Food Insecurity and Higher Education:

A Review of Literature and of Resources

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Executive Summary

Research finds food insecurity to be a barrier to postsecondary access and student success. Compared to the general population, college students experience food insecurity at higher rates. Underrepresented, first-generation, non-traditional, and low-income students have food-insecurity rates ranging from 33–51% compared to 10% among U.S. adults.

The factors contributing to food insecurity at institutions of higher education are complex, such as the increased cost of higher education, the limited usage of and eligibility for the Supplemental Nutrition Assistance Program (SNAP), the social stigma associated with being food insecure, the location of an institution within a *food desert*, and the institutional setting (a two-year or four-year college). Other barriers linked with food insecurity include ineffective meal plan policies for residential students, limited transportation to and from campus, and whether students come from food-insecure backgrounds. Irrespective of cause, food insecurity negatively impacts college access, retention, and completion. The need to understand the factors contributing to food insecurity and the effective interventions used to mitigate food insecurity are essential to achieving THEC's mission to increase the number of Tennesseans with a postsecondary credential and THEC's Master Plan goals relative to student success and family prosperity. This comprehensive literature review conducted sought to answer the following questions.

What does the literature say about food insecurity in higher education and its effects on students and institutions?

Increased **tuition and non-tuition costs** (e.g., books and supplies), leave many students unable to fund essential expenses such as groceries. In addition, **limited access to and knowledge of SNAP benefits among college students** has led to low participation rates in the program. Students experiencing food insecurity are **less likely than their food-secure peers to excel academically** and are **more likely to report high levels of stress** and to consume less-healthy diets. To cope with being food insecure, students may depend on support or resources from family and friends or may rely heavily on resources provided by the institution or local community.

What solutions and best practices does existing literature suggest to address food insecurity in higher education?

Literature suggests institutions should conduct a needs assessment to inform institutional programming and intervention strategies, such as food pantries, meal-swipe donation programs, and completion grants. Additionally, institutions should connect students to community-based or state/federal resources via one-stop services and should work to build campus awareness of food (in)security. This could be achieved through non-profit partnerships and by faculty and staff awareness trainings.

From a policy perspective, literature suggests federal, and state food-insecurity programming should be expanded to promote and allow SNAP benefits for students for the duration of their enrollment. The CARES Act temporarily expanded student eligibility for SNAP benefits. Expanding SNAP Employment and Training (SNAP E&T) programming and enacting food insecurity legislation (e.g., the *Hunger Free Campus Bill*) could bolster both policy and practice in ensuring students have their basic needs met.

How are postsecondary institutions in Tennessee addressing food insecurity among students?

In Tennessee, public two-year and four-year institutions employ numerous interventions to mitigate food insecurity on their campuses, such as food pantries, community gardens, meal-swipe donation programs, and targeted financial supports (e.g., emergency grant funds). Active state-led food insecurity programming and identification mechanisms include SNAP E&T, tnAchieves COMPLETE Grant, TN Promise COMPLETE Coaching, TN Promise Completion Grants, and the TN Reconnect Quick Screener.

Introduction

A rapidly growing body of research finds food insecurity a barrier to access, particularly for low income, minoritized, first generation, and non-traditional students. Exacerbated by the COVID-19 pandemic, food insecurity in higher education and attention to the issue continues to increase. Competing financial, academic, and personal responsibilities lead students to prioritize one set of needs over another, such as purchasing textbooks in lieu of groceries or other basic needs supplies. Rising non-tuition costs (e.g., housing, transportation, food) and the effects of the pandemic such as campus closures and access to institutional resources, have only worsened the levels of food insecurity experienced by students.

Complementing the growing body of research, practical and political efforts are expanding to address food or basic needs insecurity on college campuses. As more attention is drawn to food insecurity in higher education, local, institutional, state, and federal efforts to address it have increased. Institutional memberships in anti-hunger organizations have increased exponentially. Swipe Out Hunger, a national anti-hunger non-profit organization, expanded membership from 124 to 450 campuses in all 50 states during 2021-2022 (Swipe Out Hunger, 2021)[1]. California, New Jersey, Maryland, Louisiana, and other states have passed legislation to denote *Hunger-Free Campuses*, a designation often accompanied with funds, which indicates that colleges are addressing food insecurity (Ellison et al., 2021).

Purpose and Scope

Relative to T.C.A. § 49-7-214, which requires the Tennessee Higher Education Commission (THEC) to inform the Tennessee General Assembly of food insecurity at public institutions of higher education across the state, this review summarizes the academic and non-academic literature surrounding food insecurity in the postsecondary education context.

This literature review aims to answer three research questions:

1. What does the literature say about food insecurity in higher education and its effects on students and institutions?
2. What solutions and best practices does existing literature suggest to address food insecurity in higher education?
3. How are postsecondary institutions in Tennessee addressing food insecurity among students?

To address these overarching questions, the review is divided into three subsections: defining and measuring food insecurity in higher education; causes and effects of food insecurity in higher education; and contextualizing and mitigating food insecurity in higher education.

The literature considered for this review was purposefully broad to ascertain a comprehensive picture of academic and non-academic sources published within the past decade. Key search terms included phrases such as "Campus Food Insecurity", "Student Food Insecurity" and "Food Insecurity in Higher Education."

This literature review was conducted between May and December 2022.

Defining and Measuring Food Insecurity in Higher Education

This portion of the literature review summarizes how the term *food insecurity* is operationalized and measured within the literature. The United States Department of Agriculture (USDA), which is most commonly cited when measuring food insecurity, defines food insecurity as "a household-level economic and social condition of limited or uncertain access to adequate food" (USDA, 2021, paras 3-6). The USDA measures and classifies food insecurity into two categories, *low food security* and *very low food security*, based on responses to a series of survey items.

USDA survey tools, such as the Adult and Household Food Security Survey Modules, are commonly used in research and evaluation of food insecurity. The U.S. Household Food Security Survey Module is an 18-item survey component, tailored to measure food insecurity of households *with* children. The USDA Adult Food Security Survey is tailored to measure food insecurity of individuals or households *without* children (USDA, 2021). While the USDA definition for food insecurity and the Adult and Household Food Security Survey Modules have primarily been utilized in literature and are considered the most valid measures of food insecurity for Americans (Ellison et al., 2021), more recent literature has argued that the USDA definition and survey modules have not been evaluated for use with the college student population (Ames & Barnett, 2019; van Woerden et al., 2019). Research (e.g., El Zein et al., 2021; Laska et al., 2017) regularly emphasizes the differences between college students and adults from the general population, which underscores the imperative to capture these differences when measuring food insecurity in higher education (Ellison et al., 2021).

When compared to the general population, students experience food insecurity at higher rates. Recent literature reviews reported average rates of food insecurity among college students at 33–51% as compared to 9.8% among U.S. adults (Ellison et al., 2021).

Factors contributing to food insecurity at institutions of higher education are complex and include limited financial resources, reduced buying power of federal aid, high tuition, housing, and food costs (El Zein et al., 2019). Creating a more representative measure of campus food insecurity would enable researchers to quantify the prevalence of food insecurity among students in higher education with greater accuracy when compared to the national rates of food insecurity (Ellison et al., 2021).

At the time of this literature review, no national studies on food insecurity in higher education were identified, though some research studies have multistate perspectives (e.g., the Students in Need in Community Colleges item set in the Community College Survey of Student Engagement and The Hope Center Student Basic Needs Survey). Because studies on college food security have been published in a range of disciplines, such as nutrition and dietetics, consumer studies, and higher education, gaining a clear impression of the extent of insecurity in higher education has been difficult (Nazmi et al., 2018). Even so, a growing body of research (e.g., Riddle et al., 2020) has found that students in higher education experience food insecurity at higher rates than the public.

Rates of Food Insecurity for Minoritized, First-Generation, Non-traditional and Low-Income Students

The 2021 #RealCollege survey, conducted by The Hope Center for College, Community, and Justice, received responses from 195,000 students across 130 two-year colleges and 72 four-year colleges and universities. The 2021 survey found that when compared to non-Hispanic white (28%) students, rates of food insecurity were much higher among African Americans (47%), Hispanic or Latinx students (40%), Indigenous and Native (51%), and multi-racial (40%) students. In addition, the same survey found students who were Pell Grant recipients (44%) experienced higher rates of food insecurity than their counterparts (27%) (Dr. Sara Goldrick-Rab testimony found in HRDT-117-RU00: Ending Hunger in America: Hunger on College Campuses).

The HOPE Center's survey also found that students with children (47%) experienced higher rates of food insecurity when compared to non-parenting students (31%). Too, older students, including those over 25 years old (40%), experienced significantly higher rates of food insecurity than younger students aged 18 to 20 (26%). Rates of food insecurity were also much higher among LGBTQ students, veterans, former foster youth, and students who were pursuing higher education after exiting the criminal justice system (Dr. Sara Goldrick-Rab testimony found in HRDT-117-RU00: Ending Hunger in America: Hunger on College Campuses).

Additional studies have found similar findings to The Hope Center. One study analyzing broad demographics of food insecurity at one institution found that there were statistically significant differences by ethnicity, age, and first-generation status (Phillips, McDaniel, & Croft, 2018). African American students were more likely to experience food insecurity than students of other races or ethnicities. First-generation students, non-traditionally aged students (24 or older), continuing education students (measured by years enrolled in postsecondary education), students with debt, students who were financially independent, students with children, and off-campus residents were more likely to be food insecure (Phillips et al., 2018). When studying the rates of food insecurity of graduate and undergraduate students, one study also found that there were significant differences by race/ethnicity and food security status for both undergraduate and graduate students. Hispanic, African American, American Indian, and multiracial/other undergraduate students had greater adjusted odds of experiencing food insecurity compared with White, non-Hispanic students. African American graduate students had the greatest adjusted odds of experiencing food insecurity when compared to the remaining surveyed graduate students (Soldavini et al., 2019). When assessing the prevalence of food insecurity among undergraduate students, Willis (2019) found students who were eligible for the Pell Grant had a higher food-insecurity prevalence when compared to those who were not eligible for the grant. In addition, the study also found that students who identified with a sexual minority group have 1.74 times higher odds of food insecurity than heterosexual students.

