

The Evolution of Poverty in Higher Education:  
Material Hardship, Academic Success, and Policy Perspectives

By

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## ABSTRACT

Despite improvements in college access, college completion rates remain low among students from low-income and otherwise vulnerable families. Over the past three decades, college prices rose dramatically, the real income of most families stagnated, and the purchasing power of need-based financial aid declined. To make up for substantial unmet financial need, students often work and take out loans. Additionally, some students go hungry or homeless while pursuing their educational goals. Strong theory and some evidence indicates that experiences of material hardship—meaning that individuals lack the minimum basic goods necessary for decent human functioning—inhibit academic success, but we lack systematic research on the topic. In this multi-method project, I examine the problem of material hardship among college students and find that a substantial share of undergraduates, and especially those attending community colleges, are food and/or housing insecure. Next, I investigate the relationship between material hardship and academic success using quasi-experimental matching methods and multiple regression. Results indicate that students who experience housing insecurity during their first year in college are nearly 10 percentage points less likely to have graduated or be enrolled four years later than otherwise similar peers. Reductions in academic achievement and credit attainment both appear to contribute to poorer academic outcomes for housing insecure students over the long term. Although food insecurity is inversely associated with academic achievement and attainment, the statistically significant relationship does not persist once background factors are considered. Additional analyses using two other study samples yielded substantively similar conclusions. Housing insecurity appears to be an independent source of educational disadvantage while the relationship between food insecurity and academic success could not be isolated in a multivariable context. Finally, I examine current higher education policy perspectives through a text analysis of two intermediary organizations with divergent ideologies. I use Social Construction and Policy Design theory to better understand debated constructions of key issues and students and predict how policymakers might respond to students who lack basic needs. These findings contribute to our understanding of undergraduates' experiential and material challenges and inform policy debates regarding financial and in-kind support for college students.

## CHAPTER ONE

### Introduction to the Evolution of Poverty in Higher Education: Material Hardship, Academic Success, and Policy Perspectives

The American higher education system has grown and diversified over the past half century. A larger share of students from low-income families and racial/ethnic minority backgrounds now attend college, especially in the community college sector (National Center for Education Statistics, 2016). Today, three-quarters of undergraduates are considered “non-traditional” students because they work full-time, delayed college enrollment, attend college exclusively part-time, are considered independent for financial aid purposes, have one or more dependents, are a single caregiver, or do not have a traditional high school diploma (National Center for Education Statistics, 2015a).<sup>1</sup>

Despite increases in access, however, there are large college completion gaps by family background. Moreover, these gaps persist even after accounting for prior academic preparation (National Center for Education Statistics, 2015b). According to one estimate, students from high-income families are six times more likely than those from low-income families to earn a bachelor’s degree by age 25 (Bailey & Dynarski, 2011). From an individual perspective, the attainment of a college credential is associated with higher wages, better work conditions, and increased health, happiness, and civic participation (Flanagan & Levine, 2010; Oreopoulos & Petronijevic, 2013). At community and national levels, college completion gaps by family background inhibit efforts to create an educated and competitive workforce as well as a more socially equitable society (Carnevale, Smith, & Strohl, 2010; Carnevale & Rose, 2011; Goldin &

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<sup>1</sup> Non-traditional is in quotes to acknowledge that this group of students is now the majority or typical student in higher education. Other terms for this group include “new-traditional” or “neo-traditional.”

Katz, 2008; National Center for Education Statistics, 2013; United States Department of Education, 2011).

Prior research documents large and growing gaps in college completion by family income, socioeconomic status, and wealth (e.g., Alon, 2009; Bailey & Dynarski, 2011; Bastedo & Jacquette, 2011; Belley & Lochner, 2007; Chetty et al. 2014; National Center for Education Statistics, 2015b; Haveman & Smeeding, 2006; Pfeffer, 2016). Since the 1970s, rates of bachelor's degree attainment have increased for young adults from high-income families, but they have remained relatively flat – at less than 10% – for students from families in the bottom income quintile (Ziol-Guest & Lee, 2016). To better understand and explain these trends, scholars often focus on the growing price of college attendance and declining “purchasing power” of need-based financial aid (College Board, 2016). Indeed, rigorous research indicates that need-based grant aid can improve college access and success for students from low-income families (e.g., Alon, 2011; Dynarski, 2003; Goldrick-Rab, Kelchen, Harris & Benson, 2015b; Singell, 2004). These studies, however, rarely consider the daily lived experiences of students. Instead, research on students' college experiences typically follows in the tradition of studying how academic and social integration influence college success (e.g., Astin, 1993; Kuh et al., 2008; Pascarella and Terenzini, 1991; Tinto, 1993). In this project, I seek to understand how the security and predictability of basic material goods may be related to students' college experiences and success.

College students and higher education practitioners report that some undergraduates go without basic necessities, including adequate food and shelter, while pursuing their educational goals. These students are facing material hardship or basic needs insecurity, meaning that they lack the minimum basic goods necessary for decent human functioning. Although material

hardship is related to income, socioeconomic status, and wealth, it is conceptually and empirically distinct. Unlike these other measures of family background or poverty, material hardship provides direct evidence of well-being (e.g., Eberstadt, 2006; Nelson, 2011; Nolan & Whelan, 2011). Basic needs insecurity is of interest to scholars, policymakers, and practitioners for several reasons. Normative or moral influences may inform a desire to ensure that all individuals can function and live a life worthy of basic human dignity (e.g., Sen, 1985; United Nations General Assembly, 1948). Instrumentally, when basic needs are met, individuals are more likely to be productive and reach their goals (e.g., Beverly, 2001b; Maslow, 1943). In this case, college completion might be enhanced if material hardship is reduced. Several non-profit organizations and college leaders have been persuaded by this hypothesis and provide direct hardship alleviation support to students (Broton, Frank & Goldrick-Rab, 2014; CUFBA, 2017). These social entrepreneurs argue that short-term investments in college students may lead to significant and substantial long-term benefits for individuals and society (Duke-Benfield, 2015; Goldrick-Rab, Broton & Gates, 2013; Price et al., 2014).

This study contributes to the burgeoning area of research on basic needs insecurity among college students by focusing on three interlinked goals:

1. Describe the problem of material hardship, and particularly food and housing insecurity, among college undergraduates
2. Assess the relationships between food and/or housing insecurity and college academic achievement and attainment
3. Examine the current higher education policy context and discuss potential policy implications for college students from vulnerable backgrounds



I use multiple methods and data sources to address research questions related to these areas of inquiry. In the second chapter, I conduct a systematic review of the extant research on food and housing insecurity among college students to better understand the scope and depth of the problem and evaluate the strengths and limitations of existing research. Additionally, I conduct a longitudinal trend analysis of food insecurity, housing instability, and an inability to meet essential expenses using data from the Survey of Income and Program Participation (SIPP), which is a nationally-representative household panel survey.

In the third chapter, I use data from the Wisconsin Scholars Longitudinal Study (WSLS), a statewide longitudinal dataset of traditional-age Pell grant recipients that includes survey and administrative record data, to examine relationships between material hardship and academic success. Specifically, I use quasi-experimental matching methods and multiple regression to estimate relationships between experiences of food and/or housing insecurity early in college and degree attainment or enrollment four years later. I also investigate potential mechanisms or academic pathways by examining the relationship between material hardship and short-term academic achievement and enrollment intensity. The fourth chapter extends this work using two additional data sources: The Wisconsin STEM (Science, Technology, Engineering, and Math) Study and The Healthy Minds Community College Study. Both studies link students' survey responses to their academic records, enabling further investigation of the relationships between food and/or housing insecurity and short-term academic achievement and attainment in different college and geographic contexts.

In the fifth chapter, I examine how two intermediary organizations socially construct and frame today's college students and key higher education issues using text analysis and interpretive research methods. I draw on Social Construction and Policy Design theory to discuss

potential policy implications, with a focus on students from low-income or vulnerable backgrounds. Finally, the sixth chapter summarizes the study and discusses implications for practitioners, policymakers, and researchers.

## CHAPTER TWO

### The Evolution of Poverty in Higher Education: Basic Needs Insecurity among Undergraduates

In today's college-for-all era, almost all young people aspire to earn a college degree, and a growing share is enrolling in college (Jacob & Wilder, 2010; National Center for Education Statistics, 2013; Schneider & Stevenson, 1999). Among recent high school graduates, two-thirds immediately matriculate into college, and a significant number of adults enroll in college after years in the workforce (Baum, Kurose, & McPherson, 2013; Hussar & Bailey, 2013; National Center for Education Statistics, 2013). These students are seeking the college wage premium, a ticket to the middle-class, and a host of other non-monetary benefits, such as better health and happiness, that tend to accompany a college degree (Oreopoulos & Petronijevic, 2013). Yet among students historically underrepresented in higher education, this increase in college access has not been matched with increases in degree attainment. Among students from low-income families born in the early 1980s, less than 10 percent had earned a college degree by age 25 even though nearly one-third had enrolled in college (Ziol-Guest & Lee, 2016). Disproportionate college completion rates by family background inhibit efforts to create an educated workforce and citizenry as well as a more socially equitable society (Carnevale, Smith, & Strohl, 2010; Haveman & Smeeding, 2006; National Center for Education Statistics, 2013; United States Department of Education, 2011).

Scholars seeking to explain growing gaps in college attainment by family background often point to the rising net price of college, which disproportionately affects students from low-income families (e.g., Goldrick-Rab, Kelchen, Harris, & Benson, 2015b). But studies of financial

aid and family income rarely consider the lived daily experiences of students from low-income or otherwise vulnerable families or how such experiences might impact college success (e.g., Bailey & Dynarski, 2011; Alon, 2011; Dynarski, 2003; Singell, 2004). Increasingly, college students and higher education practitioners report that some students' lives are marked by an inability to consistently meet basic expenses, including adequate food and shelter (e.g., Smith, 2017). Research suggests that when basic material needs are met, individuals are more likely to be productive and reach their goals (Beverly, 2001b; Desmond, 2016; Maslow, 1943). In this case, college completion might be enhanced if students' basic needs are secure (e.g., Alaimo, 2005; Miller, 2011). Yet, we lack systematic evidence regarding the type or level of material hardship faced by today's college students or how it has changed over time.

In this paper, I examine the problem of material hardship or basic needs insecurity among college students, which means that they lack the minimum basic goods necessary for decent human functioning. Results from a systematic review of the extant research and a longitudinal trend analysis using data from the Survey of Income and Program Participation (SIPP) indicate that college students are more likely than the overall public to report challenges obtaining adequate food and a secure home. Among college students, those attending community, vocational, and technical colleges appear to be especially at risk of food and/or housing insecurity. Between 1998 and 2011, the share of undergraduates reporting material hardship challenges increased, but especially for college students enrolled in a vocational or technical college.<sup>2</sup> While this paper contributes to our understanding of broad trends and patterns, data limitations do not allow for precise and generalizable estimates of the share of U.S. college students who struggle with basic needs insecurity.

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<sup>2</sup> The SIPP includes a measure of vocational or technical colleges rather than community colleges, which is widely used in the higher education literature.

## Background

Mainstream and alternative media report that some college students are going without basic material goods, including food and shelter, in order to pursue their college aspirations (e.g., Ashtari, 2014; Bahrapour, 2014). These news stories explain the daily obstacles created by basic needs insecurity and the coping strategies some students employ to help make ends meet. One story featured Christine, a junior majoring in creative writing at a prestigious four-year university. Financial aid pays a little less than half of her tuition and she “has no money left for food.” Each day, she packs “at least one empty tub of Tupperware” in her bag, along with textbooks and notepads. “She darts to club meetings between lectures to scoop up uneaten pizza or sandwiches. If she gets there early, she can grab enough to stow away for later.” Christine explains how she has “skipped meals, applied for food stamps, and dumpster-dived,” even going through her roommate’s trash in hopes of finding enough to eat. “Being food insecure is so alienating,” states Christine (Colarusso, 2015, np.). Christine is not alone in her struggles to obtain enough to eat while attending university, but it is difficult to know how widespread the problem of food insecurity is among college students.

Those who work directly with college students confirm students’ accounts of material hardship and many believe that the problem has gotten worse over time (Broton, Frank, & Goldrick-Rab, 2014). For example, the College and University Food Bank Alliance (CUFBA) is a professional organization of campus-based programs that work to alleviate food insecurity, hunger, and poverty among our nation’s college students. Formed in 2012, they have grown to support food pantries on over 450 college and university campuses (CUFBA, 2017). It is unclear, however, if this exponential growth in on-campus food pantries represents an increase in

the incidence of material hardship among college students, a growing response to a problem that was always there, or something else.

Early research on food insecurity among college students often focused on the experiences of students at four-year colleges and universities, likely because researchers were located at these institutions (e.g., Chaparro, Zaghoul, Holck & Dobbs, 2009). However, America's higher education system is increasingly stratified along racial/ethnic and class dimensions (Gerber & Cheung, 2008). Those with low-incomes, racial/ethnic minorities, and single parents are overrepresented at our nation's community colleges (Bastedo & Jaquette, 2011; National Center for Education Statistics, 2015). Individuals with these background characteristics are also more likely to report material hardship challenges (Beverly, 2001a; Coleman-Jensen, Rabbitt, Gregory & Singh, 2015). Although tuition and fees are relatively low at community colleges, attendance is far from free (Monaghan & Goldrick-Rab, 2016). Community college students from low- and moderate-income families face out-of-pocket costs equivalent to 40% and 22% of their annual family income, respectively (Goldrick-Rab & Kendall, 2014).<sup>3</sup> Subsequently, one might expect community college students to be at a greater risk of basic needs insecurity in comparison to university students. Thus, early estimates of material hardship among university students may represent a conservative estimate of the problem across higher education.

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<sup>3</sup> Low-income families come from the bottom income quartile in the study and the median annual family income in this quartile is \$21,000. After grant aid is considered, the net price of attendance for dependent students at public two-year college is \$8,300. Moderate-income families come from the second income quartile in the study and the median annual family income in this quartile is \$52,000. The net price of attendance for dependent students at a public two-year college is \$11,300. Data come from the National Postsecondary Student Aid Study, 2012.

### **Conceptual contribution of material hardship**

Although income and socioeconomic status are often used as proxies for understanding poverty in educational research, families with low-incomes and those lacking the security of basic material goods are distinct, though overlapping, groups. The likelihood of experiencing material hardship increases as income decreases, but not all income-poor households experience basic needs insecurity and not all income-rich households are materially secure (Edin & Lein, 1997; Iceland & Bauman, 2007; Lin & Bernstein, 2008; Rector, Johnson, & Youssef, 1999; Short 2005). For example, 14% of U.S. households are food insecure, meaning that they do not have consistent access to enough food for an active, healthy life. This average masks consideration variation across background characteristics, however. Among households with incomes below the federal income-poverty line, 40% report low or very low levels of food security whereas 6% of those with incomes above 185% of the poverty line are food insecure (Coleman-Jensen et al., 2015).

Poverty is a multidimensional concept in which measures of income and material hardship capture distinct aspects. Seminal work by Mayer and Jencks (1989) found that current income explains only 14 percent of the variation in the number of material hardships a family experiences. More recent analyses indicate that income-poverty and material hardship have a complex relationship in which the association is stronger when income-poverty episodes were recent, more frequent, longer or deeper (Iceland & Bauman, 2007). Thus, some families with moderate income-to-poverty ratios are more likely than families with lower ratios to experience material hardship (Beverly, 2001a; Layte, Nolan, & Whelan, 2001). For instance, working single mothers have higher average incomes than unemployed single mothers, but they are also more likely to report material hardships. While this finding may seem counterintuitive, it is likely the

result of increased work-related expenses and a reduction in time for home activities (Beverly, 2001a). Thus, demographic subgroup analyses focusing on students from low-income families, such as those commonly used in education and social science research, portray a group with heterogeneous material experiences.

### **Prior empirical evidence**

Despite growing public and policy attention, there is relatively little systematic evidence regarding experiences of basic needs insecurity among college students. Nationally representative surveys of college students do not include measures of material hardship, like food and housing insecurity, commonly used in household surveys of the general public. Instead, individual researchers and practitioners have undertaken efforts to document and better understand college students' inability to meet basic living expenses. These studies typically focus on food insecurity, which exists on a spectrum ranging from anxiety and worry over food supply to reductions in the quality or variety of diet to disrupted eating patterns and reductions in food intake. The most severe forms of food insecurity are often accompanied by physiological sensations of hunger. According to the U.S. Department of Agriculture (USDA) Food Security Survey Module, respondents are categorized as having high, marginal, low, or very low levels of food insecurity based on the number of affirmative responses. There are three versions of the survey (i.e., 18-item, 10-item, and 6-item), which have been tested and validated to reliably measure the concept of food insecurity (Bickel et al., 2000). Notably, these questions are worded with the caveat that food insecurity is the result of a lack of money, rather than a lack of time or something else. For a brief overview of food security measurement in the U.S., see Appendix A.

Chaparro and colleagues (2009) conducted the first published study of food insecurity among college students in the United States. They surveyed students attending the University of



Hawai'i at Manoa (UHM) and found that nearly three times as many students reported low or very low levels of food security as compared to the state of Hawai'i (21% students vs. 8% state). Fully, 45% of UHM students surveyed reported that they had marginal, low, or very low levels of food security. Five years later, practitioner and CUFBA co-founder, Clare Cady, identified food insecurity as an important challenge to college success in a journal article for student affairs professionals and others interested in student development. In that article, Cady (2014) conducted a literature review of food insecurity among college students and called for campus administrators to determine the prevalence of food insecurity on their campuses.

Efforts to document other types of material hardship among college students are rare. Although the Free Application for Federal Student Aid (FAFSA) does not provide an estimate of the number of homeless college students, it does provide some insights on the problem among those who apply for federal financial aid. Specifically, homeless students ages 21 or younger who do not remain with their parents and are not already considered financially independent (i.e., they were not orphans, wards of the court, in foster care, emancipated minors, in legal guardianship, veterans or in active duty, married, in a graduate program or provide more than half of a dependent's support) can request to be identified as an "unaccompanied homeless youth" in order to obtain financial independent status.<sup>4</sup> Homeless students who do not meet these criteria (e.g., 22- and 23- year olds) may petition for a dependency status override through the "special circumstances" process, which is described as burdensome, subjective, and often unsuccessful (Government Accountability Office, 2016).<sup>5</sup> Students who self-identify as homeless

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<sup>4</sup> This system excludes many students including those who do not complete the FAFSA, students who become homeless after completing the FAFSA, students over age 21 who may be homeless, students who are homeless with their families, and students who qualify as financially independent under another rule, such as being a foster care youth (who are at high risk of homelessness).

<sup>5</sup> Among 22- and 23- year olds who self-identified as homeless and were not able to provide parental financial information, just 2% (762 students) were granted a homeless override in 2015-16. The U.S. Department of

through either of these processes must then provide documentation verifying that they lack safe and stable housing, which can be extremely difficult for those who are not connected to a high school homeless liaison or shelter system (NAEHCY, 2014).<sup>6</sup> In 2015-16, nearly 32,000 college students completed this verification process and were officially determined to be homeless for financial aid purposes. However, more than 150,000 students indicated that they were homeless on an initial filtering question, but failed to complete the necessary documentation process (School House Connection, 2017).<sup>7</sup> Thus, the minimum number of homeless college students is 32,000.

Students who are homeless live in a variety of temporary situations including staying in shelters, motels, cars, abandoned buildings, parks, transportation stations, or in the homes of other people (NAEHCY, 2014). Housing insecurity or instability encompasses a broader set of circumstances including an inability to pay rent or utilities, moving frequently, or doubling up with another household due to financial problems (Cutts et al., 2011; Johnson & Meckstroth, 1998). Tsui and colleagues (2011) conducted the first systematic report of housing instability among college students at the City University of New York (CUNY). Students were considered

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Education announced that it will remove the definition of “youth” from the FAFSA application beginning with the 2018-19 application. This change will allow unaccompanied homeless applicants who are 22 or 23 years old to indicate that they are homeless without having to go through the “special circumstance” process. Students ages 24 or older are automatically considered independent. Thus, they are not identified as homeless at any part of the financial aid process.

<sup>6</sup> Few students have such formal connections. Shelter stays are relatively rare among this population and only those who were documented homeless during high school and are enrolling in college immediately after high school are likely able to rely on their k-12 school district officials for such support. Financial Aid Administrators can also make homeless determinations, but it is rare for them to do so (School House Connection, 2017).

<sup>7</sup> Just over half of the students who answered “yes” to the homeless filtering question were age 22 or 23. Thus, they do not qualify for the “unaccompanied homeless youth” question and are directed to the “special circumstances” process where they can request a homelessness override.

housing instable if they reported at least one of twelve housing challenges.<sup>8</sup> Results indicate that 42%, or over 100,000 CUNY students had experienced some form of housing instability in the prior year, including 29% who did not have enough money to pay rent. Additional analyses suggest that CUNY students are at a greater risk of housing instability than other relevant New York and national populations (Tsui et al., 2011). Nationally, one in eight poor renting families is unable to pay all of their rent and a similar number believe that they are at risk of eviction (Desmond, 2016). These seminal studies of food and housing insecurity among college students laid the groundwork for additional research in this area.

### **Data and Empirical Approach**

This paper provides the first systematic review of the extant research on material hardship challenges among college students. First, I update Cady's 2014 literature review with new studies of food insecurity and expand the focus of the review to include studies of housing instability among college students. Next, I evaluate the state of the extant literature, focusing on issues of sample selection, measurement, and generalizability. Finally, I conduct longitudinal trend analyses of basic and essential needs insecurity among college students using data from the Survey of Income and Program Participation.

#### **Systematic review of extant research**

The systematic review synthesizes and evaluates the extant research regarding the prevalence of food and/or housing insecurity among college undergraduates in the United States

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<sup>8</sup> Housing challenges include: 1) Not having enough money to pay rent 2) Experiencing a rent increase that made it difficult to pay rent 3) Being required to appear in housing court 4) Leaving because of feeling unsafe in the household 5) Being threatened with foreclosure 6) Being thrown out by someone in the household 7) Being evicted by a landlord 8) Trying but not being able to get into a shelter 9) Being removed from a shelter 10) Losing housing as a result of fire or other building problems 11) Losing housing as a result of a foreclosure 12) Losing housing as a result of a Workfare requirement.

between 2009 and March 2017.<sup>9</sup> The review includes peer-reviewed journal articles and grey literature such as reports and conference presentations.<sup>10</sup> Due to the burgeoning state of the field, grey literature often contained the most recent estimates of material hardship. Moreover, reports were often commissioned by higher education leaders and garnered significant media attention (e.g., Crutchfield et al., 2016; Goldrick-Rab & Broton, 2015; Martinez, Maynard & Ritchie, 2016).

The search was conducted using Google Scholar, which includes both academic and grey literature. Google Scholar's coverage has improved dramatically over the past decade and recent studies indicate that it is sufficient to be used alone for systematic reviews (Gehanno, Rollin & Darmoni, 2013). The terms "food insecurity" AND "college students" and "housing instability" AND "college students" were used to identify studies. I read resulting titles and abstracts to determine if the article was likely to meet the study criteria defined above.<sup>11</sup> Then, I read promising articles in full to determine inclusion in the systematic review (Moher et al., 2009). For each relevant article or study sample, I report the higher education institution(s) included in the study; how food or housing insecurity challenges were measured; sample information including sampling strategy, response rate, and sample size; and the type of document reviewed. Based on a qualitative synthesis of this information, I highlight the strengths and weaknesses of the extant literature on food and housing insecurity among college students.<sup>12</sup>

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<sup>9</sup> The first study of material hardship among U.S. college students was published in 2009.

<sup>10</sup> Articles must be written in English. Student thesis projects were excluded from the systematic review. Overall, student thesis projects relied on small convenience samples at single institutions limiting their contribution given the state of the literature.

<sup>11</sup> As a robustness check, I also reviewed all of the articles that cited any of the food or housing insecurity articles that were identified in the search process and published prior to 2016. This process did not yield any additional relevant studies.

<sup>12</sup> The results are not quantitatively weighted or analyzed.

## Survey of Income and Program Participation

The SIPP is a nationally representative household survey designed as a continuous series of panels, making it ideal to track trends over time. Questions about material hardship come from the adult well-being topical module, which was administered five times between 1998 and 2011 (i.e., 1998, 2003, 2005, 2010, and 2011).<sup>13</sup> Notably, this time period includes the Great Recession, which officially started in 2007 and ended in 2009. However, recovery was slow and material hardship rates remained high into the early 2010s. For example, national household food insecurity rates remained above 14% between 2008 and 2011 and the highest prevalence was recorded in 2011 at 15%. For comparison, household food insecurity rates were 10-12% between 1998 and 2007 (USDA, n.d.).<sup>14</sup>

The SIPP sample includes all non-institutionalized household members ages 15 and older.<sup>15</sup> When an individual leaves an original household, they are followed and continue to be included in the survey and individuals that join an original household are also surveyed. Conducted by the Census Bureau, the SIPP's defining characteristic is its ability to track economic and material well-being, especially among the nation's poor who are oversampled for the survey. The SIPP consistently outperforms other national surveys, such as the Current Population Survey, American Community Survey, and Panel Study of Income Dynamics, in the measurement of material hardship (Czajka & Denmead, 2008; Meyer, Mok, & Sullivan, 2009).

A primary limitation of the SIPP is the sampling frame, which excludes students living in residence halls or dormitories. Nationally, just 12% of college students live in residence halls

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<sup>13</sup> The adult well-being topical module was administered once or twice in the 2008, 2004, 2001 and 1996 SIPP panels. Prior surveys asked some similar, but non-equivalent questions.

<sup>14</sup> Specifically, household food insecurity rates were 11.8% in 1998; 11.2% in 2003; 11.0% in 2005; 14.5% in 2010; and 14.9% in 2011 (USDA, n.d.)

<sup>15</sup> Proxy response is permitted for household members who are temporarily unavailable.

(Author's calculations, 2012 National Postsecondary Student Aid Study). Although ethnographic and survey evidence indicates that students living in residence halls may also experience basic needs insecurity, they are significantly and substantively less likely to report experiences of food or housing insecurity than peers in other living arrangements (e.g., Armstrong & Hamilton, 2013; Author's calculations, Wisconsin Scholars Longitudinal Study). These limitations likely bias material hardship estimates upward.

However, the SIPP sampling frame also excludes students living in shelters, motels or other places not meant for regular human housing. Because individuals in these housing circumstances are also at a greater risk of other types of material hardship, these limitations likely bias hardship estimates downward (Author's calculations, Wisconsin Scholars Longitudinal Study). Thus, the study design suggests that both positive and negative forms of bias may influence estimates and it is impossible to know how much they cancel each other out.

### **Survey measures**

The SIPP includes three measures of adult well-being: food security, housing stability, and an ability to meet all essential expenses (Ouellette, Burstein, Long & Beecroft, 2004).<sup>16</sup> While food and housing are often considered basic needs, "essential expenses" is a more subjective term. Thus, this measure may be particularly relevant for understanding the challenges faced by college students. For example, students may consider college-related costs such as paying for textbooks, tuition, fees, or transportation as essential to their success in college. The ability to meet essential experiences was measured over the prior year.

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<sup>16</sup> In the SIPP, all measures of adult well-being are conceptualized at the household level, so the survey reports the proportion of individuals who live in households that report basic or essential needs insecurity.

Next is an indicator of food security based on responses to questions from the food security survey module.<sup>17</sup> The survey asked respondents to indicate if they or members of their household had experienced any of the following over the last four months because there was not enough money for food: the food you bought just didn't last; couldn't afford to eat balanced meals; skipped meals or cut the size of meals; ate less than you felt you should; or did not eat for a whole day. Those who answered in the affirmative to zero or one of the questions are considered food secure. Those who answered two or three questions affirmatively have low food security and those with four or five affirmative responses have very low food security (Shaefer, 2014).

The last measure of material hardship is an indicator of housing stability. The survey asked if there was a time in the past 12 months when the household was unable to pay the full amount of rent or mortgage and if so, an eviction had occurred for non-payment. Similarly, respondents were asked if they were unable to pay the full amount of the utilities bill sometime during the past year and if so, the utilities had been cut off as a result. I categorized those who reported difficulty paying the full amount of rent or utilities as housing instable.

### **Analytic sample and approach**

I describe the incidence of food insecurity, housing instability, and an inability to meet essential expenses for three separate groups in the following years: 1998, 2003, 2005, 2010, and 2011.<sup>18</sup> The first group is all adults age 18 or over and serves as a comparison or reference group (n=49,448-70,312 depending on the survey year). The second group is college undergraduates

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<sup>17</sup> Although the questions come from the food security survey module, they do not form a fully validated scale.

<sup>18</sup> The unit of analysis is the individual and appropriate individual-level survey weights are employed in all analyses. These are the only years in which the SIPP administered questions related to adult well-being (Shaefer, 2014).

pursuing an academic degree whose class standing is between freshman and senior (n=2,499-3,956). It is common for students seeking this type of degree to enroll in a four-year college or university. The third group includes college students who are “enrolled in a vocational, technical, or business school” (n=284-460) according to the SIPP questionnaire. Today, many of these colleges are referred to as two-year or community colleges.<sup>19</sup> Graduate or professional school students and non-degree/credential seeking students are excluded from analyses.

## **Findings**

### **Systematic review of extant research**

The search resulted in 2,111 studies about food insecurity and college students and 231 studies about housing instability and college students. Twenty-three studies provided estimates of food insecurity among U.S. college students and 10 studies included estimates of housing instability among this population.<sup>20</sup> Two studies provided information about two samples so the search resulted in 25 unique estimates of food insecurity and 12 distinct estimates of housing instability among college students (see Figures 1 and 2 for details).

### ***Extant research on food insecurity among college students***

The extant research suggests that food insecurity levels among college students are similar to or higher than estimates of the U.S. population. Results indicate that between 12 and 76% of surveyed college students report some form of food insecurity ranging from anxiety and worry over their food supply to substantial reductions in food intake and hunger. However, that range of estimated prevalence rates comes from a wide variety of studies including surveys of

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<sup>19</sup> While the higher education literature typically categorizes students according to sector of enrollment (two- vs. four-year college), the SIPP does not include this measure.

<sup>20</sup> Articles resulting from the search that were not included in the systematic review were often excluded for the following reasons: college students were not the target population; the article did not provide an estimated prevalence rate; or the study occurred in another country.



single college classrooms and surveys of entire university systems. Among studies that include more than one college or university, between 39 and 76% of surveyed students report that they are food insecure. Although that is still a relatively wide range, variation is expected given the diversity of higher education institutions and student populations included in these studies. For example, studies of community college students consistently report higher rates of food insecurity than those focused on university students (Broton & Goldrick-Rab, 2016; Dubick, Matthews & Cady, 2016; Freudenberg et al., 2011; Goldrick-Rab, Broton & Eisenberg, 2015a).<sup>21</sup> Multi-site studies of food insecurity are discussed below and all studies are summarized in Table 1 and Figure 3.

The first university system study of food insecurity among undergraduates was conducted at the City University of New York in response to growing concerns about student hunger. In 2009, the CUNY Chancellor publicly stated, “one of the saddest moments that I have experienced recently occurred at a Council of Presidents meeting when some presidents indicated to me and other members of the chancellery that more and more students appear on their campuses hungry. They have not had breakfast or may have missed a meal the night before” (Freudenberg et al., 2011, pg. 1). In response to the Chancellor’s call for action, researchers invited a random sample of students from all 17 two- and four-year CUNY campuses to complete a survey and approximately 1,100 responded for a 16% response rate. Results indicate that 39% of CUNY undergraduates are food insecure. Additionally, a supplemental sample of 1,114 students from the highest poverty campuses indicates that 45% of respondents are food insecure (Freudenberg et al., 2011). In another study, a random sample of over 66,000

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<sup>21</sup> There is one exception: a report by The Community College Equity Assessment Lab (Wood, Harris, & Delgado, 2016) indicates that 12% of community college students surveyed are food insecure, but the report does not include any information about the study frame, study sample, response rate or survey measures. Lack of methodological information makes it difficult to draw conclusions regarding the reliability or validity of this study.

students from all 10 University of California System campuses were invited to complete a food security survey and 14% responded. Results indicate that 48% of undergraduates have low or very low levels of food security (Martinez et al., 2016). Finally, researchers invited a random sample of University of Wisconsin System undergraduates from low-income families to share their experiences with food security as part of a larger survey on their college experiences. Over three-quarters of students responded and 57% indicated some form of food insecurity (Broton & Goldrick-Rab, 2016). Across these system-wide studies, a greater share of students from low-income families and racial/ethnic minority backgrounds report food insecurity challenges. Moreover, results from the CUNY study indicate that a greater share of food insecure students work 20 or more hours per week and are in fair or poor health in comparison to their food secure peers.

