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TYPE:	Article CC:CCG
JOURNAL TITLE:	Journal of college student retention
USER JOURNAL TITLE:	Journal of College Student Retention: Research, Theory & Practice
ARTICLE TITLE:	Examining the Relationship Between Food Insecurity and Academic Performance: Implications for Diversity and Equity in Higher Education
ARTICLE AUTHOR:	Mechler, Heather ; Coakley, Kathryn ; Walsh-Dilley
VOLUME:	26
ISSUE:	1
MONTH:	
YEAR:	2024
PAGES:	3 - 18
ISSN:	1521-0251
OCLC #:	

Processed by RapidX: 9/25/2024 11:52:05 AM

Article

Journal of College Student Retention:
Research, Theory & Practice
2024, Vol. 26(1) 3–18

DOI: 10.1177/15210251211053863
journals.sagepub.com/home/csr
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Examining the Relationship Between Food Insecurity and Academic Performance: Implications for Diversity and Equity in Higher Education

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Abstract

In recent years, researchers have increasingly focused on the experience of food insecurity among students at higher education institutions. Most of the literature has focused on undergraduates in the eastern and midwestern regions of the United States. This cross-sectional study of undergraduate, graduate, and professional students at a Minority Institution in the southwestern United States is the first of its kind to explore food insecurity among diverse students that also includes data on gender identity and sexual orientation. When holding other factors constant, food-insecure students were far more likely to fail or withdraw from a course or to drop out entirely. We explore the role that higher education can play in ensuring students' basic needs and implications for educational equity.

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Keywords
food insecurity, attrition, student success, equity in higher education

Introduction

Over the past decade, there has been an increased awareness of the prevalence of food insecurity both within the general population as well as among college students in the United States. The United States Department of Agriculture (USDA) defines food insecurity as follows: "Food insecurity is the limited or uncertain availability of nutritionally adequate and safe foods or the limited or uncertain ability to acquire acceptable foods in socially acceptable ways." In addition to the obvious physical health impacts of inadequate or inconsistent nutrition, college students may struggle academically due to food insecurity (Cady, 2014; El Zein et al., 2019; Weaver et al., 2020). Students may work extra hours at an off campus job to be able to afford food or may have difficulty accessing transportation to obtain food. Cognitive impairment caused by malnutrition or hunger could also have a direct and negative impact on food-insecure students' academic success. Further, the financial stress experienced by many food-insecure students can have a detrimental effect on their well-being and daily functioning. Many of the existing studies on college student food insecurity have limitations inherent in the limited population (typically only undergraduate-level students), lack of student diversity, regional focus (midwestern and eastern states in the United States), and reliance on self-reported academic data (e.g., grade point average, course completions, and enrollment status). This study will attempt to augment the literature on food insecurity in higher education through the inclusion of graduate and professional students at a majority-minority institution in the southwestern United States.

Literature

While food insecurity impacts people of all ages, an emerging body of research focuses on the prevalence and effects of food insecurity among college and university students. Sara Goldrick-Rab and her colleagues at the Hope Center at Temple University have conducted a number of large-scale studies of students at a range of institutions in the United States. These studies have set the standard for other researchers interested in examining food and housing insecurity in higher education. The Hope Center approach uses the USDA U.S. Household Food Security Survey Module to assess students' level of food security. These studies typically include the 6-item short form or 10-item adult food security measure, as the 18-item measure is more appropriate for households that include children.

Data collected through the Hope Center's research suggests that approximately 39% of college and university students nationwide are food insecure (Goldrick-Rab et al., 2019). Students at 2-year institutions are more likely to report food insecurity,

with 42% of community college students designated as food insecure compared to 33% of 4-year college and university students (Baker-Smith et al., 2020). Further, there are significant disparities in the prevalence of food insecurity, with underrepresented minority (URM), first-generation, and lesbian, gay, bisexual, transgender, or queer (LGBTQ) students being more likely to be food insecure than White, heterosexual, cisgender, and non-first-generation students (Hagedorn et al., 2019; Phillips et al., 2018).