Causes of Food Insecurity in Higher Education

This portion of the literature review focuses on the sources of food insecurity among college students and on how being food insecure impacts the lives and successes of those students. Alaimo (2005) developed a conceptual framework model of food insecurity, emphasizing that the "determinants and components of food insecurity, as well as the outcomes and consequences of food insecurity, which are mediated by the availability and acceptability of various food-acquisition and coping strategies" (p. 284).

Broton et al. (2018) used Alaimo's food insecurity conceptual model to fit the college student context, specifically including food insecurity risk factors unique to students such as "sociodemographic background characteristics, childhood experiences of food insecurity, limited financial resources, employment status, and the college and community environment" (p.24). Their adaptation highlights that when addressing why students are food insecure, there is an implicit link between risk factors specific to college students and food security. For college students, risk factors can come from a lack of resources, time, transportation, or kitchen facilities, all of which are necessary to be food secure. For students experiencing food insecurity, the consequences can negatively affect academic achievement and physical and mental health.

The following paragraphs further unpack the factors of food insecurity relative to the higher education context in addition to the consequences of and responses to food insecurity.

Factors of Food Insecurity in Higher Education

Cost of Higher Education

The rising cost of attending higher education is a factor of student food insecurity. As the cost of tuition and living expenses has risen (Broton, Weaver, & Mai, 2018), the purchasing power of federal financial aid has decreased (Lumina Foundation, 2019) and the cost of non-tuition expenses has increased. During the past 35 years, the cost of tuition has increased 5 times more than inflation. Adjusted for inflation, the cost of tuition and fees at public four-year institutions increasing from $8,500 in 2010-11 to $9,400 in 2020-21 and public two-year institutions increasing from $3,300 in 2010-11 to $3,900 in 2020-21 (National Center for Education Statistics, 2021).

As the cost of tuition and fees has increased, the purchasing power of federal financial aid has reduced, and the cost of college has shifted onto students and their families. A 2018 U.S. Government Accountability Office (GAO) report reviewing food insecurity among college students found that the average Pell Grant amount only covered 37% of tuition costs at public 2-year colleges, and 19% at public 4-year colleges (U.S. Government Accountability Office, 2018). After accounting for grant aid, the cost to attend a higher education institution can take up as much as 40% of a student's annual income (Goldrick-Rab & Kendall, 2014), with 20 states having shares above 50% in 2021 (State Higher Education Executive Officers Association, 2022).

In addition to tuition increases, supplementary costs, defined as the *hidden costs of college*, also contribute to the financial strain placed on students (Goldrick-Rab, 2019). After paying for major financial expenses, a student may not have enough money to cover the essentials, including food (Ferone, 2021).

Limited SNAP Use and Education

The Supplemental Nutrition Assistance Program (SNAP) is the largest of the domestic nutrition assistance programs administered by the USDA's Food and Nutrition Service (FNS). In fiscal year 2019, SNAP provided a total of $55.6 billion in annual benefits to 35.7 million people in an average month (Vigil, 2022); however, the 2018 GAO report found that almost 2 million at-risk students who were potentially eligible for SNAP did not report receiving benefits in 2016 (U.S. Government Accountability Office, 2018). Prior to the COVID-19 pandemic and the passage of the Consolidated Appropriations Act most college students did not meet the eligibility requirements for SNAP. A report by The Hope Center studying basic needs insecurity among Los Angeles Community College District students during the pandemic found that 18% of students received SNAP, but 52% did not apply for supports because they did not know how (The Hope Center for College, Community, and Justice, 2021). The same report found that for students who were able to enroll in SNAP, students enrolled in two-year colleges were more likely to experience basic needs insecurity than students enrolled in four-year colleges (at 24% and 10% respectively).

In 2021, the Consolidated Appropriations Act temporarily expanded SNAP access for college students (USDA, 2021). Students who are eligible to participate in state or federal work-study programs during the regular school year and have an Expected Family Contribution (EFC) (EFC is an index number used to determine eligibility for federal student aid) of zero dollars in the current academic year were eligible for SNAP under the temporary provisions. At the time of this writing, the COVID-19 public health emergency (PHE) ended, and USDA began to close the temporary expansions to student SNAP eligibility.

In addition to the temporary status of SNAP eligibility for college students, they are generally unfamiliar with the program. Interviews conducted with 23 college students in North Carolina and

West Virginia for a yet to be published paper revealed that the understanding of federal nutrition assistance programs among students was limited (Snelling & Hagedorn, 2021). Students, however, are not the only individuals unfamiliar with SNAP eligibility guidelines. The 2018 GAO report found that officials at institutions of higher education also had difficulty understanding SNAP rules, with some institutions misinforming students about their potential eligibility (U.S. Government Accountability Office, 2018). This lack of institutional awareness can create barriers to access for students as college officials are important sources of information for their students. For students who are eligible for SNAP, the intimidating and often confusing application process can deter individuals from participating (Freudenberg, N., et al., J., 2019).

Student and Social Stigma

While research reveals that the prevalence of student food insecurity occurs at high rates, the issue can often go unnoticed. This may be due to personal feelings students may have towards food insecurity. The stigmatization of food insecurity leads many students to purposefully hide their food and basic needs insecurities and students may be unwilling to discuss their circumstances with individuals, particularly those with resources due to feelings of shame and self-doubt (Crutchfield, et al., 2020). A study at the University of Central Florida found that almost 25% of participants found utilizing the campus food pantry difficult due to feelings of shame, embarrassment, and pride (Daugherty, Birnbaum, & Clark, 2019). A study conducted at the University of North Texas found that both food-secure and food-insecure students noted that food insecurity can affect students in different ways and is not often talked about among students (Henry, 2017).

Institutional Characteristics

A college's geographic location can also be a factor of food insecurity. Institutions located in food deserts may also be a contributing factor to food insecurity (Dhillon et al., 2019). A food desert, as defined by the USDA, is an urban area where at least 33% of its residents are located more than a mile away from a venue offering nutritious food (e.g., supermarkets) (Dutko, et al., 2012). A study of food insecurity among students at a midsize rural University in Oregon found that 59% of students experienced food insecurity (Patton-López, et al., 2014). A study conducted at an urban institution in Alabama found that roughly 14% of students were experiencing food insecurity (Gaines et al., 2014). At one minority-serving institution located in a food desert, a low variety and poor quality of available food options on campus appeared to dictate first-year student food choices (Dhillon et al., 2019). The study also found that the price of on-campus dining options was high, particularly for healthier food options, which made them inaccessible options for some students.

In addition to geographical location, the type of institution correlates with the rates of food insecurity experienced by students (Broton, et al., 2018). Literature revels that up to 55% of undergraduate students face food insecurity, and students in community colleges (i.e., two-year colleges) and those living in areas with high costs of living experienced the greatest rates of food insecurity (Broton & Goldrick-Rab, 2018; Freudenberg et al., 2011; Gaines et al., 2014; Payne-Sturges, et al., 2018). Students attending community colleges were more likely to be older, have dependent children, financially disadvantaged, work longer hours, and tended to have a less healthy diets than students at four-year institutions (Shi, Davies, & Allman-Farinelli, 2021).

On- and Off-Campus Food Options

Residential institutions may require students to purchase a meal plan (Ellison et al., 2021), which are pre-paid accounts to provide students with access to dining services on campus. For some students, a meal plan does equate to food security. Mei et al., (2021) observed in their study of students at a

large midwestern university that even students with unlimited meal plans experienced food insecurity. Another study conducted among students at a major research university found that students living on campus who are required to purchase meal plans may choose to purchase less expensive plans to save money; however, cheaper meal plans may only provide 10-14 meals per week (Dhillon et al., 2019), translating to fewer than 3 meals per day, which may be insufficient to meet dietary needs (Dhillon et al., 2019). A study of eight non-traditional students (defined by the authors as financially independent, have dependents other than a spouse, have delayed enrollment, enter college with a GED rather than a high school diploma, attend school part-time, work full-time, and are a single parent), at a mid-sized, public, four-year university located approximately 25 miles from a major metropolitan city found that cheaper meal plans offered fewer meals per month and were not sufficient for student needs, with students running out of meals swipes before the end of the month (Beam, 2020). Van Woerden et al., (2019) found that students working while enrolled had lower meal plan usage and expressed difficulty in obtaining meals at night or after hours after on campus dining services were closed. Other studies, such as Peterson and Freidus (2020), note that distance to cafeterias, hours of operation and busy schedules pose barriers to food access even with meal plans in effect.

A study of food insecurity among 30 graduate and undergraduate students at a major research university found that living off campus and not being enrolled in a meal plan were associated with food insecurity (White, 2020). For students living off campus, the price of groceries can also be a guiding factor in the meals students choose to purchase. Students in the study cited affordability as the dominant driver of their decisions on which foods they consumed.

Busy Schedules

A report found a positive relationship between higher food insecurity levels and the number of hours a student worked per week, finding that food-insecure students were more likely to work evening shifts, which may affect their ability to access on-campus dining halls during regular business hours (Mei et al., 2021). Pursuing a postsecondary education is time intensive and can cause a student to have competing priorities on their daily schedule. Among undergraduates from low-income families across Wisconsin, a study found that a lack of time was one of the most reported barriers for food-insecure students, particularly female students and four-year college students (Broton, Weaver, & Mai, 2018). Students caring for dependents (e.g., children, siblings, older family members) may have more complex constraints to their schedules. To cope with these restrictions, students may rely on faster, less nutritious, or otherwise inadequate meal options.