Several additional studies examined food insecurity across multiple colleges and universities within or across higher education systems. For example, researchers recently recruited more than 3,700 undergraduates attending one of 34 two- and four-year colleges and universities in 12 states to complete a food security survey module. Results indicate that 50% of community college students and 47% of four-year college students have low or very low levels of food security. Overall, 21% of respondents are marginally secure, 26% have low food security, and 22% have very low food security (Dubick et al., 2016). In other cases, studies were not necessarily designed to measure food security rates, but they provide an opportunity to do so. For instance, researchers at the Wisconsin HOPE Lab invited 1,565 students to complete a survey that included the 6-item Food Security Survey Module and 1,007 responded for a 64% response rate. The study participants were randomly selected from an eligible pool of first- and second-year undergraduates who enrolled in 1 of 2 two-year colleges or 8 four-year colleges in

the state of Wisconsin; had taken the ACT and scored college-ready in certain subjects like math; indicated a modest interest in science, technology, engineering or math (STEM); and come from a low- or moderate-income families within 200% eligibility of the Pell grant. Results indicate that 10% of undergraduates are marginally food secure, 24% have low food security, and 27% have very low food security (Broton & Goldrick-Rab, 2016).

While these multi-site studies often include thousands of student responses and use validated survey measures, the populations in which the results are generalizable to is less clear than in the university system studies. Instead, these studies illustrate that large numbers of college students at a wide variety of institutions experience food insecurity and help us better understand the correlates and relationships to food insecurity (see also, Morris, Smith, Davis & Null, 2016). For example, Dubick and colleagues (2016) found that the majority of food insecure students are working and receiving financial aid. They also report that 43% of students who were enrolled in a campus meal plan are still food insecure. They go on to explain the barriers to food security among students with meal plans and argue that meals plans alone will not eliminate food insecurity among college students.

Finally, a growing body of research examines food insecurity at two-year colleges, where it appears to be the most prevalent. The first study of food insecurity among community college students was conducted in-person at two community colleges in Maryland. The convenience sample of 301 students indicates that 76% of respondents are food insecure, including 56% who have low or very low levels of food security. However, African American students were overrepresented in the sample, which may have biased estimates upward (Maroto, Snelling & Linck, 2015). Since then, the Wisconsin HOPE Lab has conducted two studies of food insecurity among community college students from across the nation (Goldrick-Rab, et al. 2015a; Goldrick-

Rab, Richardson & Hernandez, 2017). The most recent survey includes responses from more than 33,000 students attending 70 community colleges in 24 states. In comparison to national averages, the sample includes a greater share of females and first-generation college students and a smaller share of White, not Hispanic or Latino students. Results indicate that two-thirds of students are food insecure including 12% who are marginally secure, 23% with low food security and 33% with very low food security. Though college-level response rates vary between 1 and 20%, there is “little evidence of a strong relationship between institutional response rates and reported levels of food insecurity” (Goldrick-Rab et al., 2017, pg. 25). In addition to reporting individual-level correlates as discussed above, this study also examines geographic and community-level variation. After presenting several analyses, the authors conclude that basic needs insecurity among college students is widespread rather than an isolated problem only affecting urban or high-poverty communities (Goldrick-Rab et al., 2017).

### *Evaluation of the extant research on food insecurity*

The extant research on food insecurity among college students has grown dramatically over the past few years and has several strengths and weaknesses. A significant limitation to this body of work is that the majority of studies measure food insecurity at a single college or university campus, or for a subgroup of students at a particular institution. The estimated prevalence rates reported in these studies may be of most use to local practitioners and communities, but many studies also provide important insights into the nature of food insecurity. For example, one university study found that students who received financial aid or actively budgeted were more likely to be food insecure while those who received familial financial support or had access to alternative financing, such as a credit card, were less likely to be food insecure, after controlling for background factors. Thus, resource adequacy appears to play an

important role in food security risk among college students (Gaines, Robb, Knol & Sickler, 2014).

Although the earliest food insecurity studies were often conducted at four-year research universities, more recent research has expanded to include students who attend community colleges and broad-access four-year colleges.<sup>22</sup> Additionally, more recent studies include multiple institutions to better understand the issue of food insecurity across diverse groups of students. To date, studies have been conducted in rural and urban colleges and universities in over half of the states. This change in the composition of students included in food security studies over time along with the fact that almost all of the studies have been conducted in the past few years limits our understanding of how this problem may have changed over time.

Most of the reviewed studies used a USDA Food Security Survey Module to measure food insecurity. These modules have been validated and provide reliable estimates of various levels of food security (Bickel et al., 2000). Although these survey tools allow researchers to report high, marginal, low, and very low levels of food security, results were not always disaggregated. Notably, some researchers combined the categories of high and marginal while others combined marginal with low and very low levels of food security (e.g., Martinez et al., 2016; Patton-López, López-Cevallos, Cancel-Tirado & Vazquez, 2014). The use of different reference periods also limits comparisons across studies of college students' food security since longer reference periods are associated with higher prevalence rates (e.g., Bruening et al., 2015).

Another benefit of using these survey modules is that they are also used in several national household studies of food insecurity such as the Current Population Survey. However, the extant literature on food insecurity among college students conceptualizes food insecurity at

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<sup>22</sup> Freudenberg and colleagues (2011) study at CUNY is a notable exception.

the individual level whereas national estimates are conducted at the household level (Coleman-Jenson et al., 2015). While the individual-level approach ensures measurement of food insecurity among college students rather than households with college students, it limits direct comparisons to these national studies. Finally, food insecurity is a complex concept and the Food Security Survey Module is only one approach to measuring it. Due to the reliance on this measurement approach, other aspects of food sufficiency and quality are less well understood (e.g., Carletto, Zezza & Banerjee, 2013; Webb et al., 2006).

Finally, several of the studies used defined sampling frames and randomly selected classrooms or individuals for survey participation. This approach can improve the external validity of findings, especially when coupled with a high response rate. All of the university system studies utilized this design and two had response rates of approximately 15% while the other had a 77% response rate. The majority of studies, however, relied on convenience samples or suffered from low response rates, including seven studies that reported response rates below 10%.<sup>23</sup> While low response rates are not synonymous with survey nonresponse bias, nonresponse increases the potential for biased estimates. However, non-responders must substantially differ from responders on the measure of interest for low response rates to increase bias (Groves, 2006; Massey & Tourangeau, 2013). The extent of nonresponse bias in the sample estimates reported here, however, is difficult to determine since most studies did not examine potential nonresponse bias, explain steps they may have taken to reduce such bias, or speculate on the expected direction of such bias.<sup>24</sup>

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<sup>23</sup> Calvez et al., 2016; Goldrick-Rab et al., 2015a; Goldrick-Rab et al., 2017; Lindsley & King, 2014; Mirabitor et al., 2016; Morris et al., 2016; and Patton-López et al., 2014.

<sup>24</sup> The Wisconsin HOPE Lab reports (Goldrick-Rab et al., 2015a; Goldrick-Rab et al., 2017) are a notable exception. These reports compare the characteristics of survey respondents to the characteristics of community college students nationally and describes ways in which the estimates may be upwardly or downwardly biased.

### *Extant research on housing instability among college students*

The extant research indicates that housing instability is also a challenge for a smaller, but substantial share of undergraduates. Studies report that between 2 and 20% of surveyed college students are homeless and 15-52% are housing instable (including homelessness). Two university system studies of housing instability report that 24% and 43% of undergraduates experienced housing instability in the past year while most multi-site studies estimate that approximately half of students struggle with housing challenges. Certain groups of students, including community college students, appear to be especially vulnerable to housing instability (Broton & Goldrick-Rab, 2016; Dubick et al., 2016; Goldrick-Rab et al., 2015a; Tsui et al., 2011). See Table 2 and Figure 4 for housing study details.

The only system-wide study focused on housing instability was conducted at the City University of New York. Nearly 7,000 randomly sampled undergraduates from all 17 campuses were invited to participate in a survey and nearly 1,100 responded for a 16% response rate. Forty-two percent of respondents indicated that they had experienced at least one of twelve distinct housing challenges, including not having enough money to pay rent, in the past year. Certain groups, including women, parents, students over age 25, low-income students, and students working at least 20 hours per week, were more likely to report housing instability problems than their more advantaged peers. Moreover, 1 in 4 CUNY students reported both food and housing insecurity challenges. A supplemental sample that only included students at CUNY's highest poverty campuses found that 48% of respondents are housing instable (Tsui et al., 2011). The other university system study includes approximately 1,400 students from low-income families attending one of Wisconsin's 42 public two- and four year colleges and universities. Though the project was not designed to study housing instability, questions related

to students' living circumstances were included on a survey. Results indicate that 24% of students were unable to pay the rent/mortgage or utilities on time in the past year (Broton & Goldrick-Rab, 2016a).

Three multi-site studies provide estimates of housing instability among community college students. Although the studies are drawn from convenience samples, they represent the experiences of more than 40,000 community college students. Results indicate that 51-53% of students are housing instable, including 13-14% of students who identify as homeless (Dubick et al., 2017; Goldrick-Rab et al., 2015a; Goldrick-Rab et al., 2017). In these studies, rates of housing instability and food insecurity follow similar demographic patterns as described above. Additionally, the latest Wisconsin HOPE Lab community college study indicates that 30% of former foster youth surveyed were homeless while attending community college. At an institutional level, community colleges with larger shares of low-income and racial/ethnic minority students are more likely to have higher rates of housing instability, but students attending more affluent and predominantly white institutions also struggle with housing challenges, including homelessness (Goldrick-Rab et al., 2017).

The final multi-site study includes a random sample of Wisconsin students from low- and moderate-income families who are interested in STEM fields. The majority of student in the sample attend a four-year college and results indicate that 15% of undergraduates are housing instable, including 2% who are homeless (Broton & Goldrick-Rab, 2016a). A study at the University of Massachusetts Boston reported a similar homelessness rate of 5% (Silva et al., 2015), while researchers report that 12% of surveyed students at California State University, Long Beach are homeless (Crutchfield et al., 2016). The highest reported rate of homelessness comes from Utah State University where 1 in 5 surveyed students indicated that in the past year



they had stayed in a hotel, car or outdoors because they had nowhere else to stay; in an abandoned building or residence without utilities; in a homeless shelter; or in a domestic violence shelter (Peterson, Taylor & Fargo, 2014).

### ***Evaluation of the extant research on housing instability***

The extant research on housing instability among college students is limited; just one journal article appears on the topic although there is a growing body of grey literature. Overall, 10 studies and 12 distinct samples were identified, and the diversity of institutions and geographic areas represented in these studies is a key strength of the literature. The studies include information about students attending two- and four-year colleges and universities in urban and rural areas in approximately half of the states.

However, there are also significant limitations with this body of work. Despite considerable geographic and institutional variation, just two of the studies include students from an entire university system. Five studies include multiple institutions from across systems and five studies focus on single institutions, subgroups within institutions, or did not report institution information. Next, survey response rates have fallen across disciplines and this area of research is no exception. Over three-quarters of studies reported response rates below 25% or did not report a response rate. Again, these low response rates do not necessarily mean that the findings are biased, but few scholars provided information that would aid the reader in gauging the potential level or direction of bias.

Studies of undergraduates' housing challenges also used inconsistent definitions and measures of housing instability and homelessness, limiting direct comparison across studies or to national studies. This is not surprising since there is no agreed upon definition of housing instability let alone a validated survey instrument. For instance, multiple definitions of

homelessness are used across federal agencies.<sup>25</sup> Finally, there were no studies of college students' housing instability prior to 2011 and almost all of the studies were conducted in the last few years. This limits our understanding of how the problem has changed over time or might continue to change in the future.

### **Survey of Income and Program Participation findings**

Results from the SIPP indicate that college students, and especially students enrolled in vocational or technical colleges are more likely to report basic and essential needs insecurities than the adult population, writ large. In 2011, 16% of adults reported that they lived in a household that was unable to meet all essential expenses. In that same year, 17% of academic degree seeking college undergraduates and 28% of college students enrolled in a vocational or technical college indicated an inability to meet all essential expenses. Thus, vo-tech students were more than 1.5 times as likely as other groups to report this challenge (Table 3).

Also in 2011, 7% of adults reported that they live in a household with low food security and an additional 4% have very low food security for a total food insecurity rate of 11%. Among academic degree seeking undergraduates, 8% reported low food security and 4% reported very low food security. However, college students enrolled in a vocational or technical college appear

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<sup>25</sup> The U.S. Department of Education defines homeless youth as youth who “lack a fixed, regular, and nighttime residence” or an “individual who has a primary nighttime residence that is a) a supervised or publicly operated shelter designed to provide temporary living accommodations; b) an institution that provides a temporary residence for individuals intended to be institutionalized including welfare hotels, congregate shelters, and transitional housing for the mentally ill; or c) a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.” This definition includes both youth who are unaccompanied by families and those who are homeless with their families. The U.S. Department of Housing and Urban Development (HUD) defines homelessness into four categories. The categories are: individuals and families who lack a fixed, regular, and adequate nighttime residence (includes a subset for an individual who resided in an emergency shelter or a place not meant for human habitation and who is exiting an institution where he or she temporarily resided); individuals and families who will imminently lose their primary nighttime residence; unaccompanied youth and families with children and youth who are defined as homeless under other federal statutes who do not otherwise qualify as homeless under this definition; and individuals and families who are fleeing, or are attempting to flee, domestic violence, dating violence, sexual assault, stalking, or other dangerous or life-threatening conditions that relate to violence against the individual or a family member. See also Toro, Lesperance, & Braciszewski, 2011, for example, for more information on the heterogeneity of homeless youth and potential typologies.

to be at greatest risk; 11% reported living in household with low food security and an additional 10% reported very low food security. Thus, the food insecurity rate among vo-tech students is nearly double that of the adult population (11% vs. 21%) (Table 3).

Approximately 14% of the adult population reported housing instability challenges in 2011 including 11% who lived in a household that was unable to pay their full utilities bill and 9% who were unable to pay the full amount of their rent or mortgage. These non-payments resulted in eviction for 0.5% and stopped utilities for nearly 2% of adults. Similarly, 16% of academic degree seeking undergraduates reported housing instability challenges in 2011 including 12% who did not pay the full amount of utilities due and 9% who did not pay their full rent or mortgage. Again, this non-payment resulted in eviction for 0.3% of students and a utility cut for almost 2% of undergraduates. Rates of housing instability were approximately twice as common (31%) among students attending a vocational or technical college. Twenty-five percent reported that they lived in a household that was unable to pay their full utilities bill resulting in service shutoff among 4% of students. In addition, 18% were unable to pay their full rent or mortgage and 2% were evicted from their homes as a result (Table 3).

This pattern continues for each of the years in which food insecurity, housing instability, and an inability to meet essential expenses were studied between 1998 and 2011. Undergraduates seeking academic degrees live in households with similar or slightly higher reported levels of basic and essential needs insecurities as the general adult population (Tables 4-5). However, the prevalence of food insecurity, housing instability, and an inability to meet essential expenses is consistently substantially higher among students attending a vocational or technical college (Table 6). To be clear, these results are descriptive and do not speak to the causes of basic or essential needs insecurity. They do not imply that two-year college attendance is more likely to

cause material hardship than attendance at a four-year college. Instead, those who are already experiencing material hardship or who may be at an increased risk of material hardship may be more likely to attend a two-year college.

### *Change over time*

Over time, rates of basic and essential needs insecurities increased for all groups, but the magnitude of the gaps between adults and those attending vocational or technical college also increased. For example, in 1998 almost 9% of adults, 9% of academic degree seeking undergraduates, and nearly 11% of vo-tech students reported living in a household with low or very low food security. By 2011, 11% of adults, 12% of academic degree seeking undergraduates, and 21% of vo-tech students reported food insecurity challenges (Tables 4-6). Generally, material hardship rates were relatively stable during the pre-Great Recession years in which it was measured (i.e., 1998, 2003, and 2005) and again during the post-recession years (i.e., 2010 and 2011) with a significant increase between the two time periods. In the late 1990s and early 2000s, 10-12% of adults, 10-12% of academic degree seeking undergraduates, and 16-20% of vo-tech students were housing instable, for example, compared to 14% of adults, 15-16% of academic degree seeking undergraduates, and 27-31% of vo-tech students in 2010 and 2011 (Tables 4-6).

The measure of an inability to meet essential expenses displays a similar trend pattern over time. In 1998, 13% of adults, 14% of academic degree seeking undergraduates, and 21% of vo-tech students lived in a household that was unable to meet essential expenses. Thirteen years later, 16% of adults, 17% of academic degree seeking undergraduates, and 28% of vo-tech students reported this challenge (Tables 4-6).

## Limitations

As described above, the extant research has several limitations that are primarily related to a lack of high-quality data. To account for some of these weaknesses, including that just one study of material hardship was conducted prior to 2011, I conducted a longitudinal trend analysis with data from the SIPP. Although the SIPP is a nationally representative household study that includes estimates of material hardship prior to 2011, it also has several limitations.

First, the SIPP does not measure material hardship annually. Estimates of adult well-being are limited to the years in which that topical module was administered. Notably, the adult well-being topical module was not administered during formal recessionary periods (i.e., 2001, 2007-2009) when college enrollments and experiences of hardship often swell. Additionally, the most recent available data come from 2011, prior to almost all of the local studies of college students' material hardship experiences.

Next, the SIPP is a household survey and measures of material hardship or well-being are reported at the household, rather than individual, level. This may be particularly problematic with regards to measuring food insecurity or an inability to meet essential expenses. For example, college students may live in households with food security challenges, but not experience food insecurity themselves if other members of the household shield them from such hardship. In this case, the estimates may be biased upward. On the other hand, the household reporter may be unaware that their college student is struggling to get enough to eat. This may be especially likely if a student is living apart from her parents during the school year, but the family fails to report that she has left the household. Qualitative evidence suggests that some materially insecure undergraduates fail to tell their families about their struggles to meet basic needs, often out of feelings related to fear, shame, or embarrassment (Zepeda, personal

communication, September 28, 2016). To the extent that this is the case, estimates may be biased downward.

Also, the SIPP sampling frame design limits certain subgroups of students including those living in residence halls as well as those who are living in shelters, motels, or other places not meant for regular human housing. These exclusions limit the external validity of findings in any given year and may bias comparisons across subgroups or years.<sup>26</sup> For example, estimates of material hardship among academic degree seeking students may be more upwardly biased than estimates for vo-tech students because a greater share of academic degree seeking students live in residence halls.<sup>27</sup> Similarly, estimates of material hardship among vo-tech students may be more downwardly biased compared to estimates for academic degree seeking students if a greater share of vo-tech students live in a shelter, motel, or other place not captured by the SIPP sampling frame. These limitations suggest that the estimated differences in hardship prevalence rates between academic degree seeking and vo-tech students may be conservative estimates. Finally, the SIPP classifies college students' enrollment according to class standing for those seeking an academic degree or attendance at a vocational or technical school. These categories only roughly map onto two- or four-year college attendance, which is typically used in higher education research. For example, some students pursuing an academic degree at a two-year will fall into the first group, which limits direct comparisons to the extant research. Lastly, the sample

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<sup>26</sup> Over time, for example, these analyses would not pick up a large increase in the share of students living in shelters, motels, or other places excluded from the SIPP sampling frame. Note that the share of undergraduates living in residence halls was 12% according to the 2012 2012 National Postsecondary Student Aid Study and 14% in the 1996, 2004, and 2008 2012 National Postsecondary Student Aid Study panels. Thus, slightly fewer students were excluded from the analyses due to living in a dormitory over time.

<sup>27</sup> Students living in residence halls are significantly and substantially less likely to report material hardship challenges (Author's calculations, Wisconsin Scholars Longitudinal Study).

size for vo-tech students is smaller than the other groups and thus, the results are less precisely estimated.

### **Discussion**

This paper examines the scope and depth of basic needs insecurity among college students and provides the first estimates of material hardship among college students over time. Although the systematic review and SIPP analyses have different strengths and weaknesses, they reach the same conclusion: college students appear to be particularly vulnerable to experiences of food and housing insecurity. While these findings may challenge stereotypical notions of undergraduates and their college experiences, “traditional” students represent just a fraction of today’s undergraduates. Three-quarters of current undergraduates are considered “new traditional” students who juggle multiple work and family responsibilities while attending college. Specifically, one-quarter of undergraduates are parents, over half are financially independent for financial aid purposes, three-quarters are employed, and nearly half attend a community college (Davis, 2012; NCES, 2015). Relatively high rates of material hardship may be less surprising in the context of these other factors.

Indeed, students attending two-year, community, vocational, and technical colleges are more likely to report material hardship challenges than those attending four-year colleges and universities. For instance, results from the SIPP analyses indicate that vo-tech students are approximately twice as likely as the overall adult population to report difficulty obtaining adequate food and secure shelter. This is likely the result of multiple contributing factors. First, the price of attendance at a two-year college represents a significant financial burden for many students from low- and moderate-income families. Moreover, a greater share of two-year college students has background characteristics that are associated with a higher risk of material

hardship. Specifically, students from low-income families, racial/ethnic minorities, and parents are overrepresented in our nation's two-year college system.

While college students may be at an increased risk of basic needs insecurity, it is difficult to estimate the exact share experiencing food insecurity, housing instability, or an inability to meet essential expenses due to data limitations. Existing studies including more than one college or university often indicate that approximately half of students are food and/or housing insecure though local estimates of classrooms and campuses range from 12 to 76%. Estimates from the SIPP analyses are more conservative. In 2011, for example, 12% of academic degree seeking students and 21% of vo-tech students lived in food insecure homes and 16% of academic degree seeking students and 31% of vo-tech students were housing instable.

Across studies, differences in measurement and sample selection likely account for a significant amount of the variation in estimated prevalence rates. Although the SIPP is a nationally representative household survey, it was not designed to capture the experiences of college students and may fail to accurately measure students' material hardship challenges. Therefore, the SIPP results may be less valid or reliable than well done local studies of material hardship. Although these local studies may be of limited utility for understanding the problem of basic needs insecurity nationwide or over time, they provide important insights into the nature and correlates of material hardship among college students.

Finally, the share of undergraduates and their families reporting basic needs insecurity appears to have grown over time and especially for students attending vocational and technical colleges. Between 1998 and 2011, the rate of housing instability among all adults increased 27% whereas it increased 63% for vo-tech students. Thus, the eight-percentage point gap in housing instability reported in 1998 grew to 17 percentage points by 2011.



## Conclusion

College enrollment, especially among students from low-income and otherwise vulnerable families, has increased over the last several decades. Yet, college attainment among students from these groups remain low, contributing to growing gaps by family background. Over the past fifteen years, the net price of higher education has increased and the real incomes of most American families have been falling. Subsequently, a greater share of undergraduates and their families are having trouble making ends meet and are going without adequate food and shelter. These rising rates of material hardship may be contributing to the college completion problem, but additional research is necessary to explicitly study this connection.

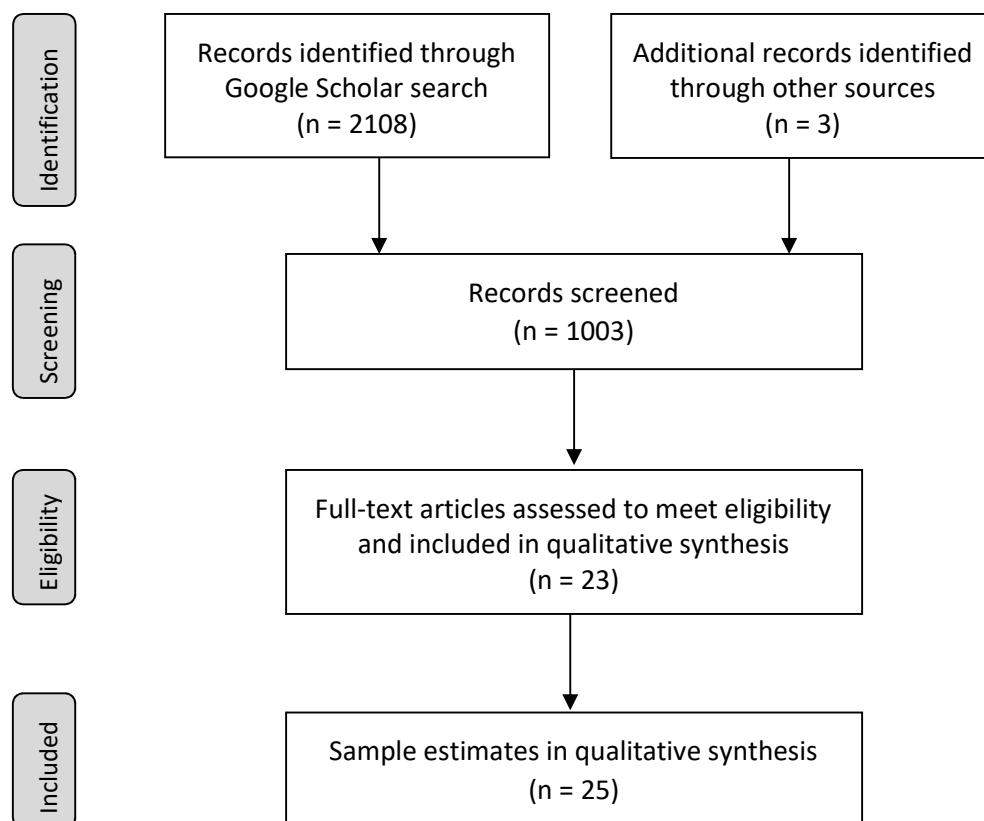
The existing evidence indicates that a significant share of students experience basic needs insecurity while pursuing their college aspirations. The problem affects hundreds of thousands of college students each year. In order to obtain better estimates of the problem and its correlates, measures of material hardship must be added to nationally representative surveys of college students, such as the National Postsecondary Student Aid Study. Several researchers, higher education organizations, and legislators are advocating for better data collection efforts and the Government Accountability Office recently agreed to undertake such a study (Government Accountability Office, 2017; United States Senate, 2017; Wisconsin HOPE Lab and American Council on Education Center for Policy Research and Strategy, 2015).

With greater awareness of the problem of material hardship among college students, practitioners and policymakers can consider ways to better serve students who are living on the margins and struggling to make ends meet. Networks like CUFBA exist to support and connect college leaders who seek to reduce the incidence of basic needs insecurity on college campuses.

Moreover, research-practice partnerships can lead to a better understanding of the problem and potential solutions to reduce material hardship among college students.

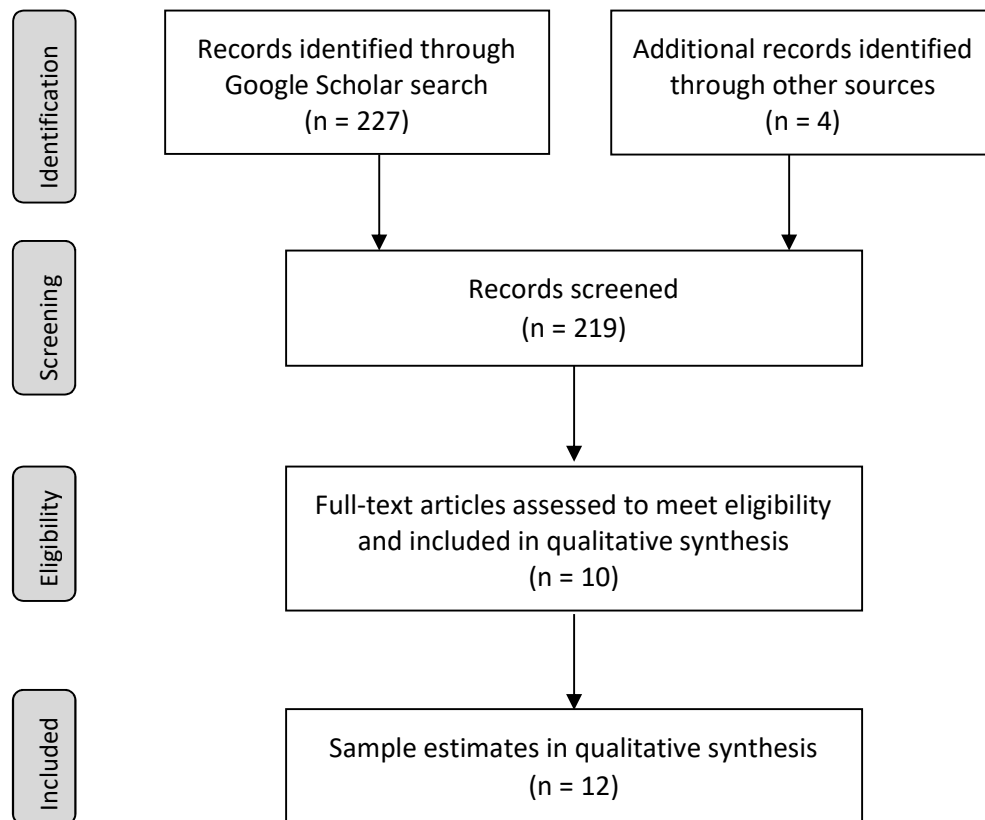
## Figures

Figure 1. Systematic review of food insecurity among college students



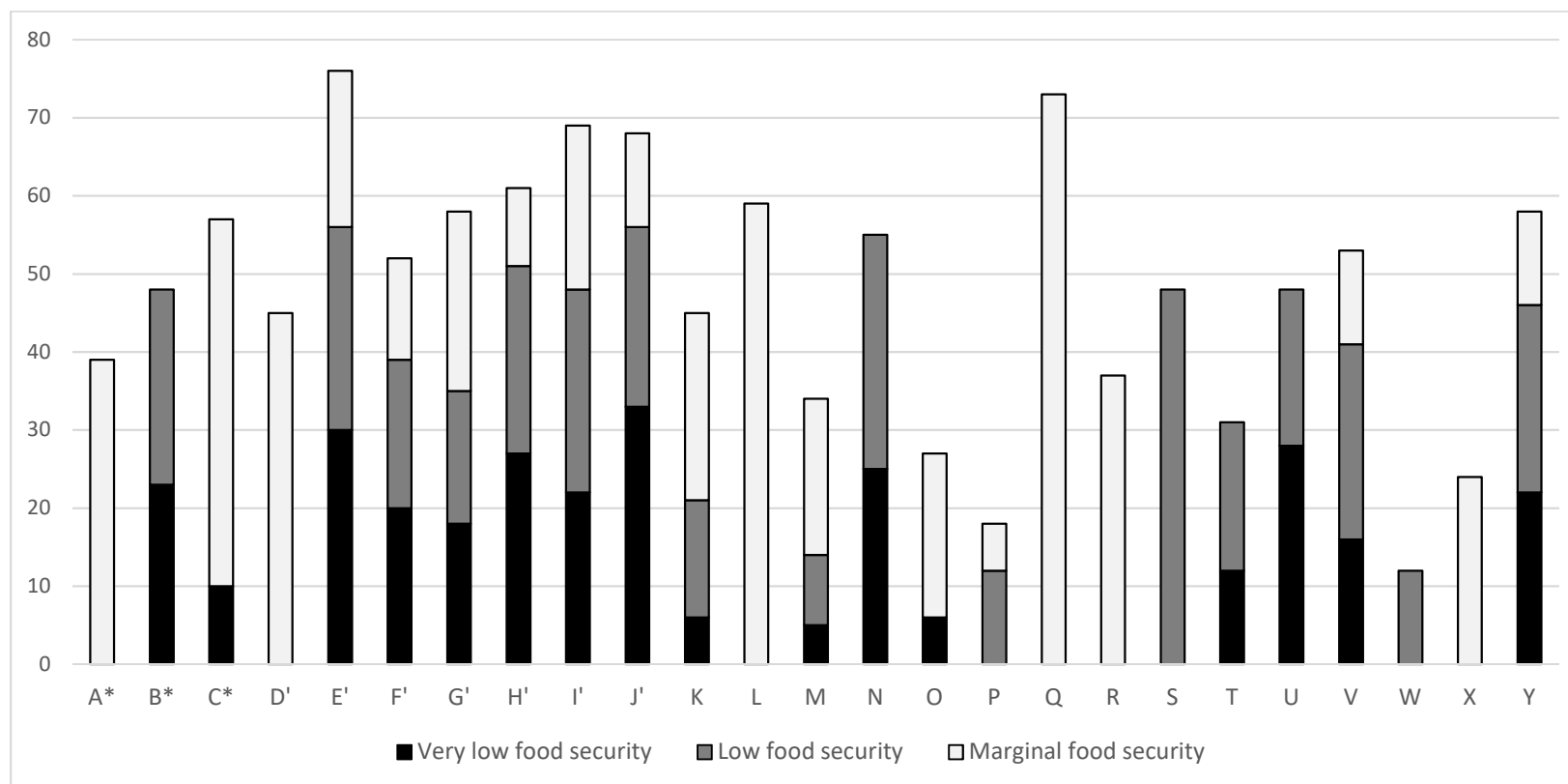
*Notes.*

Eligible studies were published between 2009 and March 2017 in English and included an estimate of the incidence rate of food insecurity among college students in the U.S. Google Scholar displays a maximum of 1,000 search results. The last relevant study was identified on page 53 of 100.

