's how I've been thinking. But, then I realize that's negative, because I need to maintain myself now. I need to be doing self-care and what self-love looks like now, and that's feeding myself the proper energy and nutrients to go out and do all the things that I want to do. Sometimes I have so much ambition, but then I don't have the drive or the motivation behind it, and I realized it's because I didn't eat all day, so like I'm sitting here wondering like why can't I do this"
	"We have about this term, *Cura personalis*, and the *magis*. Where is that being really replicated for the students? Where is the example? You want us to become these things, but there's not really an example other than these tenured professors who are supposed to be of accredited, and

	you know, esteemed. But like, where's the humanity aspect of it? Where do I become a better person? That the whole point of a liberal arts education. There's a lot to be done."
	"I feel like where I've operated the most is on the margins, so experiencing other people who are also occupying that, and trying to make something happen for themselves. We're resourceful. We're hustlers. So, I think that there's definitely an issue to be said about us having to always defend, protect, and uplift ourselves, and not really getting that support, and that's something that needs to change."
	"So, maybe education programs that would educate the overall population at BC. This is our reality, because I feel like sometimes we don't…we are so focused in on what we do that we don't realize that other people are struggling. It's easy to judge them from getting good grades, including professors, where in reality these students are just trying so hard to get enough money just to get by. So, I think that educating the overall community could also help other students help the students that are in need of food."

Discussion

The goal of this study was to examine the prevalence of food insecurity throughout the duration of the COVID-19 pandemic among undergraduates, as well as explore correlates that put students at higher risk for food insecurity. Additionally, this study sought to examine the experiences of students who are facing food insecurity, the coping mechanisms that they use, the mental health implications of being food insecure, and programs and initiatives that should be implemented at an institutional, statewide, and federal level.

Prevalence and Correlates of Food Insecurity

This study found a 34.6% prevalence of food insecurity during the 2020-2021 academic year, and 36.7% in the fall 2021 semester, with a non-statistically significant difference between the prevalence of food insecurity over these two time periods. To date, there have been few studies to examine food insecurity over the course of the pandemic. However, the prevalence of food insecurity found in this study aligns with previous findings. A study conducted by Owens et al. (2020) found that during May of that year, 34.5% of students at a public university in Texas were food insecure. Additionally, a study at a private university in the Midwest found that 29% of undergraduates were food insecure during the summer and fall of 2020, up from 25% from pre-pandemic, while a study at a public university found that 15% of students became more food insecure during the pandemic (Glantsman et al., 2022 & Mialki et al., 2021). The findings from this study also confirm that certain groups, such as low-income and sexual minority students have a higher prevalence of food insecurity than their counterparts. Previous studies have also found that these groups are more vulnerable to being food insecure compared to their counterparts (Riddle et al., 2020; Nikolaus et al., 2020).

Based on the findings from the adjusted regression model, four populations stood out as being more vulnerable to food insecurity: students who identify as bisexual, those who receive

institutional financial aid, students who were previous participants of the National School Lunch Program, and students who work more than 11 hours a week. These students were between 2.5 and 4.5 times as likely to be food insecure compared to their counterparts. These groups have all been implicated as populations vulnerable to food insecurity. In this particular study, bisexual students were more likely to be food insecure than heterosexual students, whereas previous studies have implicated that the wider LGBTQ+ community is at higher risk for food insecurity (Diamond et al., 2019; University of California Office of the President Global Food Initiative, 2017). Several studies have also found that students who are employed and who receive financial aid are more likely to be food insecure than their counterparts (Weaver et al., 2019; Payne-Sturges et al., 2018; Soldavani et al., 2020). While being employed and receiving financial aid should enable students to be able to afford food, the heightened susceptibility to food insecurity suggests this to be untrue. Students who receive financial aid are more likely to be from low-income households, and the support that they receive from the university may only cover tuition, and no other associated costs of attending college, like food. Additionally, those who work more than 11 hours a week may not have parent or guardian financial support, and may have to pay for costs of housing and tuition, leaving them with little left over for food, fueling food insecurity. Additionally, previous literature has shown that students who work 20 hours a week or more may not have enough time to go grocery shopping or eat regular meals (Beam, 2020). One correlate that was found to be significant in our study but has not been extensively documented in the literature is previous participation in the National School Lunch Program in high school. The National School Lunch Program is an initiative that provides low-income public and private school students with free or reduced-cost lunches (USDA, 2019a). One study which examined elementary school students found that those who receive free school lunch are more likely to

experience certain aspects of food insecurity, such as not receiving regular meals, and eating cheap, unhealthy foods (Woolf et al., 2020). While this study was done with a different age group, the experience of food insecurity may be one that persists from childhood into early adulthood. If students come from low-income backgrounds, this may continue through college, and influence their choices for food. While many previous studies have found students of color and first-generation students to be more likely to be food insecure, this was not true in the present study (Beam, 2020; Reeder et al., 2020; Laska et al., 2021). The direction of the coefficients suggest that being first-generation and Asian are risk factors for food insecurity, and that being Black or another race is a protective factor for food insecurity. However, the lack of statistical significance of these demographic variables may be due to the relatively small sample size of these groups in the study.

Etiology of Food Insecurity

The survey and interviews highlighted several reasons why students experience food insecurity. A very consistent thread throughout the survey and interviews was the expensive prices of food in the dining hall, and how the meal plan does not allow students to eat three meals a day. Only 3% of survey participants agreed that the food in the dining hall is reasonably priced, making price a very large barrier for students when going into the dining hall. Over half of students expressed that if prices in the dining hall decreased, then they would be able to make their meal plan last longer. Students also were dissatisfied with the current meal plan, because it is not sufficient enough for their needs. The current meal plan allotment of $2,600 only allows students to eat approximately 2 meals a day, which a large proportion of survey respondents remarked how this does not allow them to eat sufficiently. One previous study also showed that students who have a meal plan of 14 meals per week are more vulnerable to being food insecure

due to running out of meals before the end of the week (van Woerden et al., 2019). To prevent food insecurity for students who are on the mandatory meal plan, the institution should consider changing the structure of the university meal plan. One suggestion that was popular among survey respondents was to switch to a swipe-based system, where students would pay for a certain number of swipes each semester, and be able to get unlimited food in the dining hall at each visit.

Another concern students reported is the food options offered in the on-campus dining halls are very limited, and does not fit their nutritional needs. Four out of six students interviewed felt as if the meals provided in the dining hall are lacking in nutrition, and do not have enough fresh produce integrated into them. While the dining halls do have produce in their fruit and vegetable bars, the choices are very limited. Additionally, the food from the fruit and vegetable bars is expensive, resulting in a heightened concern from students who feel that they must restrict their diet because they may run out of meal plan funds. Previous studies have shown how that the accessibility of nutritious food is a mediating factor for college students not being able to receive appropriate nutrient intake (Dhillon et al., 2019). This decreased accessibility to food can lead to an overall decrease in diet quality, leading to both negative physical and mental health effects (Dhillon et al., 2019). Due to this close link between dining hall choices and overall health and wellbeing (Dhillon et al., 2019), the university needs to address the lack of nutrition in their meals and find ways for healthy food to be more affordable to students.

Another large reason why students become food insecure is not being able to go grocery shopping in a timely and accessible fashion. Only 44% of students surveyed said that they are able to easily access the grocery stores closest to campus. The closest supermarket to BC is a

fairly small Star Market 2 miles away, which is a 35-minute walk or a 30-minute public transit ride away from campus. With this Star Market being approximately 2 miles away, the campus and surrounding area of BC falls into the USDA's definition of a food desert, which is a locality where at least 33% of its residents are one mile away or more from a supermarket or other grocery store that offers nutritious food (USDA, 2019b). With BC's food desert status, and a majority of students not having a vehicle on campus, students have remarked how difficult it is to get groceries. BC has a shuttle that goes to a nearby grocery store, but this shuttle only runs one day a week for five hours, restricting the opportunities when students can grocery shop. If students are not able to use the BC shuttle, they have to rely on friends with cars to get to the grocery store, or take public transportation, which results in the pursuit of grocery shopping a two hour or more expedition. This time-consuming journey for food leads to students not having enough time to shop, cook, and eat meals, potentially exacerbating food insecurity. The issue with lack of transportation has been seen as a substantial issue, especially in universities within urban settings (Zigmont et al., 2019 & Dhillon et al., 2019).

Additionally, students who have to grocery shop because they do not have a meal plan voiced concern about not being able to afford it. Students (11/36) in the free-response sections of the survey and in the interviews expressed that it is difficult to afford a full week or two of groceries because of the high costs of living on campus. Students suggested that the university should implement financial assistance programs to help students, especially those who are low-income, to receive funds for groceries. This way, students would be able to get sufficient groceries for the week and buy food that is nutritious and where they can fulfill their nutritional needs. Previous studies with college students have also found that purchasing groceries is a large

barrier for maintaining food security, and that students will ration their food in order to stretch out their budgets (Dhillon et al., 2019 & Meza et al., 2019).