Food insecurity is a known detriment to a person's overall health, sleep quality, and mental health (Cady, 2014; El Zein et al., 2019; Weaver et al., 2020). Berkowitz and his colleagues found that food-insecure individuals in the United States spent an additional $1,863 annually in health care expenditures than food-secure individuals. This additional spending undoubtedly compounds the problem of consistent access to food. This perpetuates an unhealthy cycle of constrained dietary options; overeating high-calorie, low-nutrient foods when they are accessible; exacerbated chronic health conditions; increased spending on medical care; and further constraint of access to food. Unfortunately, this cycle is more prevalent among URM groups, thus creating further societal inequities in well-being and lifespan (Berkowitz et al., 2018; Seligman & Schillinger, 2010). The physical and mental strain of food insecurity has also been shown to affect sleep quality, anxiety, and depression (El Zein et al., 2019).

The stress of food insecurity can influence students' study habits, course success, and ability to stay enrolled (known in the literature as persistence). Students who are food insecure often experience multiple types of stress (e.g., medical, financial, and emotional) and may be working jobs off campus to afford basic needs. The physical effects of poor nutrition can also impede students' ability to concentrate and learn (Cady, 2014; El Zein et al., 2019; Hagedorn et al., 2019; Weaver et al., 2020). Phillips et al. (2018) found that food-insecure students had on average a 0.17 lower grade point average (GPA) than food-secure students. Weaver and his co-authors found that food-insecure students were 2.88 times as likely as food-secure students to be in the bottom 10% of GPAs. In addition to affecting a student's ability to succeed, food insecurity could compel students to drop out to work or return to their families for assistance in meeting basic needs. In one study, food-insecure students were 3.5 times more likely to consider dropping out, 3.5 times more likely to reduce their course loads, and 3.4 times more likely to neglect their studies (Phillips et al., 2018). These studies show that food insecurity among students can be profoundly detrimental to academic success.

As Black, Indigenous, and People of Color (BIPOC) students are more likely to struggle academically and to drop out while also being more likely to experience food insecurity than their non-BIPOC classmates, it stands to reason that ameliorating food insecurity on campus could improve student outcomes and create a more equitable learning environment (Cady, 2014; Hagedorn et al., 2019; Phillips et al., 2018). Minority students are often hesitant to seek help from governmental agencies and institutions because of historical injustices inflicted upon them by these bodies. Some communities stigmatize accepting help from outside sources, even when this assistance is

desperately needed (Weaver et al., 2020). It is, therefore, necessary that any programs intended to help students with food insecurity are informed by an understanding of community norms and needs among diverse student groups (Phillips et al., 2021).

Given inequities found among college students at institutions across the United States, examining the prevalence of food insecurity at a majority-minority institution can provide a more diverse perspective on the interactions between ethnicity, food insecurity, and academic persistence. The aim of this cross-sectional survey study was to assess food insecurity in a representative sample of undergraduate, graduate, and professional students attending a Minority and Hispanic-Serving Institution and examines associations between food insecurity and academic performance using institutional GPA data rather than self-reported GPA. Extant literature has focused on undergraduate students at Primarily White Institutions (PWIs), and this study is the first to include graduate and professional students at a Minority and Hispanic Serving Institution.

Method

To assess patterns of student food insecurity, a multidisciplinary team of researchers administered an online survey to a random stratified sample of 12,000 students enrolled during the Spring 2020 term at a large, public, urban university in the southwestern United States. This university is the state's flagship institution, a Minority Institution and a Hispanic Serving Institution, and an R1 (Very High Research Activity) Carnegie Classification institution. The average age of all students at this institution at the time of the survey was 26.13 years, and the average undergraduate was 21.81 years of age. Of all undergraduates enrolled in the 2019–2020 academic year, only 11% lived in campus housing. Most students lived off campus even before campus housing closed due to the pandemic. The survey was active from April 15 to 29, 2020, which coincided with the early days of the COVID-19 pandemic restrictions and school closures. The first 2,500 students to complete the survey received a $10 Amazon credit as a participation incentive. All students provided consent to participate in the study by starting the survey; the study was approved by the institution's Institutional Review Board.

Data on all students enrolled for the Spring 2020 term were queried by the level of study, gender, ethnicity, and low-income status. These data were then processed using the SURVEYSELECT procedure in SAS software, Version 9.4 of the SAS System for Windows to generate a stratified random sample of 12,000 students. A comparison of groupings for the student population and the survey respondents can be found below (Table 1).

To reduce the survey burden and to ensure uniformity of demographic data, the sex, race/ethnicity, major, level of study, and low-income status of the invited participants were pre-populated into the survey platform. Sex, ethnicity, major, and level of study were taken directly from the institution's enterprise data system. While sex was pre-populated into the survey, it is important to note that the institutional data system

Table 1. Comparison Between Survey Respondents and General Student Population.