**Figure 2. Systematic review of housing instability among college students***Notes.*

Eligible studies were published between 2009 and March 2017 in English and included an estimate of the incidence rate of housing instability among college students in the U.S.

**Figure 3. Study estimates of the share of food insecure college students**



**Notes.**

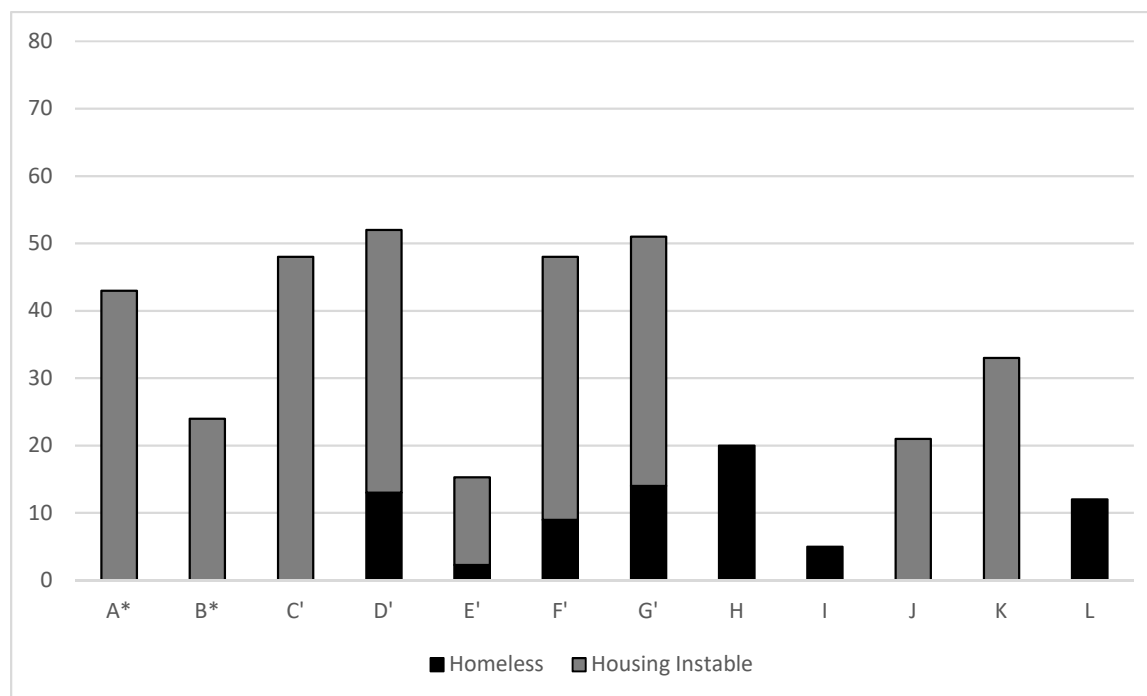
Letters correspond to studies listed in Table 1 and are listed chronologically within each type.

\* University system study

' Multi-side study

Some studies used slightly different definitions of food insecurity. When standard measures were not used, the author used qualitative definitions of food insecurity to most closely match with the USDA definitions of very low, low, and marginal food security. Measurement details for each study are included in Table 1. For studies that used standardized measures, but did not include or disaggregate all levels of food security, the least severe form of food insecurity is shaded. For example, Study L indicates that 59% of students have very low, low, or marginal levels of food security whereas Study N indicates that the authors reported that 25% of students had very low levels of food security and 30% had low levels of food security.

**Figure 4. Study estimates of the share of housing instable college students**



*Notes.*

Letters correspond to studies listed in Table 2 and are listed chronologically within each type.

\* University system study

' Multi-side study

Some studies did not disaggregate homeless and housing instable students. Those studies are represented with a grey bar. Other studies, represented with a black bar, only included a measure of homelessness. Definitions of housing insecurity and homelessness vary across studies and can be found in Table 2.

## Tables

**Table 1. Systematic review of studies of food insecurity among college students**

Study ID	Author & Year	State	College or University	Measures	Sample Information	Results	Document Type
<i>University System Studies</i>							
A	Freudenberg and colleagues, 2011	New York	All 17 CUNY community college and four-year schools where undergraduates are enrolled.	4-items based on the Food Security Survey Module  Reference period: prior year	A total of 6,883 randomly sampled students were invited to participate in the survey by email, of whom 1,086 responded, for a response rate of 15.7%.	39% food insecure	Report
B	Martinez and colleagues, 2016	California	University of California system	6-item Food Security Survey Module  Reference period: prior year	More than 66,000 undergraduate and graduate students across all 10 campuses were invited to participate in the survey. Of those invited, 8,932 students completed surveys for a 14% response rate.	48% of undergraduates are food insecure (25% low & 23% very low)  25% of graduate students are food insecure	Report

C	Broton and Goldrick-Rab, 2016 <sup>a</sup>	Wisconsin	All 42 public two- and four-year colleges and universities in Wisconsin	3-items based on USDA food security survey  Reference period: prior month	Students had to be recent high school graduates who received a Pell grant to be eligible for the study. The survey had a 77% response rate for a sample size of 1,442 students.	47% marginal or low food security  10% very low food security	Conference Presentation & Working paper
<b>Multi-Site Studies</b>							
D	Freudenberg and colleagues, 2011	New York	8 CUNY institutions: Borough of Manhattan, Bronx, Hostos, Kingsborough, La Guardia, and Queensborough Community Colleges, and John Jay and Medgar Evers Colleges, both of which are four-year schools.	4-items based on the Food Security Survey Module  Reference period: prior year	The survey was distributed and collected in person at the 8 CUNY campuses with the highest rates of students receiving public assistance for a convenience sample of 1,114 students.	45% food insecure	Report



E	Maroto and colleagues, 2015	Maryland	Two community colleges	10-item Adult Food Security Survey Module	Convenience sample of 301 students.	24% high food security 20% marginal food security 26% low food security 30% very low food security	Journal article
F	Goldrick-Rab and colleagues, 2015 <sup>b</sup>	California, Louisiana, New Jersey, New York, Pennsylvania, Wisconsin & Wyoming	10 community colleges	6-item Food Security Survey Module	Over 48,000 students were invited to participate in the online survey and 4,312 responded for a 9% response rate.	48% high food security 13% marginal food security 19% low food security 20% very low food security	Report
G	Morris and colleagues, 2016	Illinois	Eastern Illinois, Northern Illinois, Southern Illinois, and Western Illinois Universities.	10-item Adult Food Security Survey Module	The sample includes 1,882 undergraduate; 48,658 were invited to participate in the web survey and 4% responded.	42% high food security 23% marginal food security 17% low food security 18% very low food security	Journal article

H	Broton and Goldrick-Rab, 2016 <sup>a</sup>	Wisconsin	10 public and private two- and four-year colleges in Wisconsin	6-item Food Security Survey Module  Reference period: prior year	Students had to meet several criteria, including being from a low- or moderate-income family within 200% of Pell Grant eligibility. The survey had a 64% response rate for a sample size of 1,007 students.	39% high food security 10% marginal food security 24% low food security 27% very low food security	Working paper
I	Dubick and colleagues, 2016	California, Connecticut, Illinois, Massachusetts, Michigan, New Jersey, New York, North Carolina, Oregon, Virginia, Washington, & West Virginia	8 community colleges and 26 four-year colleges and universities	10-item Adult Food Security Survey Module	The sample was assembled using in-person recruitment of 3,765 students and includes about 0.5% of the students attending those 34 institutions.	31% high food security 21% marginal food security 26% low food security 22% very low food security	Report
J	Goldrick-Rab and colleagues, 2017	24 states	70 community colleges	6-item Food Security Survey Module  Reference period: prior month	The sample includes more than 33,000 community college students. The response rate was 5%.	33% high food security 12% marginal food security 23% low food security 33% very low food security	Report

**Other Studies**

K	Chaparro and colleagues, 2009	Hawai'i	University of Hawai'i at Manoa	10-item Adult Food Security Survey Module  Reference period: prior year	95 non-freshman classrooms were randomly selected to participate in the study and 33% of instructors agreed for a sample size of 441 students.	55% high food security 24% marginal food security 15% low food security 6% very low food security	Journal article
L	Patton-López and colleagues, 2014	Oregon	Western Oregon University	6-item Food Security Survey Module  Reference period: prior year	All 5,438 students were invited to participate in the web survey and 354 completed the survey for a 7% response rate.	59% food insecure (marginal, low, and very low security)	Journal article
M	Gaines and colleagues, 2014	Alabama	University of Alabama	10-item Adult Food Security Survey Module  Reference period: prior year	Students had to meet several criteria including being a full-time returning students ages 19-25 who is not pregnant. Surveys were administered in 16 classrooms and 557 eligible students participated for an 81% response rate.	66% high food security 20% marginal food security 9% low food security 5% very low food security	Journal article

N	Lindsley and King 2014	Alaska	University of Alaska-Anchorage	6-item Food Security Survey Module  Response period: summer	852 students were invited to complete the online survey and 60 responded for a response rate of 7%.	45% high or marginal food security 30% low food security 25% very low food security	Conference Presentation
O	Silva and colleagues, 2015	Massachusetts	University of Massachusetts Boston	4-items based on the Food Security Survey Module  Reference period: prior year	183 undergraduate and graduate courses were randomly selected to participate in the study and 28 instructors (15%) agreed for a sample size of 390 students.	27% worry about food supply 27% unable to eat balanced meals 27% skip meals 6% did not eat for 1-2 days	Journal article
P	Davidson and Morrell, 2015	New Hampshire	University of New Hampshire	6-item Food Security Survey Module  Reference period: prior year	The survey was administered to 18-24-year-olds in a general nutrition class and 211 responded for a 51% response rate.	82% high food security 6% marginal food security 12% low or very low food security	Journal article

Q	Fletcher and colleagues, 2015	California	University of California, Berkeley	2-items based on the Food Security Survey Module Reference period: since enrolling in Berkeley	70 undocumented undergraduate and graduate students completed the survey and approximately 283 undocumented students were enrolled at Berkeley at the time of the study	73% food insecure	Report
R	Bruening and colleagues, 2016	Southwest	Public four-year university	2-items based on the Food Security Survey Module Two reference periods: prior month and prior 3 months	The sample includes 209 college freshman living in a dormitory (N=533) who attended hall floor meetings (N=278). The sample includes 39% of those living in the dorms and 75% of those invited to participate in the survey at the meetings.	32% food insecure in the past month 37% food insecure in the past 3 months	Journal article

S	Twill and colleagues, 2016	Ohio	Wright State University	Not having enough money to buy enough food" when you were a college student	A convenience sample of nearly 150 students from student government, the honors program, an English 101 course, and social work majors	48% food insecure	Journal article
T	Biediger-Friedman and colleagues, 2016	Texas	The University of Texas at San Antonio	6-item Food Security Survey Module	15 courses were invited to participate in the study and 8 (53%) of instructors agreed for a sample size of 258 undergraduate and graduate students.	19% low food security 12% very low food security	Journal article
U	Calvez and colleagues, 2016	Texas	Texas A&M University's Main Campus	6-item Food Security Survey Module Reference period: prior semester	The survey was available to all undergraduates and 263 responded for an approximate response rate of less than 1%.	20% low food security 28% very low food security	Journal article

V	Mirabitor and colleagues, 2016	Midwest	Large public university in the Midwest	6-item Food Security Survey Module Reference period: prior year	Two anonymous surveys were e-mailed to random samples of 5,000 undergraduate and graduate students each. Overall, 514 students responded for a 5% response rate.	46% high food security 12% marginal food security 25% low food security 16% very low food security	Journal article
W	Wood and colleagues, 2016	California	College information was not reported.	Measures were not defined.	The study includes 3,647 students. No additional information was reported.	12% food insecure	Report
X	Crutchfield and colleagues, 2016	California	California State University, Long Beach	3-items based on USDA food security survey	The survey was distributed to a random sample of 4,945 students and 1,039 responded for a 21% response rate.	24% food insecure	Report
Y	Bianco and colleagues, 2016	California	California State University, Chico	6-item Food Security Survey Module Reference period: prior month	A total of 5,493 students were randomly selected to participate in the online survey and 707 responded for a 13% response rate.	42% high food security 12% marginal food security 24% low food security 22% very low food security	Report

*Table 1 Notes.*

This table includes brief summaries of the 25 distinct estimates of housing instability among college students. The Study ID is referenced in the graphic summary of these results (Figure 3). See Appendix A for more information on food security measurement.

<sup>a</sup> Note that the search resulted in the working paper entitled "Safety, Security, and College Attainment: An Investigation of Undergraduates' Basic Needs and Institutional Response" by Broton, Frank & Goldrick-Rab (2014). That working paper has been updated and is now entitled "The Hidden Costs of College: An Exploration of Food and Housing Insecurity among Undergraduates" by Broton & Goldrick-Rab (2016). This review includes results from the updated version of that paper.

<sup>b</sup> Note that the search resulted in the Too Distressed to Learn Report, also by Goldrick-Rab, Broton, & Eisenberg, which cited the food insecurity results originally published in the Hungry to Learn report.



**Table 2. Summary of the systematic review of studies of housing instability among college students**

Study ID	Author & Year	State	College or University	Measures	Sample Information	Results	Document Type
<i>University System Studies</i>							
A	Tsui and colleagues, 2011	New York	All 17 CUNY community college and four-year schools where undergraduates are enrolled	One or more of twelve housing problems. The two most common include not having enough money to pay rent or experiencing a rent increase that made it difficult to pay rent	A total of 6,883 randomly sampled students were invited to participate in the survey by email, of whom 1,086 responded, for a response rate of 15.7%.	41.7% housing instable	Report
B	Broton and Goldrick-Rab, 2016 <sup>a</sup>	Wisconsin	All 42 public two- and four-year colleges and universities in Wisconsin	Housing insecurity was defined as an inability to pay the rent/mortgage on time or an inability to pay the utilities bill on time in the past year.	Students had to be recent high school graduates who received a Pell grant to be eligible for the study. The survey had a 77% response rate for a sample size of 1,442 students.	24% housing insecure	Conference Presentation & Working paper

**Multi-site Studies**

C	Tsui and colleagues, 2011	New York	8 CUNY institutions including 6 community colleges and 2 four-year schools	One or more of twelve housing problems. The two most common include not having enough money to pay rent or experiencing a rent increase that made it difficult to pay rent	The survey was distributed and collected in person at the 8 CUNY campuses with the highest rates of students receiving public assistance for a convenience sample of 1,114 students.	48.3% housing instable	Report
D	Goldrick-Rab and colleagues, 2015	California, Louisiana, New Jersey, New York, Pennsylvania, Wisconsin & Wyoming	10 community colleges	Housing insecurity includes difficulty paying rent, didn't pay full amount of rent, didn't pay full amount of utilities, moved 2 or more times per year, doubled up, or moved in with other people due to financial problems. Homelessness includes being evicted, thrown out of home, stayed in a shelter, stayed in abandoned building or place not meant for human habitation, didn't know where you'd sleep at night, or don't have a home in the past year.	Over 48,000 students were invited to participate in the online survey and 4,312 responded for a 9% response rate.	52% housing insecure (including homeless)  13% homeless	Report

E	Broton and Goldrick-Rab, 2016 <sup>a</sup>	Wisconsin	10 public and private two- and four-year colleges in Wisconsin	<p>Housing insecurity includes those who were unable to pay the rent/mortgage or utilities, or moved in with others due to financial problems in the past year.</p> <p>Homelessness includes those staying in a shelter, abandoned building, car, or other place not meant for human habitation, those who didn't have a place to sleep at night, and those who were evicted in the past year.</p>	<p>Students had to meet several criteria, including being from a low- or moderate-income family within 200% of Pell Grant eligibility. The survey had a 64% response rate for a sample size of 1,007 students.</p>	<p>15% housing insecure (including homeless)</p> <p>2% homeless</p>	Working paper
F	Dubick and colleagues, 2016	California, Connecticut, Illinois, Massachusetts, Michigan, New Jersey, New York, North Carolina, Oregon, Virginia, Washington, & West Virginia	8 community colleges and 26 four-year colleges and universities	<p>Housing insecurity includes difficulty paying rent/mortgage, didn't pay full amount of rent, didn't pay full amount of utilities, moved 2 or more times per year, moved in with other people due to financial problems, or borrowed money to help pay bills. Homelessness includes being evicted, thrown out of home, stayed in a shelter, stayed in abandoned building or place not meant for regular housing, didn't know where you'd sleep at night, or don't have a home in the past year.</p>	<p>The sample was assembled using in-person recruitment of 3,765 students and includes about 0.5% of the students attending those 34 institutions.</p>	<p>48% housing insecure (including homeless)</p> <p>9% homeless</p>	Report

G	Goldrick-Rab and colleagues, 2017	24 states	70 community colleges	Housing insecurity includes didn't pay full amount of rent/mortgage, didn't pay full amount of utilities, moved 2 or more times per year, doubled up, or moved in with other people due to financial problems. Homelessness includes being evicted, thrown out of home, stayed in a shelter, abandoned building or place not meant for regular housing, didn't know where you'd sleep at night or didn't have a home in the past year.	The sample includes more than 33,000 community college students. The response rate was 5%.	51% housing insecure (including homeless)  14% homeless	Report
<b><i>Other Studies</i></b>							
H	Peterson and colleagues, 2014	Utah	Utah State University	Experiences of homelessness occurring in the past year include staying in a hotel, car or outdoors because they had nowhere else to stay, in an abandoned building or residence without utilities, in a homeless shelter, or in a domestic violence shelter	The study includes 1,628 students at Utah State University. No additional information was reported.	20% homeless	Conference Presentation

I	Silva and colleagues, 2015	Massachusetts	University of Massachusetts Boston	Homelessness was not explicitly defined, but the reference period was since starting college. Survey participants were also asked where they slept last night and if they could continue sleeping there for the next 2 weeks.	183 undergraduate and graduate courses were randomly selected to participate in the study and 28 instructors (15%) agreed for a sample size of 390 students.	5% homeless 4% in a temporary housing situation and 4% did not know if it would continue	Journal article
J	Fletcher and colleagues, 2015	California	University of California, Berkeley	Students were asked if they have experienced a period of homelessness or a lack of stable housing during the time they have been enrolled at Berkeley?	70 undocumented undergraduate and graduate students completed the survey and approximately 283 undocumented students were enrolled at Berkeley at the time of the study.	21% homeless or housing instable	Report

K	Wood and colleagues, 2016	California	College information was not reported.	Measures were not defined.	The study includes 3,647 students. No additional information was reported.	33% housing insecure	Report
L	Crutchfield and colleagues, 2016	California	California State University, Long Beach	Homeless or housing displaced included those who were staying in a motel, shelter, transitional housing program, car, tent, park, bus/train station, abandoned building, other public space or "couch surfing" in the past year.	The survey was distributed to a random sample of 4,945 students and 1,039 responded for a 21% response rate.	12% homeless	Report

*Table 2 Notes.*

This table includes brief summaries of the 12 distinct estimates of housing instability among college students. The Study ID is referenced in the graphic summary of these results (Figure 4).

<sup>a</sup> Note that the search resulted in the working paper entitled "Safety, Security, and College Attainment: An Investigation of Undergraduates' Basic Needs and Institutional Response" by Broton, Frank & Goldrick-Rab (2014). That working paper has been updated and is now entitled "The Hidden Costs of College: An Exploration of Food and Housing Insecurity among Undergraduates" by Broton & Goldrick-Rab (2016). This review includes results from the updated version of that paper.

**Table 3. Basic and essential needs insecurity in 2011 across groups**

	All adults	Academic degree seeking undergraduates	Vocational or technical college students
Unable to meet all essential expenses (%)	15.9	16.9	27.7
<u>Food security status (%)</u>			
Food secure	88.6	88.3	78.8
Low food security	7.3	7.5	11.3
Very low food security	4.1	4.2	9.9
<u>Housing instability status (%)</u>			
Unable to pay rent	8.5	8.9	18.4
Evicted for non-payment	0.5	0.3	2.1
Unable to pay utilities	10.6	12.0	24.9
Utilities cut off	1.8	1.7	4.41
Housing instable (any of the above 4 items):	14.3	15.9	31.4
N	62380	3689	284

*Notes.*

Data come from the Survey of Income and Program Participation and are weighted for an individual unit of analysis.

**Table 4. Basic and essential needs insecurity among all adults over time**

Year	2011	2010	2005	2003	1998
Unable to meet all essential expenses (%)	15.9	16.3	13.8	12.3	13.5
<u>Food security status (%)</u>					
Food secure	88.6	89.0	91.6	92.3	91.4
Low food security	7.3	7.3	5.2	5.0	5.7
Very low food security	4.1	3.7	3.2	2.7	2.9
<u>Housing instability status (%)</u>					
Unable to pay rent	8.2	8.1	5.7	5.3	5.2
Evicted for non-payment	0.5	0.4	0.2	0.3	0.2
Unable to pay utilities	10.6	10.6	9.4	8.4	8.9
Utilities cut off	1.8	1.8	1.6	1.4	1.2
Housing instable (any of the above 4 items):	14.3	14.0	11.7	10.4	11.0
N	62380	66410	70312	49448	55860

*Notes.*

Data come from the Survey of Income and Program Participation and are weighted for an individual unit of analysis.



**Table 5. Basic and essential needs insecurity among academic degree seeking undergraduates over time**

Year	2011	2010	2005	2003	1998
Unable to meet all essential expenses (%)	16.9	17.2	13.5	12.3	14.3
<u>Food security status (%)</u>					
Food secure	88.3	89.3	92.8	92.8	90.8
Low security	7.5	6.8	4.5	4.5	6.1
Very low security	4.2	3.9	2.7	2.7	3.1
<u>Housing instability status (%)</u>					
Didn't pay rent	8.9	8.6	5.8	4.6	5.5
Evicted	0.3	0.4	0.1	0.2	0.1
Didn't pay utilities	12.0	11.2	9.7	8.1	9.7
Utilities cut off	1.7	1.7	1.6	1.2	1.2
Housing instable (any of the above 4 items):	15.9	15.0	12.0	9.9	12.1
N	3689	3956	3650	2499	2914

*Notes.*

Data come from the Survey of Income and Program Participation and are weighted for an individual unit of analysis.

**Table 6. Basic and essential needs insecurity among vocational or technical college students over time**

Year	2011	2010	2005	2003	1998
Unable to meet all essential expenses (%)	27.7	28.2	20.8	18.0	20.7
<u>Food security status (%)</u>					
Food secure	78.8	79.3	88.3	88.4	89.5
Low security	11.3	12.0	5.6	7.3	6.4
Very low security	9.9	8.7	6.2	4.3	4.1
<u>Housing instability status (%)</u>					
Didn't pay rent	18.4	16.3	9.7	9.3	8.5
Evicted	2.1	0	1.8	0	0
Didn't pay utilities	24.9	21.8	16.1	12.5	15.7
Utilities cut off	4.4	4.7	5.9	2.0	3.2
Housing instable (any of the above 4 items):	31.4	27.3	19.8	16.2	18.9
N	284	299	297	416	460

*Notes.*

Data come from the Survey of Income and Program Participation and are weighted for an individual unit of analysis.

## CHAPTER THREE

## Poverty in American Higher Education:

How Material Hardship Affects Academic Achievement and Degree Attainment<sup>28</sup>

The price of attending college has grown substantially over the past three decades. Today, the full cost of attendance at a public four-year college is approaching \$20,000 per year (College Board, 2014).<sup>29</sup> Real family incomes for those in the middle and lower classes have been relatively flat over this time period with a substantial decline since 2000 (Kochhar & Fry, 2015). Need-based financial aid, including the Pell grant program, was created to ensure students could pursue college regardless of family economic background, but the “purchasing power” of that aid has declined. In the early 1970s, the Pell grant covered more than 75% of the cost of attending a public four-year college whereas today it covers just 30% (Goldrick-Rab, 2016). After all grant aid is accounted for, a student from a family in the lowest income quartile has to pay approximately 60% of her family’s total annual income to attend a public four-year college for one year or 40% to attend a public two-year college. Even those from moderate- and middle-income backgrounds must devote over 20% of their total family income to pay for one year of college (Goldrick-Rab & Kendall, 2014). Since federal loan limits are capped below the average amount of unmet need for students from low- and moderate-income families, students must turn

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<sup>28</sup> *Authors note.* This section was prepared as a job market paper, rather than a dissertation chapter, and thus includes a longer introduction and conclusion that may briefly overlap with other parts of the dissertation.

<sup>29</sup> The full “cost of attendance” is defined in U.S. Code 1087(II) and includes tuition and fees; books, supplies, transportation, and miscellaneous personal expenses including a computer; and room and board.

to the private loan market, earn more money, seek charitable assistance, or cut back on expenses to make ends meet.<sup>30</sup>

Approximately 40% of first-year undergraduates come from low-income families and three-quarters are “new traditional” students who juggle multiple work and family obligations while attending college (Lumina Foundation, 2015; NCES 2015). The rising net price of college coupled with a weak public social safety net and a paucity of well-paying jobs or sufficient work hours seem to contribute to the growing number of students who forgo basic needs, including adequate food and shelter, while pursuing their educational goals (Broton, Frank, & Goldrick-Rab, 2014; Duke-Benfield, 2015; Kalleberg, 2011). A growing body of evidence indicates that college students are at an elevated risk of food and housing insecurity when compared to the public, writ large (e.g., Cady, 2014; Tsui, et al., 2011). The long-term academic implications of these material hardships have not been examined, but students and practitioners report that forgoing basic material goods hinders students’ abilities to perform their best in the classroom (Silva et al., 2015).

This paper presents results from the first empirical test of the relationship between material hardship in college and later educational success. Specifically, I examine how experiences of food and/or housing insecurity early in college affect degree attainment or enrollment four years after initial college entry among a sample of undergraduates from low-income families in Wisconsin. Results indicate that both housing and food insecurity are independently associated with poorer long-term academic outcomes. After accounting for

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<sup>30</sup> Federal loans are capped at \$5,500 for first-year undergraduates, \$6,500 for second-year undergraduates, and \$7,500 for upperclassmen (career maximum of \$31,000) for dependent students. Among dependent students from low-income families in the lowest annual income quartile where the median income is \$21,000, the net price of attendance at a public two-year college is \$8,300 and the net price of attendance at a public four-year college is \$12,300. Among dependent students from moderate-income families in the second income quartile where the median income is \$52,000, the net price of attendance at a public two-year college is \$11,300 and the net price of attendance at a public four-year college is \$16,200 (Goldrick-Rab & Kendall, 2014).

background factors, housing insecurity is associated with a nearly 10 percentage point reduction in the probability of later degree attainment or enrollment. In the short-term, housing insecurity is associated with lower GPAs and part-time, rather than full-time, enrollment, which slows credit accumulation. Food insecurity is not a significant predictor of later educational success, net of background characteristics. However, family and community resources appear to moderate the relationship and may serve as protective factors among food insecure students. The findings indicate that housing insecurity during students' first year of college is an independent source of educational disadvantage while the relationship between food insecurity and later educational success could not be isolated in a multivariable context.

### **Background and Literature Review**

Higher education is a key pathway to breaking the cycle of poverty (e.g., Attewell & Lavin, 2009). In addition to a higher wage premium and lower unemployment rates, those with a postsecondary credential enjoy better health and are more likely to be civically engaged (Flanagan & Levine, 2010; Oreopoulos & Petronijevic, 2013). Over the past several decades, college access has improved among those historically underserved by higher education, including racial/ethnic minority students and those from low-income families. However, college attainment rates have not kept pace. Among those born in the early 1980s, 3 in 10 students from families in the lowest income quintile attended college, but fewer than 1 in 10 earned a bachelor's degree by age 25 (Ziol-Guest & Lee, 2016). Even after accounting for level of academic preparation, students from low-income families are less likely to earn a postsecondary credential than their more affluent peers (National Center for Education Statistics, 2015b).

Research on college access and attainment tends to focus on the role of students' family income, socioeconomic status, or wealth (e.g., Alon, 2009; Bailey & Dynarski, 2011; Bastedo &

Jacquette, 2011; Belley & Lochner, 2007; Chetty et al. 2014; National Center for Education Statistics, 2015b; Haveman & Smeeding, 2006; Pfeffer, 2016) rather than students' material well-being. In contrast, research on k-12 education has long recognized that experiences of poverty and deprivation come with conditions and situations that can compromise children's physical, cognitive, and emotional development, having adverse long-term effects (Duncan & Brooks-Gunn, 2000; Woodtke, Harding & Elwert, 2011). Thus, research documents how struggles to get enough to eat or live in adequate shelter independently reduce children's academic achievement, even after accounting for background factors including a lack of family income (e.g., Alaimo, 2005; Miller, 2011). Moreover, k-12 education policies such as the National School Breakfast and Lunch Programs and the McKinney-Vento Homeless Assistance Act ameliorate conditions of material hardship and seek to encourage a virtuous cycle of improved academic success and health over the life course (e.g., Bhattacharya, Currie & Haider, 2006; Cutler & Lleras-Muney, 2006; Frisvold, 2015; Gassman-Pines & Bellows, 2015; Hinrichs, 2010).

### **Material hardship**

When individuals lack the minimum basic goods necessary for decent human functioning, they experience material hardship (Ouellette et al., 2004). Material hardship is related, but empirically and conceptually distinct from income. The likelihood of experiencing material hardships increases as income decreases, but not all income-poor households lack basic material goods and some moderate- and high-income households are unable to meet their basic needs (e.g., Edin & Lein, 1997; Layte, Nolan, & Whelan, 2001). For example, working single mothers may have higher incomes than unemployed mothers, but they are also more likely to experience material hardship – likely due to increased work-related expenses and a reduction in

time for home activities (Beverly, 2001a). Seminal work by Mayer and Jencks (1989) found that current income explained just 24% of the variation in the number of material hardships reported by a family. More recent analyses indicate that income-poverty and material hardship have a complex relationship in which the association is stronger when income-poverty episodes were recent, more frequent, longer or deeper (Iceland & Bauman, 2007).

Food and housing insecurity are two key types of material hardship. Among families with low incomes, there is considerable heterogeneity when it comes to experiences of food and housing insecurity. Among households earning less than the federal income poverty line, approximately 40% are food insecure – uncertain of having, or unable to acquire, enough food to meet the needs of all their members due to insufficient resources (Coleman-Jensen, Gregory, & Singh, 2014). Among families earning less than \$15,000 annually, 72% devote more than half of their income to rent; such severe cost burdens are tenuous and often trigger further housing instability (Desmond, 2016; Harvard Joint Center for Housing Studies, 2016). Such scarcity and deprivation compromises economic and social well-being and thwarts the obtainment of life goals (Desmond, 2016; Mullainathan & Shafir, 2013; Jefferson, 2012).

### **Food and housing insecurity among college students**

Efforts to document material hardship among college students typically focus on food insecurity. Food insecurity is defined as limited or uncertain availability of nutritionally adequate and safe foods, or limited ability to acquire such foods in a socially acceptable manner (Anderson, 1990). Fourteen percent of U.S. households have low or very low food security, meaning they reduce the quality or quantity of their food supply at least some time during the year. An additional 8% of U.S. households are marginally food secure, meaning that they worry about getting enough to eat (Coleman-Jensen et al., 2014).

The best evidence indicates that undergraduates are at an increased risk of food insecurity (Cady, 2014). Most college food security studies using similar measures report that between one- and two-thirds of students are food insecure, ranging from anxiety over food sufficiency to reductions in food intake and hunger (Gaines et al., 2014; Maroto et al., 2015).<sup>31</sup> The majority of studies indicate that approximately half of students struggle with food security (Biediger-Friedman et al., 2016; Broton & Goldrick-Rab, 2016; Chaparro et al., 2009; Goldrick-Rab, Broton, & Eisenberg, 2015a; Martinez, Maynard, & Ritchie, 2016; Morris et al., 2016; Patton-Lopez et al., 2014). Across studies, racial/ethnic minorities and those with low-incomes are more likely to be food insecure than their more advantaged peers (Cady, 2014).