Coping Mechanisms of Food Insecurity

This study identified strategies students utilize to cope with their food insecurity. Since a substantial part of college students' food insecurity is due to not having the financial resources to access food, the coping mechanisms students most often use are ways to save money so they do not have to spend much on food (Hagedorn-Hatfield et al., 2022). The most popular coping mechanisms found in this study included buying cheaper meals, asking family to add extra money on their meal plans, attend on-campus events that offer free food, or accept food from peers. Because many students have other financial pressures in their life, such as paying for tuition, books, and rent, many do not have extra funds to spend on food, and choose to use ways to spend less money on food.

One coping mechanism that was not extensively seen among survey participants, but was discussed among two interviewees was signing up for SNAP benefits to afford groceries. Despite lacking sufficient funds for obtaining food, many college students are not utilizing SNAP benefits to mitigate their food insecurity. Prior to the COVID-19 pandemic, a majority of full-time students were not eligible for SNAP because the program required students to be working at least 20 hours to qualify for the program (Freudenberg et al., 2019). However, in 2021 due to the COVID-19 pandemic, the federal government expanded SNAP eligibility, and students who fall under one of the two criteria qualify: those who qualify for the Federal Work Study program, or whose expected family income (EFC) is 0 on the Federal Application for Federal Student Aid (FAFSA) (USDA, 2021). This expanded criteria made over three million students newly eligible for SNAP, but many are still unaware of this benefit (Granville, 2021). Only 21% of survey

respondents were aware that college students were eligible for SNAP, and 48% did not know if they qualified for the program, making unawareness of the program to be a main barrier. Researchers at Hunger-Free Oregon have compiled a list of ways that colleges can increase awareness of SNAP to students, such as targeted outreach to low-income and Pell-eligible students, providing SNAP application assistance to students, and creating on-campus markets that accept SNAP benefits (Hunger Free Oregon, 2019). While other studies have reported that stigma is a barrier to SNAP sign up (Freudenberg et al., 2019), only 28% of survey respondents in the current study stated that peer stigma is an issue for them.

One coping mechanism that was not very popular among survey respondents in this study was using an off-campus food pantry. Only 11% of survey respondents reported that they are using or would use an off-campus food pantry as a way to cope with food insecurity. While some interviewees and survey respondents reported that they have obtained food from on-campus organizations, such as the BAIC and Montserrat who offer a small selection of non-perishables, what these organizations can offer are very limited, and do not alleviate long-term food insecurity. While there are at least three food pantries within a 2-mile radius to Boston College (Newton Food Pantry, Centre Street Food Pantry, and Allston-Brighton Food Pantry), very few survey or interview participants said that they used off-campus pantries to cope with food insecurity. Overall, only about a third of college students use on- or off-campus food pantries to cope with their food insecurity (El Zein et al., 2018 & McArthur et al., 2018). One significant barrier identified in the literature to using a food pantry is the perceived stigma of receiving help for food insecurity (El Zein et al., 2018). Many students believe that being seen at a food pantry, especially among peers on-campus, is an embarrassing experience, and that they may be judged by their friends for using the resource (El Zein et al., 2018). Another barrier to food pantry use is

the politics of feeling as if they are not deserving of the help (McArthur et al., 2018). College students often feel as if there is always someone else who is more deserving of them of help, and think that if they used the pantry services, they "would be taking resources from those who may need it more than [them]" (El Zein et al., 2018).

Mental & Physical Effects of Food Insecurity

Students have reported a variety of mental and physical health ramifications due to food insecurity. Survey respondents provided a multitude of different physical health effects due to not eating sufficiently, such as tiredness, losing large amounts of weight, headache, vomiting, and lethargy. Food insecurity is associated with overall poorer health among college students (Hagedorn-Hatfield et al., 2022). Food insecure students may have to choose cheaper foods that lack nutritional value, leading to poorer overall diet quality (Hagedorn-Hatfield et al., 2022). Diets with insufficient nutritional value can lead to diseases such as obesity, diabetes, and hypertension, which may all persist through adulthood, and can cause long term diminished quality of life after graduating college (Hagedorn-Hatfield et al., 2022; Holben & Marshall, 2017).

There are a host of mental health effects that college students face due to food insecurity. In this study, approximately half of survey respondents reported disordered eating patterns, such as refraining from eating or not eating at all when experiencing feelings of anxiety and depression. A previous study found that food security status had a significant association with disordered eating behaviors, such as binge eating and unhealthy weight control behaviors (Royer et al., 2021). For interviewees in the current study who are food insecure, they reported feeling constant stress due to their issues with affording food, as well as being left out from social gatherings due to financial barriers. Feelings of stress and isolation can lead to further mental

health issues, such as depression, anxiety, and decreasing overall resilience to tough situations (Li et al., 2021). Especially with the COVID-19 pandemic fueling higher rates of depression and isolation among college students, those who are food insecure are facing a compounded mental health effect, making them a vulnerable population that needs additional attention (Eisenberg et al., 2020).

While students attend college to boost future earnings and success, students who are food insecure may face poorer academic performance as compared to their counterparts, which may lead to worse future success overall. BC students surveyed remarked their academic performance has suffered because they spent extensive time thinking about where their next meal would come from, instead of focusing on assignments. Another issue presented by students was that the dining hall hours prevented them from getting food before or after class, leaving them hungry and unable to focus on important school-related tasks. Several students also mentioned how going grocery shopping is a large burden for them, because they feel as if it takes up a significant portion of their day when they should use that time to study or finish homework. The results in this study are consistent with previous research, which has shown that students who are food insecure may have decreased academic success (Hagedorn & Olfert, 2018; Hagedorn-Hatfield et al., 2022). Students who are food insecure are more likely to skip class and withdraw from courses when compared to their food secure counterparts, negatively impacting GPA (Hagedorn & Olfert, 2018). Due to this issue with courses, food insecure students have a 42% lower odds of graduating from a four-year institution, with first-generation students having an even lower chance of graduating (Wolfson et al., 2022). Not graduating from college has several detrimental long-term effects, such as diminished earning power and lack of employee-sponsored health insurance, which is closely linked to detrimental effects on long-term health (Association of

Public & Land Grant Universities, n.d.). Ultimately, when students are food insecure, it can negatively impact their learning and academic goals as well as provide further mental and physical stress, which may perpetuate the cycle of food insecurity.

COVID-19

The COVID-19 pandemic has affected everyone in tremendous ways, and the college population is no exception. With the closing of universities at the beginning of the pandemic, and continued social and economic strife, the pandemic has been a driver for food insecurity among college students. In this study, the pandemic changed the ways that students were able to obtain food, both in the dining halls and at grocery stores. Several survey participants noted how the onset of the pandemic caused there to be a limited variety of foods, especially during the 2020-2021 academic year. With the fruit and salad bars closed to mitigate COVID-19 spread, students felt as if they were getting less nutritious options due to the main meals being served not having enough fresh produce. Additionally, the pandemic has created supply chain issues for the BC dining department, and there has been limited choices for meals. With these reduced options, students remarked that the foods and meals that they prefer were not available, and that they had to alter their diet based on what was offered at the dining hall. During the 2020-2021 academic year, students were not allowed to eat inside the dining hall and could not eat with friends, increasing feelings of loneliness and isolation. With the increase of loneliness, depression, and anxiety being well-documented among college students during the pandemic, these unintended mental health effects of COVID-19 mitigation efforts need to be emphasized (Eisenberg et al., 2020). Additionally, college students who regularly go grocery shopping have had changes in the foods that they usually purchased for themselves. With supply issues, as well as prices of staple food items increasing, students have been concerned with being able to afford all of their

groceries. While there is limited knowledge about the perceptions of college students, one study conducted on non-college aged adults found that food insecure adults were more likely to report that their food bills were more expensive, causing changes in the types and quantity of food that they bought (Godrich et al., 2022).

This is one of the first studies that has explored how food insecurity has changed during the course of the COVID-19 pandemic. While there was not a statistically significant difference between food insecurity prevalence between the 2020-2021 academic year and the fall 2021 semester, students interviewed felt as if their relationship with food changed over this period. As the university moved to a more COVID-lax approach in the fall 2021 semester and decreased social distancing and de-densification efforts in the dining hall, there were more diverse options for food, and students felt as if they could get their preferred foods in the dining halls. Additionally, students were once again able to eat in the dining halls, feeling much more integrated into social life, and connected to their peers. The existing literature so far has only been able to explore the differences in food insecurity prior to the pandemic, and the first few months of the pandemic in 2020. One study conducted in May 2020 showed that 34.5% of students at a public university in Texas were food insecure (Owens et al., 2020). Additionally, another study that looked at the differences in food insecurity prior to the onset of the pandemic and shortly afterwards showed that the pandemic caused 20% of students' food insecurity to worsen, and another 68% of students whose food security status stayed the same (Soldavini et al., 2020).