Grouping	Spring 2020 Enrollment	Survey Respondents
Undergraduates	70%	67%
Graduate Students	20%	27%
Medical Students	2%	3%
All other (Law, Pharmacy)	8%	3%
Female	56%	65%
Racial/Ethnic Minorities*	55%	50%
Low income (EFC of less than or equal to $5,576)	39%	42%

Note. *Includes American Indian, Hispanic, African-American, and Native Hawaiian students. EFC = Estimated Family Contribution.

only contained information on students' binary, legal sex. To better understand the intersectionalities of food insecurity, gender identity, and sexual orientation, the survey also collected self-reported gender identity and sexual orientation. Low-income status was derived from students' Free Application for Federal Student Aid (FAFSA) data (where available) for the 2019–2020 academic year. Students whose Estimated Family Contribution (EFC) was less than or equal to $5,576 were coded as low income. Students above this threshold were coded as not low income, and students who did not have FAFSA data on file were coded as N/A. The $5,576 cut-off was based on the EFC needed for undergraduate students to be eligible for Pell Grants. While many students' family incomes are above this amount but well below state and national median income levels, this indicator is in common use to delineate between low-income students and higher income students. This cutoff may be somewhat insufficient for graduate and professional students, as their academic programs often cost more than undergraduate programs of study, and they are more likely than undergraduate students to have families to support. Future studies will adopt a more differentiated approach to identify students at all levels who have significant financial needs.

Students' institutional identification numbers were matched against a list of randomly generated ID numbers that would serve as participants' study IDs. The matched list was accessible only to one member of the research team, and the list was kept on a secure server and required an additional password to open the file. This allowed the deidentified response data to be accessed by other members of the research team without allowing for any means of identifying individual students.

In Spring 2021, graduation data for Spring 2020, Summer 2020, and Fall 2020 terms as well as enrollment data for both Fall 2020 and Spring 2021 were added to the dataset to longitudinally examine students' academic outcomes. The academic outcomes of interest for this study were persistence to Fall 2020 and Spring 2021 and number of courses not

successfully completed (failed or withdrawn). Persistence is defined as continued enrollment for at least 1 credit hour at the institution. Since this study included students beyond first-year undergraduates, we elected to use the term persistence rather than the more commonly used term retention (Council for Adult & Experiential Education, 2016). Students were considered to have persisted to Fall 2020 if they did not graduate in Spring or Summer 2020 and were enrolled and registered for at least 1 credit hour as of the end of the third week of classes. Students were considered to have persisted to the Spring 2021 term if they had not previously graduated in Spring, Summer, or Fall 2020 and were enrolled and registered for at least 1 credit hour as of the end of the third week of classes of the Spring 2021 term.

Instruments

Food insecurity in the past 30 days was measured using the 10-item USDA U.S. Adult Food Security Survey Module, which is a three-stage design instrument with three initial screening questions. These three screener items are then followed by seven questions that are asked only of respondents who responded in the affirmative ("Always true" or "Sometimes true") to at least one of the first three screening questions. Response patterns in the seven subsequent items can establish whether the respondent has low food security (3–5 total affirmatives) or very low food security (6–10 total affirmatives), the most severe level. Together, low food security and very low food security constitute the category *food insecure*. Respondents who do not meet at least three of the conditions of food insecurity are labeled food secure, which encompasses those with high food security (0 affirmative responses) or marginal food security (1–2 affirmatives). Persons with very low food security experience reduced food intake and disrupted eating patterns and may experience hunger (U.S. Department of Agriculture, 2012). Persons with low food security may not experience caloric disruption or reduced food intake (i.e., hunger), but they do experience an uncertainty about how they will acquire food and may experience reduced diet quality (Coleman-Jenson et al., 2020). Persons with marginal food security are often considered at risk of food insecurity and may experience some anxiety or difficulty around obtaining food, but do not suffer any lack of nutritional content or variety of food intake.