Studies examining other types of material hardship among college students are rare. The Free Application for Federal Student Aid (FAFSA) does not provide an estimate of housing insecurity or homelessness among college students, but does provide some insights into the problem among those who apply for federal financial aid.<sup>32</sup> Students ages 21 or younger who are not already considered financially independent may self-identify as an unaccompanied homeless youth.<sup>33</sup> Then, students must provide documentation, typically from a k-12 education homeless

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<sup>31</sup> Note that the lowest rate of food insecurity (34%) was reported at the University of Alabama and the study sample only included full-time returning students ages 19-25 who were not pregnant (Gaines et al., 2014).

<sup>32</sup> Not all college students apply for federal financial aid. According to one estimate, approximately 750,000 high school graduates who would have been eligible for a Pell Grant did not complete the FAFSA (Simons & Helhoski, 2016).

<sup>33</sup> Students with the following circumstances are considered financially independent and are not given the opportunity to self-identify as homelessness on the FAFSA: age 24 or older, were an orphan, were a ward of the court, were in foster care, is an emancipated minor, is in legal guardianship, veteran or in active duty military, married, in a graduate program, or provides more than half of a dependent's support. Students ages 22 and 23 are not eligible to be considered "unaccompanied homeless youth" according to the U.S. Department of Education. Instead, students ages 22 and 23 can request a "special circumstances" override to be considered financially independent. Proof of homelessness status is one way to meet this override criteria, but is rare since most students are unable to provide the necessary documentation due to a lack of formal contact with the k-12 education or shelter systems (School House Connection, 2017). Thus, several groups at high risk of homelessness (e.g., foster youth) are excluded from FAFSA counts of homelessness. Moreover, students who are homeless with their families are excluded from these counts as well as students who become homeless after completing the FAFSA.



liaison or shelter, in order to prove homelessness status. According to a recent report, the process can be burdensome and hinder access to public supports (Government Accountability Office, 2016). Thus, the number of students who are able to prove homelessness status on the FAFSA should be considered a lower bound estimate of the problem. Between 2013 and 2016, approximately 30,000 students were considered homeless for financial aid purposes each year (School House Connection, 2017). Two university system studies report that 24% and 43% of undergraduates experienced housing instability in the past year while most multi-site studies estimate that approximately half of students struggle with housing challenges (Broton & Goldrick-Rab, 2016; Dubick et al., 2016; Goldrick-Rab et al., 2015a; Goldrick-Rab et al., 2017; Tsui et al., 2011).

### **Material hardship and k-12 educational success**

Research on elementary and secondary school students shows an inverse relationship between experiences of food and housing insecurity, and cognitive and developmental outcomes including academic achievement (e.g., Alaimo, 2005; Jyoti, Frongillo, & Jones, 2005; Miller, 2011; Winicki & Jemison, 2003). For example, homeless and highly mobile students score lower on standardized tests than stably housed children, regardless of family income (Obradovic et al., 2009; Rafferty, Shinn & Weitzman, 2004). Furthermore, these academic achievement gaps tend to persist over time and may even worsen as students progress through school (Cutuli et al., 2013; Obradovic et al., 2009). Similarly, children in households struggling with food insecurity have significantly lower arithmetic scores and are more likely to repeat a grade, even after accounting for potential confounding factors including family income (Alaimo, Olson, & Frongillo, 2001).

However, it is difficult to disentangle the situations and experiences associated with poverty and lack of income from the effects of food and housing insecurity. While food and housing insecure students typically have poorer academic outcomes than peers, there are notable exceptions. For example, Alaimo and colleagues (2001) reported that after accounting for background factors, food insecurity was not a significant predictor of lower academic achievement among teenagers, but it was related to poorer behavioral outcomes. Also, Buckner and colleagues (2001) found statistically similar achievement test scores when comparing the results of homeless students to similar students who were also low-income, but housed. Rather than conclude that food and housing insecurity status is unimportant, scholars argue that students from low-income or otherwise vulnerable families often face multiple risk and resilience factors that contribute to overall school success (e.g., Miller, 2011).

Given the empirical challenges associated with studying material hardship, there is a growing body of research focusing on the impact of programs and policies designed to minimize such deprivation. For instance, Figlio and Winicki (2005) argue that some school districts facing potential accountability sanctions related to poor academic performance "game the system" by substantially increasing the number of available calories on their school lunch menus on testing days. Moreover, the strategy appears to work; school districts that altered their menus the most experienced the largest increases in academic pass rates. Furthermore, studies of programs that provide food assistance to children including the National School Breakfast and Lunch Programs and SNAP (Supplemental Nutrition Assistance Program, formerly known as food stamps) indicate that the programs promote both the health and academic success of students, encouraging a virtuous cycle over the life course (e.g., Bhattacharya et al., 2006; Cutler &

Lleras-Muney, 2006; East, 2016; Frisvold, 2015; Gassman-Pines & Bellow, 2015; Gundersen, Kreider, and Pepper, 2011; Hinrichs, 2010).

### **Potential impacts of material hardship on college success**

This relationship between material hardship and academic success likely exists among college students as well, but has not been well demonstrated (e.g., Gao, Scott, Falcon, Wilde, & Tucker, 2009; Lupien, McEwen, Gunnar & Helm, 2009). In interviews and surveys, college students and educators report that food and housing insecurity hinders students' abilities to succeed in school (e.g., Farahbakhsh et al., 2016). As president of Miami Dade College's Wolfson campus, Madeline Pumariega explained, "When a student is hungry, he does not feel safe, and it is hard to help him synthesize class material. We have to meet students' basic needs in order for them to fully concentrate on assimilating the information in a class in a way that they can apply it, learn, and take it forward" (Goldrick-Rab, Broton, & Gates, 2013, p. 2). Furthermore, results from a recent survey show that 81% of housing insecure college students and 88% of food insecure students believe that such hardships impede their ability to academically perform in class. Students with food and housing insecurity challenges were also more likely to report failing or withdrawing from a university course than their materially secure peers (Silva et al., 2015).

Conceptually, there are several ways in which material hardship may impede cognition and academic success. Some of the most likely pathways to impaired cognition include scarcity, chronic stress, and a lack of nutrition. In addition, material hardship is associated with poor health and logistical challenges that may also hinder school success. First, scholars argue that near-term scarcity concerns reduce the cognitive capacity that students can apply to educational goals or tasks because of the brain's limited bandwidth. When individuals are distracted thinking

about how to meet their basic needs, there is less brain power available to devote to school, which may reduce academic achievement and attainment (Mullainathan & Shafir, 2013).

Material hardship is also associated with stressors that increase hormones that help the body fight or flee. While useful in the short-term, prolonged elevated levels of stress inhibit cognitive functioning, especially hippocampus-controlled tasks including working memory and spatial learning. Although chronic stress exposure is particularly detrimental to the developing brains of younger people, it negatively impacts brain structures related to cognition and mental health throughout the life course (Lupien et al., 2009).

When food insecurity results in inadequate nutrition, it has a direct negative impact on cognitive functioning across the life course (Gómez-Pinilla 2008; Kar, Rao, & Chandramouli, 2008). For instance, children and adolescents deficient in iron performed worse on academic achievement tests, net of family background including income-poverty status (Haltermann, Kaczorowski, Aligne, Auinger, & Szilagyi, 2001). And in adults, food insecurity is associated with nutrient inadequacy and lower global cognitive performance (Cook & Frank, 2008; Gao et al., 2009). According to one study, severely food insecure college students had significantly lower daily intake of fruits, vegetables, legumes, and dairy (Farahbakhsh et al., 2016) and a lack of these food sources is related to impaired cognition (Gómez-Pinilla 2008).

Material hardship is not only linked to impaired cognition, but covaries with health as well (e.g., Burgard, Seefeldt & Zelner, 2012; Cook & Frank, 2008). Students who are food and housing insecure are more likely to report physical and mental health problems, including depression, anxiety, and suicidal ideation (Eisenberg, Goldrick-Rab, Lipson, & Broton, 2016; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Freudenberg et al, 2011; Heflin & Iceland, 2009; Sullivan, Turner & Danziger, 2008; Tsui et al., 2011). These health problems predict lower

achievement and attainment among undergraduates, even after accounting for background characteristics including current financial situation (Eisenberg, Golberstein, & Hunt, 2009). In turn, those with lower levels of educational attainment have poorer health outcomes, on average. Thus, the bidirectional relationship between health and education can create a negative feedback loop (e.g., Cutler & Lleras-Muney, 2006).

Finally, students struggling with material hardship also face additional logistical challenges that can impede school success. As undergraduate McNair scholar at the University of Wisconsin–Madison, Brooke Evans (2015, p. 3) described, “Without a home and without meals, I felt like an impostor amongst my brilliant peers. I was shamefully worrying about food, and shamefully staring at the clock to make it out of class in time to get in line for the local shelter when I should have been giving my undivided attention to the lecturer.” Direct-assistance programs and services, including shelters, are often only open during certain hours or may have attendance criteria that interfere with course taking and studying. Additionally, the most affordable housing options and grocery stores are typically located near the outskirts of town, rather than close to campus, increasing travel time. Finally, use of public transportation or unreliable private transportation can be unpredictable, making attending and concentrating in college courses particularly difficult (Broton et al., 2014; Goldrick-Rab, Broton, & Frank, 2014; Silva et al., 2015; Wilder Research 2008).

### **Prior research on material hardship and college academic success**

Few studies have directly examined the relationship between material hardship and academic achievement in higher education. All of those studies focused on food insecurity rather than housing insecurity. The studies that have been done report that food insecurity is independently associated with lower self-reported GPA in the concurrent semester. Results from

a study of four public universities in Illinois found that 35% of students reported low or very low levels of food security and that food insecure students were statistically overrepresented among those with lower GPAs and underrepresented among those with higher GPAs (Morris et al., 2016). Next, a survey at a rural university in Oregon indicated that 59% of students experienced food insecurity and that GPA significantly predicted food security status in a multivariable model.<sup>34</sup> Specifically, students with good academic performance (3.1 or higher GPA) were 60% less likely to be food insecure than students with a lower GPA (Patton-Lopez et al., 2014). Finally, a study of two community colleges in Maryland found that 56% of students had low or very low food security and that food insecure students were 22% less likely to report a 3.5-4.0 GPA rather than a 2.0-2.49 GPA (Maroto, Snelling, & Linck, 2015). When background factors were considered, however, the relationship became statistically insignificant. Thus, these gaps in educational success could be spurious, resulting from another variable such as income, rather than food insecurity. These initial studies compel a more comprehensive and rigorous investigation of how food and housing insecurity may affect academic achievement and attainment among college students.

### **Data and Empirical Approach**

The current study examines the relationship between experiences of food and housing insecurity early in college and the probability of later educational success using multivariable regression and propensity score matching methods. I also explore potential variation in the relationships by individual- and contextual-level factors and investigate short-term academic outcomes that may improve our understanding of mechanisms. The Wisconsin Scholars

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<sup>34</sup> The model included measures of fair/poor health, moderate physical activity, health insurance, campus meal plan, food assistance program participation, living arrangements, credit card debt, student level, enrollment intensity, financial aid, employment, income, sex, marital status, ethnicity, and age.

Longitudinal Study (WSLS) is the first study that allows for such an investigation since it follows a cohort of undergraduates over time using survey and administrative records. Though the methods are limited in their ability to draw causal conclusions and omitted variable bias remains a concern, the robust set of observable covariates described below and used to balance the sample groups minimizes selection bias. Moreover, the dual analytic approach relies on different functional form assumptions, serving as a robustness check.

### **Wisconsin Scholars Longitudinal Study**

The WSLS includes 3,000 undergraduates from low-income families who enrolled in one of Wisconsin's 42 public colleges and universities full-time for the first-time in fall 2008. Students had to be Wisconsin residents who attended and graduated from a state public high school or earned an equivalency diploma and matriculated within three years. They had to complete the Free Application for Federal Student Aid (FAFSA), qualify for a federal Pell Grant, and still possess at least \$1 of unmet need (excluding loans).<sup>35</sup>

Using administrative records, eligible students were randomly selected for inclusion in the study after enrolling in college.<sup>36</sup> The study includes multiple surveys linked to students' administrative records, institutional-level data from the Integrated Postsecondary Education Data System (IPEDS), and community-level data from the American Community Survey (ACS). The study tracks students' academic outcomes for four years through colleges' administrative data systems and the National Student Clearinghouse (NSC), which includes degree information from

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<sup>35</sup> A random sample of study participants were offered additional grant aid. The grant offer does not have a statistically significant bivariate relationship with measures of material hardship including food and housing insecurity. Thus, the full study sample is included in analyses. While the grant offer is excluded from analyses presented in the paper, sensitivity tests including a measure of the grant offer does not influence the findings substantively or statistically.

<sup>36</sup> There were 6,011 students in the initial sampling frame.

98% of public and private institutions, enabling the study team to track the educational outcomes of students who transfer institutions.<sup>37</sup>

### **Analytic sample**

In fall 2009, the research team invited a subset of study participants to complete a survey that included questions about students' prior experiences of food and housing insecurity.<sup>38</sup> The analytic sample consists of the 71% of students who responded to that survey and agreed to have their survey data linked to their administrative records (N=1335).<sup>39</sup> Six in 10 respondents in the analytic sample are female and 1 in 4 identify as an underrepresented racial/ethnic minority according to University of Wisconsin System policy.<sup>40</sup> Nearly 60% come from families in which a parent has some college experience or higher. Their parents' average annual adjusted gross income is approximately \$27,500 and 35% come from families that are not expected to contribute financially to their students' college costs. Moreover, 1 in 4 students reported that when they were growing up, their family struggled to get enough to eat (Table 1).

Compared to the full WSLs study sample, those in the analytic sample come from more advantaged backgrounds, attend more advantaged college institutions, and have higher rates of

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<sup>37</sup> The study also includes students' college entrance exam scores for those who took the ACT test in high school, allowing for the consideration of preparatory commitment and pre-college academic achievement for a subsample of participants. The college entrance exam scores come from students' college transcripts and administrative data from ACT, Inc. Not all students were required to take a college entrance exam for college admission. Students who selected to take the exam are not representative of the study population. They may differ on unobservable characteristics such as motivation and are more likely to enroll in a four-year college, which has higher academic standards.

<sup>38</sup> This subset represented 63% of all WSLs participants. Students (N=1879) were selected for inclusion in the fall 2009 survey based on study eligibility and prior survey participation. Eligibility for participation was independent of the grant offer ( $p > .05$ ).

<sup>39</sup> This represents 45% of all students in the Wisconsin Scholars Longitudinal Study.

<sup>40</sup> Students who identify as African American, Latino/a, American Indian, or Southeast Asian are considered targeted racial/ethnic minorities according to University of Wisconsin System policy.



college success. For example, students in the analytic sample have higher average family incomes (\$27,500 vs. \$23,200) and a smaller share come from families with a zero dollar expected family contribution (35% vs. 41%) ( $p < .001$ ). A smaller share of students in the analytic sample attend two-year colleges (36% vs. 50%) ( $p < .001$ ). On average, those in the analytic sample attend institutions with a higher net price (\$9,100 vs. \$7,800) and a smaller share of Pell grant recipients (24% vs. 26%) ( $p < .001$ ) (Table A1).<sup>41</sup>

### Survey and administrative data measures

In fall 2009, students were asked a series of survey questions about their food security status in the prior month using measures from the U.S. Department of Agriculture (USDA) (Bickel et al., 2000). All questions were asked with the caveat that they had to do so because they lacked money to buy food. Those who responded yes to at least one of the following are categorized as having *low food security*: ate less than you felt you should, cut the size of your meals or skipped meals, or sometimes did not get enough to eat (22%). Respondents who indicated that they did not eat for an entire day or often did not get enough to eat due to financial limitations are considered to have *very low food security* (8%). Together, these groups make up 30% of students who reported they are *food insecure*. This is a relatively conservative definition of food insecurity since only those who reported a reduction in food intake are categorized as insecure.<sup>42</sup> Other researchers have also included individuals who report changes in the quality,

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<sup>41</sup> As a robustness check, I also employ two additional analytic samples that include measures of pre-college academic achievement and detailed financial aid packaging records, which are only available for a subset of the analytic sample. While these subsamples are not representative of the study population or analytic sample (i.e., they are generally more advantaged), they enable me to control for additional measures that may contribute to potential selection bias. The second analytic sample is an *Academic Sample* and includes those who responded to the fall 2009 survey, consented to the data linkage, and completed a college entrance exam (N=870). The third analytic sample is a *Financial Aid Sample* that includes those in the preceding sample who also attended a college that provided detailed financial aid packaging information (N=597). Details provided in Table A1.

<sup>42</sup> While there are multiple ways to measure food insecurity, the emerging research body on college students most commonly relies on the USDA food security survey module.

variety, and desirability of diet as food insecure (Bickel et al., 2000). The WSLs survey only included part of the USDA Food Security Survey Module, which has been systematically tested and validated (Bickel et al., 2000), but alternative constructs of food insecurity yielded substantively and statistically similar results.

Respondents who indicated that there was a time in the past year when they were unable to pay the rent/mortgage or utilities on time are considered housing insecure. Twenty-four percent of students met this criterion for housing insecurity. The survey did not include information regarding homelessness.

The study also includes a series of measures related to students' pre-college financial standings and backgrounds. Information from the FAFSA completed prior to college entry includes parents' adjusted gross income, calculated expected family contribution (EFC), students' financial (in)dependence status, and if students qualify for a simplified needs test due to participation in means-tested public benefits programs or dislocated worker status.<sup>43</sup> Responses to survey questions indicate if a student grew up in a home where there was sometimes, often, or always not enough food to eat and if either parent has at least some college experience. Students who indicated that they identify as African American, Latino/a, American Indian, or Southeast Asian are considered targeted racial/ethnic minorities according to University of Wisconsin-System policy. Background information also includes a measure of sex and if students or their parents were born outside of the United States. Together, these measures provide a

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<sup>43</sup> The EFC is an estimation of a students' or parents' ability to contribute to the financial costs of a college education and is used in determining applicants' eligibility for need-based federal student aid, including the Pell Grant. Students and families often report that they are unable to contribute the estimated EFC. The EFC is minimized at zero, indicating that a family cannot contribute anything to the cost of college. Students can be considered financially independent for several reasons including if they are over age 23, married, have dependent children, are a veteran, or have extenuating circumstances such as being a homeless youth. Students qualify for a simplified needs test when calculating the EFC if they reside in a household that receives certain means-tested public benefits (e.g., Supplemental Nutrition Assistance Program (SNAP) or Free and Reduced Price School Lunch), they satisfy a low-income criterion, or the parent is a dislocated worker.

comprehensive portrait of students' pre-college socioeconomic and demographic backgrounds. In addition, I control for whether or not students took a college entrance exam as a measure of pre-college academic background. I use institutional-level data to capture the context of students' initial college experience including sector of initial enrollment (two- vs. four-year college), average net price of attendance, and the proportion of Pell grant recipients at the institution. I also include a measure of the county-level community poverty rate in which the college is located.<sup>44</sup> Descriptive statistics for variables included in the analyses are reported in Table 1.<sup>45</sup>

The primary outcome of interest is later educational success, defined as degree attainment or enrollment four years after matriculating in college. These data come from the National Student Clearinghouse, allowing for the consideration of students who transfer institutions. Additionally, I examine two short-term academic measures, enrollment intensity and GPA, to explore potential academic pathways. Students are considered part-time if they enroll in 1 to 11 college credits and full-time if they enroll in 12 or more. In addition to students' mean cumulative GPA, I also include a binary measure indicating if students' GPA is 2.0 or greater on a four-point scale. This 2.0 cutoff is used in determinations of satisfactory academic progress (SAP), which students must meet in order to remain in good academic standing and eligible for need-based financial aid (Scott-Clayton & Schudde, 2016). These short-term academic outcomes are only available for students enrolled in Wisconsin public colleges and universities in the term of interest.

### **Analytic plan**

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<sup>44</sup> As sensitivity tests for a subset of the analytic sample described above, I include students' ACT exam scores and individual-level measures of unmet need (cost of attendance minus EFC and grant aid) rather than the institutional average net price (cost of attendance minus grant aid) and EFC in the regression models.

<sup>45</sup> See Table A1 for descriptive statistics on the additional analytic samples used as sensitivity checks.

First, I describe how food and housing insecure students differ from their peers on observable background measures described above. Next, I describe the observed rates of degree attainment or persistence by food and housing security status. In these descriptive analyses, I test for statistically significant differences by hardship status using a chi square test for categorical variables and a one-way ANOVA for continuous variables.

Then, I estimate the adjusted rates using logistic regression models. First, I predict later educational success using measures of food and housing insecurity status independently and then combined in a single model:

$$z_i = \alpha + \beta_1(\text{Food Status}_i) + \varepsilon_i \quad (\text{Model 1})$$

$$z_i = \alpha + \beta_1(\text{Housing Status}_i) + \varepsilon_i \quad (\text{Model 2})$$

$$z_i = \alpha + \beta_1(\text{Food Status}_i) + \beta_2(\text{Housing Status}_i) + \varepsilon_i \quad (\text{Model 3})$$

Next, I add a vector of control variables,  $X_i$ , described above and listed in Table 1, to reduce selection bias:

$$z_i = \alpha + \beta_1(\text{Food Status}_i) + \beta_2(\text{Housing Status}_i) + \gamma X_i + \varepsilon_i \quad (\text{Model 4})$$

To aid in interpretation, I report the logit coefficient and the change in predicted probability.<sup>46</sup>

As a robustness check, I also employ a non-parametric propensity score matching analysis using Stata's *teffects* command to estimate the "average treatment effect" of housing insecurity and very low food security. Drawing on Rubin's causal framework, this method estimates the missing potential outcome for each individual by using an average of the outcomes of similar individuals that received the other treatment level and reports the average of the difference

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<sup>46</sup> Predicted probabilities are estimated using Stata's *margins* command.

between the observed and potential outcomes for each individual. I report observed balance and overlap in addition to the predicted change in probability.<sup>47</sup>

To explore if these relationships vary by individual- or contextual-level factors, I add interaction terms to Model 4. Specifically, I test if the relationships between food and housing insecurity and later educational success differs by the number of hardships a student reports (i.e., both food and housing insecure), students' race/ethnicity, sex, or class (defined as zero dollar expected family contribution or parental education level), or contextual factors related to the college institutional sector, share of Pell grant recipients, or community poverty rate in which the college is located. These interaction terms are represented by a  $W$  below.<sup>48</sup>

$$z_i = \alpha + \beta_1(\text{Food Status}_i) + \beta_2(\text{Housing Status}_i * W_i) + \gamma X_i + \varepsilon_i \quad (\text{Model 5})$$

$$z_i = \alpha + \beta_1(\text{Food Status}_i * W_i) + \beta_2(\text{Housing Status}_i) + \gamma X_i + \varepsilon_i \quad (\text{Model 6})$$

Due to the large number of interactions tested, results should be interpreted as exploratory. I only include statistically significant relationships in the text and because interaction values vary across different covariate values in the probability metric of logistic regression, I report substantively meaningful interpretations (Ai & Norton, 2003). All interaction coefficients are reported in Tables A3 and A4.

Finally, I explore the relationships between food and housing insecurity and short-term outcomes, including enrollment intensity and GPA, to identify potential academic pathways. I repeat the regression analyses described above in Models 3 and 4 using ordinary least squares regression to predict mean GPA and logistic regression to predict enrollment intensity and SAP

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<sup>47</sup> I also repeat this analytic plan for the two supplemental analytic samples as a sensitivity test. Results are presented in Table A2.

<sup>48</sup> In addition, I ran a single model in which both food and housing security status were interacted with the stated individual- and contextual-level factors. The results were statistically and substantively similar.

GPA. For the logistic regression results, I also report the change in predicted probabilities for ease in interpretation.<sup>49</sup>

## **Limitations**

There are several limitations in this study including that the methods are limited in their ability to draw causal conclusions. The analytic sample is not nationally representative or representative of Wisconsin undergraduates, limiting generalizability. Moreover, short-term academic outcomes are only available for students enrolled in Wisconsin public college and universities, excluding students who transfer out of these systems. Finally, material hardship is only measured at one point in time and includes a limited number of questions that are relatively narrow in scope. There is no standard definition of housing insecurity and I use a measure based on two survey questions. While a validated tool for measuring food insecurity exists, the full scale was not available in the WSLs, although the questions were derived from those scales.

## **Findings**

### **Undergraduates' food and housing challenges**

In this sample of undergraduates from low-income families in Wisconsin, 24% of students are housing insecure, 22% have low food security, and 8% have very low food security. These challenges rarely occur in isolation. Housing insecure students are more likely to be food insecure than their housing secure peers. Among housing insecure students, over half (53%) reported some level of food insecurity compared to approximately one-quarter (23%) of housing secure students ( $p < .001$ ). Similarly, food insecure students are more likely to be housing insecure than their food secure peers. Among students with very low food security, over half (52%) also

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<sup>49</sup> The conditional nature of these outcome measures creates endogeneity challenges that do not allow for the use of quasi-experimental methods (Morgan & Winship, 2007).

reported housing insecurity challenges compared to 16% of food secure students ( $p < .001$ ).

Housing and food insecure college students are also more likely to have grown up in poverty as evidenced by a lack of food to eat at home. Approximately half of students with very low food security reported that growing up, there was not enough food to eat compared to 19% of food secure students ( $p < .001$ ). Thirty-seven percent of housing insecure students struggled to get enough to eat growing up compared to 22% of housing secure students ( $p < .01$ ) (Table 1).

Food and housing insecurity challenges during college are associated with family economic background. Nearly half of students struggling with very low food security or housing insecurity come from families that are not expected to financially contribute to their students' college education due to a lack of resources. On average, these families have an adjusted gross income of approximately \$23,000. By comparison, approximately one-third of food and housing secure students come from families with a zero dollar expected family contribution and their average annual income is roughly \$28,000 ( $p < .05$ ). Housing insecure students are more likely than housing secure students to qualify for a simplified needs test (71% vs. 55%) ( $p < .001$ ) and while a greater share of students with very low food security (68%) meet this criterion than those with high food security (58%), the difference is not statistically significant. Finally, students struggling with food and housing insecurity are significantly more likely to be financially independent from their parents than their materially secure peers (12% vs. 4-5%) ( $p < .01$ ) (Table 1).

Racial/ethnic minorities and students from immigrant families are more likely to report challenges obtaining adequate food and shelter than their peers. Among those with very low food security, 38% identify as a targeted racial/ethnic minority compared to 22% of food secure students ( $p < .001$ ). Similarly, 36% of housing insecure students are racial/ethnic minorities

compared to 22% of housing secure students ( $p < .001$ ). While 12-13% of food and housing secure students report that they or their parents were born outside of the U.S., 16% of students with very low food security and 19% of students facing housing insecurity come from an immigrant family ( $p < .05$ ). Women are significantly more likely to be housing insecure (67%) ( $p < .05$ ) though rates of food insecurity are statistically similar across sex. Housing insecure students are statistically less likely to have a parent with some college experience or higher. However, there is not evidence that parental education level statistically covaries with food security status. Just 51% of housing insecure students have a parent with some college experience or higher compared to 60% of housing secure students ( $p < .01$ ) (Table 1).

### **Later educational success**

Students who reported material hardship challenges early in college were significantly less likely than their materially secure peers to have earned a degree or be enrolled four years after initial college entry ( $p < .01$ ) (Table 1). Overall, 18% of students had earned a degree and an additional 48% were still enrolled in college for a two-thirds success rate (Figure 1). These sample averages, however, mask considerable heterogeneity in later educational outcomes.

While 20% of food secure students had graduated after four years, just 16% of students with low food security and only 8% of students with very low food security had earned a degree. Students with low food security were similarly likely as food secure students to be enrolled after four years (50% vs. 48%), but only 43% of students with very low food security persisted (Figure 1). Together, students with low food security were 1.6 percentage points less likely to be educationally successful than their food secure peers, and there was a 16.7 percentage point gap ( $p < .01$ ) between those with very low food security and their food secure peers (Table 2).



Twenty-one percent of housing secure students had earned a degree and 49% were still enrolled after four years of college compared to just 9% of housing insecure students who had earned a degree and 45% who were still enrolled (Figure 1). In sum, 70% of housing secure students were educationally successful compared to 54% of housing insecure students, a gap of 15.5 percentage points ( $p < .001$ ) (Table 2).

Experiences of material hardship rarely occur in isolation and these independent associations between food and housing insecurity and later educational success do not account for multiple hardship experiences. When both food and housing insecurity status are considered in the prediction of later educational success, each type of hardship remains statistically significant, though the magnitude is reduced. For instance, a change from food secure to very low food security status is associated with a 11.5 percentage point decrease in the probability of later success, net of housing status ( $p < .05$ ). Similarly, a change from housing secure to insecure status is associated with a 14.3 percentage point decrease in the probability of later educational success, after accounting for food security status ( $p < .001$ ) (Table 2).

### ***Later educational success in a multivariable framework***

These gaps in educational success could arise from several correlated factors – such as income, prior experiences of poverty, and race/ethnicity – rather than material hardship challenges during college. After adjusting for the pre-college covariates described above using regression and quasi-experimental matching methods, housing insecurity remains a statistically significant predictor of later educational success while food insecurity does not.

The relationship between very low food security status and later educational success became statistically insignificant and the gap was further reduced to -8.1 percentage points after accounting for background factors including childhood experiences of food insecurity, family

income, and demographic characteristics. Findings from the non-parametric propensity score analysis indicate that students with very low food security are 4.8 percentage points less likely to be educationally successful than otherwise similar peers, a statistically insignificant difference (Table 2).<sup>50</sup> See Figures A1-A2 for descriptions of common support and balance.

Covariate adjusted results indicate that a change in housing security status from secure to insecure is associated with a 7.7 percentage point decline in the probability of later educational success ( $p < .05$ ). The inclusion of background characteristics reduced the magnitude of the educational success gap by approximately half. Findings from the propensity score analysis indicate that housing insecure students are 8.8 percentage points less likely than otherwise observably similar peers to be enrolled or earn a degree four years after starting college ( $p < .05$ ) (Table 2).<sup>51</sup> Descriptions of common support and balance are included in Figures A3-A4. Thus, both methods of accounting for pre-college characteristics yielded statistically and substantively similar findings.

### **Variation in the relationships between material hardship and later success**

Experiences of material hardship vary by financial and non-financial background factors including race/ethnicity, sex and social class as well as by contextual-level factors including community resources (RTI International, 2014). Next, I explore if the relationships between material hardship and later academic success vary according to the number of hardships

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<sup>50</sup> I also examined the relationship between food insecurity and later academic success using two supplemental analytic samples. Results from the Academic analytic sample, which allows for the inclusion of students' ACT score, indicate that food insecurity is not a statistically significant predictor of later enrollment or attainment. However, very low food insecurity is a statistically significant predictor of later enrollment or attainment in the Financial Aid analytic sample. The propensity score analysis indicates that students with very low food security are 13.9 percentage points less likely to be educationally successful than otherwise similar peers (Table A2).

<sup>51</sup> Results from the Academic and Financial Aid supplemental analytic samples are substantively similar (Table A2).

students' report; students' race/ethnicity, sex, or social class; or the college's institutional sector, share of Pell grant recipients, or community poverty rate.

Results indicate that there is no evidence that the relationship between housing insecurity and later educational success statistically varies by students' food security status or that the relationship between food insecurity and later educational success varies by housing status. In fact, there is no statistical evidence that the relationship between housing status and educational success varies across any of the individual- or contextual-level factors described above (Table A3). In sum, housing insecurity is associated with a nearly 10 percentage point lower probability of later educational success, regardless of family background, college context, or concurrent food security challenges.

The relationship between food insecurity and later education educational success, however, appears to be moderated by family and community-level resources. Exploratory analyses indicate a statistically significant interaction between low food security status and expected family contribution. Among students with low food security, those with an expected family contribution greater than zero dollars, which indicates greater financial resources, have a higher probability of success than those with a zero-dollar EFC (Table A4). As a point of comparison, the combination of low food security status and a positive EFC is associated with similar probabilities of success as the combination of food secure status and a zero-dollar EFC, suggesting a resource substitution effect. However, students who are both struggling with low food security and come from families with a zero-dollar EFC have a lower probability of success, similar in magnitude to students with very low food security, regardless of family EFC.

To test the relationship between food security status and community-level resources, I use a continuous measure of the county poverty rate in which the college or university is located.

Results indicate a statistically significant interaction between very low food security status and community poverty rate (Table A4). Among students with very low food security, attending college in a low poverty community is associated with a higher probability of later success whereas attending college in a high poverty community is associated with a lower probability of success.