Strengths & Limitations

There are several strengths to this study. One of the major benefits is that it utilized the USDA 6-Item Food Security Survey Module, which is an established, validated tool to estimate

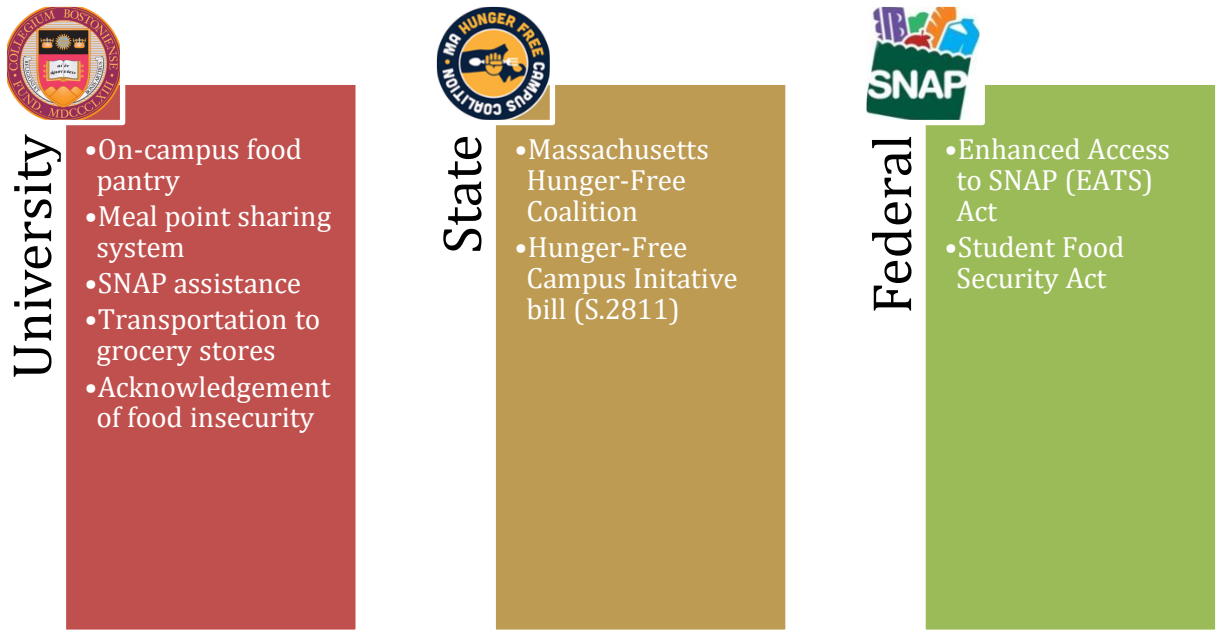
food insecurity. This survey is used in almost all studies examining food insecurity among this population, allowing for direct comparisons between the prevalence found in this study to others. Another strength is the use of both quantitative and qualitative methods to explore how food insecurity has affected this population. The survey gathered extensive information from students that holistically examined the causes of food insecurity as well as the social, mental health, and academic effects. Additionally, with the use of qualitative data from the free-text responses, as well as the interviews, gave a more complete understanding of the experience of food insecurity among students at BC.

With these strengths, there are also several weaknesses. This study employed a cross-sectional design, which only provides the prevalence of food insecurity at one point in time and the associations of factors with food insecurity does not establish causality. Additionally, this survey used a non-random, convenience sample. We were not able to obtain an email list of all undergraduates at BC, and had to distribute the survey through leveraging connections with departments to send to their students, as well as targeting marginalized students on campus through Montserrat and Learning to Learn. This means we did not obtain a representative sample of the BC population, limiting the generalizability, and the prevalence of food insecurity found in this study may not reflect the reality of this situation on the campus. Next, there was informational bias in this study. As this study used self-reported information, participants may have misremembered or misreported their information, limiting the validity of our findings. Lastly, the results found in this study may not be generalizable to other campuses of higher education. This study took place at a private institution in the Northeast, and these findings may not be valid at institutions in other parts of the country, public universities, or primarily minority

serving institutions, such as Historically Black Colleges and Universities (HBCUs) or tribal colleges and universities (TCUs).

Proposal of Interventions

Figure 11: Exploration of university, state, and federal interventions for university student food insecurity



Campus Programs

To address food insecurity, the administration at BC should implement programs and initiatives to assist the student body. One of these initiatives is either setting up a new food pantry, or expanding the small "food closet" at the Montserrat house. The food closet at Montserrat has a selection of non-perishable staples, such as noodles, rice, and canned vegetables, and feminine products. A food pantry is defined as a space on campus that provides food for students to prepare meals with (Freudenberg et al., 2019). Food pantries usually consist of non-perishable foods, but also may have perishable items, such as fresh fruit and vegetables,

and non-consumable items, like toiletries and feminine hygiene products. Food pantries are one of the most common ways that colleges and universities have addressed issues with food availability and accessibility for college students. According to the College & University Food Bank Alliance (CUFBA), there are over 700 food banks on the campuses of 2- and 4-year institutions across the country, up from 88 in 2010 (CUFBA, 2021). Food pantries are an accessible and affordable way for students to obtain food that they can prepare themselves and use for their own meals. Campus food pantries are relatively inexpensive to create; a study by the National Association of Student Personnel Administrators (NASPA) found that 79% of the campus food pantries ran on annual budgets of $10,000 or less (Freudenberg et al., 2019). Campus food pantries are also aided by monetary and food donations from local businesses, restaurants, and food pantries, further cutting down on costs (Freudenberg et al., 2019). There are also organizations that can assist with campuses establishing or expanding their current pantry services. Swipe Out Hunger is a nationwide organization consisting of over 400 campus partners that works to eradicate college student hunger (Swipe Out Hunger, n.d.). One of their initiatives is working with institutions in implementing on campus solutions, like food pantries (Swipe Out Hunger, n.d.). When partnering with Swipe Out Hunger, campuses get assistance on how to effectively operate their food pantries, as well as how to apply for microgrants to fund for items (Swipe Out Hunger, n.d). While several studies have documented low utilization of campus food pantries, researchers believe that use may increase with increased publicization of this resource among the student body, as well as the de-stigmatization of getting help for food insecurity (McArthur et al., 2020 & El Zein et al., 2018). For students who do use food pantries, they have remarked that it has improved their access to food in times of high financial need, and that they have had improved mental and physical health (McArthur et al., 2020 & Daughtery et al., 2019).

Another program that can be implemented at the institution level is creating a meal dollar sharing system, which was an initiative that was suggested by a large number of survey and interview participants. The BC meal plan system is set up to create a large number of students who run out of money on their meal plan weeks before the semester ends as well as a large number of students who have hundreds of dollars on their meal plan at the end of the semester, and no way to possibly spend it by themselves. Swipe Out Hunger has developed toolkits for universities to use if they would like to set up a meal point sharing system. In these programs, students will donate their meal plan dollars into a general pool, or "swipe bank" (Swipe Out Hunger, n.d.). Students who need extra funds can apply online for a certain amount of meal dollars, and campus administrators can assess and determine if they are eligible to receive these funds. If a student is approved, the meal plan dollars will be added to their student account. This program started at the University of California in Los Angeles in 2010, and has since been replicated and adapted at hundreds of other schools across the country who are part of the Swipe Out Hunger consortium (Swipe Out Hunger, n.d.). In the 2020-2021 academic year alone, Swipe Out Hunger schools have donated 500,000 meals to students in need, making the meal donation system a success at other universities, and is a system that should be considered at BC (Swipe Out Hunger, n.d.).

To alleviate food insecurity on campus, BC administrators can implement services to improve SNAP access to students. The biggest barriers for students signing up for SNAP is not knowing that they are eligible for the program, and not knowing how to complete the application process to receive benefits (Freudenberg et al., 2019). BC needs to implement more outreach programs to inform students about SNAP, and support them through the application process. Best practice short-term SNAP outreach programs include hanging up posters in popular campus

areas, having tabling events to distribute information about SNAP to students, or having professors include basic needs statements in their syllabi, which share resources for those who may be food or housing insecure (Hunger Free Oregon, 2019). Long-term best practice outreach programs include having certain departments, such as the office of financial aid or Montserrat, send emails to students who may be eligible for SNAP to learn more about the program, and have a dedicated, on-campus SNAP administrator or financial aid advisor to help students sign up for the program (Hunger Free Oregon, 2019). Additionally, the administration could consider accepting SNAP benefits at the on-campus markets in the Corcoran Commons and McElroy dining halls. Students who participated in the survey appreciated the convenience of these small on-campus stores that provide a large selection of staples, but found that shopping there more regularly was difficult because it uses flex plan dollars, which are very limited in comparison to the mandatory meal plan dollars. If SNAP was accepted at these on-campus markets, students would not be as concerned about spending their flex plan dollars, and would not have to worry about going off-campus to get essential staples, which is a large concern for students. All of these strategies utilize existing infrastructure at the university to inform more students about the program. Offices and departments who assist students with high financial need, such as Montserrat, can integrate SNAP into their emails and social media messaging and reach a large population of students who may be SNAP eligible.