Statistical Approach

In addition to providing descriptive statistics and percentages, statistical tests were used to explore the relationship between food insecurity, demographic characteristics, and academic performance. This study's primary outcome of interest, academic performance, was measured using persistence to the Fall 2020 and Spring 2021 terms or graduation prior to either of those terms. In addition, we used the number of courses from which a student failed or withdrew to examine the relationship between food security and successful course completion. Persistence was modeled using a dichotomous variable for both Fall 2020 and Spring 2021, where 0 indicated

that the student was not enrolled in that term (and had not yet graduated) and 1 indicated enrollment in that term or prior to graduation. Independent variables such as food security status, being an URM (e.g., Hispanic, Black, or American Indian), gender identity (cisgender or not cisgender), and LGBTQ identity (LGBTQ or not LGBTQ) were similarly converted to dichotomous categorical variables. Number of courses from which students withdrew or failed was examined as both a continuous variable (range: 0–7) and a categorical variable with three levels (0 = 0 courses; 1 = 1 course; 2 = 2 + courses). Independent samples *t*-test was used to assess differences in the number of credit hours lost by term (Fall 2020 and Spring 2021) by food security status (food secure or food insecure). Multiple logistic regression was employed to examine odds of attrition based on student characteristics (e.g., food security status, URM, non-cisgender, and LGBTQ identity). Ordered logistic regression modeled the odds of failing or withdrawing from courses (using an ordinal outcome variable) based on students' demographic characteristics and food security status. Analyses were conducted using SAS software, Version 9.4 of the SAS System for Windows.

Results

The final response sample consisted of 2,654 students (response rate of 22.1%). Among all respondents, 842 (31.7%) were food insecure. Of those, 449 (16.9% of the total sample) were considered to have very low food security. Undergraduate (36.8%) and law students (29.0%) had the highest prevalence of food insecurity, while medical students (13.1%) had the lowest prevalence. American Indian (51.8%) and African-American (44.0%) students had the highest prevalence of food insecurity, and international students (regardless of race/ethnicity) also experienced a high degree of food insecurity (39.1%). A detailed description of patterns of food insecurity and housing insecurity by demographic characteristics in this study can be found elsewhere (Cargas et al., 2020; Walsh-Dilley et al., 2021).

Respondents who reported that they were not currently employed and seeking work showed the highest prevalence of food insecurity (48.9%), which was significantly higher than all other employment status responses (employed; not employed, not looking for work; not allowed to work). The COVID-19 pandemic caused nearly 40% of all workers in the U.S. leisure and hospitality sector to lose their job (Bernstein & Bushey, 2021; U.S. Travel Association, 2021). College students are more likely to be working in this occupational category than in others (Lashley, 2013), so it follows that many of the respondents who were looking for work had been laid off from their jobs in the month prior to the survey due to COVID-19-related restrictions and shutdowns of bars and restaurants.

Patterns of Attrition and Food Insecurity

Food-insecure students dropped out at a higher rate than their food-secure peers. This was especially true for students with very low food security (Table 2).

Table 2. Persistence Rates by Student Level, Sex, and Food Security Status.

Group	Total in Study	Persistence Spring 2020 to Fall 2020	Persistence Fall 2020 to Spring 2021
All	2,654	84.4%	88.7%
Student Status			
Graduate/ Professional	867	86.5%	92.7%[a]
Undergraduate	1,787	83.2%	86.7%[b]
Sex			
Men	916	83.5%	87.1%
Women	1,738	84.8%	89.5%
Food security status			
Food secure	1,812	86.0%[c]	91.3%[c]
Food insecure	842	81.3%[d]	83.9%[d]
(very low food security)	449	80.5%	79.4%

[b]significantly less than [a] (Fisher's exact test; $p < .0015$).
[d]significantly less than [c] (Fisher's exact test; $p < .0001$).

When disaggregated by ethnicity, the data revealed substantial inequities for food-insecure Black, Hispanic, and American Indian students compared to their food-secure counterparts (Table 3).

Among all food-secure Black, Hispanic, and American Indian students, the persistence rate to Fall 2020 was 84%, and persistence to Spring 2021 was 89.6%, the latter

Table 3. Persistence Rates by Ethnicity and Food Security Status.

	Food Secure		Food Insecure	
Group	Fall 2020 Persistence	Spring 2021 Persistence	Fall 2020 Persistence	Spring 2021 Persistence
All	86.0%	91.2%	81.4%	84.0%
Hispanic	83.0%	90.7%	79.1%	82.6%
American Indian	83.3%	88.1%	77.3%	69.4%
Asian	94.7%	91.9%	88.9%	90.6%
Black	79.2%	85.7%	70.0%	76.5%
White	88.2%	92.5%	82.5%	86.6%
Multiracial	80.0%	78.3%	92.6%	88.5%
Unknown	83.3%	93.8%	71.4%	83.3%
International	87.7%	97.2%	89.6%	93.5%