### **Enrollment intensity and GPA in the short-term**

Students report that experiences of material hardship inhibit their ability to perform academically and one way in which they cope is to enroll in fewer courses (Silva et al., 2015). This coping mechanism may reduce students' tuition bill, or allow more time for work. Next, I examine if food and/or housing insecurity is associated with enrollment intensity or GPA in the semester following students' hardship report. Results indicate that housing insecurity is associated with part-time enrollment intensity and lower GPA, after accounting for observed background characteristics.

A change from housing secure to insecure status is associated with a 10.4 percentage point increase in the probability of part-time, rather than full-time enrollment, net of food security status ( $p < .01$ ). The addition of covariates reduced the magnitude by approximate half; housing insecurity is associated with a 5.4 percentage point increase in the probability of part-time enrollment in the adjusted model ( $p < .05$ ). Food security status is not statistically associated with enrollment intensity in the short-term ( $p > .05$ ) (Table 4).

Housing security status is also a statistically significant predictor of mean GPA in the following semester ( $p < .001$ ) (Table 5). After accounting for food security level, a change in housing status from secure to insecure is associated with a 0.36 point reduction in mean GPA on a four-point scale ( $p < .001$ ). Adjusting for background characteristics, housing insecurity is

associated with a 0.30 point reduction in mean GPA ( $p < .001$ ). Although very low food security status was associated with a 0.20 reduction in mean GPA, net of housing status ( $p < .05$ ), the relationship became statistically insignificant and reduced to -0.16 once additional background factors were considered (Table 5).

In addition, housing security status is associated with the probability of earning a 2.0 or higher GPA in the semester following students' material hardship report. A change from secure to insecure housing status is associated with a 16.0 percentage point decline in the probability of having a minimally sufficient GPA, net of food security status ( $p < .001$ ). The inclusion of background factors reduced the magnitude of the association between housing insecurity and a 2.0 or higher GPA to -11.2 percentage points ( $p < .001$ ). In addition, a change in food status from high food security to low food security is associated with a 3.9 percentage point increase in the probability of earning a 2.0 or higher GPA, net of background covariates ( $p < .10$ ). While this association is not statistically significant at traditional levels, it is marginally significant and the magnitude is relatively similar regardless of the inclusion of covariates (Table 6).

### **Discussion**

Using data from a statewide longitudinal study of undergraduates from low-income families, this paper provides the first empirical test of the relationship between experiences of material hardship early in college and later educational success. Both food and housing insecurity are independently associated with poorer academic outcomes, but only housing insecurity remains a statistically significant predictor after accounting for background factors including family income, parental education level, and childhood experiences of poverty. Housing insecurity during students' first year of college is associated with a nearly 10 percentage point reduction in the probability of earning a degree or being enrolled four years later, net of

background characteristics. The magnitude of this relationship is considerable and warrants further attention. For comparison, a change from growing up in a food secure to insecure home is associated with a seven-percentage point decrease in the probability of later educational success, after accounting for background factors. In addition, the female advantage in college success, well noted by scholars of education, is estimated to be 11 percentage points in this sample, all else equal.

In the short-term, housing insecurity is associated with lower mean grade point average and a lower probability of earning a 2.0 or higher GPA, which is often necessary to obtain satisfactory academic progress and maintain financial aid eligibility. Moreover, housing insecurity is also associated with part-time, rather than full-time, enrollment, which slows credit accumulation and extends time to degree. Thus, it appears that both reductions in academic achievement and credit attainment contribute to poorer academic outcomes for housing insecure students over the long-term.

Net of housing security status, food insecurity early in college is associated with poorer educational outcomes four years after initial enrollment. However, once additional pre-college background factors are considered, food security status is no longer a statistically significant predictor of later enrollment or degree attainment. There are multiple explanations for the failure to isolate a statistically significant relationship between food insecurity and academic success. Food security may be poorly measured and small sample sizes may have also inhibited the detection of a relationship.<sup>52</sup> Scholars argue that it is empirically difficult to separate the effects of food insecurity from the experiences and conditions associated with poverty more broadly (Miller, 2011). This challenge may have been exacerbated in this sample, which only includes

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<sup>52</sup> See Appendix A for brief history and measurement overview of food security in the United States.

students from low-income families. Given the episodic nature of food insecurity (RTI International, 2014), this study may have compared the academic success of students who were food insecure at one point in time to students who were food insecure or faced additional challenges at another point in time, downwardly biasing estimates.

Among students with food insecurity challenges, family and community resources appear to serve as protective factors and are associated with an increased probability of later educational success. Thus, context may be particularly important to consider in future studies of food insecurity among college students.<sup>53</sup> Moreover, these findings suggest that financial or in-kind resources may be effective in aiding food insecure students academically, though additional research is needed to test such interventions.

Finally, food insecurity is marginally associated with a greater likelihood of earning a 2.0 or higher GPA in the short-term. While this finding may seem counterintuitive, note that the relationship is conditional on enrollment and food insecure students who persist in college may be different than those who stop or drop out. Consequently, this finding could be interpreted as evidence that students who sacrifice basic needs and remain enrolled in college also make strategic academic decisions. Replication is necessary to better understand this finding and examine the results of the study more broadly.

## **Conclusion**

A college credential affords a wide range of personal, financial, and other lifelong benefits for individuals. Moreover, higher education is a community good associated with

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<sup>53</sup> Note that very low food security status is a statistically significant predictor of later educational success, net of background factors in the Financial Aid supplemental analytic sample. Compared to the other samples, the Financial Aid sample is more advantaged. Students in this analytic sample come from families with higher average annual income, are more likely to attend a four-year college, and have the highest rates of later education success (Table A1). Thus, the relationship between food security and later educational success may be context specific. For example, food insecurity may be a more consequential or defining challenge in a more advantaged college context.

happier and healthier communities. Although college access has expanded, degree attainment rates remain low among students from low-income and otherwise vulnerable families. One of the primary contributors to low attainment rates is the rising net price of college attendance coupled with inadequate family resources. These high net prices, limited support from the public safety net, and a dearth of well-paying jobs and work hours appear to be contributing to the growing share of undergraduates who forgo basic material goods during college. This paper demonstrates that such material hardship and housing insecurity, in particular, is an independent source of educational disadvantage among students from low-income families.

Changes to policy and practice that include a consideration of students' material well-being may improve students' odds of college success. Policymakers and practitioners can either address the root causes of food and housing insecurity among undergraduates or alleviate the material hardship experiences directly. For example, undergraduates are often excluded from public means-tested benefits programs that provide food, housing, and childcare assistance because college students have to meet additional criteria in order to receive services (Duke-Benfield, 2015). If undergraduates only had to meet the same income and asset requirements that others do to receive benefits, then these financial and in-kind resources could be used to complement students' financial resources needed to pay for tuition, fees, books, and living expenses. Such public investments have been shown to improve college success, indicating that this short-term cost promotes longer-term gains (Price et al., 2014).

Even without changing public policies, colleges can work to ensure that students who are currently eligible for public benefits and private charitable assistance receive the support. Organizations and programs like Single Stop, Benefits Access for College Completion, and the Working Families Success Network partner with colleges to help students draw down on all



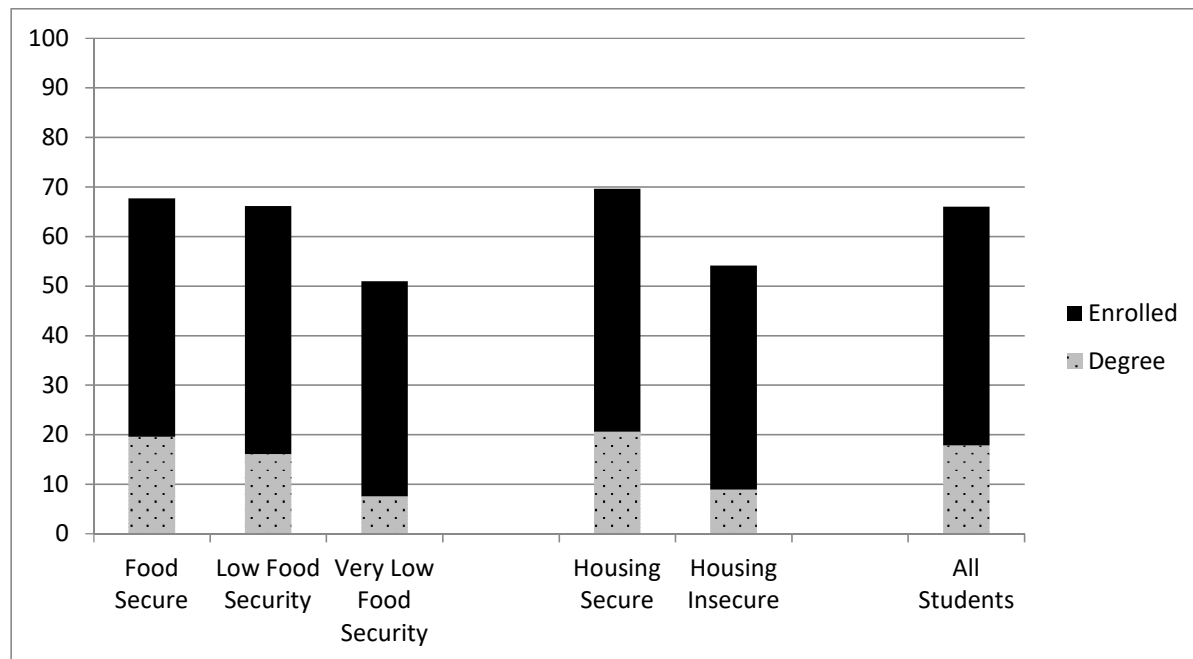
available local, state, and federal resources. According to one study, students who are eligible for public benefits can receive an additional \$5,400 in support, an amount roughly equivalent to a Pell grant (Goldrick-Rab, Broton & Gates, 2013). This approach broadens the understanding of public support for higher education beyond those institutions and systems typically associated with education.

Leveraging the social safety net is just one example of the type of response that could potentially alleviate material hardship and promote academic success. Other policies and interventions that address the full cost of college attendance or ways in which student's out-of-classroom experiences affect college success should also be explored and tested. For instance, over 400 college campuses now have food pantries to help alleviate food insecurity. Yet, we lack basic research examining the impact of these pantries or which models work best in which contexts. Research in collaboration with practitioners who have expertise in working with students who experience material hardship is needed to better understand and address this issue.

In recent years, the problem of food and housing insecurity on college campuses has gained national exposure in the public discourse (e.g., Goldrick-Rab & Broton, 2015). Although recent research has contributed to our understanding of the scope and depth of the problem, this is the first paper to examine long-term academic implications and demonstrate an inverse relationship between housing insecurity and later enrollment or attainment. Additional research is needed to better understand the relationship between material hardship and academic success, but scholars should not be complacent with describing a problem and its implications (Gamoran, 2014). Research examining programmatic and policy responses to students' material hardship challenges is crucial to promoting college attainment.

## Figures

**Figure 1. Educational Success Four Years After Initial College Entry by Material Hardship Status**



*Notes.*

Survey analytic sample (N=1335).

## Tables

**Table 1. Student characteristics and outcomes according to material hardship status**

	Analytic Sample	Food Security Level				Housing Security Level		
		Food Secure	Low Food Security	Very Low Food Security		Housing Secure	Housing Insecure	
<b><u>Material Hardship</u></b>								
<b><u>Food Security</u></b>								
Low Food Security (%)	21.9	0.0	100.0	0.0	***	17.8	35.0	***
Very Low Food Security (%)	7.9	0.0	0.0	100.0		5.0	17.5	
<b><u>Housing Security</u></b>								
Housing Insecure (%)	23.5	15.9	37.7	51.9	***	0.0	100.0	***
<b><u>Long-term Outcome</u></b>								
Degree attainment or enrollment four years after initial college entry (%)	66.0	67.7	66.1	50.9	**	69.6	54.1	***
<b><u>Short-term Outcomes</u></b>								
Part-time (vs. full-time) enrollment (%)	10.9	10.0	13.7	10.2		8.9	19.5	***
Mean GPA	2.79	2.82	2.76	2.53	*	2.86	2.49	***
2.0 or higher GPA (%)	88.76	88.58	90.16	85.71		91.41	77.18	***
<b><u>Background Characteristics</u></b>								
<b><u>Childhood Poverty</u></b>								
Growing up, there was not enough to eat at home (%)	25.7	18.7	39.7	49.1	***	22.1	37.3	***
<b><u>Pre-College Finances</u></b>								
Average Expected Family Contribution (\$)	1453	1474	1505	1120		1542	1161	**
Zero Expected Family Contribution (%)	35.1	34.2	33.6	48.1	*	31.0	48.7	***
Financially Independent (%)	5.5	4.6	6.2	12.3	**	3.4	12.4	***
Simplified Needs Test (%)	58.4	57.7	56.9	67.9		54.5	71.0	***
<b><u>Pre-College Academics</u></b>								
ACT college entrance exam record (%)	65.2	64.4	69.5	60.4		66.6	60.5	*

Table 1 continued on next page.

Table 1 continued...

<b>Initial College-Level Context</b>								
Two-year College Sector (%)	35.7	35.3	33.2	45.3	†	31.9	47.8	***
College Average Net Price (mean \$)	9136.2	9097.7	9392.1	8772.4	*	9298.0	8610.2	***
Pell Grant Recipients at College (mean %)	23.8	23.7	23.5	25.2		23.1	25.9	***
Community Poverty Rate (mean %)	11.8	11.7	12.1	12.1	*	11.8	12.0	
<b>Race/Ethnicity</b>								
White, not Hispanic (%)	72.7	76.8	64.0	59.4	***	75.8	62.4	***
Asian, except Southeast Asian (%)	1.8	1.4	2.7	2.8		2.0	1.3	
Targeted Racial/Ethnic Minority (%)	25.5	21.8	33.2	37.7	***	22.2	36.3	***
African American (%)	7.6	6.9	7.5	14.2	*	6.1	12.7	***
Hispanic (%)	5.8	5.1	5.8	11.3	*	4.8	8.9	**
Native American (%)	3.8	3.3	5.1	4.7		3.5	4.8	
Southeast Asian (%)	8.3	6.4	14.7	7.6	***	7.8	9.9	
<b>Demographics</b>								
Female (%)	60.9	60.7	64.4	52.8		59.2	66.6	*
Parents have some college experience or higher (%)	58.2	59.0	57.2	53.8		60.3	51.3	**
Parents Adjusted Gross Income (\$)	27467	27983	27603	22528	*	28807	23107	***
Immigrant Family (%)	14.8	12.5	21.6	16.0	**	13.4	19.1	*
N	1335	937	292	106		1021	314	

**Notes.**

Material hardship questions are from a fall 2009 survey.

Degree and enrollment outcomes are from the National Student Clearinghouse.

Enrollment Intensity and GPA are only available for those enrolled in a Wisconsin public college or university in Spring 2010, which is the semester following students' material hardship report (N=801). Enrollment intensity is based on the number of credits attempted; GPA is the reported cumulative GPA at the end of the term.

Pre-college finances come from students' 2008 FAFSA.

Pre-college academic information comes from ACT, Inc. and college administrative records.

Initial College-Level Context variables come from IpedS and the American Community Survey.

Demographics come from students' 2008 FAFSA, with the exception of race/ethnicity, parents' education, and immigrant status which come from survey data.

Chi square test of statistical significance used to test the relationship between hardship and categorical variables.

One-way ANOVA used to test the relationship between hardship and continuous variables.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 2. How material hardship affects later educational success using regression and quasi-experimental matching**

<i>Degree Attainment or Enrollment Four Years Post Matriculation</i>								
	Logit Model 1				Logit Model 2			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Low Food Security	-0.0157	-0.0707	(0.142)					
Very Low Food Security	-0.1672	-0.7006	(0.206)	**				
<b>Housing Security</b>								
Housing Insecure					-0.1550	-0.6641	(0.132)	***
Covariates included	<i>No</i>				<i>No</i>			

*Table 2 continued on next page.*

Table 2 continued...

<b>Degree Attainment or Enrollment Four Years Post Matriculation</b>											
	Logit Model 3				Logit Model 4				Propensity Score Matching		
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test	“Average Treatment Effect”	se	test
<b>Food Security</b>											
Low Food Security	0.0152	0.0695	(0.147)		-0.0077	-0.0363	(0.168)				
Very Low Food Security	-0.1147	-0.4852	(0.214)	*	-0.0812	-0.3630	(0.246)		-0.0483	(0.036)	
<b>Housing Security</b>											
Housing Insecure	-0.1436	-0.6169	(0.138)	***	-0.0765	-0.3479	(0.160)	*	-0.0884	(0.042)	*
Covariates included	No				Yes				Yes		

**Notes.**

Survey Sample (N=1335).

Later educational success is defined as degree attainment or enrollment four years after initial college entry.

Model 1 includes one predictor: food security status.

Model 2 includes one predictor: housing security status.

Model 3 includes two predictors: food and housing security status.

Model 4 includes food and housing status and all covariates listed in Table A1 including female, racial/ethnic minority, parental level of education, family income, immigrant status, childhood food insecurity, expected family contribution, financially (in)dependent, simplified needs test, took a college entrance exam, institutional sector, average net price, share of Pell grant recipients, and community poverty rate.

Change in average marginal effects are reported (at means). Change in probability compared to food or housing secure status.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 3. Relationship between material hardship and part-time enrollment intensity in the short-term**

<i>Part-time (vs. Full-time) Enrollment Intensity Semester Following Hardship Report</i>								
	Logit Model 1				Logit Model 2			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Low Food Security	0.0136	0.1407	(0.268)		0.0209	0.2701	(0.298)	
Very Low Food Security	-0.0211	-0.2553	(0.505)		-0.0259	-0.4539	(0.555)	
<b>Housing Security</b>								
Housing Insecure	0.1038	0.8948	(0.260)	**	0.0541	0.6399	(0.283)	*
Covariates included	No				Yes			

**Notes.**

Students must be in the Survey Sample (N=1335) to be included in this analyses. Results are reported for the subsample enrolled in Wisconsin public colleges and universities in Spring 2010 (N=801).

Model 1 includes two predictors: food and housing security status.

Model 2 includes food and housing status and all covariates listed in Table A1 including female, racial/ethnic minority, parental level of education, family income, immigrant status, childhood food insecurity, expected family contribution, financially (in)dependent, simplified needs test, took a college entrance exam, institutional sector, average net price, share of Pell grant recipients, and community poverty rate.

Change in average marginal effects are reported (at means).

Change in probability compared to food or housing secure status.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 4. Relationship between material hardship and mean GPA in the short-term**

<i>Mean GPA Semester Following Hardship Report</i>						
	Regression Model 1			Regression Model 2		
	Coef.	se	test	Coef.	se	test
<b><i>Food Security</i></b>						
Low Food Security	0.0067	(0.058)		-0.0070	(0.058)	
Very Low Food Security	-0.1997	(0.100)	*	-0.1569	(0.098)	
<b><i>Housing Security</i></b>						
Housing Insecure	-0.3588	(0.062)	***	-0.3049	(0.061)	***
Covariates included	<i>No</i>			<i>Yes</i>		

**Notes.**

Students must be in the Survey Sample (N=1335) to be included in this analyses. Results are reported for the subsample enrolled in Wisconsin public colleges and universities in Spring 2010 (N=801).

Model 1 includes two predictors: food and housing security status.

Model 2 includes food and housing status and all covariates listed in Table A1 including female, racial/ethnic minority, parental level of education, family income, immigrant status, childhood food insecurity, expected family contribution, financially (in)dependent, simplified needs test, took a college entrance exam, institutional sector, average net price, share of Pell grant recipients, and community poverty rate.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001



**Table 5. Relationship between material hardship and satisfactory academic progress GPA in the short-term**

<b>2.0 or Greater GPA in the Semester Following Hardship Report</b>								
	Logit Model 1				Logit Model 2			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Low Food Security	0.0419	0.5011	(0.298)	†	0.0394	0.5516	(0.322)	†
Very Low Food Security	0.0136	0.1416	(0.449)		0.0330	0.4431	(0.489)	
<b>Housing Security</b>								
Housing Insecure	-0.1598	-1.2648	(0.254)	***	-0.1115	-1.0679	(0.272)	***
Covariates included	No				Yes			

**Notes.**

Students must be in the Survey Sample (N=1335) to be included in this analyses. Results are reported for the subsample enrolled in Wisconsin public colleges and universities in Spring 2010 (N=801).

Model 1 includes two predictors: food and housing security status.

Model 2 includes food and housing status and all covariates listed in Table A1 including female, racial/ethnic minority, parental level of education, family income, immigrant status, childhood food insecurity, expected family contribution, financially (in)dependent, simplified needs test, took a college entrance exam, institutional sector, average net price, share of Pell grant recipients, and community poverty rate.

Change in average marginal effects are reported (at means). Change in probability compared to food or housing secure status.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

## Appendix Figures

Figure A1. Overlap and density balance for very low food security treatment

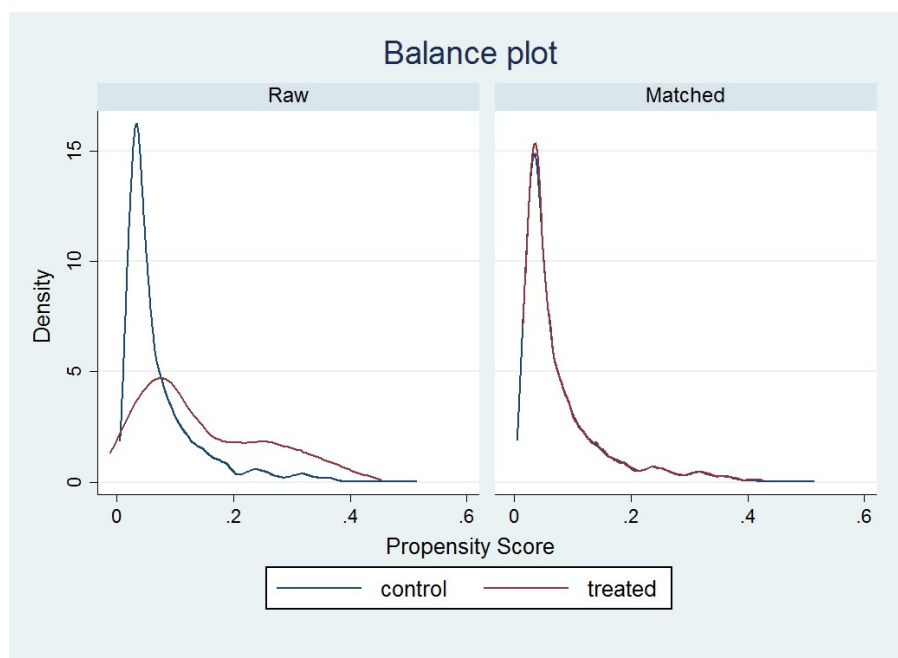
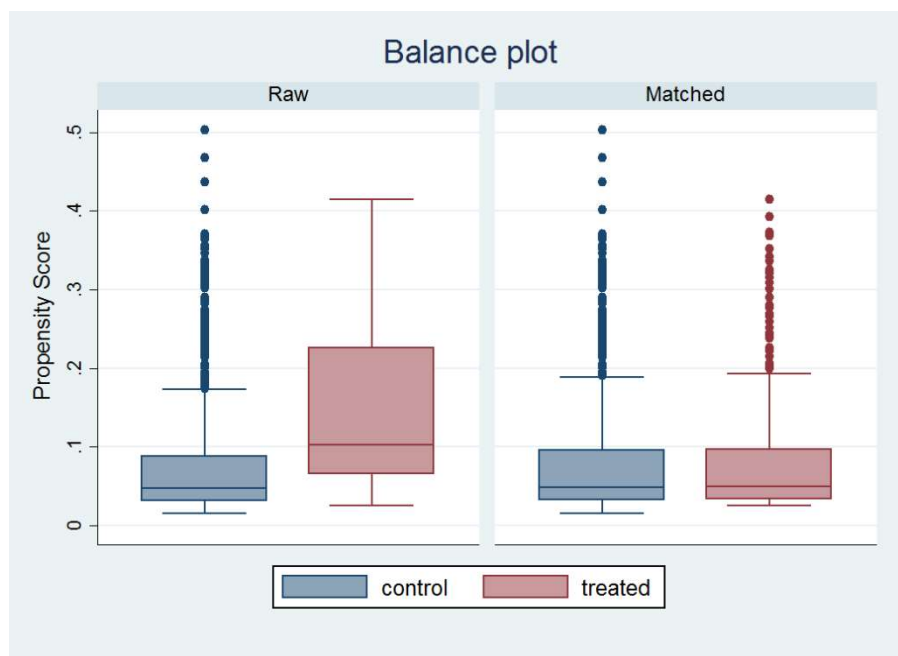
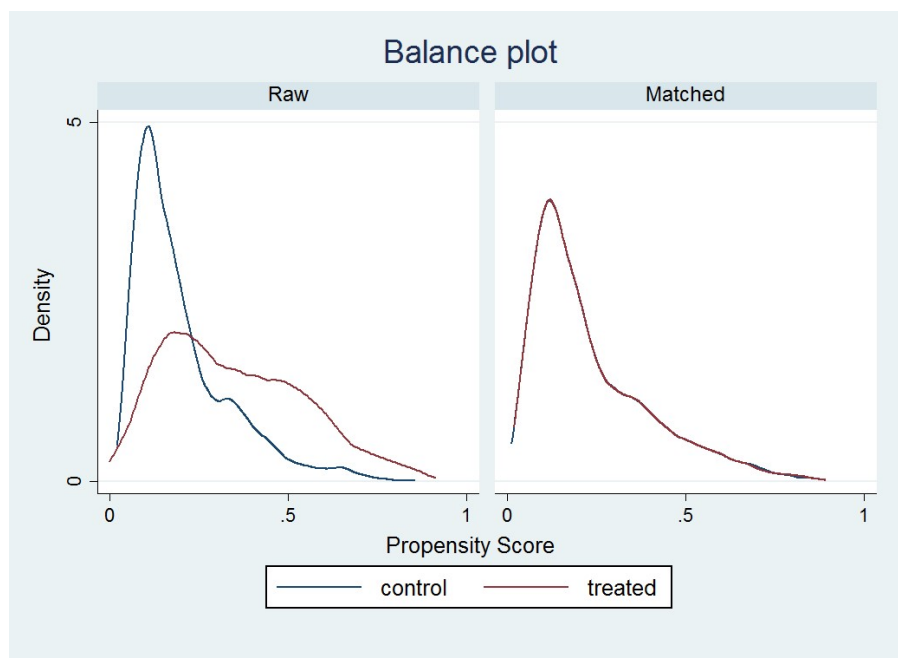
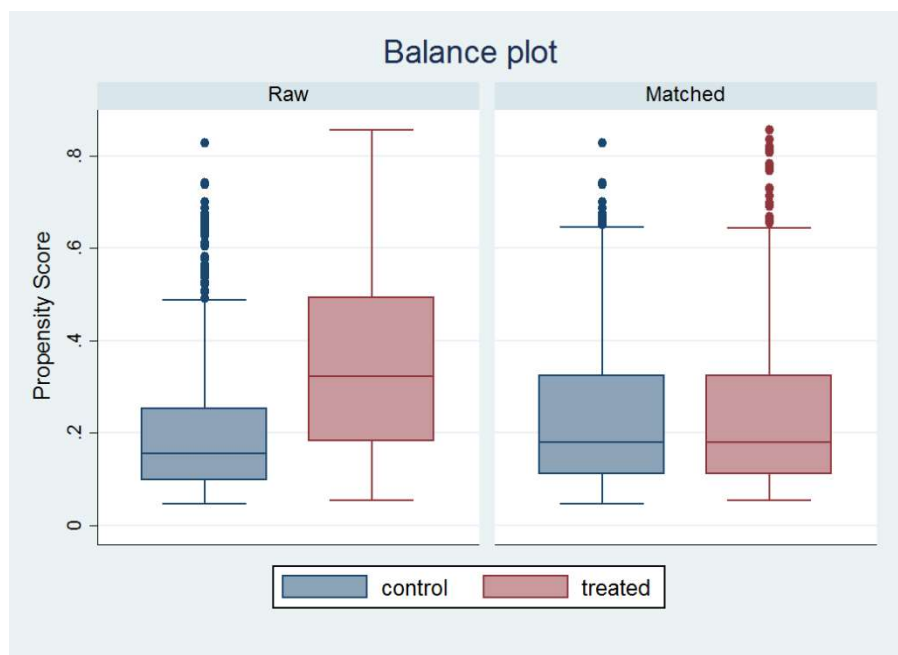


Figure A2. Box balance for very low food security treatment



**Figure A3. Overlap and density balance for housing insecurity treatment****Figure A4. Box balance for housing insecurity treatment**

## Appendix Tables

**Table A1. Sample characteristics and tests of external validity**

	<b>Full Study Sample</b>	<b>Survey Analytic Sample</b>	Test Full vs. Survey	<b>Alternative Academic Sample</b>	Test Survey vs. Academic	<b>Alternative Financial Aid Sample</b>	Test Survey vs. Financial Aid	Test Academic vs. Financial Aid
<b><i>Material Hardship</i></b>								
<b><i>Food Security</i></b>								
Low Food Security (%)	na	21.87		23.33		23.62		
Very Low Food Security (%)	na	7.94		7.36		7.54		
<b><i>Housing Security</i></b>								
Housing Insecure (%)	na	23.52		21.84	*	20.94	*	
<b><i>Long-term Outcome</i></b>								
Degree attainment or enrollment four years after initial college entry (%)	54.03	65.99	***	71.26	***	76.55	***	***
<b><i>Background Characteristics</i></b>								
<b><i>Childhood Poverty</i></b>								
Growing up, there was not enough to eat at home (%)	na	25.69		25.29		25.63		

Table A1 continued on next page.

Table A1 continued...

<b>Pre-College Finances</b>								
Unmet Need (\$)	na	na		na		8157.33		
Zero Expected Family Contribution (%)	40.74	35.13	***	31.03	***	29.15 <sup>a</sup>	***	†
Financially Independent (%)	17.61	5.54	***	4.14	**	3.52	**	
Simplified Needs Test (%)	64.25	58.35	***	54.71	***	52.26	***	*
<b>Pre-College Academics</b>								
ACT college entrance exam record (%)	na	65.17		100.00 <sup>a</sup>	***	100.00 <sup>a</sup>	***	
ACT Composite Score (mean)	na	na		21.23		21.63		***
<b>Initial College-Level Context</b>								
Two-year College Sector (%)	50.00	35.66	***	26.32	***	15.58	***	***
College Average Net Price (mean \$)	7807.37	9136.24	***	9487.79	***	9812.17 <sup>a</sup>	***	***
Pell Grant Recipients at College (mean %)	25.71	23.76	***	22.33	***	21.17	***	***
Community Poverty Rate (mean %)	11.54	11.81	***	11.83		11.79		
<b>Demographics</b>								
Female (%)	58.69	60.90	*	62.99	*	62.65		
Targeted Racial/Ethnic Minority (%)	na	25.54		23.10	**	23.62		
Parents have some college experience or higher (%)	na	58.20		59.08		58.29		
Parents Adjusted Gross Income (\$)	23220.1	27466.75	***	28549.38	**	29411.07	**	*
Immigrant Family (%)	na	14.76		14.02		13.90		
N	3000	1335		870		597		

Table A1 continued on the next page.

*Table A1 Notes.*

All samples are nested.

Material hardship questions are from a fall 2009 survey.

Degree and enrollment outcomes are from the National Student Clearinghouse.

Pre-college finances come from students' 2008 FAFSA with the exception of unmet need, which is from financial aid records

Pre-college academic information comes from ACT, Inc. and college administrative records.

Initial College-Level Context variables come from IpedS and the American Community Survey.

Demographics come from students' 2008 FAFSA, with the exception of race/ethnicity, parents' education, and immigrant status which come from survey data.

Statistical significance symbols: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

a Not included in regression models using this sample.

**Table A2. How material hardship affects later educational success using regression and quasi-experimental matching in alternative samples**

<i>Degree Attainment or Enrollment Four Years Post Matriculation</i>											
<i>Academic Sample</i>											
	Logit Model 1				Logit Model 2				Propensity Score Matching		
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test	"Average Treatment Effect"	se	test
<b>Food Security</b>											
Low Food Security	0.0193	0.0970	(0.187)		0.0099	0.0525	(0.209)				
Very Low Food Security	-0.0489	-0.2297	(0.285)		-0.0283	-0.1433	(0.315)		0.0000	(0.105)	
<b>Housing Security</b>											
Housing Insecure	-0.1818	-0.8275	(0.179)	***	-0.1096	-0.5379	(0.200)	**	-0.1851	(0.055)	**
Covariates included	No				Yes				Yes		

Table A2 continued on the next page.