With the BC campus and surrounding area being a food desert, and very few students having a car, students often have trouble getting to local grocery stores. Many students found the BC shuttle bus to Wegmans to be a helpful and cost-effective way of getting groceries, but this bus runs only on Sundays from 11am to 5pm. Students have suggested that the schedule for this shuttle bus should be expanded to at least three or four days a week, so that they have more

options of when they can go grocery shopping, and that they do not have to be concerned with the cost burden of having to take public transportation or a ride sharing service to get groceries. In a similar vein, if the administration is not able to expand service shuttle service, they can consider supplying students in need with a free Charlie Card or Uber or Lyft gift certificates so they are able to get to grocery stores without worrying about the cost.

Lastly, the administration should acknowledge that food insecurity is an issue for over a third of the undergraduate population at BC. Many of the survey and interview participants agreed that there is stigma of being food insecure at BC, and feel that it is not talked enough about. Students believe that there should be more education about food insecurity and more dissemination of resources about it as well. If there is less stigma against being food insecure, then students will feel less embarrassed about asking for help, and can feel more comfortable talking about the issue. If the administration can recognize that food insecurity is an issue, there can be more mobilization to implement the initiatives discussed above, and can help students achieve their best.

State & Federal Policies

There are several statewide policies and partners working to end food insecurity among college students in Massachusetts. The Massachusetts Hunger-Free Campus Coalition has brought together key stakeholders, such as local food pantries, nonprofit, and higher education administrators, to address food insecurity among vulnerable populations at state community colleges and universities (Massachusetts Hunger-Free Campus Coalition, 2021). Members of the MA Hunger Free Campus Coalition are lobbying to pass the Hunger-Free Campus Initiative, which would reimagine how college campuses address food insecurity. If this bill passes, the Department of Education would establish the Hunger-Free Campus Initiative, which would to

provide funding and technical assistance for public universities, as well as private institutions that serve a mainly minority population (Massachusetts Hunger Free Campus Coalition, 2021). Once universities express interest in these services, they will be designated as a "Hunger-Free Campus" and the Department of Education will help them with food security services, such as facilitating the creation of an on-campus food pantry or transportation to an off-campus pantry, and helping notify eligible students about SNAP (Massachusetts Hunger Free Campus Coalition, 2021). To keep their "Hunger-Free Campus" status, universities must demonstrate a continued interest in ending hunger on campus by conducting food insecurity surveys at least once a year, creating an emergency fund to help students in need, or developing a meal points sharing system among students (Massachusetts Hunger Free Campus Coalition, 2021).

There are also actions at the federal level to address food insecurity among college students. While the federal government broadened the requirements for SNAP at the onset of the pandemic, this is only temporary, and will cease when the federal public health emergency ends at the end of July 2022 (Weiland, 2022). However, there is legislation being considered in the U.S. House of Representatives to make these requirements permanent. The Enhanced Access to SNAP (EATS) Act, sponsored by Rep. Jimmy Gomez of California, seeks to eliminate the 20 hours a week work requirement for SNAP permanently, allowing college students who attend college full-time eligible for financial assistance (Gomez, 2021). Additionally on the federal level, Senator Elizabeth Warren is proposing the Student Food Security Act in the U.S. Senate, which would increase outreach by the U.S. Department of Education to students who may be SNAP eligible to sign up, allow students to use their SNAP benefits at on-campus eateries, and would create a $1 billion grant program for community colleges and universities to establish on-campus food pantries and other food assistance programs (Warren, 2021). If either or both of

these pieces of legislation pass, it could make a substantial impact on the lives of food insecure students across the country.

Conclusion

This study sheds light on the prevalence of food insecurity among college students, as well as the complex struggles that food insecure students face, especially in the midst of a global pandemic. Over one third of undergraduate students surveyed experienced food insecurity during the course of the COVID-19 pandemic. Particular attention needs to be placed on students who identify as bisexual, receive financial aid, work more than 11 hours per week, and were participants of the Federal School Lunch Program, as they had between 2.5 and 4.5 greater odds of being food insecure when compared to their counterparts. Students felt that the COVID-19 pandemic affected how they obtained food and their diets, both in on-campus dining halls and in off-campus settings. Students experienced a host of negative effects on their mental and physical health, academic performance, and social lives due to their food insecurity, affecting their overall wellbeing. To alleviate this issue at Boston College and at other institutions across the nation, programs and policy changes need to happen at an institutional level, as well as at the state and federally. At the university level, administrators can improve accessibility and availability to food by creating an on-campus food pantry, developing a meal point sharing system, and improving transportation to local grocery stores. At a larger societal level, there needs to be improved access to social safety net programs, such as SNAP, as well as reduced stigma to support the cost of food. Food insecurity among college students during the COVID-19 pandemic is highly prevalent, and legislators, school administrators, and advocacy organizations need to come together to generate strategies to eliminate this issue. With the appropriate steps

and action, food insecurity among students can be eliminated, making the pursuit of education a healthier and more equitable experience for all.

References

Alakaam, A. A., Castellanos, D. C., Bodzio, J., & Harrison, L. (2015). The factors that influence dietary habits among international students in the United States. *Journal of International Students*, *5*(2), 104–120. https://doi.org/10.32674/jis.v5i2.428

Anderson, J. R. (2019). Concepts of stability in food security. *Encyclopedia of Food Security and Sustainability*, 8–15. https://doi.org/10.1016/b978-0-08-100596-5.22315-9

Ashby, S., Kleve, S., McKechnie, R., & Palermo, C. (2016). Measurement of the dimensions of food insecurity in developed countries: A systematic literature review. *Public Health Nutrition*, *19*(16), 2887–2896. https://doi.org/10.1017/s1368980016001166

Baker-Smith, C., Coca, V., Goldrick-Rab, S., Looker, E., Richardson, B., & Williams, T. (n.d.). #RealCollege 2020: Five Years of Evidence on Campus Basic Needs Insecurity. *Hope For College*. Retrieved May 10, 2022, from https://hope4college.com/wp-content/uploads/2020/02/2019_RealCollege_Survey_Report.pdf.

Barry, M. R., Sonneville, K. R., & Leung, C. W. (2021). Students with food insecurity are more likely to screen positive for an eating disorder at a large, public university in the Midwest. *Journal of the Academy of Nutrition and Dietetics*, *121*(6), 1115–1124. https://doi.org/10.1016/j.jand.2021.01.025

Beam, M. (2020). Nontraditional students' experiences with food insecurity: A qualitative study of undergraduate students. *The Journal of Continuing Higher Education*, *68*(3), 141–163. https://doi.org/10.1080/07377363.2020.1792254

Becerra, M. B., & Becerra, B. J. (2020). Psychological distress among college students: Role of food insecurity and other social determinants of mental health. *International Journal of Environmental Research and Public Health, 17*(11), 4118. https://doi.org/10.3390/ijerph17114118

Billings, K. C., Fountain, J. H., Allison, R. A., & Collins, B. (2021, June 9). Food Insecurity Among College Students: Background and Policy Options. Retrieved May 12, 2022, from https://files.eric.ed.gov/fulltext/ED614264.pdf

Blagg, K., Gunderson, C., Zillak, J., & Schazenbach, D. (2017). *Assessing food insecurity on campus*. Urban Institute. Retrieved May 12, 2022, from https://www.urban.org/sites/default/files/publication/92331/assessing_food_insecurity_on_campus_4.pdf

Boston College. (2021). *Fact Book 2020-2021*. Boston College Institutional Research & Planning. Retrieved May 13, 2022, from https://www.bc.edu/content/dam/bc1/offices/irp/ir/factbook/factbook_pdfs/20-21_factbook_updated_august2021.pdf

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Bruening, M., Argo, K., Payne-Sturges, D., & Laska, M. N. (2017). The struggle is real: A systematic review of food insecurity on Postsecondary Education campuses. *Journal of the Academy of Nutrition and Dietetics, 117*(11), 1767–1791. https://doi.org/10.1016/j.jand.2017.05.022

Bruening, M., Brennhofer, S., van Woerden, I., Todd, M., & Laska, M. (2016). Factors related to the high rates of food insecurity among diverse, Urban College Freshmen. *Journal of the Academy of Nutrition and Dietetics, 116*(9), 1450–1457. https://doi.org/10.1016/j.jand.2016.04.004

Carman, K. G., & Zamarro, G. (2016, February 6). *Does financial literacy contribute to food security?* SSRN. Retrieved May 12, 2022, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2728317

Coleman-Jensen, A., Rabbitt, M., Gregory, C., & Singh, A. (2018, September). *Statistical Supplement to Household Food Security in the United States in 2017*. USDA. Retrieved May 12, 2022, from https://alliancetoendhunger.org/wp-content/uploads/gravity_forms/13-f8f4825afc84921bd400f00919c81a7a/2018/12/2018-usda-food-security-in-the-us-2017-statistical-supplement.pdf