of which exceeds the overall persistence rate for all students in the Spring 2021 academic term (88.7%). This suggests that, when food secure, students from these groups manage to continue their studies at equivalent, if not better, rates than students overall. However, when isolating the analysis to food-insecure students, the findings are less encouraging. Only 80% of food-insecure Black, Hispanic, and American Indian students returned for the Fall 2020 semester, and 81.4% returned for the Spring 2021 semester. When examining differences in persistence rates between food-secure and food-insecure students by ethnicity, some groups had wider gaps by food security status. American Indian and Black students' persistence rates were most affected by food insecurity. Notably, food-secure Black students persisted at lower rates than did food-insecure White students, suggesting that food insecurity is more likely to disrupt the education of Black students relative to White students. Much more inquiry will be needed to explore the intersectionalities of race and financial stress in the context of basic needs security in higher education.

Attrition and Credit Hour Loss

A multiple logistic regression analysis to examine contributing factors in student attrition found that status as a food-insecure student and being a member of an URM group significantly increased odds of attrition in Fall 2020 and Spring 2021 (Table 4). Gender identity did not seem to impact students' odds of attrition, and LGBTQ students had slightly higher odds of attrition but at a statistically nonsignificant level ($p = .0994$ and $p = .063$). Initial attempts to include low-income/Pell-eligible status as a variable in the model revealed high collinearity between low-income status and food insecurity.

Food-insecure students on average lost more credit hours due to course failures and withdrawals than food-secure students. 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 (independent samples t-test: $t = -3.05$, $p < .01$). In Fall 2020, food-insecure students lost an average of 1.81 credit hours, while food-secure students lost an average of 1.29 credit hours (independent samples *t*-test: $t = -3.45$, $p < .001$). When accounting for ethnicity, gender identity, and sexuality, food-insecure students were over 1.6 times as likely to withdraw from or fail multiple courses compared to food-secure students (Table 5).

Discussion

As institutions of higher education face an increasingly critical public and a marked decrease in state funding, administrators are searching for solutions to better support students and minimize attrition. At the same time, tuition and fees have risen substantially in the past 20 years, outpacing inflation in other sectors and wage increases (Akers, 2020; Wolla, 2014). This especially impacts institutions with significant achievement gaps among BIPOC students and students from low-income families and who seek to build and sustain a diverse student body and promote social mobility.

Table 4. Adjusted Multiple Logistic Regression Examining Odds of Attrition by Student Characteristics.

	Attrition Fall 2020 (34.388, p <.0001)[a] n = 2117[b]		Attrition Spring 2021 (34.6060, p <.0001) n = 1928[c]	
	Adj. Odds Ratio	95% CI (p-value)	Adj. Odds Ratio	95% CI (p-value)
Food Security Status				
Food Secure	Ref		Ref	
Food Insecure	2.039	1.444–2.878 (<.0001)	1.904	1.426–2.542 (<.0001)
URM Status				
Non-URM	Ref		Ref	
URM	1.796	1.268–2.543 (.001)	1.492	1.118–1.991 (.007)
Gender Identity				
Cisgender	Ref		Ref	
Nonbinary/gender fluid	.530	.157–1.789 (.3063)	.558	.211–1.477 (.240)
Sexuality				
Heterosexual/straight	Ref		Ref	
Gay, Lesbian, Bisexual, Pansexual, or Asexual	1.409	.937–2.117 (.0994)	1.394	.982–1.978 (.063)

[a]Wald chi-square and p-value.
[b]Hosmer–Lemeshow goodness of fit (chi-square = 3.1388; df = 5; pr > chi-square = .6786).
[c]Hosmer–Lemeshow goodness of fit (chi-square = 4.5259; df = 5; pr > chi-square = .4764). URM = underrepresented minority.

As seen in this study and others, students from traditionally marginalized groups are more likely to be food insecure, and students from those groups who are food insecure are less likely to remain enrolled. This was particularly magnified by the COVID-19 pandemic, when financial stress, mental strain, and physical health risks were at an all-time high. Many students were compelled to move back home with family or take on paid employment to assist with family support amid widespread job losses. Students who lacked access to sufficient technological infrastructure (devices, software, and network connectivity) found online course modalities to be difficult if not impossible to sustain. Sadly, these inequities fell most heavily on students from groups that have historically experienced the most difficulty in the pursuit of a college degree. This was particularly notable for American Indian students who returned to their home reservations in the wake of campus housing closures caused by COVID-19. Many residents of these communities lack access to basic infrastructure, particularly broadband connectivity (Sanchez et al., 2020). It remains to be

Table 5. Ordered Logistic Regression: Number of Course Withdrawals or Failures by Student Characteristics.