Table A2 continued...

<b>Degree Attainment or Enrollment Four Years Post Matriculation</b>											
<b>Financial Aid Sample</b>											
	Logit Model 1				Logit Model 2				Propensity Score Matching		
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test	“Average Treatment Effect”	se	test
<b>Food Security</b>											
Low Food Security	-0.0228	-0.1324	(0.238)		-0.0102	-0.0639	(0.261)				
Very Low Food Security	-0.2164	-1.0289	(0.336)	**	-0.1520	-0.7855	(0.368)	*	-0.1390	(0.055)	*
<b>Housing Security</b>											
Housing Insecure	-0.1023	-0.5370	(0.234)	*	-0.0621	-0.3569	(0.255)		-0.1240	(0.062)	*
Covariates included	No				Yes				Yes		

**Notes.**

Academic Sample (N=870); Financial Aid Sample (N=597); Subsamples are nested in Survey analytic sample (N=1335).

Model 1 includes two predictors: food and housing security status.

Model 2 includes food and housing status and all covariates listed in Table A1. The Academic Sample allows for the inclusion of students' ACT score and the Financial Aid Sample also allows for the inclusion of individual-level unmet financial need.

Change in average marginal effects are reported (at means). Change in probability compared to food or housing secure status.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001



**Table A3. Tests of subgroup variation in the relationship between housing security status and later educational success**

	Coef.	se	test
<b><i>Food Security Status by Housing Security Status Interaction</i></b>			
Low Food Security # Housing Insecure	0.5165	(0.351)	
Very Low Food Security # Housing Insecure	0.6236	(0.488)	
Low Food Security	-0.1890	(0.201)	
Very Low Food Security	-0.6095	(0.335)	†
Housing Insecure	-0.5768	(0.207)	**
<b><i>Race/ethnicity by Housing Security Status Interaction</i></b>			
Racial/Ethnic Minority # Housing Insecure	-0.1288	(0.325)	
Racial/Ethnic Minority	0.0287	(0.209)	
Housing Insecure	-0.3067	(0.191)	
<b><i>Sex by Housing Security Status Interaction</i></b>			
Female # Housing Insecure	0.5010	(0.315)	
Female	0.3909	(0.156)	*
Housing Insecure	-0.6645	(0.256)	**
<b><i>Expected Family Contribution by Housing Security Status Interaction</i></b>			
Zero Dollar Expected Family Contribution # Housing Insecure	0.3006	(0.306)	
Zero Dollar Expected Family Contribution	-0.0801	(0.214)	
Housing Insecure	-0.4831	(0.210)	*
<b><i>Parental Educational Level by Housing Security Status Interaction</i></b>			
Parents have college experience # Housing Insecure	-0.4240	(0.301)	
Parents have some college experience or higher	0.1685	(0.157)	
Housing Insecure	-0.1242	(0.225)	

*Table A3 continued on the next page.*

Table A3 continued.

<b><i>Institutional Sector by Housing Security Status Interaction</i></b>			
Two-year College Sector # Housing Insecure	-0.0338	(0.303)	
Two-year College Sector	-1.4710	(0.203)	***
Housing Insecure	-0.3313	(0.219)	
<b><i>Institutional Share of Pell Grant Recipients by Housing Security Status Interaction</i></b>			
Share of Pell Grant Recipients # Housing Insecure	0.0117	(0.020)	
Share of Pell Grant Recipients at Institution	-0.0688	(0.013)	***
Housing Insecure	-0.6529	(0.535)	
<b><i>Community Poverty Rate by Housing Security Status Interaction</i></b>			
Community Poverty Rate # Housing Insecure	-0.0155	(0.049)	
Community Poverty Rate	0.0500	(0.029)	†
Housing Insecure	-0.1646	(0.598)	

Notes.

N=1335

Each block represents a separate regression analysis that tests one interaction term. The interaction term is represented with a # and the covariates included in the interaction term are also reported.

All regression analyses include the full set of covariates listed in Table A1.

Findings are robust across operationalization of parental education level and expected family contribution.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table A4. Tests of subgroup variation in the relationship between food security status and later educational success**

	Coef.	se	test
<b><i>Housing Security Status by Food Security Status Interaction</i></b>			
Housing Insecure # Low Food Security	0.5165	(0.351)	
Housing Insecure # Very Low Food Security	0.6236	(0.488)	
Housing Insecure	-0.5768	(0.207)	**
Low Food Security	-0.1890	(0.201)	
Very Low Food Security	-0.6095	(0.335)	†
<b><i>Race/ethnicity by Food Security Status Interaction</i></b>			
Racial/Ethnic Minority # Low Food Security	0.0954	(0.358)	
Racial/Ethnic Minority # Very Low Food Security	-0.3949	(0.497)	
Racial/Ethnic Minority	0.0101	(0.212)	
Low Food Security	-0.0675	(0.197)	
Very Low Food Security	-0.2095	(0.308)	
<b><i>Sex by Food Security Status Interaction</i></b>			
Female # Low Food Security	-0.0227	(0.333)	
Female # Very Low Food Security	0.9173	(0.487)	†
Female	0.4381	(0.162)	**
Low Food Security	-0.0215	(0.262)	
Very Low Food Security	-0.8423	(0.359)	*
<b><i>Expected Family Contribution by Food Security Status Interaction</i></b>			
Zero Dollar Expected Family Contribution # Low Food Security	-0.7015	(0.338)	*
Zero Dollar Expected Family Contribution # Very Low Food Security	-0.1562	(0.475)	
Zero Dollar Expected Family Contribution	0.1749	(0.216)	
Low Food Security	0.2228	(0.213)	
Very Low Food Security	-0.3178	(0.334)	

Table A4 continued on the next page.

Table A4 continued...

<b>Parental Educational Level by Food Security Status Interaction</b>			
Parents have college experience # Low Food Security	-0.0960	(0.325)	
Parents have college experience # Very Low Food Security	-0.2827	(0.472)	
Parents have some college experience or higher	0.1036	(0.162)	
Low Food Security	0.0188	(0.247)	
Very Low Food Security	-0.2107	(0.354)	
<b>Institutional Sector by Food Security Status Interaction</b>			
Two-year College Sector # Low Food Security	0.1347	(0.326)	
Two-year College Sector # Very Low Food Security	0.0161	(0.477)	
Two-year College Sector	-1.5131	(0.207)	***
Low Food Security	-0.0941	(0.218)	
Very Low Food Security	-0.3706	(0.327)	
<b>Institutional Share of Pell Grant Recipients by Food Security Status Interaction</b>			
Share of Pell Grant Recipients # Low Food Security	0.0176	(0.021)	
Share of Pell Grant Recipients # Very Low Food Security	-0.0093	(0.032)	
Share of Pell Grant Recipients at Institution	-0.0686	(0.013)	***
Low Food Security	-0.4705	(0.557)	
Very Low Food Security	-0.1278	(0.842)	
<b>Community Poverty Rate by Food Security Status Interaction</b>			
Community Poverty Rate # Low Food Security	0.0387	(0.058)	
Community Poverty Rate # Very Low Food Security	-0.1908	(0.075)	*
Community Poverty Rate	0.0578	(0.029)	*
Low Food Security	-0.4985	(0.700)	
Very Low Food Security	1.9281	(0.923)	*

**Notes.**

N=1335

Each block represents a separate regression analysis that tests an interaction term. The interaction terms are represented with a # and the covariates included in the interaction term are also reported.

All regression analyses include the full set of covariates listed in Table A1.

Findings are robust across operationalization of parental education level and expected family contribution.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

## CHAPTER FOUR

### An Extension of How Material Hardship Affects

#### College Academic Achievement and Attainment in the Short-term

Material hardship is the inadequate consumption of goods or services deemed necessary for decent human functioning. Each year, tens of thousands of college students report that they experience material hardships, including inadequate food and shelter. Their challenges fall on a spectrum, ranging from anxiety and worry over getting enough to eat or having a safe and secure place to stay to outright hunger and homelessness. While a growing body of evidence indicates that these hardships impede academic achievement among children, few studies have examined the relationship among college students. This paper extends the prior literature by investigating the associations between experiences of food and/or housing insecurity and short-term academic achievement and attainment among two samples of undergraduates.

#### **Background and Prior Literature**

Higher education leaders and practitioners argue that a lack of basic material needs impairs students' academic success. Some explain how stress and worry associated with material hardship impedes college success while others point to the logistical challenges of attending class while struggling to meet basic needs (e.g., Cady, 2014; Farahbakhsh et al., 2016; Goldrick-Rab, Broton & Gates, 2013, Silva et al., 2015). Indeed, studies of elementary and secondary students report that challenges related to a lack of adequate food and secure shelter independently reduce students' academic achievement, after accounting for background factors including family income (e.g., Alaimo 2005; Miller, 2011). In higher education, however, few studies have examined the relationship between material hardship and students' academic

performance. Excluding the prior chapter, just three U.S. studies have examined the association between food insecurity and college students' grade point average (GPA) in the concurrent semester and none have investigated the relationship between housing insecurity and academic achievement or attainment.

The only study of food insecurity and community college students' academic success was conducted by Maroto for her 2013 dissertation, and was later published with colleagues (Maroto, Snelling & Linck, 2014). The study includes a convenience sample of 301 students attending one of two community colleges in Maryland. Participants were recruited in person and asked to complete a 16-item questionnaire that included the 10-item Adult Food Security Survey Module, categorical GPA, and demographic characteristics including age, gender, race/ethnicity, income, single parent status, and living situation. According to U.S. Department of Agriculture (USDA) guidelines, 24% of respondents had high food security, 20% were marginally secure, 26% had low food security, and 30% had very low food security. In subsequent analyses, those who reported low or very low levels of food security are considered "food insecure." Results indicate that food insecurity is statistically associated with a 22% lower likelihood of having a high GPA (3.5-4.0) rather than a low GPA (2.0-2.49) ( $p < .05$ ).<sup>54</sup> Notably, this comparison only includes information from 85 respondents who reported a GPA in these ranges.<sup>55</sup> A chi-squared test including all GPA categories, including "don't know", did not indicate a statistically significant joint relationship with food security status. Moreover, food security status is not a statistically significant predictor of high GPA in a logistic regression that also includes background factors.

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<sup>54</sup> It is not clear if alternative definitions of "high" and "low" GPA were tested in the bivariate analysis or why these categories were selected.

<sup>55</sup> According to Maroto (2013), the categorical responses for current GPA at this community college were as follows: 2 students less than 2.0 (D/F average); 38 students 2.0-2.49 (C average); 92 students 2.5-2.9 (B/C average); 89 students 3.0-3.49 (B average); 47 students 3.5-4.0 (A/B average); 33 students don't know.

Thus, the study failed to isolate a statistically significant relationship between food security and GPA, net of students' background.

Patton-Lopez and colleagues (2014) investigated food insecurity among students attending a midsize rural university in Oregon. They administered an online survey that included the 6-item Food Security Survey Module and questions related to students' socioeconomic and demographic background. All university students were invited to participate in the study and 354 completed the survey for a 7% response rate. Among surveyed students, 59% reported marginal, low, or very low levels of food security according to USDA guidelines and 65% reported a 3.1 or higher GPA.<sup>56</sup> Rather than explicitly investigate the relationship between food security level and GPA, the authors sought to identify correlates or predictors of food insecurity. Results indicate that a 3.1 or higher GPA is inversely associated with food insecurity, even after controlling for background factors. Specifically, covariate-adjusted analyses indicate that students with a 3.1 or higher GPA are 60% less likely to be food insecure.

Morris and colleagues (2016) conducted the most recent study of the relationship between food insecurity and college GPA. They invited students attending one of four public universities in Illinois to complete an online questionnaire that included the 18-item Household Food Security Survey Module, categorical GPA, and sociodemographic characteristics. Of the more than 48,000 undergraduates invited to complete the survey, 1,882 responded for a response rate of nearly 4%. Across universities, 42% of respondents had high food security, 23% had marginal food security, 17% reported low food security, and 18% indicated very low food security. In additional analyses, the 35% of surveyed students who indicated low or very low levels of food security are considered "food insecure." Nearly three-quarters of students reported

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<sup>56</sup> No additional information about the food security or GPA measures or distributions was provided.

a 3.0 or higher GPA. According to a chi-squared test, food insecurity and GPA are statistically associated ( $p < .001$ ): students with a lower GPA (0-1.99) are less likely to have high food security and students with a higher GPA (over 3.0) are more likely to have high food security. The authors did not examine the relationship between food insecurity and GPA in a multivariable context.

Overall, all three studies report a statistically significant bivariate relationship between food insecurity and GPA in the concurrent semester. Two studies considered this relationship in a multivariable context; the study of four-year college students reported that the relationship remained statistically significant when additional background factors were taken in account and the study of two-year college students reported that the relationship became statistically insignificant in covariate-adjusted analyses. The extant research is decidedly mixed and has several limitations. First, the cross-sectional study designs and limited set of background factors do not allow for causal conclusions and limit the ability to isolate a potential relationship between food insecurity and GPA. For instance, none of the studies include a measure of prior academic achievement or preparation. Next, the studies use a self-reported measure of GPA, which may contain systematic measurement error. Even if the error is randomly distributed, however, it increases variance, which makes it more difficult to detect relationships (Cassady, 2001; Kuncel, Crede & Thomas, 2005). Finally, the studies rely on convenience samples that lack external validity and two of the studies have relatively small sample sizes (i.e., less than 400 respondents), which limits the power to detect relationships. This chapter contributes to the developing body of research in this area by addressing several of these limitations.



## Data and Empirical Approach

The current study examines the relationships between experiences of food and/or housing insecurity and short-term academic achievement and attainment using multivariable regression, which accounts for a robust set of background factors. The analyses utilize two study samples that include data from approximately 3,000 undergraduates attending 16 two- and four-year colleges in seven states. Both study samples include administrative reports of GPA. Like the prior literature, academic achievement is measured in the concurrent semester in the four-year student sample. However, the two-year student sample considers academic achievement in the semester following self-reported experiences of material hardship and credential attainment or enrollment one year later. Though the samples are not nationally representative, the use of multiple study samples aids in our understanding of these relationships in different contexts. Finally, adjusting for pre-college academic and sociodemographic characteristics likely reduces selection bias and helps to isolate the relationship between material hardship and academic success (Steiner, Cook, Shadish & Clark, 2010).

### Wisconsin STEM Study

The Wisconsin STEM Study includes 1,565 students who were randomly selected to participate in the study from a pool of eligible undergraduates. To be eligible for the study, students had to be Wisconsin residents in their first- or second-year of college at one of seven participating campuses of the University of Wisconsin system or three technical colleges in the state of Wisconsin;<sup>57</sup> indicate an interest in science, technology, engineering, or math (STEM);

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<sup>57</sup> The colleges include UW-Madison, UW-Milwaukee, UW-Eau Claire, UW-LaCrosse, UW-Platteville, UW-Stevens Point, UW-Stout, Milwaukee Area Technical College, Milwaukee School of Engineering, and Northcentral Technical College.

be college-ready in certain subjects like math;<sup>58</sup> be from a low- or moderate-income family within 200% eligibility of the Pell grant;<sup>59</sup> and have at least \$1,000 in unmet need. In spring 2015, the research team surveyed study participants about their college experiences, including challenges related to obtaining adequate food and housing, and 64% responded. Then, they linked students' survey data with students' spring 2015 college academic records.<sup>60</sup>

### *Analytic Sample*

The STEM analytic sample includes 843 four-year college students who took the ACT college entrance exam, completed the survey, consented to the linkage of their survey responses to their academic records, and were enrolled in spring 2015.<sup>61</sup> Nearly half of respondents are female and 80% identify as White, not Hispanic. According to University of Wisconsin-System policy, 17% identify as an underrepresented racial/ethnic minority including 5% Hispanic of any race, 2% African American, 2% Southeast Asian, 1% American Indian or Alaskan Native, and 7% multiracial.<sup>62</sup> Three-quarters come from families in which a parent earned a postsecondary certificate or higher and 44% have a parent who earned a bachelor's degree or higher. Their parents' average annual adjusted gross income is approximately \$52,800 and 22% come from

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<sup>58</sup> Four-year college students were deemed college-ready according to ACT scores (i.e., Math score of 22 or higher) while placement test scores were used to evaluate two-year college students' readiness.

<sup>59</sup> This corresponds to an expected family contribution of less than \$10,314.

<sup>60</sup> The most recent academic data available is for spring 2015, concurrent with students' reports of material hardship. The study team expects to follow students' academic trajectory through college.

<sup>61</sup> Note that GPA is conditional on enrollment. Thus, students who may have stopped or dropped out of college due to material hardship challenges are excluded from any analyses. Overall, 1,007 students responded to the survey for a 64% response rate. Given the relationship between prior academic achievement and college academic success, I limited the analytic sample to four-year college students, who have ACT exam scores on record. Thus, 113 two-year college students who participated in the survey are excluded from these analyses. Results including the 113 two-year students are substantively similar and available upon request.

<sup>62</sup> An additional 2% of students identify as Asian, except Southeast Asian and are not a targeted group according to this policy. Reports of specific racial/ethnic minority categories may not sum to 100% due to rounding error.

families that are not expected to financially contribute to their students' college costs. Moreover, 11% report that when they were growing up, their family was poor and struggled to pay the bills (Table 1).

Compared to the full study population, the analytic sample appears to be more advantaged on several measures. For example, their parents have a higher adjusted gross income, on average (\$52,800 vs. \$51,200) and are expected to contribute slightly more to support their students' college education (\$3,800 vs. \$3,600) ( $p < .05$ ). A greater share of students in the analytic sample identify as white (80% vs. 75%) or female (48% vs. 45%). By design, no students in the analytic sample attend a two-year college compared to 14% in the fully study sample and all have taken the ACT college entrance exam compared to just 85% of the full study sample ( $p < .001$ ) (Table A1). Nationally, the average ACT score is approximately 21, while the analytic sample scored 24.3, on average (ACT, Inc, n.d.).<sup>63</sup> These differences limit the external validity of the findings in relation to the full study sample. However, excluding the relatively small number of two-year college students enhances generalizability to the four-year institutional sector.

### ***Survey and administrative data measures***

Food insecurity is defined as limited or uncertain availability of nutritionally adequate and safe foods, or limited ability to acquire such foods in a socially acceptable manner (Anderson, 1990). It is measured using the 6-item Food Security Survey Module, which was designed, tested, and validated to produce unbiased estimates of food security and insecurity (Bickel et al., 2000). Respondents were asked if over the prior academic year:

- the food they bought just didn't last and they didn't have money to get more

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<sup>63</sup> Note that students had to score college-ready in Math (i.e., 22 or higher score) in order to be eligible for the STEM study.

- they couldn't afford to eat balanced meals
- they cut the size of meals or skipped meals because there wasn't enough money for food
  - if so, how often did this happen?
- they ate less than they felt they should because there wasn't enough money for food
- they were ever hungry but didn't eat because there wasn't enough money for food

Respondents are categorized as having high, marginal, low, or very low food security according to guidelines regarding the number of affirmative survey responses. This continuum represents food circumstances ranging from no food challenges at all to reduced food intake, which is often accompanied with hunger sensations. In-between these extremes, individuals worry about their food supply and change the quality, variety, or desirability of their diet.

The survey also includes questions about the security of students' living arrangements, assessing challenges with several forms of housing insecurity and homelessness over the past year. Specifically, I consider students who report one of the following as housing insecure: an inability to pay rent/mortgage on time, an inability to pay utilities on time, or had to move in with other people due to a lack of money. I define those who indicate that due to a lack of money, they were evicted for failure to pay rent/mortgage; stayed in a shelter; stayed in an abandoned building, car, or other place not meant for habitation; or did not know where they would sleep at night as experiencing homelessness.

The study also includes several background measures related to students' pre-college academic achievement, pre-college financial standing, and demographic characteristics. Specifically, college administrative records include a measure of students' ACT college entrance exam score. Students' sex, financial dependency status, expected family contribution (EFC), and unmet need come from the Free Application for Federal Student Aid (FAFSA). Students can be

considered financially independent for several reasons including if they are over age 23, married, have dependent children, are a veteran, or have extenuating circumstances such as being a homeless youth. The EFC is used to determine students' financial aid eligibility and takes into account family income, household size, and participation in means-tested public benefits programs. It is truncated at zero dollars, indicating that family is not expected to financially contribute toward the students' cost of college. Unmet need is the difference between the cost of attendance and students' financial aid offer, including EFC. Responses to survey questions indicate students' race/ethnicity and if growing up they were poor and struggled to pay the bills; poor, but had enough money to the bills; comfortable, neither poor nor wealthy; or wealthy.

The primary outcome of interest is mean cumulative grade point average on a 4-point scale. The measure comes from students' spring 2015 college transcripts and is conditional on enrollment. Given satisfactory academic progress (SAP) policies that indicate that a student must earn a 2.0 or higher GPA in order to remain in good academic and financial aid standing, I also create a binary measure of GPA based on this benchmark (Scott-Clayton & Schudde, 2016).

### **Healthy Minds Community College Study**

The 2015 Healthy Minds Community College Study (HMS) includes over 4,000 students who attended one of ten community colleges across seven states. In spring 2015, the research team invited students to complete an online survey regarding their college experiences, including challenges related to food and housing insecurity. In fall 2016, students' survey responses were linked to their academic records at the following nine colleges:

- Delgado Community College in Louisiana
- Montgomery County Community College in Pennsylvania
- State University of New York at Onondaga

- San Diego Community College District at Mesa, Miramar, City & Continuing Education, all in California
- Essex County College in New Jersey
- Moraine Park Technical College in Wisconsin

### *Analytic Sample*

The HMS analytic sample includes 2,151 students for which linked survey and administrative record data were available. This represents 4% of all students originally invited to participate in the online survey. Two-thirds of respondents in the analytic sample are female and the average age is 30 years. Slightly more than half (54%) identify as White, not Hispanic while 21% identify as Hispanic, 15% identify as African American, and 3% identify as American Indian. Almost one-third of respondents have children and two-thirds receive financial aid to help pay for college. Nearly one in three respondents report annual household incomes below \$20,000 while one in five report incomes of \$75,000 or greater. Forty-four percent come from families in which a parent earned an associate's degree or higher (Table 2).

Compared to national community college student characteristics, the HMS analytic sample has a greater share of females and is approximately two years older, on average. The racial/ethnic composition is similar (AACC, 2015). Six of the nine participating colleges have typical rates of poverty in their surrounding communities (e.g. around the national average of 16%), while Montgomery County and Moraine Park are in areas with lower-than-average rates of poverty (7 to 9%). Delgado Community College's county poverty rate is very high, at 27 percent.

### *Survey and administrative data measures*

In the HMS survey, food insecurity is also measured using the 6-item Food Security Survey Module and students are categorized as having high, marginal, low, or very low levels of food security over the prior academic year (Bickel et al., 2000). The survey also includes several measures related to students' housing challenges over the past year and an affirmative response to one or more indicates that a student is housing insecure. Specifically, the survey asked students to report if they had experienced any of the following due to resource limitations: difficulty paying rent, did not pay full amount of rent, did not pay full amount of utilities, moved two or more times, doubled up with another household, or moved in with others. Measures of homelessness include being formally evicted or informally thrown out of your home; staying in a shelter, abandoned building or other place not meant for human habitation; did not know where you would sleep at night; or did not have a home. Again, I categorized students who reported at least one affirmative response as homeless.

Background factors come from the same 2015 survey and include measures related to students' academic preparation, financial standing, family background, and demographic characteristics. Responses indicate if students were required to participate in developmental or remedial math and/or English courses when they started college. Students reported if they were a financial aid recipient and the household income of those with whom they share expenses. Additional background measures include sex, race/ethnicity, age, parental status, citizenship or residency status, and parents' highest education level.

The first academic outcome is mean cumulative GPA, which the study team collected from students' academic transcripts one semester after the survey was administered.

Additionally, I create a binary measure of GPA that indicates if students' earned a 2.0 or greater

GPA given satisfactory academic progress policies. Additionally, I use college administrative records to determine if students earned a credential or are still enrolled one year after the survey was administered.<sup>64</sup> This attainment or persistence measure provides insights into the longer-term relationships between experiences of food and/or housing insecurity and college completion.

### **Analytic Plan**

For each sample, I describe the share of students who report food and housing insecurity challenges and examine how food and housing insecure students differ from their peers on observable background measures. Next, I report the academic outcomes by food and housing security status and test for statistically significant differences using a chi-squared test for categorical variables and a one-way ANOVA for continuous variables.

Next, I predict academic achievement and attainment using food and housing insecurity status independently and then jointly as my predictors of interest:<sup>65</sup>

$$y_i = \alpha + \beta_1(\text{Food Status}_i) + \varepsilon_i \quad (\text{Model 1})$$

$$y_i = \alpha + \beta_1(\text{Housing Status}_i) + \varepsilon_i \quad (\text{Model 2})$$

$$y_i = \alpha + \beta_1(\text{Food Status}_i) + \beta_2(\text{Housing Status}_i) + \varepsilon_i \quad (\text{Model 3})$$

Ordinary least squares regression is used to predict continuous outcome measures, including mean GPA, while logistic regression is used to predict dichotomous outcomes, including SAP GPA and if students are enrolled or have earned a credential. Then, I add a vector of control variables,  $X_i$ , described above and included in the notes of each table, to reduce selection bias:

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<sup>64</sup> Though I use the generic term credential, almost all of the credentials earned over this time period are Associate's Degrees.

<sup>9</sup> Note that due to the small number of homeless students in the STEM sample (N=15), I combine the categories of housing insecurity and homelessness in all regression analyses. As a sensitivity check, I ran all models with housing insecurity (without homelessness) and homelessness as two separate categories and results are substantively similar.



$$y_i = \alpha + \beta_1(\text{Food Status}_i) + \beta_2(\text{Housing Status}_i) + \gamma X_i + \varepsilon_i \quad (\text{Model 4})$$

Covariate selection was theoretically informed and tested for model fit. For the logistic regression analyses, I report the logit coefficient and the change in predicted probability using Stata's *margins* command to aid in interpretation.

### **Limitations**

There are several limitations in this study. The samples are not nationally representative, limiting the generalizability of findings. Although the analyses take into account several correlated factors, the results should be interpreted as associational. Also, the four-year study sample has a cross-sectional design, limiting our understanding the relationship between hardship and academic success over time. The two-year study sample examines academic success after one semester or one year; longer term outcomes are not available.

### **Findings**

#### **Experiences of food and housing insecurity among college students**

In both samples, over half of undergraduates report some level of food insecurity while rates of housing insecurity vary across samples. Specifically, 41% of STEM students indicate a high level of food security, 10% are marginally food secure, 24% have low food security, and 25% report very low levels of food security. In addition, 10% report some form of housing insecurity, including 2% who are experiencing or recently experienced some form of homelessness.<sup>66</sup> In the HMS sample, 46% of surveyed students report high food insecurity, 13% have marginal food security, 20% indicate low levels of food security, and 22% have very low food security. Similarly, 56% of community college students are housing insecure, including

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<sup>66</sup> Due to the small number of homeless four-year college students in the STEM analytic sample (N=15), all regression analyses combine housing insecurity and homelessness into a single category. Sensitivity analyses that kept housing insecure (without homelessness) and homelessness as two separate categories are substantively similar.

13% who are or recently were homeless. In both samples, students who report food insecurity challenges are more likely to also report housing challenges and students who report housing challenges are also more likely to indicate food insecurity problems ( $p < .001$ ) (Tables 1-2).

Students who report material hardship challenges differ from their materially secure peers on several background characteristics, including many that covary with academic success. In the STEM sample, for example, nearly 1 in 5 undergraduates with very low food security report that growing up, their family was poor and struggled to pay the bills compared to 1 in 20 of those with high food security ( $p < .001$ ). Similarly, more than 1 in 4 homeless students grew up in a poor family that struggled to pay the bills compared to just 1 in 10 housing secure students ( $p < .001$ ). Students with food or housing insecurity challenges have lower expected family contributions, on average, indicating fewer financial resources ( $p < .10$ ). In comparison to their food secure peers, those with low or very low levels of food insecurity also have larger average amounts of unmet financial need (\$4700 vs. \$5800 and \$6300) ( $p < .001$ ). Students who are housing insecure without homelessness have the highest amount of unmet financial need (\$7900), while those who identify as homeless have a smaller amount of unmet need (\$4900) than housing secure students (\$5100) ( $p < .001$ ). Students with high or marginal levels of food security scored about one point higher on the ACT than those with low or very low levels of food security (24.8 vs 23.9 and 23.7) ( $p < .001$ ). Homeless students have the highest average ACT score (25.9) followed by housing secure (24.4) and housing insecure students (23.6) ( $p < .05$ ). Food and housing insecure students are less likely to identify as white, non-Hispanic and more likely to be female ( $p < .05$ ) (Table 1).

These patterns of material hardship by background characteristics are similar in the HMS sample. In addition, community college students who report food or housing challenges are

more likely to receive financial aid than their materially secure peers. Approximately three-quarters of students with low food or housing security are financial aid recipients compared to roughly 60% of students who are food or housing secure ( $p < .001$ ). A greater share of food or housing insecure students report that they were required to take developmental or remedial math or English courses when they started college ( $p < .001$ ). For example, approximately 1 in 3 students with food or housing insecurity were required to enroll in developmental English compared to 1 in 5 materially secure students ( $p < .001$ ). Finally, there is no evidence that food or housing insecurity status statistically varies by citizenship or permanent residency status ( $p > .10$ ) (Table 2).

### **Material hardship and short-term academic achievement**

Food and housing insecurity are both independently associated with mean GPA in the short-term. In the STEM sample, students with high food security earned a 3.10 GPA, on average, while those with very low food security earned a 2.89 average GPA ( $p < .01$ ). Similarly, housing secure STEM students had a 3.03 average GPA while those who are housing insecure or homeless earned a 2.67 and 2.80 GPA, respectively ( $p < .001$ ) (Table 1). Results from the HMS sample are substantively and statistically similar. Students with high food security earned a 3.08 average GPA while those with very low food security earned a 2.94 GPA, on average ( $p < .05$ ). Finally, housing secure HMS students had a 3.09 GPA whereas housing insecure or homeless students had a 3.01 and 2.93 GPA, respectively ( $p < .05$ ) (Table 2).

Students often report struggling with both food and housing insecurity, however, and these independent associations do not account for multiple hardship experiences. When both types of hardship are considered together, results from the STEM sample indicate that each type of hardship remains statistically significant, though the magnitude is reduced. Net of housing

status, a change from food secure to low or very low food security is associated with a 0.18 and 0.15 reduction in mean GPA, respectively ( $p < .05$ ). Marginal food security is not a statistically significant predictor. Similarly, a change in housing status from secure to insecure (with or without homelessness) is associated with a 0.29 lower GPA, after accounting for food status ( $p < .001$ ) (Table 3). In the HMS sample, however, neither food nor housing insecurity is a statistically significant predictor of mean GPA when both are considered. Low and very low levels of food security as well as housing insecurity and homelessness have statistically insignificant negative relationships with mean GPA ranging from -0.05 to -0.11 ( $p > .10$ ) (Table 4).

***Relationship between material hardship and academic achievement in a multivariable context***

Students who report food and/or housing insecurity challenges typically have poorer academic outcomes, but they also differ from their peers in several important ways related to sociodemographic background and academic preparation. Thus, these differences in academic success by material hardship level may result from other associated factors and characteristics, rather than food or housing challenges. After accounting for pre-college factors including academic preparation, demographic characteristics, and family background, experiences of material hardship, and particularly housing insecurity, are statistically associated with poorer academic achievement.

In the STEM sample, a change from housing secure to insecure status (with or without homelessness) is associated with a 0.25 lower average GPA, after accounting for background factors including ACT score and pre-college financial standing ( $p < .001$ ). Covariate-adjusted analyses also indicate that a change from high to low food security is marginally associated with a 0.12 reduction in GPA ( $p < .10$ ). Marginal and very low food security levels are not statistically

significant predictors though the relationships to GPA are in the expected negative direction ( $p > .10$ ) (Table 3). In the HMS sample, a change from housing secure status to homelessness is marginally associated with a 0.14 lower GPA, after accounting for pre-college background factors ( $p < .10$ ). Food insecurity nor housing insecurity (without homelessness) predict mean GPA at traditional significance levels (Table 4).