Lack of Transportation

Inconsistent or unreliable means of transportation can create a barrier to food access. In a study of Wisconsin undergraduates from low-income families, Broton et al. (2018) found that 13% of students who were food insecure reported that they did not have a form of transportation to get to the store to purchase food. This can vary for students attending institutions of higher education in different geographical locations. In the study, a greater share of students who identified as a racial/ethnic minority (19%) or attended college in urban areas (19%) indicated that a lack of transportation was a barrier to their food security. For students with access to transportation, the increase in the cost of gas may cause further financial strain (The Feed, 2022).

Other studies have also found barriers between transportation and food. A study of non-traditional students found that students would often have to choose between utilizing funds for gas or food, and, when gas funds were low, students would skip class to ration funds (Beam, 2020). Limited transportation options to off-campus grocery stores have also been cited as barriers to food access

by students and for students without cars, some often walk to the store and are limited to a small number of groceries that they are able to bring back (Peterson & Freidus, 2020).

Lack of Cooking Facilities and Abilities

Inadequate cooking skills or facilities may prevent food access and security. Dhillon et al., (2019) revealed that limited reservations for campus kitchens made it difficult for students to cook. White (2020) found students expressed difficulty with cooking and worried about wasting food when trying new cooking methods. Among undergraduate and graduate students, one study found that perceived cooking skills were significantly associated with food-security status. Undergraduate students were less likely to experience food insecurity if they reported fair cooking skills (compared with those reporting poor cooking skills) (Soldavini, Berner, & Da Silva, 2019). Gaines et al. (2014) suggested that students who may have inadequate cooking skills, time, or money to buy and prepare food, may be at increased risk for food insecurity.

Childhood Food Insecurity

Food insecurity may be acute (temporary) or chronic (long lasting). Being food insecure prior to attending college, particularly in childhood, may be associated with a greater risk of food insecurity in adulthood (Mezaet al., 2019). When studying food insecurity among first-generation college students, students who experienced childhood food insecurity were more than twice as likely to be food insecure in college when compared to first-generation peers who did not experience food insecurity during childhood. The same study found childhood food insecurity influenced a college student's likelihood of being food insecure regardless of first-generation status (Olfert, et al., 2021).

The Effects of Food Insecurity in Higher Education

Academic Success, Persistence and Degree Completion

Students experiencing food insecurity are less likely than food-secure peers to excel academically and are more likely to report high levels of stress, which hinders their ability to focus on their academics (Mechler et al., 2021). In spring 2020, a survey of 2,654 students conducted at a large, public, urban university in the Southwestern United States found that food-insecure students lost more credit hours on average due to course failures and withdrawals than food-secure students (Mechler et al., 2021). In spring 2020, food-insecure students lost an average of 1.31 credit hours, compared to an average of 0.97 credit hours among food secure students. Using participants recruited from the University of California, Berkeley, food pantry, Meza et al., (2019) conducted surveys and interviews analyzing the experience of food insecurity among college students and its impact on psychosocial health and academic performance. The authors found that all interview participants expressed how being food insecure presented a substantial challenge to their academic success, noting that the physical manifestations of food insecurity and the mental stress between food or focusing on academics was difficult.

When analyzing the association between food insecurity and two measures of academic achievement among first-year students- grade-point average (GPA) and retention- van Woerden et al., (2018) found that food-insecure students had a slightly lower GPA than food-secure students. The authors estimated the impact of food insecurity on GPA using a model. In their model, food insecure students were assumed to be secure and assigned the GPA expected if they were food secure. The model revealed that the percentage of food-insecure students obtaining at least a 3.0 or above increased from 59% to 72% and that the probability to achieving a 4.0 or above increase from 8% to 11%.

Wolfson et al., (2021) found that food insecurity, particularly for first-generation college students, is associated with lower odds of college completion. In addition, a study found that students with some form of debt--defined as, "debt from any source, including credit card debt, car loans, and personal loans" (p.372)—were more likely to be food insecure. The study found that students experiencing food insecurity had 3.49 times higher odds of reporting that they had considered dropping out of college due to some form of debt they owed and food insecure students had 3.58 times greater odds of reporting that they had reduced their course load due to some form of debt they owed, suggesting that competing priorities, such as debt repayment and food procurement created difficulties for students to remain in school (Phillips, McDaniel, & Croft, 2018). In a study of eight non-traditional students' experiences with food insecurity, students noted the ways in which food insecurity and competing responsibilities affected their academic success (Beam, 2020). When asked about food insecurity and how students managed the situation with their academics, all participants shared that, regardless of their situation, they were committed toward doing well academically.

Physical and Mental Health Effects

Food-insecure diets are less likely to be healthy (i.e., containing fewer fruits, vegetables, and whole grains) and more likely to contain higher intakes of sweets (i.e., added sugars and fast foods) (Leung et al., 2019).

One study analyzing the role of food insecurity on student mental health wellbeing found that food-insecure students had significantly higher levels of psychological distress compared to food-secure students and were also more likely to self-report an average or poor mental health status (Becerra & Becerra, 2020). Food-insecure students are also more likely to suffer from disordered eating behaviors, and poorer sleep quality compared to food-secure students (El Zein et al., 2019). One study found that several food insecure students reported sleeping long hours, either as a response to not eating sufficient food or as a coping strategy related to their hunger sensations (Meza et al., 2019). For other students, food insecurity led to sleep deprivation from being anxious with thoughts of food, perpetuating a cyclical pattern of tiredness and inability to focus on class. In Beam's (2020) study, all students reported previously experiencing emotional distress due to limited money for food or lack of food, competing financial demands, and/or the impact their situation had on children.

Completion and Retention Rates

Food insecurity can prohibit a student's ability to remain enrolled or to complete a degree. The mental and physical health and social implications of food insecurity on student academics often result in students either reducing credit hours (i.e., potentially moving from full-time to part-time status) or dropping out completely. Wolfson et al. (2021) found that, after adjusting for age, sex, race/ethnicity and household position, food insecurity during college was associated with lower odds of college completion, and lower likelihood of obtaining a bachelor's degree or a graduate or professional degree. After further adjustment for first-generation status and poverty level, college food insecurity remained significantly associated with lower odds of college graduation. This is especially important for key subgroups such as first-generation and low-income students given the importance of a college degree for economic mobility (Wolfson et al., 2022).

Coping With and Responding to Food Insecurity

Compromising Food Quality and Basic Needs

Despite the physical, mental, and academic effects of food insecurity, students employ a variety of coping strategies, which may include compromising food quantity or quality. A study measuring the

prevalence and correlates of food insecurity among college students in Appalachia asked students about food insecurity coping strategies (McArthur et al., 2018). In the survey, students indicated that purchasing cheap or processed foods, rationing food, and eating less healthy meals to eat more were some of the coping strategies often used to combat their food insecurity. Students also coped by forgoing preference and variety in their diet and sacrificed basic needs to purchase foods, such as delaying rent payments, insurance payments and other necessary purchases (Beam, 2020).

Family Support

When experiencing food insecurity, students may turn to family and friends for supplemental support. Dhillon et al., (2019) found that first-year minority college students attending a campus located in a food desert relied on family for convenient, acceptable (i.e., familiar, and preferred), and free food. Broton, Weaver, and Mai (2018) found that receiving assistance from family members was a common theme in interviews with students. Food-insecure students in the same study highlighted the importance of familial support and other financial supports as coping mechanisms. Not all food-insecure students, however, may feel comfortable asking or relying on their parents for help. One study cited that parents of food-insecure students may have misperceptions of food insecurity, considering it a normal experience or a rite of passage while in college (Henry, 2017). Other students were reluctant to ask for help, citing that one should be able to feed themselves without support while in college.

Institution-Based Supports

For some students, a campus food pantry is an accessible and easy way to acquire food (Beam, 2020); however, these strategies are not without barriers or deterrents to their usage. El Zein et al., (2018) found that food insecure students indicated that social stigma and embarrassment, insufficient information on how the program works, eligibility criteria, self-identity, the feeling that the food pantry was not for them, and inconvenient hours of operation were barriers to food pantry access. Another study found students cope by using left over meal swipes, either asking friends or using institution meal swipe donation programs (Beam, 2020). The Students Against Hunger (SAH) program, a program aimed at mitigating student food insecurity at a large land grant institution, provides students in need of food assistance with free meal swipes. Nevertheless, barriers to meal swipe transfer programs exist. An evaluation of SAH found that approximately 2,800 students were in need however, SAH only served 51 students that semester with more than 200 students waitlisted for the following semester (Novak & Johnson, 2017). Students also indicated attending community or institution events where free food would be served as a strategy to mitigate hunger (Hagedorn-Hatfield, et al., 2022).

Supplemental Nutrition Assistance Program (SNAP) Participation

For students who are eligible, participating in SNAP can be a coping method for food insecurity. In a study conducted prior to the expansion of SNAP eligibility to college students, Broton et al., (2018) found that 10% of survey respondents used SNAP to purchase food. In that same study13% of those who were food insecure with hunger (measured as reduced food intake) drew on this federal support, with student parents most likely to have used SNAP. In addition, students with a zero-dollar EFC were more likely to use SNAP than those with a higher EFC and minoritized students were more likely to report using SNAP than their majority peers. SNAP usage varied by assigned residence and institution type. Just 2% of on-campus students used SNAP compared to 18% who live off campus and 21% of two-year college students used SNAP compared to just 8% of four-year college students. Additional research analyzing SNAP participation since the expansion of eligibility during the pandemic would help unpack the impact of SNAP participation and access on improving food security for students. Despite the temporary expansion, Students, however, indicated SNAP participation is not always an easy experience. Even with the temporary expansion of SNAP eligibility, and barriers to participation

remain, including stigma and confusion over eligibility and the enrollment process (Freudenberg, et al., 2019).

Food Insecurity in Higher Education and the COVID-19 Pandemic

This portion of the literature review frames the subject of food insecurity relevant to both the COVID-19 pandemic and the broader Tennessee context, and it highlights common, evidence-based practices to address food insecurity systematically.