	Number of Course Withdrawals or Failures in Spring 2020 and Fall 2020 (26.375, $p<.0001$)[a] n = 2654	
	Adj. Odds Ratio	95% CI (p-value)
Food Security Status		
Food Secure	Ref	
Food Insecure	1.639	1.302–2.063 (<.0001)
URM Status		
Non-URM	Ref	
URM	1.257	1.000–1.580 (.05)
Gender Identity		
Cisgender	Ref	
Nonbinary/gender fluid	.964	.473–1.963 (.964)
Sexuality		
Heterosexual/straight	Ref	
Gay, Lesbian, Bisexual, Pansexual, or Asexual	1.214	.914–1.612 (.1812)

[a]Wald chi-square and p-value. URM = underrepresented minority.

seen how much of the recent gains made in student diversity have been lost to food insecurity and other issues triggered by the COVID-19 pandemic.

The disparities in retention rates between food-secure and food-insecure students represent hundreds of students at just one institution who will fall farther behind in their studies, and perhaps never return to complete a degree. For many, this will lock them out of many employment opportunities and further contribute to their financial strain. Forty-three percent of 18–29-year olds and 40% of 30–44-year olds who ever attended college acquired student debt without having earned a bachelor's or associate's degree. Of these, 37% were behind on repaying their student loan debt as of 2018. Black and Hispanic adults are more than 2 times as likely as White adults to be behind on student loan payments and are a little over half as likely to have paid off their student loans (Board of Governors of the Federal Reserve System, 2019).

Institutional Responsibility

As access to food is considered a human right according to the Universal Declaration of Human Rights (UN General Assembly, 1948), there is some debate as to how much responsibility colleges and universities may have in ensuring that students' basic needs are being met. There are many initiatives around the United States that demonstrate

how institutions can connect students with resources and knowledge to ensure basic needs security. As of 2018, nearly 700 institutions around the United States were members of the College and University Food Bank Alliance (CUFBA) (Goldrick-Rab et al., 2018). Many colleges and universities operate some sort of food pantry to aid students with obtaining food and other necessary items (e.g., hygiene products, cleaning supplies, and personal care products). Other institutions participate in food recovery initiatives and the Swipe Out Hunger Campaign, where students can donate unused meal plan swipes to students in need. However, many institutions' food pantries do not keep regular hours or do not carry sufficient and appropriate products for students. Improving students' access to food and necessities does not always change their financial situations, and there still may be many other needs that cannot be addressed by a food pantry, such as housing or medical care.

One significant way in which institutions and scholarship-granting entities can address these problems is to restructure how financial aid is distributed and reduce or remove restrictions on what various types of aid can pay for. Many scholarships, grants, and loans allow only for paying the costs of tuition, fees, and possibly books. Allowing students more leeway to spend remaining aid dollars on basic needs would allow students to pursue their studies without the crushing burden of too many hours spent working in addition to being a full-time student. The current amount of money allocated for Pell Grants is similarly insufficient to meet students' needs. The maximum allowable Pell Grant in the 2020–2021 academic year was $6,345, while the average tuition and fees at 4-year public institutions were over $10,000. This aid covers only slightly over half of students' tuition and fees and does not even begin to help students cover other necessary costs including food and housing (Renter, 2021). Reform in this area is sorely needed so that all students are truly supported in their pursuit of a degree. Students who fail a course and have to repeat it are especially vulnerable, as the additional costs may not be feasible for them to shoulder. The national average cost of a 3-credit hour course at a public 4-year university for resident students was $1,188 as of 2020. When considering that nearly 40% of Americans do not have sufficient resources to cover an unanticipated $400 expense, this added expense is well out of reach for many students and their families (Board of Governors of the Federal Reserve System, 2019).

Limitations

This study took place at a single institution of higher education during the first month of global upheaval due to the COVID-19 pandemic. The somewhat low response rate of 22.1% is reflective of the many strains students were facing during this period. In recent years, survey researchers have noted a decline in responses among higher education populations, but recent research has shown that even response rates of 5%–10% can still yield sufficient reliability (Fosnacht et al., 2017). These findings certainly reflected the vulnerabilities that many students face when confronted with financial hardship and abrupt life changes. However, they may not represent the prevalence

and extent of food insecurity at this institution or among college students more generally. Within some subgroups in the sample, there were very few students, which also limit the generalizability of these findings. One unique strength of this study was the inclusion of official institutional data on course completion and enrollment status, thus mitigating the problem of self-reported academic data found in many similar studies.