Conzelmann, J. G., & Lacy, T. A. (2022, March 9). *Financial and student loan (IL)literacy among US college students*. Brookings. Retrieved May 12, 2022, from https://www.brookings.edu/blog/brown-center-chalkboard/2018/10/15/financial-and-student-loan-illiteracy-among-us-college-students/

CUFBA. (2021). *Truth in numbers*. CUFBA. Retrieved May 12, 2022, from https://cufba.org/resources/

Cusick, J., Seeberger, C., Oduyeru, L., Gordon, P., Shepherd, M., Parshall, J., Haider, A., Ndumele, N. L., Zhavoronkova, M., Ross, L. J., Malik, R., Schultz, E., Buchanan, M. J., Jordan, A., Sozan, M., & DiMatteo, E. (2021, November 5). *New poverty and food*

insecurity data illustrate persistent racial inequities. Center for American Progress. Retrieved May 12, 2022, from https://www.americanprogress.org/article/new-poverty-food-insecurity-data-illustrate-persistent-racial-inequities/

Cuy Castellanos, D., & Holcomb, J. (2018). Food insecurity, financial priority, and Nutrition Literacy of university students at a mid-size private university. *Journal of American College Health, 68*(1), 16–20. https://doi.org/10.1080/07448481.2018.1515762

Darling, K. E., Fahrenkamp, A. J., Wilson, S. M., D'Auria, A. L., & Sato, A. F. (2015). Physical and mental health outcomes associated with prior food insecurity among young adults. *Journal of Health Psychology, 22*(5), 572–581. https://doi.org/10.1177/1359105315609087

Daugherty, J. B., Birnbaum, M., & Clark, A. (2019). Having Enough: Students' understanding of food insecurity and campus food pantry use. *Journal of Poverty, 23*(7), 600–620. https://doi.org/10.1080/10875549.2019.1652721

Dhillon, J., Diaz Rios, L. K., Aldaz, K., De La Cruz, N., Vu, E., Asad Asghar, S., Kuse, Q., & Ortiz, R. (2019). We don't have a lot of healthy options: Food environment perceptions of first-year, minority college students attending a food desert campus. *Nutrients, 11*(4), 816. https://doi.org/10.3390/nu11040816

Diamond, K. K., Stebleton, M. J., & delMas, R. C. (2019). Exploring the relationship between food insecurity and mental health in an undergraduate student population. *Journal of Student Affairs Research and Practice, 57*(5), 546–560. https://doi.org/10.1080/19496591.2019.1679158

Edelson, D. (n.d.). *How does a college degree improve graduates' employment and earnings potential?* Association of Public & Land-grant Universities. Retrieved May 12, 2022, from https://www.aplu.org/our-work/5-archived-projects/college-costs-tuition-and-financial-aid/publicuvalues/employment-earnings.html

Eisenberg, D., Lipson, S., & Heinze, J. (2021). *The Healthy Minds Study: Fall 2020 Data Report*. Retrieved May 13, 2022, from https://healthymindsnetwork.org/wp-content/uploads/2021/02/HMS-Fall-2020-National-Data-Report.pdf

El Zein, A., Mathews, A., House, L., & Shelnutt, K. (2018). Why are hungry college students not seeking help? predictors of and barriers to using an on-campus food pantry. *Nutrients*, *10*(9), 1163. https://doi.org/10.3390/nu10091163

El Zein, A., Shelnutt, K. P., Colby, S., Vilaro, M. J., Zhou, W., Greene, G., Olfert, M. D., Riggsbee, K., Morrell, J. S., & Mathews, A. E. (2019). Prevalence and correlates of food insecurity among U.S. college students: A multi-institutional study. *BMC Public Health*, *19*(1). https://doi.org/10.1186/s12889-019-6943-6

Feeding America. (2018). *Food Insecurity and Poverty in the US*. Retrieved May 13, 2022, from https://hungerandhealth.feedingamerica.org/wp-content/uploads/2018/10/Food-Insecurity-Poverty-Brief_2018.pdf

Feeding America. (2021). *Hunger & Poverty in the United States | map the meal gap*. Retrieved May 13, 2022, from https://map.feedingamerica.org/

Feeding America. (2021). *Hunger in Rural Communities*. Feeding America. Retrieved May 12, 2022, from https://www.feedingamerica.org/hunger-in-america/rural-hunger-facts

Flannery, M. E. (2021). *Hunger on campuses: A growing problem*. NEA. Retrieved May 12, 2022, from https://www.nea.org/advocating-for-change/new-from-nea/hunger-campuses-growing-problem

Food Research Action Center. (2020). *Poverty, hunger, health, and the Federal Nutrition Programs: A Profile of the Southern Region*. Retrieved May 13, 2022, from https://frac.org/wp-content/uploads/FRAC-Poverty-Hunger-Health-and-the-Federal-Nutrition-Programs-2020.pdf

Freudenberg, N., Goldrick-Rab, S., & Poppendieck, J. (2019). College students and snap: The new face of food insecurity in the United States. *American Journal of Public Health*, *109*(12), 1652–1658. https://doi.org/10.2105/ajph.2019.305332

Fry, R., & Cillufo, A. (2019, May). A Rising Share of Undergraduates are From Poor Families, Especially at Less Selective Colleges. Retrieved May 12, 2022, from https://www.pewresearch.org/social-trends/wp-content/uploads/sites/3/2019/05/Pew-Research-Center-Undergrad-report-FINAL-05.22.19.pdf

Gaines, A., Robb, C. A., Knol, L. L., & Sickler, S. (2014). Examining the role of financial factors, resources and skills in predicting food security status among college students. *International Journal of Consumer Studies*, *38*(4), 374–384. https://doi.org/10.1111/ijcs.12110

Gaines, A., Robb, C. A., Knol, L. L., & Sickler, S. (2014). Examining the role of financial factors, resources and skills in predicting food security status among college students. *International Journal of Consumer Studies*, *38*(4), 374–384. https://doi.org/10.1111/ijcs.12110

Glantsman, O., McGarity-Palmer, R., Swanson, H. L., Carroll, J. T., Zinter, K. E., Lancaster, K. M., & Berardi, L. (2022). Risk of food and housing insecurity among college students during the COVID-19 pandemic. *Journal of Community Psychology*. https://doi.org/10.1002/jcop.22853

Godrich, S. L., Lo, J., Kent, K., Macau, F., & Devine, A. (2022). A mixed-methods study to determine the impact of covid-19 on food security, food access and supply in regional Australia for consumers and food supply stakeholders. *Nutrition Journal*, *21*(1). https://doi.org/10.1186/s12937-022-00770-4

Goldrick-Rab, S., Richardson, J., & Hernandez, A. (2017). *Hungry and Homeless in College: Results from a National Study of Basic Needs in Higher Education*. Retrieved May 12, 2022, from https://vtechworks.lib.vt.edu/bitstream/handle/10919/83028/HungryAndHomelessInCollege.pdf

Gomez, J. (2021, March 17). *Reps. Gomez, harder, and Panetta introduce legislation to permanently expand SNAP benefits to college students*. U.S. Representative Jimmy Gomez. Retrieved May 12, 2022, from https://gomez.house.gov/news/documentsingle.aspx?DocumentID=2337

Granville, P. (2021, April 26). *Congress made 3 million college students newly eligible for snap food aid. here's what must come next*. The Century Foundation. Retrieved May 12, 2022, from https://tcf.org/content/commentary/congress-made-3-million-college-students-newly-eligible-snap-food-aid-heres-must-come-next/?session=1

Gross, R., Schoeneberger, H., Pfifer, H., & Preuss, H.-J. A. (2000). *The Four Dimensions of Food and Nutrition Security: Definitions and Concepts*. FAO. Retrieved May 11, 2022, from https://fpmu.gov.bd/agridrupal/sites/default/files/Four_Dimension_of_FS.pdf

Gundersen, C., Kreider, B., & Pepper, J. (2011). The economics of food insecurity in the United States. *Applied Economic Perspectives and Policy*, *33*(3), 281–303. https://doi.org/10.1093/aepp/ppr022

Hagedorn, R. L., Walker, A. E., Wattick, R. A., & Olfert, M. D. (2022). Newly Food-Insecure College students in Appalachia during the COVID-19 pandemic. *Journal of Nutrition Education and Behavior*, *54*(3), 202–210. https://doi.org/10.1016/j.jneb.2021.08.010

Hagedorn, R., & Olfert, M. (2018). Food insecurity and behavioral characteristics for academic success in young adults attending an Appalachian University. *Nutrients*, *10*(3), 361. https://doi.org/10.3390/nu10030361

Hagedorn-Hatfield, R. L., Hood, L. B., & Hege, A. (2022). A decade of college student hunger: What we know and where we need to go. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.837724

Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., & Duda, S. N. (2019). The redcap consortium: Building an international community of Software Platform Partners. *Journal of Biomedical Informatics, 95*, 103208. https://doi.org/10.1016/j.jbi.2019.103208