The COVID-19 Pandemic and Food Insecurity

The COVID-19 pandemic increased student food-insecurity levels, further complicating the academic and social experience of college students (Glantsman et al., 2022). Prior to the pandemic, college students were already disproportionately affected by food insecurity (Mialki et al., 2021). Mialki et al. (2021) conducted a survey of students attending a large, public, land grant university and found 38% of students experienced a change in food security as a result of the pandemic, with 60% becoming less food secure, and 40% becoming more food secure. Gender, ethnicity, and race were also associated with changes in food security levels. Students who identified as Hispanic/Latino were less likely to have stable or the same food-security status compared to non-Hispanic/Latino students.

As institutions transitioned from in-person activities to remote or distance learning, students living on campus were sent home. For students unable to leave campus, university efforts and resources to maintain access to food were not wholly adequate, with 30% of students who stayed on campus experiencing a decrease in food security (Mialki et al., 2021). Another study conducted at Iowa State University (ISU) surveyed students aged 18–30 years enrolled at ISU as of March 2020 who were physically present on the campus area prior to closure due to COVID-19. The study identified that not only did campus closures affect student living situations, both students living on their own and food-insecure students expressed more frequent barriers to food access (Davitt, et al., 2021). Owens et al., (2020) found that the strongest predictors of food insecurity during the pandemic were employed students being furloughed, laid off, or losing part-time work.

As institutions remained closed, so did access to on-campus resources and meal plans. Hagedorn et al., (2022) found that the loss of campus resources and meal plans likely resulted in many students having to purchase food directly from grocery stores. The pandemic also brought on increased anxiety, threat, and depression among college students (Hagedorn, et al., 2021). A study of campus-based programs to address food insecurity found that mandatory pandemic-related health protocols caused operating procedures for campus programs to be modified, such as limiting operating hours, limiting the number of students permitted in indoor facilities, requiring scheduled appointments to access services, social distancing, and altering the physical location of services (Hagedorn-Hatfield et al., 2022).

Higher Education Emergency Relief Funds

In response to the COVID-19 pandemic, the federal government released a series of monetary relief funds to support higher education institutions. The CARES Act included a Higher Education Emergency Relief Fund (HEERF I) that provided more than $14 billion in emergency funding to higher education. More than $6 billion had to go directly to students in the form of emergency financial aid grants (HEERF-student share) for costs related to the disruption of campus operations due to COVID-19 (National Association of Student Financial Aid Administrators [NASFAA], 2022).

Two other relief packages relative to higher education followed. The Consolidated Appropriations Act of 2021 included additional COVID-19 relief through the Coronavirus Response and Relief

Supplemental Appropriations (CRRSA) Act. The new stimulus package included $23 billion for higher education institutions and students (HEERF II). Uses of the funds were more flexible, institutions could distribute student grants for uses such as, any component of their cost of attendance, emergency costs that arise due to coronavirus, such as tuition, food, housing, health care (including mental) and childcare (NAFSAA, 2022).

HEERF III was created under the American Rescue Plan (ARP). This new stimulus bill included $40 billion that required 50% of an institution's funds be spent on student grants, with the exception of for-profit institutions, which must spend 100% of their funds on student grants.

HEERF I, HEERF II and HEERF III provided institutions with the ability and flexibility to distribute much needed funds to their students, particularly to meet student basic needs due to the pandemic. In January 2022, the United States Department of Education (USDOE) provided institutions with guidance and strategies for higher education institutions to employ to meet the basic needs of students. Under this guidance, one suggestion given is to use HEERF grant funds to increase food security among students. In addition, USDOE's guidance suggests that institutions can also use HEERF grant funds to "coordinate and facilitate peer-to-peer meal swipe programs that allow students with excess meals on meal plans to share with classmates experiencing food insecurity" (U.S. Department of Education, 2022, pg. 2).

Solutions and Practices to Address Food Insecurity in Higher Education

Establishing Need

Determining who is food insecure within an institution of higher education is essential to devise and implement food insecurity interventions (Perkins & Savoy, 2021). Institutions can use this opportunity to highlight food insecurity as an organizational priority. A 2019 report by the Association of Public and Land Grant Colleges (APLU) and Coalition of Urban Serving Universities (USU) found some institutions did not have data collection efforts for fear that such questions could result in a violation of Federal Educational Rights and Privacy Act (FERPA) guidelines (Perkins & Savoy, 2021). Organizations, such as Ithaka S+R, a non-profit organization that provides strategic guidance in a range of areas, offers institutions guides designed to assist in basic-needs data collection by formalizing a four-step process: early planning, collecting, cultivating, and formalizing and advocating (Blankstein, 2022**).**

Institutional Resources and Programming

Food Pantries

Food pantries are among the most common institution-led initiatives. In the last decade, a growing number of institutions have opened food pantries on their campuses to address food insecurity (Beam, 2020). In addition, the acquisition of the College and University Food Bank Alliance (CUFBA) by Swipe Out Hunger in October of 2021 increased Swipe Out Hungers membership growth, expanding membership from 124 to 450 campuses in all 50 states during the 2021-2022 year (Swipe Out Hunger, 2021). The presence of a food pantry, however, does not always equate to food security for students. The same study found that while students valued the food pantry, barriers to access remained. Study participants expressed the need for discretion and privacy from other students. A cross-sectional investigation examining the relationship between food insecurity and pantry awareness, use, and perceived barriers to pantry include social stigma, self-identity or feeling as though the pantry was not for them, insufficient information on how the program works, insufficient information on eligibility to

use the pantry, and inconvenient hours of operation such as a traditional 8-5 schedule of operation. (El Zein et al., 2018).

Twill, et al. (2016) analyzed the inter-institutional partnerships of one university to establish a campus food pantry and noted that an advisory board was formed to discuss pantry services and to adjust policies and procedures. Additional efforts from the advisory board included making faculty members aware of the campus food pantry as part of their new faculty orientation (Twill, et al., 2016). Feeding America conducted a report to better understand the response of their network's food banks in addressing food insecurity among college students (Berry, et al., 2020). Through open-ended survey responses and interviews with food bank representatives, the report unearthed four themes relative to effective initiatives: relationships and partnerships (i.e., support), access (i.e., countering stigma), awareness (i.e., promotion), and operations (i.e., logistics).

Meal Swipe Donation / Transfer Programs

Another common solution used by institutions is meal-swipe donation or transfer programs that allow students to donate unused meals to peers in need. While a variety of campuses choose to execute their programs differently, Swipe Out Hunger (n.d.) explains the *swipe bank* method used by various institutions and their campuses. Extra meal swipes donated by students across the institution are pooled into a swipe bank. At most institutions, an online system is in place to enable students experiencing food insecurity to apply and complete an application form. Applications typically assess a student's need and eligibility for the program and are often reviewed by a member of staff. If approved, meal swipes are transferred to the student to use at dining halls. At Columbia University, students created a meal-share program, allowing students with extra or unused meal swipes to volunteer to swipe in their classmates at the dining halls. Students also created an app that allows food-insecure students to be matched with nearby meal donors. To maintain privacy, students also created a virtual meal swipes bank that allows food-insecure students to request six free meals per semester from the fund through a dining hall official with no questions asked (Henry, 2017).

The Students Against Hunger (SAH) program at Colorado State University was developed in the spring 2015 and provides food-insecure students with free meal swipes on their student ID cards. A study conducted of the SAH program aimed at assessing which students experience food insecurity and the associations between meal swipe receipt and student success found evidence of a positive relationship between receiving the meal swipes and student success (measured by GPA and persistence). In addition, the study found that next-term retention was higher for students who received the meal swipes compared to those who do not receive the meal swipes. The study, however, highlighted that food insecurity was not being adequately addressed on campus. Students Against Hunger highlighted there were approximately 2,800 students in need, but only 51 students were served that semester and more than 200 students were waitlisted for the following semester (Novak & Johnson, 2017). Similar to food pantries, meal-donation programs provide only immediate and temporary relief (Freudenberg, Goldrick-Rab, & Poppendieck, 2019).

Food Recovery Programs

Food-waste or food-recovery programs collect leftover food from dining halls or other campus events. In 2011, led by students at the University of Maryland, the Food Recovery Network was established and has donated over 523,809 pounds of food using this system (Henry, 2017). Food-recovery programs, such as Matching Excess and Need for Stability (MEANS), allow students to pick up excess foods from restaurants, dining halls, food courts, and other facilities after posting on an app (Beam, 2020). The Ram Food Recovery Network at Colorado State University supports students experiencing

food insecurity by alerting students of leftover food from various locations for students to come and pick up. The Food Recovery Network (National) also offers a comprehensive resource for food recovery programs, offering guidance to individuals or organizations involved in the recovery, distribution, or service of food for food insecure individuals (Food Recovery Committee, 2016).

Community and Shared Gardens

Community gardens or shared gardening, defined as a shared nature of collectively managing a garden for a shared benefit (Lovell, R et al., 2014), is another method to combat food insecurity. Food pantries may be unable to provide students with fresh fruits and vegetables, and community gardens alleviate this need by providing a source of fresh produce. In 2011, after receiving a $66,000 grant from the Kansas Health Foundation, Fort Hayes State University created a food pantry and community garden to provide members of the campus community access to fresh produce, which increased students' fruit and vegetable intake (Manry, et al., 2017). The garden also offered multiple opportunities for individuals to work/harvest during the growing season. A freezer unit in the pantry housed produce frozen from the garden (Manry, et al., 2017).

For institution-led community gardens to be successful, they must have committed support. One study emphasized this when analyzing the establishment of a campus garden and food pantry at an urban, Hispanic-serving institution (Ullevig et al., 2020). The campus garden was entirely comprised of faculty and students with day-to-day responsibilities that did not include full responsibility for the garden, so progress on key tasks and garden construction was slow. After the garden received institutional support in the form of dedicated university office staff to the garden, construction was completed. In addition, the approval of a student garden intern allowed the campus garden to accomplish tasks that were previously postponed due to a lack of time. As highlighted by Ullevig et al. 2020, institutions should take advantage of existing positions and roles that may assist in maintaining these programs.