Future Research

While this study included some novel perspectives on the issue of student food insecurity (e.g., LGBTQ, graduate and professional students, the southwest United States, and the COVID-19 pandemic), there is still much work to be done to better understand the diversity inherent in students' experiences with basic needs insecurity. This research was undertaken at a large, urban 4-year institution and may not reflect the prevalence or experience found among students at 2-year institutions or universities in other regions of the United States. Future studies will include branch campuses from this institution as well as other institutions in the region.

Another path in this area of inquiry would be to assess the effects of different interventions designed to aid food-insecure students. Simple interventions like expanded hours at student food pantries, pop-up pantries, destigmatizing campaigns, and inclusion of culturally appropriate items could promote the effectiveness and utilization of food pantries and potentially improve academic performance and persistence. Not all food-insecure students share the same struggles and thus may require different types of assistance. The needs of a student who is also a working single parent are quite different from a 19-year-old international student living on campus. Therefore, we must adapt existing structures to ensure that nobody is left behind. Understanding how various groups interact with a food pantry and its policies would augment the current research and provide much-needed assistance to vulnerable students.

Conclusion

The problem of student food insecurity should be considered an explanatory factor in the number of students who enroll in a postsecondary program and never complete a credential. In the United States, approximately 37% of students at 4-year institutions fail to complete a bachelor's degree within 6 years. This figure rises to 64% for students at 2-year colleges failing to complete a degree within 3 years (U.S. Department of Education, 2019). While students drop out for many reasons unrelated to food insecurity, higher education has an important role to play in ensuring that food insecurity and other manifestations of financial strain do not prevent a student from completing a degree. With the cost of higher education increasing more than the rate of inflation or household incomes (Akers, 2020), it follows that more students are experiencing financial stress in pursuit of a postsecondary credential. Many college students today face complex issues that hinder their ability to earn a degree.

Ensuring that all students have a reliable source of nutritious food is one issue that institutions are capable of addressing.

Acknowledgements

The author(s) acknowledge the support of the UNM Office of the Provost, UNM Honors College, the UNM Cancer Center, and Shoshona Adler Jaffe for her assistance with preliminary analyses.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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References

Akers, B. (2020). *A new approach for curbing college tuition inflation*. Manhattan Institute.

Baker-Smith, C., Coca, V., Goldrick-Rab, S., Looker, E., & & Richardson, B. (2020). #RealCollege 2020: Five years of evidence on campus basic needs insecurity. Retrieved from the Hope Center. https://hope4college.com/wp-content/uploads/2020/02/2019_RealCollege_Survey_Report.pdf

Berkowitz, S., Basu, S., Meigs, J., & Seligman, H. (2018). Food insecurity and health care expenditures in the United States, 2011–2013. *Health Services Research*, *53*(3), 1600–1620. https://doi.org/10.1111/1475-6773.12730

Bernstein, J., & Boushey, H. (2021). *The employment situation in January*. The White House. Retrieved April 23, 2021, from https://www.whitehouse.gov/briefing-room/blog/2021/02/05/the-employment-situation-in-january.

Board of Governors of the Federal Reserve System. (2019). Report on the economic well-being of U.S. households in 2018-May 2019. Retrieved April 23, 2021, from https://www.federalreserve.gov/publications/2019-economic-well-being-of-us-households-in-2018-dealing-with-unexpected-expenses.htm.

Cady, C. L. (2014). Food insecurity as a student issue. *Journal of College and Character*, *15*(4), 265–272. https://doi.org/10.1515/jcc-2014-0031

Cargas, S., Walsh-Dilley, M., Mechler, H., Coakley, K., & Adler Jaffe, S. (2020). Basic Needs Insecurity at UNM: 2020 Research Report. Retrieved from the University of New Mexico Basic Needs Project. https://basicneeds.unm.edu/basic-needs-at-unm-2020-research-report.pdf

Coleman-Jenson, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2020). *Household food security in the United States in 2019, ERR-275*. US Department of Agriculture, Economic Research Service.