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research Electronic Data Capture (redcap)—a metadata-driven methodology and workflow process for providing Translational Research Informatics Support. *Journal of Biomedical Informatics*, *42*(2), 377–381. https://doi.org/10.1016/j.jbi.2008.08.010

Haskett, M. E., Kotter-Grühn, D., & Majumder, S. (2020). Prevalence and correlates of food insecurity and homelessness among university students. *Journal of College Student Development*, *61*(1), 109–114. https://doi.org/10.1353/csd.2020.0007

Healthy People 2020. (2021). *Food Insecurity*. Food Insecurity | Healthy People 2020. Retrieved May 10, 2022, from https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity

Holben, D. H., & Marshall, M. B. (2017). Position of the Academy of Nutrition and Dietetics: Food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics*, *117*(12), 1991–2002. https://doi.org/10.1016/j.jand.2017.09.027

Holben, D. H., & Marshall, M. B. (2017). Position of the Academy of Nutrition and Dietetics: Food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics*, *117*(12), 1991–2002. https://doi.org/10.1016/j.jand.2017.09.027

Hunger Free Oregon. (2019). *Best Practices in SNAP Outreach Strategies*. Hunger Free Oregon. Retrieved May 13, 2022, from https://oregonhunger.org/wp-content/uploads/2019/10/Toolkit_Outreach-Strategy-Ideas.pdf

Hunyh, S. (2021). *Student Hunger: Addressing Food Insecurity Among Community College Students in Washington State*. Proctor Research Brief. Retrieved from https://proctor.gse.rutgers.edu/sites/default/files/Steffi%27s%20Brief%204_5.pdf

Jamerson, J. (2020, May 21). *When coronavirus hits food deserts*. The Wall Street Journal. Retrieved May 12, 2022, from https://www.wsj.com/articles/when-coronavirus-hits-food-deserts-11589233413

Johansson, R. (2021, July 29). *Another look at availability and prices of food amid the COVID-19 pandemic*. USDA. Retrieved May 12, 2022, from https://www.usda.gov/media/blog/2020/05/28/another-look-availability-and-prices-food-amid-covid-19-pandemic

Jägermeyr, J., & Müller, C. (2021). Climate Change Signal in global agriculture emerges earlier in new generation of climate and Crop Models. *Nature Food*. https://doi.org/10.5194/egusphere-egu22-3011

Knol, L. L., Robb, C. A., McKinley, E. M., & Wood, M. (2019). Very low food security status is related to lower cooking self-efficacy and less frequent food preparation behaviors among college students. *Journal of Nutrition Education and Behavior, 51*(3), 357–363. https://doi.org/10.1016/j.jneb.2018.10.009

Laska, M. N., Lenk, K., Lust, K., McGuire, C. M., Porta, C. M., & Stebleton, M. (2021). Sociodemographic and health disparities among students screening positive for food insecurity: Findings from a Large College Health Surveillance System. *Preventive Medicine Reports*, *21*, 101297. https://doi.org/10.1016/j.pmedr.2020.101297

Leung, C. W., Insolera, N., Cohen, A. J., & Wolfson, J. A. (2021). The long-term effect of food insecurity during college on future food insecurity. *American Journal of Preventive Medicine*, *61*(6), 923–926. https://doi.org/10.1016/j.amepre.2021.05.038

Li, Y., Zhao, J., Ma, Z., McReynolds, L. S., Lin, D., Chen, Z., Wang, T., Wang, D., Zhang, Y., Zhang, J., Fan, F., & Liu, X. (2021). Mental health among college students during the COVID-19 pandemic in China: A 2-wave longitudinal survey. *Journal of Affective Disorders*, *281*, 597–604. https://doi.org/10.1016/j.jad.2020.11.109

Manboard, M., Johnson, C. M., Thornton, H., & Biediger-Friedman, L. (2021). The home study: Understanding how college students at a Hispanic serving institution coped with food insecurity in a pandemic. *International Journal of Environmental Research and Public Health*, *18*(21), 11087. https://doi.org/10.3390/ijerph182111087

Massachusetts Hunger Free-Campus Coalition. (2022, April 7). *About: The Massachusetts Hunger-free Campus Coalition*. Hunger Free Campus MA. Retrieved May 12, 2022, from https://www.hungerfreecampusma.org/about/

McArthur, L. H., Ball, L., Danek, A. C., & Holbert, D. (2018). A high prevalence of food insecurity among university students in Appalachia reflects a need for educational

interventions and policy advocacy. *Journal of Nutrition Education and Behavior*, *50*(6), 564–572. https://doi.org/10.1016/j.jneb.2017.10.011

McEwen, B. S. (2008). Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators. *European Journal of Pharmacology*, *583*(2-3), 174–185. https://doi.org/10.1016/j.ejphar.2007.11.071

Meldrum, L. A., & Willows, N. D. (2006). Food Insecurity in University Students Receiving Financial Aid. *Canadian Journal of Dietetic Practice and Research*, *67*(1), 43–46. https://doi.org/10.3148/67.1.2006.43

Meza, A., Altman, E., Martinez, S., & Leung, C. W. (2019). "it's a feeling that one is not worth food": A qualitative study exploring the psychosocial experience and academic consequences of food insecurity among college students. *Journal of the Academy of Nutrition and Dietetics*, *119*(10). https://doi.org/10.1016/j.jand.2018.09.006

Mialki, K., House, L. A., Mathews, A. E., & Shelnutt, K. P. (2021). Covid-19 and college students: Food security status before and after the onset of a pandemic. *Nutrients*, *13*(2), 628. https://doi.org/10.3390/nu13020628

MLRI. (2021). *Snap eligibility rules/rights for college students*. MassLegalServices. Retrieved May 12, 2022, from https://www.masslegalservices.org/content/snap-eligibility-rulesrights-college-students

Nagata, J. M., Palar, K., Gooding, H. C., Garber, A. K., Whittle, H. J., Bibbins-Domingo, K., & Weiser, S. D. (2019). Food insecurity is associated with poorer mental health and sleep

outcomes in young adults. *Journal of Adolescent Health*, *65*(6), 805–811. https://doi.org/10.1016/j.jadohealth.2019.08.010

Nikolaus, C. J., An, R., Ellison, B., & Nickols-Richardson, S. M. (2019). Food insecurity among college students in the United States: A scoping review. *Advances in Nutrition*, *11*(2), 327–348. https://doi.org/10.1093/advances/nmz111

Niles, M. T., Bertmann, F., Belarmino, E. H., Wentworth, T., Biehl, E., & Neff, R. (2020). The early food insecurity impacts of covid-19. *Nutrients*, *12*(7), 2096. https://doi.org/10.3390/nu12072096

Owens, M. R., Brito-Silva, F., Kirkland, T., Moore, C. E., Davis, K. E., Patterson, M. A., Miketinas, D. C., & Tucker, W. J. (2020). Prevalence and social determinants of food insecurity among college students during the COVID-19 pandemic. *Nutrients*, *12*(9), 2515. https://doi.org/10.3390/nu12092515

Patton-López, M. M., López-Cevallos, D. F., Cancel-Tirado, D. I., & Vazquez, L. (2014). Prevalence and correlates of food insecurity among students attending a midsize rural university in Oregon. *Journal of Nutrition Education and Behavior*, *46*(3), 209–214. https://doi.org/10.1016/j.jneb.2013.10.007

Payne-Sturges, D. C., Tjaden, A., Caldeira, K. M., Vincent, K. B., & Arria, A. M. (2017). Student hunger on campus: Food insecurity among college students and implications for academic institutions. *American Journal of Health Promotion*, *32*(2), 349–354. https://doi.org/10.1177/0890117117719620

Pia Chaparro, M., Zaghloul, S. S., Holck, P., & Dobbs, J. (2009). Food insecurity prevalence among college students at the University of Hawai'i at Mānoa. *Public Health Nutrition*, *12*(11), 2097–2103. https://doi.org/10.1017/s1368980009990735

Piontak, J. R., & Schulman, M. D. (2014). Food insecurity in Rural America. *Contexts*, *13*(3), 75–77. https://doi.org/10.1177/1536504214545766

Project Bread. (2021). *Hunger & Food Insecurity in Massachusetts: Project bread*. Hunger & Food Insecurity in Massachusetts | Project Bread. Retrieved May 12, 2022, from https://www.projectbread.org/hunger-by-the-numbers

Reeder, N., Tapanee, P., Persell, A., & Tolar-Peterson, T. (2020). Food insecurity, depression, and race: Correlations observed among college students at a university in the Southeastern United States. *International Journal of Environmental Research and Public Health*, *17*(21), 8268. https://doi.org/10.3390/ijerph17218268

Reeder, N., Tapanee, P., Persell, A., & Tolar-Peterson, T. (2020). Food insecurity, depression, and race: Correlations observed among college students at a university in the Southeastern United States. *International Journal of Environmental Research and Public Health*, *17*(21), 8268. https://doi.org/10.3390/ijerph17218268