Cooking and Meal Preparation Demonstrations

Many college students may have inadequate cooking skills or lack nutrition literacy (Gaines et al., 2014). As one study of first-year students highlighted, a lack of food preparation skills indicated a need for nutrition education, food budgeting, and recipes to be included in first-year seminars. Cooking demonstrations and classes serve as an opportunity for students to learn basic cooking skills, to prepare meals on a budget, and to improve their nutritional education (Hagedorn et al., 2022). One study found that students had positive feelings towards cooking classes, with usually 10 to 20 students attending, and another study finding that over 40% of participants expressed a desire to learn better cooking skills (Crawford & Hindes, 2020).

Financial Literacy Programming

Financial literacy interventions teach budgeting skills (McArthur et al., 2018). One study found that among five types of support, students selected learning how to make a budget as the third most popular support that would be most helpful to increase access to food (McArthur et al., 2018). In another study, 42% of food-insecure students believed that they could eat better with help from a budget versus 20% of food-secure students (Peterson & Freidus, 2020). A Government Accountability Office report of fourteen institutions of higher education found that nine colleges had instituted supplemental or credit-eligible courses, such as financial literacy or cooking and nutrition. One institution ran a workshop for first-year students on writing a spending plan and a food budget (U.S. Government Accountability Office, 2018).

Mental Health Programming

The mental health implications of food insecurity on students can be detrimental. Hagedorn et al., (2022) emphasized that another intervention institutions can implement is continued or expanded access to mental health services in a variety of platforms and environments, such as online or group counseling. In addition, services should incorporate wrap-around services that provide students with tools to eat healthily and to practice financially sound purchasing habits. Stebleton et al. (2020), however, noted that the intersection of mental health and the experiences of food insecurity must be explored. The stigma and social exclusion food insecurity can cause necessitates dedicated support services for students to shift the culture and conversation of food insecurity. Stebleton et al (2020) emphasized that further research around food insecurity and the intersection of mental health, along with socioeconomic class, and related factors, is needed.

Connecting Students to Resources and Benefits

In addition to institution-led intervention programs, numerous community-based resources exist alongside federal and state assistance programs.

Single Stop, a national anti-poverty nonprofit organization, partners with community colleges and other organizations that serve low-income families and implements a one-stop method, which serves a central on-campus hub where students can find a designated staff member to create a plan to meet the student's basic and educational needs (Crawford & Hindes, 2020). One study found that that Single Stop use was associated with increased college persistence (measured as attempting more credits, earning more credits, and reenrolling for the next semester; Freudenberg et al., 2019). California has implemented legislation requiring all college campuses to offer physical basic needs centers and benefits navigators. These are individuals who assist students in applying for state and federal assistance programs, connect students with food pantries and other food insecurity resources, and provide students with emergency aid (Hatch, 2022). Similar legislation has also been passed by Illinois and Oregon (Hatch, 2022).

Targeted Financial Supports

Emergency-Need Grants

Due to financial constraints, students often prioritize financial expenses over others, such as choosing to pay rent or bills instead of buying groceries. A popular intervention used by institutions is to offer emergency need-based grants (Freudenberg et al.,2019). Emergency funds can be used to offer students cash assistance to avoid utility cut-offs, cover rent payments or transportation costs (Freudenberg, et al., 2019). One National Association of Student Personnel Administrators (NASPA) study found that emergency loans were the most common form of emergency aid, but many institutions now also offer direct grants (Freudenberg, et al., 2019). Federal legislation has been introduced that would increase the amount of emergency grant aid students may receive. The proposed Cost Assistance Made Possible for Undergraduate Students (CAMPUS) Act (H.R. 4308) would amend the Higher Education Act of 1965 to establish an emergency grant aid program (Laska, et al., 2020).

Completion Grants

In addition to emergency grants, completion grants can be used by students in non-emergency times, providing key financial support for non-tuition expenses. In Tennessee, Tennessee Promise Completion Grants are available to low-income students utilizing the Tennessee Promise Scholarship, the state's last-dollar scholarship program for recent high school graduates. The completion Grant

provides students with additional monetary support to cover costs outside of tuition and mandatory fees, such as transportation, groceries, technology, supplies, rent/utilities, textbooks, and class fees (inclusive access textbooks) (Tennessee Higher Education Commission, 2022).

Building Awareness and Fostering a Food-Secure Culture

Educating Faculty and Staff

Educating the campus community can increase understanding of the prevalence of food insecurity amongst students. Faculty and staff may be trained to look for indicators of food insecurity or to communicate the resources available to students through class syllabi (Beam, 2020). Faculty and staff can also assist in fundraising efforts, organize campus food drives, and volunteer to support campus-based food access initiatives (Beam, 2020). Other initiatives include launching a university-wide SNAP education and enrollment campaign that can help normalize and destigmatize enrollment into the program.

Building Community and Non-Profit Partnership

When institutions are unable to support their students, an alternative solution is to connect students to existing local and community programs (Conrad et al., 2022), such as community food pantries and other community basic needs assistance. Non-profit organizations, such as Swipe Out Hunger, partner with institutions to assist with the creation and implementation of hunger prevention programming. Additional organizations, such as Feeding America, partner with food banks, policymakers, supporters, and the communities they serve to provide food programs, food rescue (collecting unused foods), disaster responses and hunger research. Research and advocacy organizations, such as The Hope Center for College, Community, and Justice, uses research to provide technical assistance to colleges and universities and policy advising to state and federal governments.

Supporting Student Activism and Organizations

A variety of anti-hunger, non-profit organizations began as student led campus organizations. Supporting student activism and organizations on campuses is crucial as students best understand their own unique experiences of food insecurity, providing important input when developing and implementing interventions (Berday-Sacks & Dubick, 2020). Student-led organizations can provide key programming support to food insecurity mitigation programming. Organizations such as Challah for Bread recruit and train students throughout the school year, building a pipeline of volunteers to participate in their program, providing volunteers with online training platforms that help build deeper engagement with the organization's programs and educational resources (Berday-Sacks & Dubick, 2020).

Increased Access and Awareness to SNAP

Prior to the COVID-19 pandemic, most college students were ineligible for SNAP. Although eligibility of SNAP was temporarily expanded to college students, many students still experience barriers to access. A 2018 Government Accountability Office (GAO) report found that less than half of 3.3 million students who were potentially eligible in 2016 participated in SNAP. The report revealed that in addition to students being unaware of their eligibility, many college and university officials were unfamiliar with or did not fully understand SNAP's student eligibility rules. To improve access and awareness to SNAP for college students, the GAO recommended the Food and Nutrition Service (FNS) improve student eligibility information on its website and to share information on state SNAP agencies.

Federal legislation, such as the Student Food Security Act, has been introduced to make SNAP eligibility for college students permanent (Warren, 2021). In addition, the legislation attempts to increase SNAP participation among college students by directing the Department of Education to work with the Department of Agriculture and other relevant agencies to notify students that they may be eligible for benefits when they file their application for federal student aid and creates a SNAP student hunger demonstration program that would allow students to use their SNAP benefits at on-campus dining facilities at up to ten institutions.

State Access

SNAP Employment and Training (SNAP E&T) programs are another way in which students may be eligible for SNAP participation. SNAP E&T is a package of services that include participant assessment, employment and training activities and supportive services. SNAP E&T program eligibility is also determined by states (Snap to Skills, n.d.). The 2018 GAO report recommended that states use SNAP E&T programs to increase SNAP access and participation by encouraging states to create established partnerships with employment and training providers and community colleges to deliver SNAP E&T programs (U.S. Government Accountability Office, 2018). States should also designate educational programs to qualify as employment and training to extend SNAP eligibility to students. For example, California implemented the CalFresh program, the benefits of which can be used to purchase eligible food items in grocery stores and participating farmers markets (Nesbit, 2022). One study found that participation in CalFresh reduced food insecurity perceptions (e.g., stigma and misinformation) of food insecurity among college students (Parks et al., 2018).

Institutional Access

Institutions can also work to make SNAP benefits usable on campus, such as using SNAP as a payment option on campus locations. As noted previously, institutions can increase SNAP information and access to their students through university-wide SNAP education and enrollment campaigns. Institutions may also attempt to distribute federal work study positions more strategically to increase the number of students who become SNAP eligible through participation in state or federal work study. Even one hour of federal work study eligibility and participation can make a student SNAP eligible (Freudenberg, et al., 2019).

Increased Federal and State Support, Programming and Legislation

Laska et al (2020) reviewed federal legislation on food insecurity in higher education introduced in the 116th legislative session (2019-2020), prior to the COVID-19 pandemic. Their review found in total, 17 bills, 12 of which were new or unique, were introduced. The key factors of the 12 unique bills proposed were establishing small-scale grant programs or grant eligibility changes, instituting SNAP eligibility information dissemination and outreach programs, expanding SNAP eligibility to students, requiring agencies to report about food, and increasing cross-agency data sharing agreements to screen and identify students eligible for food assistance (Laska et al., 2020).

Hunger Free Campus Bill

In addition to Benefits Navigator legislation and SNAP E&T, states can also implement the Hunger Free Campus Bill, originally designed by Swipe Out Hunger, the bill sets up resources to public colleges that are addressing student hunger (Swipe Out Hunger, n.d.). States that pass the Hunger Free Campus legislation must start a meal-swipe donation program, establish food pantries, and create SNAP enrollment opportunities by designating an individual to ensure students have access to accurate information regarding SNAP and how to apply. At the time of this review, the Hunger Free Campus

Act has been passed in California, New Jersey, Maryland, Minnesota, Louisiana, and Pennsylvania, and has been introduced in nine more states.