Council for Adult and Experiential Education (2016, June 20). *Retention or persistence? Are they the same?* https://www.cael.org/news-and-resources/retention-or-persistence-are-they-the-same.

El Zein, A., Shelnutt, K., Colby, S., Olfert, M., Kattelmann, K., Brown, O., & Matthews, A. (2019). The prevalence of food insecurity and its association with health and academic outcomes among college freshmen. *Advances in Nutrition*, *8*(1), 4. https://doi.org/10.1186/s12889-019-6943-6

Fosnacht, K., Sarraf, S., Howe, E., & Peck, L. K. (2017). How important are high response rates for college surveys? *The Review of Higher Education*, *40*(2), 245–265. http://doi.org/10.1353/rhe.2017.0003

Goldrick-Rab, S., Baker-Smith, C., Coca, V., Looker, E., & Williams, T. (2019). *College and university basic needs insecurity: A national #RealCollege survey report*. The Hope Center.

Goldrick-Rab, S., Cady, C., & Coca, V. (2018, September 28). *Campus food pantries: Insights from a national survey*. CUFBA. https://cufba.org/wp-content/uploads/2019/03/2018-CUFBA-Report-web-2.pdf.

Hagedorn, R. L., McArthur, L. H., Hood, L. B., Berner, M., Anderson Steeves, E. T., Connell, C. L., Wall-Bassett, E., Spence, M., Babatunde, O. T., Kelly, E. G., Waity, J. F., Lillis, J. P., & Olfert, M. D. (2019). Expenditure, coping, and academic behaviors among food-insecure college students at 10 higher education institutes in the Appalachian and southeastern regions. *Current developments in nutrition*, *3*(6), 1–10. https://doi.org/10.1093/cdn/nzz058

Lashley, C. (2013). Student employment in hospitality and tourism: Insights from a recent study. *Research in Hospitality Management*, *3*(1), 1–8. https://doi.org/10.1080/22243534.2013.11828297

Phillips, E., McDaniel, A., & Croft, A. (2018). Food insecurity and academic disruption among college students. *Journal of Student Affairs Research and Practice*, *55*(4), 353–372. https://doi.org/10.1080/19496591.2018.1470003

Renter, E. (2021). *Pell grants: Dwindling power to help at-need students*. NerdWallet. https://www.nerdwallet.com/article/loans/student-loans/data-pell-grant.

Sanchez, G. R., Roybal, C., & Joshi, A. (2020). *COVID-19: Internet access and the impact on tribal communities in New Mexico*. State of New Mexico Indian Affairs Department. Retrieved September 23, 2021, from https://www.iad.state.nm.us/wp-content/uploads/2020/06/nabpi-iad-broadband-report-final.pdf.

Seligman, H. K., & Schillinger, D. (2010). Hunger and socioeconomic disparities in chronic disease. *New England Journal of Medicine*, *363*(1), 6–9. https://doi.org/10.1056/NEJMp1000072

UN General Assembly (1948). Universal declaration of human rights (217[III] A). Retrieved from http://www.un.org/en/universal-declaration-human-rights/.

U.S. Department of Agriculture, Economic Research Service (2012). *U.S. adult food security survey module: Three-stage design, with screeners*.

U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) (2019). Graduation Rate Survey. Retrieved June 18, 2021, from https://nces.ed.gov/ipeds/TrendGenerator.

U.S. Travel Association (2021). *Leisure & hospitality accounts for whopping 39% of jobs lost to pandemic*. https://www.ustravel.org/press/leisure-hospitality-accounts-whopping-39-jobs-lost-pandemic.

Walsh-Dilley, M., Coakley, K., Mechler, H, & Cargas, S. (2021). Understanding the Double Burden of Basic Needs: Patterns of Food and Housing Insecurity Among College Students at a Minority Serving Institution. Manuscript submitted for publication.

Weaver, R. R., Vaughn, N. A., Hendricks, S. P., McPherson-Myers, P. E., Jia, Q., Willis, S. L., & Rescigno, K. P. (2020). University student food insecurity and academic performance. *Journal of American College Health*, *68*(7), 727–733. https://doi.org/10.1080/07448481.2019.1600522

Wolla, S. A. (2014). *The rising cost of college: Tuition, financial aid, and price discrimination*. Federal Reserve Bank of St. Louis, Page One Economics Newsletter. https://research.stlouisfed.org/publications/page1-econ/2014/01/01/the-rising-cost-of-college-tuition-financial-aid-and-price-discrimination/.