Remenick, L. (2019). Services and support for nontraditional students in Higher Education: A historical literature review. *Journal of Adult and Continuing Education*, *25*(1), 113–130. https://doi.org/10.1177/1477971419842880

Remund, D. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of Consumer Affairs*, *44*(2), 276–295. https://doi.org/10.1111/j.1745-6606.2010.01169.x

Riddle, E. S., Niles, M. T., & Nickerson, A. (2020). Prevalence and factors associated with food insecurity across an entire campus population. *PLOS ONE*, *15*(8). https://doi.org/10.1371/journal.pone.0237637

Royer, M. F., Ojinnaka, C. O., & Bruening, M. (2021). Food insecurity is related to disordered eating behaviors among college students. *Journal of Nutrition Education and Behavior*, *53*(11), 951–956. https://doi.org/10.1016/j.jneb.2021.08.005

RStudio. (2022, May 11). *Open source & professional software for data science teams*. RStudio. Retrieved May 12, 2022, from https://www.rstudio.com/

Schanzenbach, D., & Pitts, A. (2020). *IPR Rapid Research Reports Pulse HH data 10 June 2020*. How Much Has Food Insecurity Risen? Evidence from the Census Household Pulse Survey . Retrieved May 12, 2022, from https://www.ipr.northwestern.edu/documents/reports/ipr-rapid-research-reports-pulse-hh-data-10-june-2020.pdf

Simon, G.-A. (2012, March). *Food security: Definition, Four Dimensions, History*. FAO. Retrieved May 11, 2022, from https://www.fao.org/fileadmin/templates/ERP/uni/F4D.pdf

Soldavini, J., Andrew, H., & Berner, M. (2020). Characteristics associated with changes in food security status among college students during the COVID-19 pandemic. *Translational Behavioral Medicine*, *11*(2), 295–304. https://doi.org/10.1093/tbm/ibaa110

Sumekh, R. (2021). *5 New Realities to Know About College Hunger*. COVID's impact on college student hunger. Retrieved May 12, 2022, from https://www.insidehighered.com/views/2021/07/01/covid%E2%80%99s-impact-college-student-hunger

Swipe Out Hunger. (2022, April 14). *Solutions to college food insecurity*. Swipe Out Hunger. Retrieved May 12, 2022, from https://www.swipehunger.org/ourwork/#campus-partners

U.S Department of Education. (2020). *College Student Employment*. Coe - college student employment. Retrieved May 12, 2022, from https://nces.ed.gov/programs/coe/indicator/ssa

U.S. Department of Agriculture. (2012). *U.S. Adult Food Security Survey Module - USDA ERS*. U.S. Adult Food Security Survey Module: Three-Stage Design, With Screeners. Retrieved May 11, 2022, from https://www.ers.usda.gov/media/8279/ad2012.pdf

U.S. Department of Agriculture. (2021). *History & Background*. USDA ERS - History & Background. Retrieved May 10, 2022, from https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/history-background/

U.S. Department of Labor. (2020, May 6). *A-10. unemployment rates by age, sex, and marital status, seasonally adjusted*. U.S. Bureau of Labor Statistics. Retrieved May 12, 2022, from https://www.bls.gov/web/empsit/cpseea10.htm

U.S. Economic Research Service. (2021). *Food Security and Nutrition Assistance*. USDA ERS - Food Security and Nutrition Assistance. Retrieved May 12, 2022, from https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-security-and-nutrition-assistance

United States Department of Agriculture. (2022, April). *Definitions of Food Security*. USDA ERS - Definitions of Food Security. Retrieved May 10, 2022, from https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/

University of California (UC) Office of the President Global Food Initiative. (2017). *Global Food Initiative: Food and Housing Security at the University of California*. Retrieved May 13, 2022, from https://www.ucop.edu/global-food-initiative/_files/food-housing-security.pdf

USDA. (2019). *Documentation*. USDA ERS - Documentation. Retrieved May 12, 2022, from https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation/

USDA. (2019, March 20). *National School Lunch Program (NSLP) fact sheet*. Food and Nutrition Service U.S. Department of Agriculture. Retrieved May 12, 2022, from https://www.fns.usda.gov/nslp/nslp-fact-sheet

USDA. (2021). *Key Statistics & Graphics*. USDA ERS - Key Statistics & Graphics. Retrieved May 12, 2022, from https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/key-statistics-graphics/

USDA. (2021, March 25). *Students*. Food and Nutrition Service U.S. Department of Agriculture. Retrieved May 12, 2022, from https://www.fns.usda.gov/snap/students

van Woerden, I., Hruschka, D., Vega-López, S., Schaefer, D. R., Adams, M., & Bruening, M. (2019). Food insecure college students and objective measurements of their unused meal plans. *Nutrients*, *11*(4), 904. https://doi.org/10.3390/nu11040904

Ver Ploeg, M., Nulph, D., & Williams, R. (2011). *Mapping food deserts in the United States*. USDA ERS - Data Feature: Mapping Food Deserts in the U.S. Retrieved May 12, 2022, from https://www.ers.usda.gov/amber-waves/2011/december/data-feature-mapping-food-deserts-in-the-us/

Warren, E. (2021). *The Student Food Security Act of 2021*. Retrieved May 12, 2022, from warren.senate.gov/imo/media/doc/Student%20Food%20Security%20Act%20one-pager%20final.pdf

Watson, T., Malan, H., Gilk, D., & Martinez, S. (2017). *College students identify university support for basic needs and life skills as key ingredient in addressing food insecurity on campus*. Retrieved May 13, 2022, from https://basicneeds.berkeley.edu/sites/default/files/calag_student_food_insecurity_and_food_literacy_published.pdf

Weaver, R. R., Vaughn, N. A., Hendricks, S. P., McPherson-Myers, P. E., Jia, Q., Willis, S. L., & Rescigno, K. P. (2019). University student food insecurity and academic performance. *Journal of American College Health*, *68*(7), 727–733. https://doi.org/10.1080/07448481.2019.1600522

Weiland, N. (2022, April 13). *The Biden administration extends the national Covid Public Health Emergency for another 90 days.* The New York Times. Retrieved May 12, 2022, from https://www.nytimes.com/2022/04/13/us/politics/biden-covid-public-health-emergency-extended.html

Wolfson, J. A., Insolera, N., Cohen, A. J., & Leung, C. W. (2021). The effect of food insecurity during college on graduation and type of degree attained: Evidence from a Nationally Representative Longitudinal Survey. *Public Health Nutrition*, 1–22. https://doi.org/10.1017/s1368980021003104

Woolf, H. R., Fair, M., King, S. B., Dunn, C. G., & Kaczynski, A. T. (2020). Exploring dietary behavior differences among children by Race/ethnicity and socioeconomic status. *Journal of School Health*, *90*(8), 658–664. https://doi.org/10.1111/josh.12915

Zigmont, V., Linsmeier, A., & Gallup, P. (2019). Understanding the why of college student food insecurity. *Journal of Hunger & Environmental Nutrition*, *16*(5), 595–610. https://doi.org/10.1080/19320248.2019.1701600

Appendix A: Online Survey Questions

Demographic Questions

1. Please specify your grade level.
    - Freshman (1st year undergraduate)
    - Sophomore (2nd year undergraduate)
    - Junior (3rd year undergraduate)
    - Senior (4th year undergraduate)
2. Please specify your age.
    - 18
    - 19
    - 20
    - 21
    - 22
    - 23
    - 24
    - 25+
3. Are you a first generation college student?
    - Yes
    - No
4. Are you an international student?
    - Yes
    - No
5. Are you of Hispanic, Latino, or Spanish origin?
    - Yes
    - No
6. What race do you identify with?
    - Asian
    - Black or African American
    - Native Hawaiian or Other Pacific Islander
    - White
    - Not listed, please specify
7. Which term do you use to describe your gender identity?
    - Woman or female
    - Man or male
    - Trans woman
    - Trans man
    - Genderqueer
    - Agender
    - Genderfluid
    - Intersex
    - Non-binary
    - Other (please specify)
8. Which term best describes your sexual orientation?
    - Straight/heterosexual

- Bisexual
- Gay
- Lesbian
- Pansexual
- Queer
- Questioning

9. Where do you live?
    - On campus traditional housing (singles, doubles, triples, quads)
    - On campus suite style housing
    - On campus apartment housing
    - Off campus apartment
    - Parent/guardian/other family member's home
10. Do you receive financial aid from Boston College?
    - Yes
    - No
    - Unsure
11. Are you a Montserrat student?
    - Yes
    - No
    - Unsure
12. While you were in high school, did you participate in free or reduced-price school meals?
    - Yes
    - No
13. How many hours per week, on average, do you work for pay?
    - I do not work for pay
    - 1-10 hours per week
    - 11-20 hours per week
    - 21-30 hours per week
    - 31-40 hours per week
    - 40+ hours per week
14. Select the types of extracurricular activities that you participate in on-campus on a regular basis.
    - Student government
    - Academic clubs
    - Culture & affinity clubs
    - Athletics (varsity, club, intramural, etc.)
    - Volunteer organizations
    - Student newspaper
    - Performing & visual arts
    - Other

The following questions are asking about your feelings with food in the prior academic year (Fall 2020 and Spring 2021).