Higher Education Iteration of the National School Lunch Program

The National School Lunch Program provides students enrolled in public education the ability to receive free and reduced lunch throughout their elementary and secondary education; however, no such public program exists in higher education. McCoy et al., (2022) argue that in addition to SNAP, the federal government should consider an expansion of the National School Lunch Program for two- and four-year institutions, which would create a safety net for students as they continue their education (Phillips, McDaniel, & Croft, 2018). For example, using existing on-campus dining facilities, colleges could provide nutritious, low-cost or free meals or direct meal benefits to students who qualify (McCoy et al., 2022). Legislation, such as the Food for Thought Act (H.R. 4065), would amend the B. Russell National School Lunch Act to add a pilot meal program in community colleges (Laska et al., 2020).

Student Food Insecurity in the Tennessee Context

The Tennessee landscape of public higher education consists of 13 community colleges and 24 colleges of applied technology (TCATs) operating under the Tennessee Board of Regents, 4 residential universities operating within the University of Tennessee System, and 6 independently governed regional universities (Locally Governed Institutions). Efforts to mitigate food insecurity vary across these institutions. This portion of the literature review showcases local efforts and research in the Tennessee context. In general, the extant literature is largely centered within the University of Tennessee System and is, therefore, there is not a comprehensive assessment or generalizable measurement of the broader enrollment of Tennessee's postsecondary students experiences with food insecurity.

Across the University of Tennessee (UT) system, 33.8% of students experience food insecurity which is more than double the rate of Tennessee's general population of 13.4% (Student Basic Needs Coalition, 2021). Food insecurity across the UT System was found to be 43.5% at UT-Martin, 31.9% at UT-Knoxville, 18.7% at UT- Health Sciences Center, and 44.1% UT-Chattanooga.

At Roane State Community College, a 2018 survey of food insecurity found that 65% of students at the Cumberland County campus (an off-campus center) identified as food insecure. The results of the study led to the launch of the Campus Food Pantry Grant by the Tennessee Department of Environment and Conservation (TDEC) Higher Education Sustainability Initiative to fund the start-up costs for food pantries at community colleges (Wright, 2022). Two Tennessee Colleges of Applied Technology (in Elizabethton and in Jacksboro) were awarded TDEC's food pantry grant for 2021 and opened food pantries for their students in fall 2021 (Tennessee Department of Environment and Conservation, n.d.).

Two studies authorized by the Institutional Review Board at UT- Knoxville yield additional insight into food insecurity within Tennessee colleges. Wooten, Spence, Colby, and Steeves (2018) administered a cross-sectional online survey to enrolled students (totaling 38,614 students) across three campuses within the university system, with an analysis sample of 4,824 students. Food insecurity was measured using the USDA's Adult Food Security Survey Module. The results of the study revealed that 36% of students were characterized as food insecure. After controlling for observable characteristics, factors that were significantly associated with increased likelihood of food insecurity included, being previously food insecure, financial factors (income sources and monthly expenditures), and self-reported grade point average of less than or equal to 3.85. Seniors were significantly more likely to

experience food insecurity than graduate students but there were no differences in food insecurity were found between graduate students and sophomore or juniors. The study found no significant relationship between food insecurity and meal-plan participation.

Robbins, Spence, and Steeves (2022) assessed the prevalence of food insecurity, housing insecurity, and basic needs insecurity among college students enrolled at a large, public university. The authors used a cross-sectional online survey inviting all eligible, enrolled students (n=23,444) to complete the online survey. The survey yielded 2,634 responses. High rates of food insecurity (48.5%), housing insecurity (66.1%), and basic needs insecurity (37.1%) were identified and after controlling for confounders, factors that were significantly associated with increased odds of students having basic needs insecurity included previous food insecurity, being employed, not receiving family financial support, and living off-campus. Juniors, seniors, Masters, and PhD or EdD students were significantly more likely to experience basic needs insecurity than sophomore students (Robbins, Spence, & Steeves, 2022).

An operational, though not entirely comprehensive, summary of food-insecurity prevention and intervention programs in practice at Tennessee public institutions of higher education is available in the Appendix. Resources were located via an online web search of institution websites as of April 2023.

Discussion and Conclusion

Food insecurity in higher education is a pressing issue. While many students express a desire to attend an institution of higher education, the increasing share of college costs, both tuition and non-tuition expenses, has left many students making difficult financial decisions, prioritizing some needs such as rent, utilities and textbooks over others like food. In alignment with Tennessee's goal to be the most affordable in the south for higher education, the state has implemented a variety of strategies to reduce student burden, including financial aid programs, like the Tennessee Promise Scholarship and Tennessee Reconnect, need-based completion grants, and binding tuition ranges. Even with improved affordability, more is needed to understand and comprehensively address food insecurity in higher education. In this spirit, the literature review presented here sought to answer three questions.

What does the literature say about food insecurity in higher education and its effects on students and institutions?

Existing literature indicates there are a variety of factors that can be attributed to the causes of food insecurity in higher education. The issue of college affordability has left a large share of college costs on students and their families. Beyond tuition increases, the associated costs of attending college (e.g., transportation, parking, meals) have also inflated. As these costs rise, many students may be unable to cover the cost of essential expenses such as groceries. Compounding this scenario, many students are unaware of their eligibility for SNAP benefits. For many students, being food insecure limits their ability to interact and perform in social settings and to make use of available resources, as being food insecure carries a social stigma and students sometimes feeling ashamed of their food-security status.

Students in rural locations and in community colleges are more likely to experience higher levels of food insecurity. On campus dining, including meal plans or dining alternatives, are expensive and the rising cost of off-campus food options (groceries) are barriers influencing food insecurity. In addition, students experience challenges, balancing work and school, lack of transportation, and lack of cooking abilities and facilities which are contributing factors to food insecurity. Literature also reveals that childhood food insecurity and food insecurity prior to attending higher education can contribute to food insecurity experiences as a student in higher education.

Students' academic success, persistence, and degree completion can be compromised if they are experiencing food insecurity. Food-insecure students are more likely to take fewer credit hours, to receive lower grade point averages, and to drop out. In addition to academic effects, students also experience negative physical and mental effects. Food-insecure students are also more likely to have significantly higher levels of psychological distress compared to food-secure students. The mental and physical health and social implications of food insecurity on student academics often results in students either reducing credit hours (i.e., potentially moving from full-time to part-time status) or dropping out completely.

To cope with food insecurity, students may compromise the quality of their food, purchase cheap or processed foods, stretch food provisions to make supplies last longer, or reach out to family for support. Students also utilize institutional resources, (e.g., food pantries and meal swipe donation programs); however, literature reveals that institutional programs present barriers to students, such as inaccessible facility schedule or insufficient ability to assist all students.

The COVID-19 pandemic impacted student food-security levels. The pandemic exacerbated food needs insecurity while drawing public policy and academic research attention to the issue. In addition, pandemic-related characteristics that were associated with changes in food-security levels included changes in housing and employment status. Furthermore, as campuses transitioned from in-person activities to remote or distance learning, students were unable to access institutional programs such as food pantries or donated meal swipes.

What solutions and best practices does existing literature suggest to address food insecurity in higher education?

Establishing a needs assessment can assist in highlighting university priorities and help identify key issue areas or research questions for institutions. Institutional programming such as food pantries and meal swipe donation programs can help alleviate food insecurity but barriers to access can still occur, limiting the effectiveness of these programs. Food recovery programs work to reduce food waste on campuses, such as collecting left over food from dining halls or other campus events. Community and shared gardens may provide pantries with fresh produce or give food insecure students the opportunity to grow their own food. Additional institutional programming can come in the form of cooking demonstrations and financial literacy programs, which aim to teach students cooking, nutrition and smart financial skills. Furthermore, providing students with mental health services may help to alleviate the stressors faced by food insecure students.

Connecting students to additional resources and benefits, such as SNAP and community programs, can assist students with food insecurity. Targeted financial support such as emergency need grants and completion grants provide students with financial support for non-tuition expenses such as transportation, food, and childcare, with the aim of ensuring that additional financial support can assist students in remaining enrolled. Student access to SNAP remains limited. While temporary expansion of SNAP to students has provided students with a federal safety net during the pandemic, the ending of the Public Health Emergency without permanent expansion of eligibility to students will mean students remain vulnerable to SNAP access. Furthermore, increasing state access to SNAP and state SNAP programs such as SNAP E&T can increase SNAP access, participation and provide skills training. Federal legislation on food insecurity in higher education introduced prior to the COVID-19 pandemic proposed a variety of federal programs such as SNAP eligibility information outreach programs and cross-agency data sharing agreements. States have implemented the Hunger Free Campus Bill to designate and send funding to public colleges to address food insecurity on their campuses.

Educating faculty, staff and the campus community can help increase understanding to the prevalence of food insecurity amongst the student community, helping reduce stigma and increase awareness of available resources to students. In addition to educating campus staff, building partnerships with community and non-profits is another method to mitigate food insecurity when resources are limited. Supporting student activism and organizations on campuses is crucial, as students understand their own unique experiences of food insecurity, providing key programming support to food insecurity mitigation programs with volunteers and training.

How are postsecondary institutions in Tennessee addressing food insecurity among students?

Across Tennessee, public two- and four-year institutions have implemented a variety of methods to mitigate food insecurity experienced by their students. On-campus food pantries are the most common food insecurity alleviation program and are implemented in some form by almost every institution. In addition, many institutions implement emergency aid programs to provide students financial assistance, as well as meal swipe donation programs and community gardens.

Limitations in the Literature

Laska et al., (2020) noted that while enthusiasm for food insecurity, particularly in the legislative context, has increased, one limiting factor is the need for nationally representative studies and estimates of food insecurity in higher education. They argue that a valid and widely accepted measure of food insecurity is needed, particularly given the USDA definition of food insecurity may not be the best fit for the college student population (Laska et al., 2020). Establishing clear and consistent metrics for outcomes during food insecurity studies can also assist in understanding the effects of food insecurity on student outcomes.