### **Material hardship and satisfactory academic progress GPA benchmark**

There is limited evidence of a relationship between material hardship status and earning a 2.0 or higher GPA, which is often necessary for good academic and financial aid standing. In the STEM sample, 93% of housing secure students earned a minimally sufficient GPA compared to 87% of homeless students and 82% of housing insecure students ( $p < .05$ ). The joint relationship between food security level and minimally sufficient vs. low GPA is not statistically significant according to a chi-squared test, but low food security status is a statistically significant predictor of earning a 2.0 or higher GPA in a logistic regression where high food security is the reference group ( $p < .05$ ). Just 88% of STEM students with low food security earned a 2.0 or greater GPA compared to 94% of students with high food security (Tables 1, 5). However, results from chi-squared tests and logistic regressions do not provide evidence of a statistically significant or substantially meaningful relationship between food or housing status and earning a 2.0 or higher GPA in the HMS sample. Across food and housing levels, 91-92% of surveyed HMS students earned a minimally sufficient GPA (Table 2, 6).

When both food and housing security status are used to predict earning a 2.0 or greater GPA, the findings are statistically and substantively similar to the bivariate analyses. In the STEM sample, a change from high to low food security status is associated with a 5.5 percentage point decline in the probability of earning a 2.0 or higher GPA, net of housing status ( $p < .05$ ).

Similarly, a change from housing secure to insecure status (with or without homelessness) is associated with a 9.7 percentage point lower probability of having a 2.0 or higher GPA, net of food status ( $p < .01$ ). Other levels of food insecurity are associated with lower probabilities of earning a minimally sufficient GPA that are substantively small and statistically insignificant ( $p > .10$ ) (Tables 5). In the HMS sample, neither food nor housing insecurity is a statistically or substantively significant predictor of earning a 2.0 or higher GPA ( $p > .10$ ) (Table 6).

Finally, I account for pre-college background factors in the relationship between material hardship and meeting the SAP GPA benchmark. In the STEM sample, a change from housing secure to insecure status (with or without homelessness) is associated with a 6.8 percentage point decline in the probability of earning a 2.0 or higher GPA, net of background factors ( $p < .05$ ). Food insecurity is inversely related with a minimally sufficient GPA, but the association is not statistically significant in covariate-adjusted analyses. For example, a change from high to low food security status is associated with a 3.5 percentage point lower probability of earning a 2.0 or higher GPA, after accounting for background factors ( $p > .10$ ) (Table 5). Again, there is no evidence of a statistically significant or substantively meaningful relationship between material hardship and earning a 2.0 or greater GPA in the HMS sample. For example, adjusted results indicate that a change from high to very low food security status is associated with a 2.2 percentage point decline in the probability of earning a 2.0 or higher GPA ( $p > .10$ ) (Table 6).

### **Material hardship and attainment or persistence one year later**

Finally, rates of attainment or enrollment statistically vary by housing security level, but there is no evidence of such variation by food security level, in the HMS sample. According to a chi-squared test, there is a statistically significant joint relationship between housing status and later attainment or enrollment; just 59% of homeless students earned a degree or persisted one

year later compared to 64% of housing secure and 67% of housing insecure students ( $p < .05$ ) (Table 2). However, neither housing insecurity nor homelessness status is a statistically significant predictor of attainment or enrollment when compared to housing secure status (Table 7).<sup>67</sup> Although there is not a statistically significant joint relationship between food security status and later attainment or enrollment as tested by a chi-squared, low food security status is a marginally significant predictor in logistic regressions when the reference group is high food security ( $p < .10$ ). That is, 64% of students with high food security, 65% with marginal food security, 69% with low food security and 63% with very low food security had earned a degree or persisted one year after reporting their hardship status (Tables 2, 7). While the high rate of success among those with low food security or housing insecurity may be counterintuitive, note that these gaps do not account for compositional differences in subgroups. These independent relationships are consistent when both food and housing insecurity status are considered in the prediction of later attainment or enrollment (Table 7).

When background factors, including demographic characteristics, household income and prior academic achievement, are adjusted for in the analysis, homelessness is a statistically significant predictor of later credential attainment or persistence. A change from housing secure to homelessness status is associated with an 8.1 percentage point decline in the probability of earning a credential or being enrolled one year later, net of background characteristics ( $p < .05$ ). The second largest predictor is very low food security status, which is associated with a 3.8 percentage point adjusted lower probability, though the relationship is not statistically significant ( $p > .10$ ). Analyses indicate that food and housing insecurity (without homelessness) are not

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<sup>67</sup> This is likely because the highest rate of educational attainment or persistence is among housing insecure students (67%). While counterintuitive, this is likely because of the disproportionate representation of certain groups in each housing level. For example, women are overrepresented in the housing insecure group and have higher rates of college attainment, on average (Table 2).

statistically significant predictors of attainment or persistence once other factors are considered. Notably, the marginally significant positive association between low food security status and attainment or persistence in earlier analyses approximates zero and become statistically insignificant once background factors are considered (Table 7).

### **Discussion**

This paper contributes to the small, but growing, body of research examining the relationships between experiences of food and/or housing insecurity and college students' academic success. Findings indicate that food and housing insecurity are independently associated with poorer average academic achievement though later credential attainment or persistence only statistically varies by housing status. In the four-year student sample, food and housing security status are also associated with earning a 2.0 or higher GPA. After accounting for pre-college factors, however, only experiences of housing insecurity, including homelessness, are negatively associated with students' academic achievement and attainment in the short-term.

Specifically, challenges with housing insecurity or homelessness are associated with lower cumulative GPAs in both samples. After adjusting for pre-college academic, financial and demographic characteristics, housing insecure status (with or without homelessness) is statistically associated with a one-quarter grade lower GPA in the four-year college student sample while homeless community college students have a marginally significant -0.14 lower GPA, on a four-point scale. Thus, the magnitude of the inverse relationship is nearly twice as large in the four-year student sample. This sample is limited to relatively high achieving four-year college students and includes a measure of GPA in the concurrent semester whereas community college students' GPA was measured one semester later.



Additionally, housing insecurity (with or without homelessness) is inversely associated with earning a minimally sufficient GPA in the four-year student sample. Once background factors are considered, housing insecure status is statistically associated with a 6.8 percentage point lower probability of earning a 2.0 or higher GPA. Since this grade-point benchmark is often necessary to remain in good academic standing and receive need- and merit-based financial aid, it can have serious implications for students' academic progress in college. Research indicates that failure to meet satisfactory academic progress negatively impacts college persistence (Scott-Clayton & Schudde, 2016).

The community college sample also allows for the examination of credential attainment or persistence one year after students reported their material hardship challenges. Again, covariate-adjusted analyses indicate that a change from housing secure to homelessness status is statistically associated with an 8.1 percentage point decline in the probability of later attainment or enrollment. Though I am unable to examine attainment among the four-year student sample in this chapter, results from the prior chapter are very similar. Specifically, housing insecure students are 7.6 percentage points less likely to have earned a degree or be enrolled four years after initial college entry.<sup>68</sup> The students in that analysis are primarily four-year students from low-income families in Wisconsin, suggesting that the relationship between housing insecurity and academic attainment or persistence may be relatively consistent across contexts.

Food insecurity is independently associated with poorer average academic achievement in both samples, but once pre-college factors are considered, the magnitude of the relationship is reduced and becomes statistically insignificant at traditional levels. In the four-year student

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<sup>68</sup> Note that the 7.6 percentage point estimate results from the multivariable logistic regression. Estimates from the propensity score matching analysis are slightly larger. The analyses in the prior chapter only included a measure of housing insecurity; that survey did not include questions about homelessness.

sample, however, covariate-adjusted analyses indicate that low food security status is marginally associated with a 0.12 lower mean GPA. In the community college sample, there is no evidence of a statistically significant relationship between food security and academic success once students' pre-college factors are considered. Similar to the prior literature, analyses adjusted for background characteristics suggest an inverse relationship between food insecurity and academic achievement among four-year college students, but not among two-year college students (Maroto et al., 2014; Patton-Lopez et al., 2014).

The use of multiple analytic samples aids in our understanding of the relationships between food and/or housing insecurity and college academic success across contexts. Though the two samples differ along several dimensions including institutional sector, geographic location, and prior academic preparation, the housing results were relatively consistent. Housing insecurity or homelessness is negatively associated with academic success across samples with one exception: there is no evidence that the probability of earning a 2.0 or higher GPA statistically varies by housing or food status in the community college sample. This may be because the majority of students reached this minimally sufficient academic benchmark or perhaps they are unaware of the cutoff, limiting the ability to make strategic decisions (Wisconsin HOPE Lab, 2015).

The relationship between food status and academic success is more variable, suggesting that context may be a particularly important consideration in future studies. There could be several reasons why the analyses failed to isolate a statistically significant relationship between food insecurity and academic success, especially in the community college sample. On one hand, experiences of food insecurity are often intermittent and associated with conditions of poverty more broadly, which makes it empirically difficult to untangle (Miller, 2011; RTI International,

2014). On the other hand, some undergraduates face multiple substantial challenges related to work and family responsibilities as well as low levels of academic preparation. In this context, food security may be an important, but insufficient, factor for college success. Certainly, students who enroll in college in the face of material hardship challenges may be particularly dedicated and motivated to succeed. If food insecure students currently match the academic success of their food secure peers while struggling to make ends meet, efforts to reduce hunger may yield positive academic impacts. Additional research is needed to test potential interventions and improve our understanding of the role that basic needs insecurities play in college academic achievement and attainment.

## Tables

**Table 1. Wisconsin STEM Study: Student characteristics and outcomes according to material hardship status**

	Analytic Sample	Food Security Level					Housing Security Level			
		High Food Security	Marginal Food Security	Low Food Security	Very Low Food Security		Housing Secure	Housing Insecure	Homeless	
<b><u>Material Hardship</u></b>										
<b><u>Food Security</u></b>										
High Food Security (%)	41.3	100.0	0.0	0.0	0.0		44.0	15.2	13.3	
Marginal Food Security (%)	10.0	0.0	100.0	0.0	0.0	***	10.4	4.6	13.3	***
Low Food Security (%)	23.5	0.0	0.0	100.0	0.0		24.0	19.7	13.3	
Very Low Food Security (%)	25.3	0.0	0.0	0.0	100.0		21.5	60.6	60.0	
<b><u>Housing Security</u></b>										
Housing Secure (%)	90.4	96.6	94.1	92.4	77.0		100.0	0.0	0.0	
Housing Insecure (not homeless) (%)	7.8	2.9	3.6	6.6	18.8	***	0.0	100.0	0.0	***
Homeless (%)	1.8	0.6	2.4	1.0	4.2		0.0	0.0	100.0	
<b><u>Outcomes</u></b>										
Mean GPA	3.00	3.10	3.06	2.90	2.89	**	3.03	2.67	2.80	***
2.0 or greater GPA (%)	91.6	93.7	92.9	87.9	91.1		92.5	81.8	86.7	**
<b><u>Background characteristics</u></b>										
<b><u>Growing up, we were:</u></b>										
Poor and struggled to pay bills (%)	11.0	4.6	11.9	13.6	18.8		9.8	21.2	26.7	
Poor, but had enough to pay bills (%)	25.2	20.1	22.6	23.7	35.7	***	24.7	30.3	26.7	*
Comfortable, neither poor nor wealthy (%)	63.0	74.1	64.3	61.6	45.5		64.6	48.5	46.7	
Wealthy (%)	0.8	1.2	1.2	1.0	0.0		0.9	0.0	0.0	

Table 1 continued on next page.

Table 1 continued...

<b>Pre-College Finances</b>										
Average Expected Family Contribution (\$)	3845	4244	3772	3547	3497	*	3926	3143	2800	†
Zero Expected Family Contribution (%)	21.5	17.8	25.0	21.7	25.8		20.0	33.3	46.7	
Pell Eligible (0<EFC<=5157) (%)	40.5	40.8	38.1	42.9	38.5		41.3	34.9	20.0	*
Pell Ineligible (EFC>5157) (%)	38.1	41.4	36.9	35.4	35.7		38.7	31.8	33.3	
Unmet Need (\$)	5306	4718	3877	5824	6347	***	5086	7944	4860	***
Financially Independent (%)	3.0	2.0	1.2	4.6	3.8		2.5	6.1	13.3	*
<b>Pre-College Academics</b>										
ACT composite score (mean)	24.3	24.8	24.8	23.9	23.7	***	24.4	23.6	25.9	*
<b>Institutional Sector</b>										
Four-year College Sector (%)	100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	
<b>Race/Ethnicity</b>										
White, not Hispanic (%)	80.4	85.3	85.7	78.8	71.8	**	81.6	68.2	73.3	*
Asian, except Southeast Asian (%)	2.3	na								
Underrepresented Racial/Ethnic Minority (%)	16.5	11.2	9.5	19.7	24.9	***	15.0	31.8	26.7	**
African American (%)	2.3	na								
Hispanic (%)	4.5	na								
American Indian or Alaskan Native (%)	0.6	na								
Southeast Asian (%)	1.9	na								
Two or more races (%)	7.2	na								

Table 1 continued on next page.

Table 1 continued...

<b>Demographics and Family Background</b>										
Female (%)	47.9	45.4	38.1	50.5	53.5	†	46.7	60.6	53.3	†
Parent has a postsecondary certificate or higher (%)	74.6	76.1	71.3	74.2	73.8		74.9	68.3	85.7	
Parent has a bachelor's degree or higher (%)	43.8	43.1	48.1	44.3	42.7		44.1	46.8	14.3	†
Parents' Adjusted Gross Income (\$)	52798	54620	52409	52422	50252		53062	51807	43150	
Students' Adjusted Gross Income (\$)	3110	3212	3045	2811	3247		2966	4251	5407	**
N	843	348	84	198	213		762	66	15	

**Notes.**

GPA is the reported cumulative GPA from students' academic transcript records.

Material hardship questions are from a spring 2015 survey.

Pre-college finances come from students' 2014 FAFSA.

Pre-college academic information comes from college administrative records.

Demographics come from students' 2014 FAFSA, with the exception of race/ethnicity which come from survey data. Race/ethnicity may not sum to 100% due to round error. NA – not available due to small cell size.

Chi square test of statistical significance used to test the relationship between hardship and categorical variables.

One-way ANOVA used to test the relationship between hardship and continuous variables.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 2. *Healthy Minds Study*: Student characteristics and outcomes according to material hardship status**

	Analytic Sample	Food Security Level					Housing Security Level			
		High Food Security	Marginal Food Security	Low Food Security	Very Low Food Security		Housing Secure	Housing Insecure	Homeless	
<b><u>Material Hardship</u></b>										
<b><i>Food Security</i></b>										
High Food Security (%)	45.6	100.0	0.0	0.0	0.0		68.0	31.5	16.2	
Marginal Food Security (%)	12.5	0.0	100.0	0.0	0.0	***	11.7	13.8	11.0	***
Low Food Security (%)	20.3	0.0	0.0	100.0	0.0		13.7	26.0	23.9	
Very Low Food Security (%)	21.6	0.0	0.0	0.0	100.0		6.7	28.7	48.9	
<b><i>Housing Security</i></b>										
Housing Secure (%)	43.8	65.4	40.9	29.5	13.6		100.0	0.0	0.0	
Housing Insecure (not homeless) (%)	43.5	30.1	48.0	55.6	57.9	***	0.0	100.0	0.0	***
Homeless (%)	12.7	4.5	11.2	14.9	28.6		0.0	0.0	100.0	
<b><u>Outcomes</u></b>										
Mean GPA	3.03	3.08	3.12	3.00	2.94	*	3.09	3.01	2.93	*
2.0 or greater GPA (%)	91.8	92.1	91.8	92.3	90.5		91.2	92.1	92.3	
Credential attainment or enrollment (%)	64.9	64.0	64.7	68.9	63.2		64.2	67.3	59.2	*
<b><u>Background characteristics</u></b>										
Female (%)	67.8	64.8	72.1	70.0	69.5	*	62.4	73.9	65.4	***
Age (mean)	30.0	31.8	28.1	28.1	28.8	***	30.4	29.7	29.2	
Have children (%)	28.5	32.2	20.1	24.7	29.0	***	28.2	29.6	25.7	
US Citizen or Permanent Resident (%)	97.0	97.0	98.1	95.9	97.4		97.0	97.2	96.3	
Financial aid recipient (%)	68.2	59.8	71.4	77.6	75.3	***	59.2	75.0	76.1	***

Table 2 continued on next page.

Table 2 continued...

<b>Household income</b>									
Less than \$5,000 (%)	9.7	6.6	8.9	12.8	13.6		6.5	10.4	18.4
\$5,000-\$9,999 (%)	5.7	4.2	6.0	7.1	7.5		2.1	7.3	12.9
\$10,000-\$14,999 (%)	8.7	6.3	6.0	7.8	16.1		6.5	9.9	12.1
\$15,000-\$19,999 (%)	7.2	5.0	10.0	8.2	9.0		5.2	9.2	7.0
\$20,000-\$24,999 (%)	6.9	4.9	8.6	8.9	8.4		4.7	8.7	8.8
\$25,000-\$29,999 (%)	6.6	5.5	7.1	7.6	7.7	***	6.5	6.5	7.4
\$30,000-\$39,999 (%)	9.9	8.7	8.2	12.1	11.4		8.0	12.1	9.2
\$40,000-\$49,999 (%)	8.3	7.6	11.5	8.2	8.0		7.2	9.9	6.3
\$50,000-\$59,999 (%)	7.8	9.1	9.7	5.7	6.0		9.1	7.1	5.9
\$60,000-\$74,999 (%)	8.7	10.0	8.6	9.6	5.0		11.4	7.6	2.9
\$75,000-\$99,999 (%)	9.2	13.4	9.7	5.5	3.4		14.1	5.5	4.8
\$100,000 or more (%)	11.4	18.8	5.9	6.4	3.9		18.9	6.0	4.4
<b>Parents' Highest Education level</b>									
Less than high school diploma (%)	12.3	10.3	14.1	14.7	13.1		9.7	14.2	14.7
High school diploma (%)	22.6	21.2	23.1	22.7	25.4		20.6	23.4	27.2
Some college, no degree (%)	20.8	20.0	20.1	22.7	21.3	**	20.6	20.6	22.4
AA degree (%)	11.0	9.8	10.0	11.9	13.1		10.2	11.9	10.7
BA degree (%)	20.6	24.7	22.7	16.7	14.4		26.1	16.5	15.8
Graduate degree (%)	12.7	14.0	10.0	11.4	12.7		12.9	13.5	9.2
<b>Pre-College Academics</b>									
Developmental Math required	39.1	33.8	37.9	44.4	46.0	***	30.7	46.3	43.8
Developmental English required	28.0	20.9	29.7	36.4	34.2	***	20.9	33.4	34.2

Table 2 continued on next page.



Table 2 continued...

<b>Race/Ethnicity</b>										
White, not Hispanic (%)	53.7	59.6	53.2	44.9	49.7	***	60.7	49.3	44.5	***
Asian, except Southeast Asian (%)	6.7	6.7	6.0	6.4	7.3		7.5	6.1	5.9	
Underrepresented Racial/Ethnic Minority (%)	41.9	34.9	42.0	50.3	48.8	***	34.3	47.0	51.1	***
African American (%)	14.8	10.2	13.8	18.5	21.5	***	9.1	18.4	22.1	***
Hispanic (%)	20.6	18.7	20.1	25.4	20.7	*	17.1	23.0	25.0	**
American Indian (%)	2.6	1.6	1.9	3.0	4.7	**	1.8	2.7	5.2	**
Pacific Islander (%)	2.9	2.9	3.7	2.1	3.2		3.0	3.1	1.8	
Southeast Asian (%)	4.0	4.0	5.6	4.1	2.8		5.0	3.6	1.5	*
<b>Community College</b>										
Delgado (%)	7.9	na					na			
Essex (%)	9.5	na					na			
Montgomery (%)	11.9	na					na			
Moraine (%)	11.2	na					na			
Onondaga (%)	11.6	na					na			
San Diego Community College - City (%)	14.5	na					na			
San Diego Community College - Continuing Education (%)	6.5	na					na			
San Diego Community College - Mesa (%)	13.6	na					na			
San Diego Community College -Miramar (%)	13.3	na					na			
N	2151	980	269	437	465		943	936	272	

Table 2 continued on next page.

*Table 2 Notes.*

GPA is the reported cumulative GPA from students' college records for those enrolled in fall 2016.

Enrollment and credential outcomes are from college records as of spring 2016. Almost all credentials are Associate's Degrees.

Material hardship and background questions are from a spring 2015 survey.

Race/ethnicity may not sum to 100% because respondents could select multiple responses. Underrepresented minorities include those who selected African American, Hispanic, American Indian, Pacific Islander or Southeast Asian.

na - Not available; material hardship is not disaggregated by community college due to IRB reporting requirements.

Chi square test of statistical significance used to test the relationship between hardship and categorical variables.

One-way ANOVA used to test the relationship between hardship and continuous variables.

Statistical significance symbols: †  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

**Table 3. Wisconsin STEM Study: Relationship between material hardship and mean GPA in a multivariable context**

<i>Mean GPA Same Semester as Hardship Report</i>												
	Regression Model 1			Regression Model 2			Regression Model 3			Regression Model 4		
	Coef.	se	test	Coef.	se	test	Coef.	se	test	Coef.	se	test
<b>Food Security</b>												
Marginal Food Security	-0.0409	(0.088)					-0.0336	(0.088)		-0.0406	(0.084)	
Low Food Security	-0.1930	(0.065)	**				-0.1810	(0.064)	**	-0.1179	(0.063)	†
Very Low Food Security	-0.2030	(0.063)	**				-0.1459	(0.065)	*	-0.0784	(0.065)	
<b>Housing Security</b>												
Housing Insecure (any)				-0.3378	(0.085)	***	-0.2923	(0.088)	**	-0.2478	(0.085)	**
Covariates included	<i>No</i>			<i>No</i>			<i>No</i>			<i>Yes</i>		

*Notes.*

2014-15 Cumulative GPA data comes from students' transcript records (N=843).

Model 1 includes one predictor: food security status.

Model 2 includes one predictor: housing security status. Due to the small number of homeless students, homeless and housing insecure students are combined.

Model 3 includes two predictors: food security and housing security status.

Model 4 includes food and housing status and the following covariates: female, racial/ethnic minority, college entrance exam score, expected family contribution, financially (in)dependent, unmet need, and childhood poverty status.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 4. *Healthy Minds Study*: Relationship between material hardship and mean GPA in a multivariable context**

	<i>Mean GPA Semester Following Hardship Report</i>											
	Regression Model 1			Regression Model 2			Regression Model 3			Regression Model 4		
	Coef.	se	test	Coef.	se	test	Coef.	se	test	Coef.	se	test
<b><i>Food Security</i></b>												
Marginal Food Security	0.0491	(0.070)					0.0672	(0.071)		0.0894	(0.070)	
Low Food Security	-0.0780	(0.059)					-0.0514	(0.062)		-0.0323	(0.062)	
Very Low Food Security	-0.1346	(0.057)	*				-0.0898	(0.064)		-0.0520	(0.063)	
<b><i>Housing Security</i></b>												
Housing Insecure (not homeless)				-0.0855	(0.047)	†	-0.0566	(0.051)		-0.0543	(0.052)	
Homeless				-0.1605	(0.071)	*	-0.1147	(0.077)		-0.1385	(0.078)	†
Covariates included	<i>No</i>			<i>No</i>			<i>No</i>			<i>Yes</i>		

*Notes.*

Fall 2015 Cumulative GPA data comes from students' transcript records and are conditional on enrollment (N=1115)

Model 1 includes one predictor: food security status.

Model 2 includes one predictor: housing security status.

Model 3 includes two predictors: food security and housing security status.

Model 4 includes food and housing status and the following covariates: female, racial/ethnic minority, age, parents' education level, parental status, household income, financial aid recipient, immigrant status, developmental math, developmental English, and college.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 5. Wisconsin STEM Study: Relationship between material hardship and satisfactory academic progress GPA in a multivariable context**

<i>2.0 or Greater GPA Same Semester as Hardship Report</i>								
	Logit Model 1				Logit Model 2			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Marginal Food Security	-0.0082	-0.1309	(0.478)					
Low Food Security	-0.0580	-0.7149	(0.310)	*				
Very Low Food Security	-0.0260	-0.3724	(0.326)					
<b>Housing Security</b>								
Housing Insecure (any)					-0.0980	-0.9495	(0.325)	**
Covariates included	<i>No</i>				<i>No</i>			

Table 5 continued on next page.

Table 5 continued...

<b>2.0 or Greater GPA Same Semester as Hardship Report</b>								
	Logit Model 3				Logit Model 4			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Marginal Food Security	-0.0062	-0.0971	(0.479)		-0.0102	-0.1606	(0.487)	
Low Food Security	-0.0547	-0.6650	(0.312)	*	-0.0345	-0.4717	(0.325)	
Very Low Food Security	-0.0084	-0.1293	(0.346)		-0.0063	0.1113	(0.372)	
<b>Housing Security</b>								
Housing Insecure (any)	-0.0966	-0.9556	(0.345)	**	-0.0683	-0.7960	(0.373)	*
Covariates included	<i>No</i>				<i>Yes</i>			

*Notes.*

2014-15 Cumulative GPA data comes from students' transcript records (N=843).

Model 1 includes one predictor: food security status.

Model 2 includes one predictor: housing security status. Due to the small number of homeless students, homeless and housing insecure students are combined.

Model 3 includes two predictors: food security and housing security status.

Model 4 includes food and housing status and the following covariates: female, racial/ethnic minority, college entrance exam score, expected family contribution, financially (in)dependent, unmet need, and childhood poverty status.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 6. *Healthy Minds Study*: Relationship between material hardship and satisfactory academic progress GPA in a multivariable context**

<i>2.0 or Greater GPA Semester Following Hardship Report</i>									
	Logit Model 1				Logit Model 2				
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test	
<b><i>Food Security</i></b>									
Marginal Food Security	-0.0031	-0.0418		(0.347)					
Low Food Security	0.0013	0.0181		(0.299)					
Very Low Food Security	-0.0161	-0.2045		(0.271)					
<b><i>Housing Security</i></b>									
Housing Insecure (not homeless)					0.0084	0.1099		(0.232)	
Homeless					0.0101	0.1341		(0.354)	
Covariates included	<i>No</i>				<i>No</i>				

*Table 6 continued on the next page.*

Table 6 continued...

<b>2.0 or Greater GPA Semester Following Hardship Report</b>								
	Logit Model 3				Logit Model 4			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Marginal Food Security	-0.0069	-0.0959	(0.351)		-0.0027	-0.0594	(0.378)	
Low Food Security	-0.0048	-0.0676	(0.314)		-0.0145	-0.2893	(0.344)	
Very Low Food Security	-0.0270	-0.3396	(0.308)		-0.0219	-0.4115	(0.338)	
<b>Housing Security</b>								
Housing Insecure (not homeless)	0.0158	0.2053	(0.255)		0.0012	0.0242	(0.285)	
Homeless	0.0224	0.3026	(0.389)		-0.0054	-0.1018	(0.424)	
Covariates included	<i>No</i>				<i>Yes</i>			

**Notes.**

Fall 2015 Cumulative GPA data comes from students' transcript records and are conditional on enrollment (N=1115).

Model 1 includes one predictor: food security status.

Model 2 includes one predictor: housing security status.

Model 3 includes two predictors: food security and housing security status.

Model 4 includes food and housing status and the following covariates: female, racial/ethnic minority, age, parents' education level, parental status, household income, financial aid recipient, immigrant status, developmental math, developmental English, and college.

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001



**Table 7. *Healthy Minds Study*: How material hardship affects later credential attainment or enrollment in a multivariable context**

<i>Credential Attainment or Enrollment One Year after Hardship Report</i>								
	Logit Model 1				Logit Model 2			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b><i>Food Security</i></b>								
Marginal Food Security	0.0070	0.0307	(0.144)					
Low Food Security	0.0490	0.2200	(0.123)	+				
Very Low Food Security	-0.0075	-0.0326	(0.117)					
<b><i>Housing Security</i></b>								
Housing Insecure (not homeless)					0.0315	0.1400	(0.097)	
Homeless					-0.0497	-0.2103	(0.141)	
Covariates included	No				No			

*Table 7 continued on next page.*

Table 7 continued...

Credential Attainment or Enrollment One Year after Hardship Report								
	Logit Model 3				Logit Model 4			
	Change in Probability	Coef.	se	test	Change in Probability	Coef.	se	test
<b>Food Security</b>								
Marginal Food Security	0.0060	0.0262	(0.146)		-0.0277	-0.1225	(0.153)	
Low Food Security	0.0482	0.2162	(0.128)	†	0.0086	0.0389	(0.135)	
Very Low Food Security	-0.0017	-0.0072	(0.130)		-0.0375	-0.1647	(0.138)	
<b>Housing Security</b>								
Housing Insecure (not homeless)	0.0259	0.1152	(0.105)		-0.0027	-0.0123	(0.112)	
Homeless	-0.0540	-0.2291	(0.154)		-0.0812	-0.3488	(0.163)	*
Covariates included	<i>No</i>				<i>Yes</i>			

*Notes.*

Analytic Sample (N=2151).

Enrollment and credential outcomes are from college records as of spring 2016. Almost all credentials are Associate's Degrees.

Model 1 includes one predictor: food security status.

Model 2 includes one predictor: housing security status.

Model 3 includes two predictors: food security and housing security status.

Model 4 includes food and housing status and the following covariates: female, racial/ethnic minority, age, parents' education level, parental status, household income, financial aid recipient, immigrant status, developmental math, developmental English, and college.

Change in average marginal effects are reported (at means).

Change in Probability Compared to Food or Housing Secure Status

Statistical significance symbols: † p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table A1. Wisconsin STEM Study: External validity of full and analytic study sample**

	Full Study Sample	Analytic Sample	test
<b>Outcomes</b>			
Mean GPA	2.83	3.00	***
2.0 or greater GPA (%)	85.7	91.6	***
<b>Pre-College Finances</b>			
Average Expected Family Contribution (\$)	3580	3845	***
Zero Expected Family Contribution (%)	25.8	21.5	
Pell Eligible (0<EFC<=5157) (%)	38.6	40.5	***
Pell Ineligible (EFC>5157) (%)	35.6	38.1	
Unmet Need (\$)	5634	5306	**
Financially Independent (%)	9.4	3.0	***
<b>Pre-College Academics</b>			
ACT college entrance exam record (%)	84.5	100.0	***
<b>Institutional Sector</b>			
Two-year College Sector (%)	14.4	0.0	***
<b>Race/Ethnicity</b>			
White, not Hispanic (%)	75.1	80.4	***
Asian, except Southeast Asian (%)	2.6	2.3	
Underrepresented Racial/Ethnic Minority (%)	20.9	16.49	***
African American (%)	4.1	2.3	***
Hispanic (%)	4.9	4.5	
American Indian or Alaskan Native (%)	0.8	0.6	
Southeast Asian (%)	3.3	1.9	**
Two or more races (%)	7.7	7.2	
<b>Demographics</b>			
Female (%)	44.9	47.9	*
Parents' Adjusted Gross Income (\$)	51202	52798	*
Students' Adjusted Gross Income (\$)	4960	3110	***
<hr/>			
N	1565	843	
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Table A1 notes on next page.

*Table A1 Notes.*

GPA is the reported cumulative GPA from students' academic transcript records (N=1509 for this measure).

Material hardship questions are from a spring 2015 survey.

Pre-college finances come from students' 2014 FAFSA.

Pre-college academic information comes from college administrative records.

Demographics come from students' 2014 FAFSA, with the exception of race/ethnicity which come from survey data. May not sum to 100% due to rounding error.

Chi square test of statistical significance used to test the relationship with categorical variables.

One-way ANOVA used to test the relationship with continuous variables.

Statistical significance symbols: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## CHAPTER FIVE

The Social Construction of College Students:  
Competing Perspectives and Policy Implications

Calls for evidence-based policymaking have increased over the past decade. Yet, research is just one lever among many – including professional judgment, values, context, and politics – that influences the policy process (Tseng, 2012; Weiss, 1979). The link between research and policy is further complicated in fields where the guidelines for validating knowledge or potential public policy ideas are highly contested, such as in climate change and education (Lubienski, Scott & Debray, 2014; Malin & Lubienski, 2015; Strassheim & Kettunen, 2014). In these fields, intermediary organizations (IOs) play a key role in shaping policy outcomes through the assembling and re-packaging of evidence that frames social problems and solutions in certain ways that advance their organization’s objectives (Lubienski, Scott & Debray, 2014; Scott, Lubienski & DeBray-Pelot, 2009; Scott, Lubienski, Debray & Jabbar, 2014). Thus, the language used by IOs provides insights into their conceptions of the larger social world and the ways in which they make sense of certain policy target groups, such as college students (Luke, 1995).