1. "The food that I bought just didn't last, and I didn't have money to get more." Was that often, sometimes, or never true for you?
    - Often true
    - Sometimes true
    - Never true
    - Don't Know/refused to answer
2. "I couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you?
    - Often true
    - Sometimes true
    - Never true
    - Don't Know/refused to answer
3. Did you ever cut the size of your meals or skipped meals because there wasn't enough money for food?
    - Yes
    - No
    - Don't know or refused
4. (IF YES to above question) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
    - Almost every month
    - Some months but not every month
    - Only 1 or 2 months
    - Don't know or refused
5. Did you ever eat less than you felt you should because there wasn't enough money for food?
    - Yes
    - No
    - Don't know or refused
6. Were you ever been hungry but didn't eat because there wasn't enough money for food?
    - Yes
    - No
    - Don't know or refused

The following questions are asking about your feelings with food during the Fall 2021 semester.

1. "The food that I bought just didn't last, and I didn't have money to get more." Was that often, sometimes, or never true for you?
    - Often true
    - Sometimes true
    - Never true
    - Don't Know/refused to answer
2. "I couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you?
    - Often true
    - Sometimes true
    - Never true

- Don’t Know/refused to answer

3. Did you ever cut the size of your meals or skipped meals because there wasn't enough money for food?
    - Yes
    - No
    - Don’t know or refused
4. (IF YES to above question) How often did this happen—almost every week, some weeks but not every week, or in only 1 or 2 weeks?
    - Almost every week
    - Some weeks but not every week
    - Only 1 or 2 weeks
    - Don’t know or refused
5. Did you ever eat less than you felt you should because there wasn't enough money for food?
    - Yes
    - No
    - Don’t know or refused
6. Were you ever been hungry but didn't eat because there wasn't enough money for food?
    - Yes
    - No
    - Don’t know or refused

The following questions will ask you about how you feel about food on campus.

1. Do you currently have a meal plan?
    - Yes
    - No
2. (IF YES to above question) What type of meal plan do you have?
    - Residential (mandatory) meal plan
    - Flex Basic ($300 or less)
    - Flex 300 ($300)
    - Flex 800 ($800)
    - Flex 1200 ($1200)
    - Other flex plan (please specify)
3. How many times per week do you obtain food from the dining hall?
    - 0 times per week
    - 1-3 times per week
    - 4-6 times a week or less
    - 7-10 times per week
    - 10-15 times per week
    - 16+ times per week
4. (IF ANSWER ANY TIMES ABOVE) Indicate your level of agreement with the following questions regarding your experience with the BC dining halls and meal plans.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

The dining hall has the types of foods I like to eat.					
I am provided enough food at the dining hall where I do not feel hungry afterwards.					
I believe the food in the dining hall is reasonably priced.					
I am confident I have enough meal plan money to last me the entire semester.					

5. If you were to run out of money on your meal plan, what would you do?
    - Ask friends to pay for meals with their meal plans
    - Ask family/parent(s) for more money
    - Skip meals
    - Go to food pantry or other free organization
    - Use credit card/take out loan to buy food
    - Ask faculty or staff for advice/help
    - Unsure
    - Other (please specify)
6. How many times per week do you purchase food from restaurants or go out to eat?
    - 0 times per week
    - 1-3 times per week
    - 4-6 times a week or less
    - 7-10 times per week
    - 10-15 times per week
    - 16+ times per week
7. How many times per month do you go grocery shopping?
    - 0 times a month
    - 1-2 times per month
    - 3-4 times per month
    - 5+ times per month
8. (IF ANSWER ANY TIMES ABOVE) Please indicate your level of agreement with the following statements regarding grocery shopping.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am able to easily access the grocery stores near BC.					

The grocery stores near BC are affordable.					
I am able to purchase the items I want without worrying I cannot afford them.					
I know how to shop smartly and purchase groceries within my budget.					

The following section will be asking you to answer questions about food assistance programs and your accessibility to food.

1. Do you know what the Supplemental Nutrition Assistance Program (SNAP) or food stamps are? Do you know that college students are eligible for SNAP?
    - Yes, I know what SNAP is, and I am aware college students are eligible
    - Yes, I know what SNAP is, but I am not aware college students are eligible
    - No, I do not know what SNAP is, but I am aware college students are eligible
    - No, I do not know what SNAP is, and I am not aware college students are eligible
2. Which of the following programs have you used during the prior academic year, or this current semester?
    - SNAP or food stamps (including pandemic-EBT [p-EBT])
    - Food pantry/food bank
    - Other food assistance programs (please specify)
    - None of the above

3. Please indicate your level of agreement regarding concerns and barriers to using income-based food programs and food pantries.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am worried about the paperwork I need to share to enroll in food programs					
I do not want to rely on food programs because I value personal independence					
It is difficult for me to travel to the food program offices to apply and recertify					
I do not know if I qualify for income-based programs					

I'm worried people will find out I use these programs					

4. Select which of the following strategies, if any, you are using to obtain or afford food. If you are not using the following strategies, indicate which ones you would be most likely to use to afford or obtain food**.**

- Accept food from friends
- Have friends pay for meals in the dining hall or at restaurants
- Ask parents for extra money or add funds to student account
- Buy different or cheaper foods/meals
- Go to on campus events that are offering free food
- Buy food using a credit card or take out a loan
- Get food from an on or off campus food pantry
- Stretch the food I currently have by eating less
- Skip meals altogether
- Other (please specify)

5. Indicate your level of agreement on whether or not the following strategies would be helpful for improving your level of food access.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Access to public transit or rides to grocery stores					
Different hours in meal programs, stores, or dining hall					
Extra money to help pay for groceries					
Additional funds added to student account to help pay for food in the dining hall					
Information about food assistance programs					
More (or different) food in stores or the dining hall					
Support for the cost of food delivery					

Please indicate your level of agreement with the following statements regarding eating and access to food.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I find myself eating when I'm feeling emotional (such as anxious, depressed, sad), even when I'm not physically hungry.					
I find myself eating when I am lonely, even when I'm not physically hungry.					
I find myself eating when I am stressed out, even when I'm not physically hungry.					
I am eating less because I am anxious or depressed.					
I am feeling anxious or stressed out because I do not have enough to eat or cannot afford food.					
I am having trouble focusing during class because I do not have enough to eat or cannot afford food.					
I am struggling focusing on important assignments or studying because I do not have enough to eat or I cannot afford food.					
I feel lonely and isolated because I do not have enough to eat and/or cannot afford food.					
I have skipped or missed social events with friends because I cannot afford it.					
I feel comfortable discussing my inability to afford food with friends or family.					

I am using appetite suppressing methods (smoking, drinking water, taking supplements, etc.) to stop feeling hungry because I do not have enough to eat.					

The following section will be asking you open ended questions about food insecurity.

- If you have faced food insecurity while at BC, please describe your experience.
- How do you believe BC should address food insecurity on campus?
- If you have any other thoughts about food insecurity, and food availability or accessibility at BC, please share them here.

Appendix B: Interview Questions

Some questions adapted from: "It's a Feeling That One Is Not Worth Food": A Qualitative Study Exploring the Psychosocial Experience and Academic Consequences of Food Insecurity Among College Students (Meza et al., 2019)

Question	**Follow Up Questions**
Tell me about your food situation here at BC, and if you have struggled to get enough food or pay for food on campus.	How long has this been happening? Why do you think this is happening? How do you feel about the situation? What specific thoughts do you have?
How often have you felt stressed or anxious due to not having enough money for food?	Can you tell me about a specific time? How do you cope with these feelings?
Tell me about some of the resources you have to help with food here at BC. Are you using any other resources outside of BC to help with food (SNAP, food pantries, etc.)?	Do you rely on family or friends? How does that make you feel? Do you work for pay? If yes, do you find it hard to balance with school?
Are you aware of what SNAP (or food stamps) are? Did you know that college students are eligible for SNAP?	Would you want to sign up/learn more about SNAP eligibility for college students? How would you want this information to be conveyed to you?
How often have you felt like [you had no choice about what you were eating/embarrassed or stigmatized/lonely/sad or depressed] due to not having enough money for food? Are there any other emotions you may have felt related to your food situation?	Can you tell me about a specific time? How do you cope with these feelings?
How has your food situation affected your academic performance?	Can you give me an example? How did you feel in this situation? What did you do as a result?
What do you think BC should do to address food insecurity on campus?	Why do you think that would be an effective strategy? Do you think BC would take any actions like this?
How has COVID affected food insecurity?	
What would you want the administration at BC to know about students who may struggle with food insecurity?	Why do you think this is important to tell them?
Is there any other effect that food insecurity has on you that you would like to talk about?	