Nikolaus et al., (2019) argued that food insecurity measurement accuracy among college students is essential to advance knowledge in the field. The study found that variability in food insecurity estimates produced by the different USDA Food Security Survey Module elicited concerns about the validity and reliability of these methods for college student populations, potentially leading to misclassification. Food insecurity surveys or measurement instruments must ensure that experiences among students are captured, including cognitive interviews and quantitative validity studies (Nikolaus et al., 2019).

Future Research

Rigorous, longitudinal studies of food insecurity in higher education are needed. Additional research could be conducted to better understand the systemic root causes and prevalence of food insecurity and the experiences of college students (Bruening et al., 2017). For the first time, the National Postsecondary Student Aid Study will ask students about their experiences of food insecurity, asking questions such as, if students have ever skipped meals because there was not enough money for food, if they can afford to eat balanced meals and if they lost weight because there was not enough money for food (Evans, 2020).

Additionally, research is needed on the prevalence, determinants, and consequences of food insecurity. This research is needed generally as well as in rural and small-town settings, Hispanic-serving institutions, Historically Black Colleges and Universities (HBCUs), community and technical colleges, for-profit institutions, and food deserts to better understand how these environments factor into student food insecurity experiences (Bruening et al., 2017; Dhillon et al., 2019). Furthermore, research is needed to examine the role of the college and community environment, particularly including students' net price of college attendance to improve shared understanding of the factors

that may influence student food-security levels (Broton, et al., 2018). Evaluation studies of food-intervention programs and their efficacy are needed to evaluate the effects and ability to reduce food insecurity in higher education. Laska et al., (2020) emphasizes that for policy efforts to be effective, research must include rigorous longitudinal studies of the short- and long-term consequences of food insecurity and evaluation of intervention methods used to combat food insecurity experienced by students.

Findings from this literature inform a larger state report on food insecurity in Tennessee higher education.

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The resources cited in this appendix were identified via an online review of institutional resources over summer and fall 2022. If institutional initiatives did not have an online presence or if they were established and advertised after the time of the review, they will not be reflected in the descriptions below.

Community Colleges

Chattanooga State Community College (ChSCC)

In March of 2018, the **Tiger Cupboard** was created to address food insecurity at ChSCC. The pantry provides food, hygiene supplies and poverty-alleviation related resources (Tiger Cupboard, 2019). The pantry also connects students to community resources such as applying for SNAP, local food pantries, legal aid and more. At ChSCC, students can also gain access to the **TN Promise Plus Scholarship**, an award provided by ChSCC to supplement the TN Promise Scholarship. The Promise Plus award that provides up to $750 per semester to help with books, supplies, transportation, and fees not covered by the state's TN Promise Scholarship (Scholarships & Grants, 2016).

Cleveland State Community College (CSCC)

Students have access to the **Cougar Den Food Pantry** (Alexander, 2021).

Columbia State Community College

At CSCC, students may contact the Dean of Students office for assistance with basic needs.

Dyersburg State Community College (DSCC)

Students are provided with a webpage of **food pantry resources** which provides students with information about food pantries in the community and SNAP eligibility and information (Food Pantry Resources, n.d.).

Jackson State Community College (JSCC)

Students have access to a **webpage** which provides information about community resources (Jackson, n.d.).

Motlow State Community College (MSCC)

At MSCC, students can access **student pantries** that are located at all of Motlow's campuses and are free any MSCC student (Motlow News, 2021).

Nashville State Community College (NSCC)

At NSCC, students have access to a variety of programs to assist with food insecurity. The **campus cupboard** provides groceries and personal care items once a week to students in need (Nashville State Community College Foundation, n.d.). Students acquire foods by logging into the online ordering system and can choose a pantry location that is closest to them and a time that is most convenient for them. Students also have access to a **community resources webpage** which provides students with different links to community resources such as emergency financial assistance, nutrition assistance and more in addition to providing students with county specific community resources (Davidson, Montgomery, Dickson and Humphreys) (Nashville State Community College Foundation, n.d.). At NSCC, the **Beyond**

Financial Aid program, administered by the Nashville State Community College Foundation assistance NSCC students with childcare, nutrition, textbooks, and transportation (Nashville State Community College, n.d.). In addition, the **Helping Hand Fund** provides students with immediate, short-term emergency financial assistance (Nashville State Community College, 2020).

Unique to NSCC, **Nashville Flex** provides eligible part-time students with financial and academic support (Nashville State Community College, 2022). Students receive $150/semester to assist with the costs of textbooks, $100 monthly support paid in two $50 installments for gas and groceries, access to check out a new laptop to help with coursework, special class scheduling, dedicated career development support services, advisor support and personalized guidance. **Nashville Grad** (Nashville State Community College, 2019) provides eligible full-time students with financial and academic support. Students who participate in the program receive $300/semester to assist with the costs of textbooks, $100 monthly support paid in two $50 installments for gas and groceries, a new laptop to help with coursework, financial support to pay for necessary tools and equipment, coverage for industry certification fees, special class scheduling, dedicated career development support services, advisor support and personalized guidance.

Northeast State Community College (Northeast State)

The Student Needs Project (SNP) addresses non-academic and socioeconomic factors that impact student success (Student Needs Project, n.d.). SNP promotes student access to campus and community resources. Campus initiatives focus on early alert, food security, resource development, student emergency funds, and transportation. To apply, a Student Referral System form can be completed and submitted online by faculty and/or staff. On the Student Alerts Form, students check the Student Needs Project, Socioeconomic Needs and/or Personal Counseling, Personal/Emotional Issues box(es) and provide a brief explanation of their situation. Student Needs Project staff will follow-up with the student to determine how best to help. To access pantry resources, students can research community food pantry locations at Second Harvest Food Bank of Northeast Tennessee. A directory of community resources is available. After being reviewed by the Student Needs Project staff, community resources are added to the directory to for students to access. In addition, students also have access to the **mobile pantry**. Students enrolled at the Elizabethton Campus may visit the Blountville or Kingsport campuses to receive assistance through Northeast State's Mobile Food Pantry or may choose one of the community sites.

Pellissippi State Community College (PSTCC)

At PSCC, **Student Care and Advocacy** focuses on non-academic barriers to student success and helps connects students who want to help others on campus and in the community (Student Care and Advocacy, n.d.). Services include the Hardin Valley Garden and the Pellissippi Pantry for those experiencing food insecurity. Student Care and Advocacy also serves as the liaison for students experiencing homelessness. In addition, the organization **X Hunger** carries out the LUVS program (the organization locates a pantry understand its needs and volunteers and provides services) to support the PSCC pantry (Student Engagement and Leadership, n.d.). The club will be based at the Hardin Valley campus; however, the organization is recruiting officers and members from across all 5 campuses.

Roane State Community College (RSCC)

The **Student Food Pantry** is free to all RSCC students and recipes are free and available students online (Student Basic Needs, n.d.). Additional pantry locations are the Harriman Pantry, Oak Ridge Pantry, Cumberland County Pantry, Knox County, Knox County, Scott County and Campbell County. PSCC also offer students with a **resource's webpage** with SNAP, WIC healthcare, housing, and general assistance resources (Student Services, n.d.). **The Pay-it-Forward** program provides students with financial assistance during emergencies or times of hardship (Student Services, n.d.). Students sign an agreement to pay their award amount back ("Pay It Forward") to the Foundation when they are gainfully employed and able to contribute to help other Roane State students with similar needs through the program in the future. The amount of emergency awards is determined on a case-by-case basis and students are limited to a maximum of $500 annually. Expenses such as car repairs, gasoline, childcare (for a limited duration) and utility bills. Expenses that are not approved for use are medical bills, dentistry, glasses, medicine, and tuition. In addition to Emergency Aid, students can also receive financial assistance for licensing/certification exam fees and Finish Line Scholarships.

At RSCC, students in need may contact and work directly with a dedicated Student Support Advocate located in the Dean of Students office. The Student Support Advocate assists a student experiencing basic needs insecurity to locate internal or external resources to mitigate their needs. One example initiative created by Sonya is a near comprehensive list of available basic needs resources at each RSCC campus. Each campus has a dedicated online document available to students that is periodically updated by Sonya with new additional resources. Resources can range, including food, housing, transport, and childcare. Resources include institution-led programs, local organizations, non-profit partnerships, or state programs.

Southwest Tennessee Community College

Students can access a **resources webpage** which provides students with information about community resources such as federal benefits assistance and food pantry locations (Retention and Student Success, n.d.).

Volunteer State Community College (VSCC)

The Feed is the campus pantry available to students, operating as a grocery "pick-up" (The Feed, n.d.). Students must first complete an information sheet which allows VSCC to connect with students and provide any additional support or resources that may be relevant to the student. Once the form is completed VSCC sends students the Feed Shopping List. Students can choose their day & time of pick up along with what items they would like and then are able to come pick them up from campus. Additionally, VSCC provides students with a **SNAP resources webpage** which provides students with SNAP information such as, SNAP College Student Eligibility Flyer, SNAP College Student Guide Brochure, SNAP Medical Deductions Flyer, SNAP = More Food at Home Flyer and one on one assistance with SNAP (contacting Signe Anderson, Director of Nutrition Advocacy the Tennessee Justice Center) (Student Support Services, n.d.).

Walters State Community College (WSCC)

Students can access a **resources webpage** which provides students with information about community resources such as federal benefits assistance and food pantry locations (Lewis, n.d.).

Locally Governed Institutions

Austin Peay State University (APSU)

At APSU, students may access the **Save Our Students (S.O.S.) Food Pantry** which allows students access to food pantry items once a week (SOS Food Pantry, n.d.). **The Govs Give Back Fund** provides students access to financial assistance during financial hardship (Govs Give Back, n.d.). To receive funds, an applicant must provide a bill, invoice, or quote showing the amount needed and after applying, applicants will be contacted to meet with the Director of the Center for Service, Learning & Community Engagement to determine best methods for assistance. Applicants are highly encouraged, but not required, to volunteer with the food pantry after receiving support funds. Funds can only be used for non-tuition expenses. **Victory Gardens & Chickens** is a student led community garden (Victory Gardens & Chickens, n.d.). The garden has 25 garden beds, 13 chickens and a mini orchard and all produce goes to the food pantry. **Govs Guide to Getting By** is a crowd sourced document containing student entries on how to cut costs and ways in which to be financially smart when navigating college life (Govs Guide to Getting By, n.d.).

East Tennessee State University (ETSU)

Students have access to the **Bucky's food pantry (Bucky's Food Pantry, n.d.)**. Students can pick up their food boxes from two different locations. Students can also donate their meal swipes through the food pantry for students in need. ETSU also offers its students referrals to campus and community resources and support such as: daycare services, financial/food Assistance, housing assistance and more. In addition, Bucky's Food Pantry collaborates with community organizations to serve its ETSU community needs. Bucky's food pantry partners with organizations such as Second Harvest Food Bank of Northeast Tennessee, Good Samaritan Ministries, Inc, and Salvation Army of Johnson City. Students can also access the **Buccaneer Student Crisis Fund** (BSCF) helping students during extenuating circumstances which may affect their ability to remain enrolled. Students can only apply for assistance from the BSCF once per term with a maximum award amount of $500 (Emergency Funding for Students, n.d.). Students who are at or above their "cost of attendance" for ETSU cannot receive any additional aid, including a BSCF award.

Middle Tennessee State University (MTSU)

In the fall of 2012, the Student Government Association (SGA) and MTSU One Stop, which provides integrated services in the areas of financial aid, registration, tuition, billing, and transcripts, began the **student food pantry** for food insecure MTSU students. **Student Government Association (SGA) Emergency Loans** provide small loans of $100 to both graduate and undergraduate students who have demonstrated an emergency need (Student Food Pantry, n.d.). The loans are short-term and must be repaid in 30 to 90 days, and students will not be eligible if they currently owe MTSU a balance. **Emergency Short-Term Foundation Loans** can provide undergraduate, graduate, and international students with a loan of $500 (Emergency Assistance, n.d.). Applicants must provide a paycheck stub or show proof of ability to repay the loan and can only receive one Emergency Short-Term Foundation Loan per semester. MTSU also offer students **micro-grants (Financial Crisis Aid for Students, n.d.)**.

The Lewis Hazelwood Student Emergency Fund gives students access to emergency funds during times of emergency need that may impact their ability to continue their education. The grants do not have to be repaid and are available up to $250 for undergraduate, graduate, and international students. Students may be awarded the micro-grant only once during their tenure at MTSU.

Tennessee State University (TSU)

At TSU, the **Tiger Pantry** provides students with access to food (Tiger Pantry, n.d.).

Tennessee Tech University (TTU)

Established in 2012, students at TTU have access to the **food pantry** and has since served over 1000 members of the campus community (Food Pantry, n.d.). Students also have access to the **Eagle Assistance Grant (E.A.G.)** (Eagle Assistance Grant, n.d.), which is an emergency fund providing one-time financial assistance to students during times of financial hardships and can cover non-tuition expenses, however, food is not a permitted expense. Students also have access to a **resources webpage** providing both internal and external links to resources such as Supplemental Nutrition Assistance Program (SNAP) information, COVID-19 Resources, Emergency Cash Assistance Application and Helping Hands of Putnam County (Student Resources - Food, Shelter, & Emergency Assistance, n.d.).

The University of Memphis (UofM)

Students at the UofM have access to the **Rosie Phillips Bingham Student Emergency Fund** which provides currently enrolled students facing unexpected hardships or expenses with emergency financial awards (Rosie Bingham Emergency Fund, n.d.). Students can use these funds for non-tuition expenses. The **Tiger Pantry** is open to all students at UofM. Students can access perishable and non-perishable food items, basic household items, basic toiletries, and feminine products (Tiger Pantry, n.d.). **Tiger Meal Swipes** allow students experiencing food insecurity access up to five meal swipes to on campus dining. Swipes are collected through donations (Tiger Meal Swipes, n.d.). **Tigers Fight Hunger (TFH)** is a student organization at UofM dedicated to fighting student food insecurity (Tigers Fight Hunger, n.d.). Students who are members of TFH would undertake activities such as staff the Tiger Meal Swipe Donation Drive, organize, and stock the Tiger Pantry, host donation drives with partner RSOs, promote Tigers Fight Hunger activities across campus, visit classes to present about Tiger Pantry supports for students and tabling events to raise awareness of campus food insecurity. UofM also provides students with additional webpages containing access to community and campus resources, in addition to SNAP information and assistance.

University of Tennessee

University of Tennessee- Chattanooga (UTC)

A committee formed to analyze the concerns of food insecurity on UTC's campus found that 43% of students had experienced food insecurity and 54% had been aware of another student who was experiencing food insecurity. The committee proposed the formation of **Scrappy's Cupboard,** which began operation in 2017 (Scrappy's Cupboard, n.d.). There are no requirements for a student's first visit to Scrappy's Cupboard and students may use the food pantry more than once, however, students will be asked to speak with staff from the Office of the Dean of Students to discuss how additional or alternate assistance may be obtained. In addition, through the **Denise and Tim Downey Student Emergency Fund,** students can

University of Tennessee- Knoxville (UTK)

UTK has implemented a variety of food-insecurity mitigation programs. The **End Hunger/FEED Change** *(EH/FC)* initiative raises awareness about hunger on a local to global scale and implements solutions to address the issue. A huger studies working group is also present at UTK. The working group is comprised of departments on campus and community partners. The working group aims to develop initiatives to lessen the effects of food insecurity within the campus community (End Hunger/ FEED Change, n.d.).

Established in January 2016, **Smokey's Pantry** is a collaboration between student government, Tyson House (the Lutheran and Episcopalian Campus Ministry), and FISH Pantry, with support from the Office of Student Life and others (Smokey's Pantry, n.d.). In fall of 2020, the **Big Orange Pantry** opened to help meet the increase in basic needs assistance (Dean of Students, n.d.). The Big Orange Meal Share is a short-term meal assistance program sponsored by the Office of the Dean of Students, Vol Dining, and Swipe Out Hunger. If approved, meals can be added to student accounts to be used at on campus dining facilities. The University of Tennessee, Knoxville's Culinary Institute began the **food4VOLS** program, aimed at reducing hunger and waste on campus (Food4VOLS, n.d.). food4VOLS partners with Vol dining to collect usable food from campus outlets which is later transformed by students at the culinary institute into ready-to-heat and ready-to-eat meals that are distributed to those with food insecurity through The Big Orange Pantry.

The **Grow Lab** is a campus garden operated by the Office of Sustainability (Grow Lab, n.d.). Produce is donated to institution pantries and individual students, groups, and staff can cultivate a garden plot. The Office of Sustainability has also proposed a **Zero Waste Commitment** which aims to divert 50% of UTK's waste from landfills and incinerators by 2030. **Vols Grow: Seed to Table Summer Program** allowed students to sign up for seeds which they could grow on their own, in a container if they did not have access to a garden plot (End Hunger/ FEED Change, n.d.).

UTK also provides students with an emergency fund which provides time-sensitive emergency funding for students experiencing financial hardship. Students can use the fund for a variety of non-tuition expenses. Student emergency funds recipients are encouraged to meet with a representative from the Center for Financial Wellness. Students applying a second time may be required to meet with a representative from the Center for Financial Wellness before receiving their funds.

Various **student organizations** exist on UTK's campus with anti-hunger missions or support anti-hunger programming. Organizations such as Progressive Students Association, S.P.E.A.K., Vols for Veggies, Student Government Association (SGA), Food Recovery Network at UT, and the Student Basic Needs Coalition (SBNC) have addressed food related issues with UT Dining Services and Aramark. In the 2019 - 2020 academic year, SGA, SBNC, and S.P.E.A.K. led food insecurity initiatives.

University of Tennessee- Martin (UTM)

At UTM, after a food insecurity campus climate survey was conducted, it was revealed that over 20% of UTM students faced hardship when affording food. To combat food insecurity

experienced on campus, the Division of Student Affairs, SGA, Sodexo, and Residence Life partnered to provide two programs to combat food insecurity. **Captain's Pantry** is open to all UTM students. Students may pick up food, free of charge, at two locations (Student Government Association, n.d.). The pantries are available 24 hours a day, 7 days a week to all students. The **Skyhawks Share** allows meal swipes to be deposited on a student's ID card that can be used in the Skyhawk Dining Hall (Student Government Association, n.d.). Students also have access to the **Student Affairs Emergency Fund** (Division of Student Affairs, n.d.). The fund provides students with financial assistance during financial emergencies and can be used to cover non-tuition expenses.

University of Tennessee- Southern (UTS)

Students can access the **Student Food Bank** which aims to alleviates food insecurity experienced by UTS students (Student Food Bank, n.d.). Students are asked to fill out a brief membership form with basic information, however this is not necessary to prove eligibility. The membership form is used by administrators as valuable data to attract support for the Food Bank. Students must also check in each visit to the Student Food Bank, another data collection point to determine food pantry usage.

University of Tennessee - Health Sciences Center (UTHSC)

At UTHSC, students experiencing food insecurity can access the **UTHSC Campus Cupboard**, which is acting as an agency for the Mid-South Food Bank. While visiting the pantry, students have access to recipes that can be used with the items stocked within the pantry (UTHSC Campus Cupboard, n.d.). Students can also access **emergency student loans** (Loan Information, n.d.). Students may borrow up to $600 and must be repaid within 60 days after receipt with repayment or a late fee of $30.00 will be charged. Students cannot have more than one outstanding emergency loan and all previous emergency loans must be repaid before another one can be issued.