There are multiple competing narratives about today’s undergraduate students (e.g., Goldrick-Rab, 2016). The most recent narratives were developed against the backdrop of the Obama administration, which actively sought to make college more accessible and affordable while also calling for greater transparency and accountability in the higher education system. Obama and colleagues were relatively active in higher education policy reform and their efforts were widely debated and met with mixed success.<sup>69</sup> Regardless of the particular policy outcome,

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<sup>69</sup> For example, Obama and colleagues proposed a series of reforms related to student financial aid and college tax credits, free community college, and gainful employment criteria. Pell Grant program spending increased

associated narratives and debates contribute to our current conceptualization of college students and their college experiences. For individuals from low-income or otherwise vulnerable families, some narratives portray students as determined individuals seeking upward mobility through hard-work and dedication while other narratives portray students as lazy “academically adrift” individuals who are looking for a freeride-- or even criminals. For example, one journalist writes, “homeless college students are largely indistinguishable from their [housed] peers...they don’t want people to look at them like they’re waiting for the free handout. They’re also uniquely motivated to succeed” (Ashtari, 2014). While another author states, the student “was a ‘Pell runner,’ a scam artist who bounces from college to college, staying just long enough to receive a Pell Grant refund...their fraud costs taxpayers untold thousands...the word is out there that this is something you can do to exploit the aid programs” (Field, 2011). These narratives exemplify the age-old distinction between who is and is not deserving of charitable assistance or government support (Katz 1989; Piven & Cloward, 1971; Schram, 2005; Soss, 2005).

The language used to construct these everyday narratives exists in a social context and has political consequences (McHoul & Luke, 1989). One of the most recognized examples is the case of welfare policy in which the negative “dependency” discourse evolved over time such that the policy became nearly synonymous with poor black mothers and public and political support dwindled (Hancock, 2004). Around the same time that President Reagan and colleagues were constructing a narrative of a Cadillac-driving welfare queen, U.S. Secretary of Education William Bennet and colleagues “seized on an anecdotal report of one financial aid recipient driving a Corvette during spring break in Florida to claim widespread abuses existed in the

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significantly during his term in office due to increases in the number of students served as well as an increase in the maximum award amount. Despite these increases, the “purchasing power” of the Pell Grant has not kept pace with the rising price of college attendance.

financial aid system” (Goldrick-Rab, 2016, pg. 69). More recently, need-based federal financial aid has been referred to as “welfare of the 21<sup>st</sup> century” and was categorized as “welfare spending” in a recent federal budget proposal (Bolton, 2011; Noah, 2013; Terkel, 2011). Furthermore, higher education scholars and advocates have reflected these social constructions in policy proposals aimed at ensuring that students are motivated, work hard, and are able to benefit from federal financial aid (Goldrick-Rab, 2016).

Different texts make available various meanings, ideas, and versions of the world (Luke, 1995). These frames of understanding provide cognitive structures that help citizens and policymakers make sense of a group or issue in a way that makes it seem natural or “real” (Schneider & Ingram, 1993, 1997, 2005, 2008). This process of meaning-making gives rise to “rules, norms, identities, concepts, and institutions” that become taken-for-granted (Schneider & Sidney, 2009, pg. 106). Thus, the ways in which groups are constructed in texts and discourse can influence the specific types of policies that are created. Moreover, these constructions can become embedded in policy design and “feed forward” to further shape our understanding of groups, politics, and democracy (Schneider & Ingram 1993, 1997, 2005, 2008).

In this paper, I examine the ways in which intermediary organizations engaged in advocacy efforts to influence higher education policy describe and socially construct college students and their college experiences. Through an analysis of texts, I investigate how these organizations understand and make sense of today’s college students and how they actively construct meanings and ideas about the key issues facing students. Using Social Construction and Policy Design (SCPD) theory, I also discuss potential implications for policy, especially as it pertains to supporting college success for students from low-income families.

## Background

Public policies are a mechanism through which values, benefits, and burdens are distributed in society. The policy design process is an ongoing and dynamic undertaking in which multiple groups and institutions seek to influence the content or substance of an issue, including the framing and definition of the problem, target groups, and potential solutions. Grounded in the sociology of knowledge, the theory of Social Construction and Policy Design provides a framework for understanding the development and implications of policy design (Berger & Luckmann, 1966; Holzner, 1968; Segre, 2016). In this framework, Schneider and Ingram (1993, 1997, 2005, 2008) argue that the ways in which target policy populations are socially constructed can influence if and what type of policies are created. Moreover, policy details can further impact the ways in which certain populations are viewed and understood, resulting in a feed-forward cycle. Empirical applications of SCPD suggest that the framework provides broad utility for understanding the dynamic process of policy design (Nowlin, 2011; Schneider & Ingram, 2008).

I focus on the social construction of college students as a target population in which policy benefits or burdens can be distributed. In this context, social construction means the “images, stereotypes, and beliefs that confer identities on people and connect them with others as a social group” (Schneider & Ingram, 1997, pg. 75). According to SCPD theory and related empirical studies, there are two policy relevant dimensions of social construction: morality and power continuums. Positive assessments of morality include language and images related to “deserving, entitled, good, and meritorious” groups while negative assessments include language that identifies groups as “greedy, corrupt, immoral, dangerous, and inhuman.” Power is conceptualized in a political context and refers to “the size of the group, their propensity to



mobilize, access to decision points, wealth, and intensity of beliefs” (Schneider & Ingram, 2008, pg. 192). While morality and power exist on a relative scale in this framework, groups in the far corners of each dimension have been labeled to aid in interpretation. Target groups with positive social constructions of morality and high political power (e.g., middle class, senior citizens) are considered *advantaged* and typically receive visible political benefits. On the other hand, groups with negative social constructions of morality and low political power (e.g., welfare queens, terrorists) are labeled *deviants* and are politically burdened. Theoretically, the overt distribution of benefits and burdens follows groups on this diagonal axis (Schneider & Ingram, 1993, 1997, 2005, 2008) (see Figure 1).

Those with low political power, but favorable social constructions of morality (e.g., mothers, children) are labeled *dependents* and theory suggests that politicians may rhetorically support these groups, but there is little political will to enact actual financial or political benefits. Finally, those with high political power, but negative constructions (e.g., corporations, radical right, environmentalists) are considered *contenders*, who may receive benefits, but without significant discussion or publicity. The key utility of the framework is the recognition of the interaction of these two dimensions in relative terms. For example, if we assume that college students have a relatively low amount of political power, then the key difference between students being treated as *dependents* rather than *deviants* is in their social construction of worth and deservingness (Schneider & Ingram, 1993, 1997, 2005, 2008) (Figure 1).

The SCPD framework is especially relevant in “degenerative” policy environments where policy entrepreneurs, such as advocacy-based intermediary organizations, debate the construction of policy targets for political gain, rather than in an impartial assessment of particular benefits and burdens. In such cases, the social construction of groups is particularly

consequential because the debate often generates narratives of “deserving” and “undeserving” groups. Such labels legitimize or provide a rationale for the conferral of policy benefits or burdens and reinforce stereotypes that privilege some groups while stigmatizing others (Schneider & Ingram, 1997). Empirical studies indicate that education policymaking exists in a degenerative context in which some intermediary organizations provide selective interpretations of evidence and target groups to advance ideological interests (e.g., Lubienski & Garn, 2010; Lubienski, Weitzel, & Lubienski, 2009; Weiss, 2000).

### **Intermediary Organizations**

Multiple entities play a role in the policymaking process, but intermediary organizations – a broad term encompassing think tanks, policy firms, and advocacy organizations – are particularly effective at advancing the goals of elites (Domhoff, 2006; Scott, Lubienski & Debray-Plot, 2009). IOs operate in the politicized space between policymaking and traditional research and their rise in the education sector coincided with calls for the use of more rigorous research evidence in policymaking (Scott, Lubienski, Debray & Jabbar, 2014; Slavin, 2002). Acting as brokers, they mediate the research to policy translation through assembling and packaging various types of evidence for use by formal and informal policymakers at multiple levels. For example, IOs at the national level worked to persuade legislators to advance Common Core Standards (McDonnell & Weatherford, 2013) while others focus on state-level changes via governmental agencies (e.g., Ness, 2010; Ness & Gandara, 2014). While some IOs are widely considered to be “honest brokers” who objectively translate research for policy, advocacy- or ideologically-based IOs seek to influence policy by shaping research and evidence to frame

social problems and target groups in ways that advance their organizations' objectives.<sup>70</sup> Many of these advocacy organizations have large and elaborate communications departments that distribute their framing of an issue to media, citizens, and policymakers via reports and policy briefs, op-eds, blogs, and private meetings. Thus, they capitalize on policymaker's inability to gather, interpret, and summarize complex bodies of research, which provides them tremendous power and authority (Lubienski, Scott, & DeBray, 2014; Malin & Lubienski, 2015; Scott, Lubienski, Debray & Jabbar, 2014; personal communication with IOs, March 2015).

Intermediary organizations seek to shape and influence policies throughout the entire design process. However, it is crucial for IOs to engage in narrative debates prior to the introduction of formal policy documents, such as legislative bills, because the social constructions of issues and groups changes very little after that point in the process (Baumgartner et al., 2009; Schneider & Sidney, 2009). In fact, some scholars argue that the policy design phase, including the construction of issues and groups, is so consequential that changes to it constitutes social change in itself (Lakoff, 2004). Thus, current debates about college students will likely influence future legislation, including the reauthorization of The Higher Education Act. Often considered the signature legislation in higher education, The Higher Education Act of 1965 was part of Lyndon Johnson's Great Society Agenda and provided a set of norms and expectations regarding college access and success. Through this legislation, Johnson argued that all students should be able to pursue a college education, regardless of economic background. The Act and subsequent reauthorizations define several aspects of higher education, including those related to financial aid. Current authorization for the Act expired in 2013, but it has yet to

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<sup>70</sup> For example, some university-based research or policy centers are widely viewed as "honest brokers," while IOs that identify as conservative or liberal are less likely to be viewed as providing an even-handed or impartial representation of the research evidence.

be reauthorized. Prior to each reauthorization, congress amends or changes existing higher education programs and policies.

### **Empirical Approach**

I investigate how those who seek to influence policy through advocacy make sense of today's college students using an interpretivist orientation. Specifically, I examine texts produced by advocacy intermediary organizations in order to gain insights into the social construction of college students, including their greatest assets and challenges (Soss, 2006). My work is guided by key questions in Social Construction and Policy Design theory including: 1) What are the key issues facing today's college students and how are they framed, 2) How are college students socially constructed as a policy target group, and 3) What are the potential implications for future policy development (Schneider & Ingram, 1993, 1997, 2005, 2008).

The analysis began by mapping the field of intermediary organizations operating in the higher education policy space during the second Obama administration. Since my interest is in influential advocacy-based intermediary organizations that have the power to shape college student narratives, I identified organizations using several methods. I reviewed research identifying the most influential think tanks and policy organizations (e.g., Rich, 2004; Medvetz, 2012; Weidenbaum, 2010) and consulted lists of organizations funded by foundations and philanthropies that seek to influence education policy, such as the Bill and Melinda Gates Foundation (e.g., Barnhardt, 2017; Hall & Thomas, 2012; Reckhow & Snyder, 2014; Scott & Jabbar, 2014). Additionally, I spoke with individuals who are familiar with national higher education policy and work in intermediary organizations, federal government, or private consulting about their perspectives on which intermediary organizations have the potential to shape current or future policy narratives (Schwartz-Shea & Yanow, 2012).

Next, I purposively selected two influential advocacy organizations that would maximize variation based on ideological perspective. Given the SCPD framework, I focused on organizations that were engaged in the narrative framing and construction of college students and key higher education issues.<sup>71</sup> The first organization is the Heritage Foundation, a conservative political think tank whose mission is “to formulate and promote conservative public policies based on the principles of free enterprise, limited government, individual freedom, traditional American values, and a strong national defense” (Heritage Foundation, n.d.). Founded in 1973 and with over \$225 million in net assets, the Heritage Foundation is often considered one of the most influential groups in terms of “making their work known among a set of policy makers so that it informs their thinking on or public articulation of policy relevant information” (Heritage Foundation, 2015; Rich, 2004, pg. 153). This is due in part to the organization’s breadth of focus and concentrated efforts to inform congressional decision making (Heritage Foundation, n.d.; Rich, 2004). In 2015, the organization issued a total of 275 briefs and backgrounders; staff and affiliates wrote nearly 1,500 commentaries in the media; and they submitted 27 congressional testimonies (Heritage Foundation, 2015).

The second organization I selected is The Institute for College Access and Success (TICAS), an independent organization that “works to make higher education more available and affordable for people of all backgrounds” (TICAS, n.d.). TICAS was founded by Robert Shireman, who “has had a hand in most of the major higher education policy issues of the last decade through [his] work in Congress, the White House, in the foundation and think tank world, and then as deputy under secretary of education in President Obama's first term” (Lederman, 2015, n.p.). Although TICAS may be relatively unknown to those outside of the higher education

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<sup>71</sup> The organizations I selected did not have to have developed specific policy proposals to reform higher education (although they could). I am interested in the “thinkers” who may or may not also be the “doers.”

policy realm, the organization was a key player during the Obama administration. The organization identifies as nonpartisan, but many of their funders – including the Ford, Gates, and Kresge Foundations – tend to be associated with more progressive views, though the distinction is not always clear in education where groups with different ideological backgrounds can support the same policy (e.g., Leonard, 1998; Reich & Barth, 2010; Wooster, 2003).<sup>72</sup> Simply put, there is not a clear equivalent to the Heritage Foundation on the political left. TICAS is a much more focused, younger, and smaller organization. Their first major publication came out in 2004 and they have approximately \$2 million in assets (Charity Navigator, 2016; TICAS, n.d.). Though their policy impact has not been studied in the same way as the Heritage Foundation's, TICAS has been instrumental in key efforts to reform higher education including regulations related to student loans and the for-profit sector. For example, TICAS is one of 25 organizations brought together by the Bill and Melinda Gates Foundation to participate in a multi-year, multi-million-dollar policy initiative, Reimagining Aid Design and Delivery. Moreover, TICAS regularly conducts independent research in order to shape the current discourse and collaborates with other national and local organizations in efforts in influence higher education policy.<sup>73</sup>

### **Analytic Approach**

After mapping for exposure and selecting cases, I engaged in a close read of all the publicly available documents related to higher education or college students that each

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<sup>72</sup> Current funders include College Futures Foundation, Ford Foundation, Bill & Melinda Gates Foundation, The Rosalinde and Arthur Gilbert Foundation, the Kresge Foundation, Lumina Foundation, and the New York Community Trust – Wallace Special Projects Fund (TICAS, n.d.).

<sup>73</sup> Much of the “research” that TICAS conducts consists of putting together data from existing reports or surveys in new ways to make a cohesive argument. For example, TICAS recently highlighted the difference between tuition and net price at colleges and universities across California in order to argue that community college students need more financial support. Many of TICAS’ collaborators are progressive organizations. For example, the American Federation of Labor-Congress of Industrial Organizations, American Federation of Teachers, Center for Law & Social Policy, Demos, U.S. Public Interest Groups, and Young Invincibles all signed on to a recent TICAS coalition letter to members of congress about gainful employment regulation (TICAS, March 22, 2017).

organization produced in 2016. The close read allowed me to carefully and thoughtfully observe and analyze the texts' form, construction, and argumentation. The intertextual approach of including formal reports and briefs as well as blog posts, op-eds, and coalition letters enabled me to better understand the ways in which texts are related and narratives about students are constructed. During this process, I looked for "dimensionality, ambiguity, and possible contradictions that might arise from broad examination of evidence" to aid in analytic sense-making (Schwartz-Shea & Yanow, 2012, pg. 86). I also used interpretive analytic tools to assist in analysis and meaning-making. For example, I sought out negative or disconfirming cases to identify and challenge assumptions (e.g., Becker, 1998). Also, I questioned the characteristics ascribed to college students and reassigned them to highlight taken-for-granted norms and expectations (e.g., van Dijk, 2008). Next, I thematically coded each document in relationship to the research questions discussed above, which I identified from prior policy development theory and articulated in advance (Soss, 2006). Moreover, I paid attention to the ways in which knowledge and evidence were used to support specific frames and social constructs (Lubienski et al., 2009; Schneider & Ingram, 1997). While I started by reading all documents published by either organization in 2016, I continued to read documents until theoretical saturation was reached and additional data did not provide new contributions to the analysis. For TICAS, I primarily read documents dating between 2014 and 2017 and for the Heritage Foundation, I read documents published between 2013 and 2017. Throughout this process, I wrote field notes and analytic memos to aid in analysis and interpretation. Though multiple authors contributed to the documents, I conceptualize the collection of texts and related narratives at the organizational level (Schwartz-Shea & Yanow, 2012; Yanow & Schwartz-Shea, 2006).

Interpretive or constructivist research is based on the premise that multiple interpretations or meanings are co-generated through interactions between the researcher and the researched materials. Thus, my position as a white female sociologist who was not the first in her family to attend college is important to recognize and reflect upon as a check to my own sense-making. My undergraduate experiences as a high-achieving student from a moderate-income family at a public flagship university also influence my views and understanding of the college experience. My personal background, however, is bolstered by my professional experiences in college access and juvenile justice and research experiences over the past five years in which I conducted community college campus observations as well as interviews and focus groups with students from poor and low-income families (Phillips & Hardy, 2002; Schneider & Ingram, 1997; Schwartz-Shea & Yanow, 2012; Soss, 2006; Wodak & Meyer, 2001; Yanow & Schwartz-Shea, 2006).

## **Findings**

### **The Heritage Foundation's Construction of Deservingness**

Both organizations point to the high cost of college and related student debt as key issues facing today's college students. Yet, the organizations differ in their conceptualization of the problem and thus, point to divergent policy solutions. The Heritage Foundation's discussion of the rising cost of college explicitly focuses on tuition and fees. In this perspective, living expenses are considered "non-educational" costs. Although these expenses are associated with college attendance, they are largely absent from any policy discussions or recommendations (e.g., Fried, March 2013). According to the Heritage Foundation, the primary cause of rising college tuition is too much governmental involvement, namely through the provision of federal financial aid programs. In short, "the more aid flowed in, the more expensive college got"



(Bromund, January 2016, pg. 2). This theory, credited to Ronald Reagan's Secretary of Education is known as the Bennett Hypothesis and posits that increases in federal student financial aid leads to increases in tuition, regardless of the actual costs or quality of education provided to students (Bennett, 1987). The merits of this theory continue to be debated. The Heritage Foundation cites several recent papers, including one from the National Bureau of Economic Research and one from the New York Federal Reserve, that lend credence to this hypothesis while excluding those that do not support this perspective. Given this narrow definition of the problem, the organization's solutions focus on ways to reduce federal involvement in higher education and implement market-based reforms. For example, the Heritage Foundation calls for higher education to embrace technological and business innovations that create flexible higher education alternatives and privatize lending in order to "decrease loan burdens and place pressure on colleges to rein in college costs" (Burke, December 2016, pg. 6; Fried, March 2013).

In this framing of the problem, college students enjoy a rather charmed life. They live in "luxury" residence halls with "climbing walls" and enjoy "big time athletics" (Bromund, January 2016, pg. 1). Moreover, students do not feel the immediate impact or burden of high college costs because they are buffered by federal loans and grants (Burke, Hall, & Reim, July 2016, Reim, July 2016). Thus, students get the perks that come along with university attendance without the pains or responsibilities of paying for a higher education and related leisure goods. In this construction, it appears that universities take advantage of students' naivete, myopia, or perhaps even selfishness as they ignore the financial cost to taxpayers. The depiction of college students' residential experiences as luxurious raises several questions about the fairness and appropriateness of public higher education spending. The narrative suggests that such facilities

do not contribute to learning and are well beyond the living standards of most taxpayers (Fried, March 2013). Although the Heritage Foundation implicitly acknowledges that this phenomenon is concentrated in the four-year college sector, they argue that low-income community college students do not need additional financial aid either. These students “already have access to federal Pell Grants, which can cover the bulk of community college tuition” (Reim, July 2016, pg. 1). In a world in which the cost of college is limited to tuition and fees – rather than the federally defined cost of attendance (COA), which includes living expenses – then students do not need additional subsidies. Instead, college and universities need to be held accountable for providing a high-quality education.

In addition, the Heritage Foundation questions the value of federal financial aid by raising doubts about the deservingness and morality of college students. These narratives imply that college students lack motivation and the commitment to achieve a college education. For instance, a recent issue brief states that college students devote more time to leisure than education activities. In addition, it states that college students work less than at any point during adulthood, prior to retirement. The authors conclude that “college demands substantially less time commitment than do high school or regular full-time employment” (Burke, Hall & Reim, July 2016, pg. 3). Even though college is described as undemanding, a college professor writing for the Heritage Foundation depicts today’s students as unmotivated in the classroom (Bromund, January 2016, pg. 3). Thus, taxpayers subsidize students’ educational *and* leisure time while students individually benefit from a college education.<sup>74</sup>

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<sup>74</sup> The report cites data from the Bureau of Labor Statistics Time Use Survey (2003-2014), but does not does not disaggregate students’ time use by financial aid status, limiting the ability to draw empirical-based conclusions on this topic.

Yet, not all college students are as ‘spoiled’ as those depicted above. There is at least one college, nicknamed “Hard Work U” that requires students to engage in an “honest day’s work;” provides a top-notch learning environment and ‘patriotic education;’ and students graduate debt free (Moore, May 2014, pg. 3). The college is offered almost as a proof of concept, illustrating an alternative model to the current “perverse method of financing college education” (Moore, May 2014, pg. 1). But there is not much optimism that the model will expand. Even though the author believes in an “honest day’s work,” he thinks that too few of today’s college students share this core value. Students from privileged families, in particular, fail to attend “Hard Work U” (Moore, May 2014).

Throughout Heritage Foundation documents, there is an overarching narrative that if college students are prudent and willing to work hard, then a few changes to the traditional higher education model would enable “just about anyone” to pursue and complete a quality college education at a reasonable price (Fried, March 2013, pg. 6). For example, one discussion paper uses a series of vignettes to describe how college students with different family backgrounds can afford college without debt by taking online courses:

John just finished high school and lives at home rent free. He pays for “transportation, incidentals, and perhaps a cheap trip to Cancun” by working half-time at a minimum-wage job (Fried, March 2013, pg. 6).

Jane is also supported by her parents, but she does not want to live at home during her three years of college. “With good planning, saving the whole amount [of living expenses] should be relatively painless for middle-class parents” (Fried, March 2013, pg. 6).<sup>75</sup>

George does not receive any financial support from family, but works 30 hours per week at minimum wage while taking 15 credits per semester. “If George is a

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<sup>75</sup> Jane completed one year of college while she was in high school and over the summers so her parents only have to pay for three years of college. This residential experience is estimated to cost \$27,000 over three years.

good student and willing to forgo a busy social life, he still should be able to graduate in four years” (Fried, March 2013, pg. 6).

Jessica is a single mother with two children and no family support. “Jessica’s problem is not financing her education,” which is subsidized with state and federal grants, but with “paying her family’s living expenses while she goes to school and cannot work full time.” However, “Jessica is likely already getting significant amounts of means-tested assistance” to pay for the family’s cost of living (Fried, March 2013, pg. 7).

In each vignette, a little hard work, sound planning, good judgment, and a modest lifestyle enables “just about anyone” to pursue and complete a college education (Fried, March 2013, pg. 6). These vignettes and related documents make college success sound simple, but include several critical assumptions. For example, this narrative assumes that students are able to obtain employment; that students have the academic preparation and ability to successfully balance significant work and school responsibilities; and that a robust social safety net exists to support students’ living expenses. Critics argue that high unemployment rates; inadequate and inequitable k-12 spending; and a diminished social safety net limits the utility of such assumptions (e.g., Bureau of Labor Statistics, 2016, 2017; Duke-Benfield, 2015). The document also contains value-laden language regarding “modest” living, which is valued at approximately \$8,500 per year for George, even though the official poverty line for a family of one is \$12,060 (ASPE, 2017).<sup>76</sup> Moreover, the language used to construct the vignettes implies that if students are unable to afford college, then they must be lazy, lack intelligence, or failed to appropriately budget resources. In the case of George, for example, the idea that working such long hours as a full-time student is not conducive to academic success is not offered. Instead, “if George is a

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<sup>76</sup> In the paper, John earns \$7,100 for working half time at minimum wage. George works 30 hours per week so I assume he makes 1.5 times what John earns or \$10,650. Tuition is estimated to cost \$2,112 per year, leaving George with \$8,538 for living expenses and other education-related costs.

good student and willing to forgo a busy social life, he still should be able to graduate in four years” despite any challenges related to a lack of family financial support (Fried, 2013, pg. 6).

### **The Heritage Foundation’s Construction of Power**

According to the Heritage Foundation, another important issue facing today’s college students is discrimination. They argue that certain groups of students including women, students of color, and those with progressive or liberal ideology are protected and receive unfair advantages while those who disagree with this system – namely conservatives, whites, and men – are silenced (Holmes, June 2016; Johnson, August 2016; Reim, April 2016; Slattery, August 2016). Although faculty and administrators are often implicated in growing controls on freedom of expression and the bureaucratization of ‘safe spaces’ on campus, narratives also highlight the role that students play in attacking free speech. In an article titled, “The Face of Mob Rule,” Kloster (November 2015) describes events at two universities to illustrate the growing power of student activists associated with the left (Holmes, June 2016). The students are described as members of the Black Student Alliance and the college football team, painting a portrait primarily of African American males whose depictions have historically been used to induce fear and social contempt (e.g., Alexander, 2010). As Kloster describes it, “student activists want blood” (November 2015, pg. 1). Specifically,

Both situations involve menacing groups of students who appeared ready to get physical. At Yale, for example, students physically encircled the administrator, shouted him down, and got very close to him. At Mizzou, students physically surrounded the car of [President] Wolfe and demanded he exist the vehicle into the mob” (Kloster, November 2015, pg. 2).

While the author does not state that a physical exchange occurred, the power of these student activists and the faculty who support them is clear. They forced the President of the University of Missouri to resign and “prominent people like former Harvard

University President Larry Summers are forbidden to speak” (Holmes, June 2016; Kloster, November 2015). The consequences of these actions are not yet entirely clear, but according to one author they are dire: “[t]here is no way to sugarcoat how bad this is for our society. It is thought control pure and simple. And it is systemic. It is...the corruption of our institutions of higher learning” (Holmes, June 2016, pg. 2).

### **The Institute for College Access and Success’ Construction of Deservingness**

Like the Heritage Foundation, TICAS also points to the rising cost of college and related student debt as key issues for college students. But they argue that a lack of federal and state support, rather than too much governmental involvement, caused the problem. They build their argument by describing the high amount of unmet financial need faced by students due to reductions in the “purchasing power” of federal grant aid (e.g., TICAS, April 6, 2016). They go on to explain how the “the government is falling short [on its] promise of equitable opportunity for all students” (TICAS and Californians for College Affordability, Spring 2016, pg. 1). Finally, in requests for additional public financial support, they reference peer-reviewed research that demonstrates the effectiveness of grant aid in increasing students’ likelihood of enrolling, persisting, and succeeding in college (e.g., Cochrane, February 3, 2016).

Rather than limit college costs to tuition and fees, TICAS defines the cost of college in accordance with the federally defined cost of attendance, which includes tuition and fees, room and board, education supplies, transportation, and other personal expenses. They justify the broader definition of cost in the following way:

Beyond the research, it is easy to understand why aid is critical to student access and success. If you can’t pay the tuition bill, you can’t step foot in the classroom. That is how financial aid supports access to college – by helping students cover the tuition charges that allow them to enroll. However, textbooks, transportation, food, and housing are all costs of attending college. If you only have resources to cover the tuition bill and not these other costs, then you may not be able to keep

coming back to that classroom, day after day and week after week. You may not be able to spend time in the library, or visit the tutoring center or professors' office hours. That is why, to facilitate students' access to and success in college, it is important that students be able to cover the total cost of attendance with available savings, earnings, and grant aid (Cochrane, March 15, 2016).

In this perspective, students “want to stay in school and succeed. [But] all too often, they just cannot afford to” (TICAS, April 2016, pg. 2). For example, TICAS compiled data showing that at some of the nation's lowest tuition colleges, low-income students are still asked to pay more than \$15,000 per year after subtracting all available grants and scholarships. Thus, students would have to work full-time, which the organization describes as detrimental to college success (Cochrane, February 3, 2016; SzaboKubitz, December 15, 2016; TICAS, April 2016).<sup>77</sup>

Moreover, few students at these institutions borrow, in part because their colleges refuse to participate in federal loan programs. Thus, “students who cannot afford the cost of college after available grants and scholarships are left between a rock and a hard place” (TICAS, June 2016, pg. 1). TICAS argues that private lending is too risky and costly for students since it lacks appropriate consumer protections.

According to TICAS, students are playing by the rules and doing everything right, but the deck seems to be stacked against them. In this construction, students would use any and every additional dollar of financial aid to further promote their educational success. Through the power of voice, TICAS illustrates how difficult it is to afford college and the sacrifices that students make to pursue an education. For example, one student explained:

I took additional classes to become an EMT so that I could get a better paying job to cover my college materials and tuition plus housing, etc. I wear the same clothes I have owned since I was 15 or 16. I do not have vices nor splurge...I just bought a math book, which means I won't be able to buy groceries for two weeks!

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<sup>77</sup> The citations for the argument that working more than 20 hours per week impedes student success are primarily from advocacy groups rather than peer-reviewed journals. These reports show a correlation between long work hours and lower graduation rates, but fail to provide strong evidence of a causal relationship.

So water it is!!! And I am not going to quit school. Because that is what's going to get me out of this rut. - Female, 25, part time (TICAS, April 2016, pg. 8).

Students are regularly portrayed as diligent, responsible, and frugal. They rarely, if ever, make poor choices. TICAS typically cites their own survey work or that of other advocacy organizations in support of these narrative constructions. In this case, the student works and spends her money responsibly, but she is still forced to cut back on food in order to pay for education supplies. In these narratives, when students are not working or attending school, they are caring for family. Such examples of caregiving further emphasize students' humanity and goodwill. Again, a student shares her story:

I'm a 47-year-old mother of five who is the sole financial support in my household. I have always wanted to be a teacher, but took time to raise my children before fulfilling my dream. I don't regret that, but sometimes I wish I would have gone to college when I was younger. I make only \$13,000 a year with my job, and have an autistic son on SSI and we buy food with food stamps. I have a hard time paying my rent and my bills, and I spend way too many nights up late studying so that I can make a better life for my family, but they're worth it.  
- Female, 47, full time" (TICAS, April 2016, pg. 4).

The overarching narrative describes how "even the most devoted and prepared college students can be slowed or stopped in their tracks by financial obstacles" (TICAS, April 2016, pg. 1). According to TICAS, increased grant aid and access to federal student loan programs would improve college access and success, especially for students from low-income families.

### **The Institute for College Access and Success' Construction of Power**

In addition to college unaffordability, TICAS is concerned about the ways in which higher education institutions, processes, and related entities disadvantage or harm students. These worries range from bureaucratic hurdles that unnecessarily burden students to outright predatory behaviors. Thus, TICAS argues that students not only need additional financial support, but they also require consumer protection and advocacy in the form of better



information, increased transparency, and greater institutional accountability (e.g., TICAS, December, 16, 2016).

According to TICAS, “numerous investigations have revealed widespread waste, fraud and abuse in the for-profit college industry in particular, including deceptive and aggressive recruiting of students, false or inflated job placement rates, and dismal completion rates” (TICAS, July 21, 2016, pg. 1). Thus, “commonsense protections” are “needed to protect students and taxpayers from over-priced, poor-quality education programs that consistently saddle students with debt they cannot repay and degrees or certificates they cannot use” (TICAS, July 11, 2016, pg. 1). In these narratives, students are the victim of a broken system that allows “unscrupulous actors” to profit off of their college hopes and dreams. The issue is not that students do not have good judgment, but rather that “without accurate information, they cannot make good decisions” (TICAS, January 25, 2016, pg. 3). In this perspective, students are routinely held accountable for their actions, so it is only right and fair for institutions to be held accountable as well (TICAS, February 2016).

In the past year alone, TICAS has argued that students need more access to high-quality data in order to make informed choices; that the financial aid process should be simplified and made more transparent; that students need protection from aggressive loan collection agencies; and that students deserve a responsive complaint and feedback center (La Rocque, May 24, 2016; TICAS, February 8, 2016; May 20, 2016; June 6, 2016; October 25, 2016; January 17, 2017). In each of these examples, TICAS describes students as smart, hard-working individuals who fall prey to a system that is not working in their best interest. With federal financial aid, for example, TICAS explains how administrative obstacles “unnecessarily delay or derail access to the aid” that students deserve and need in order to be successful in college (TICAS, November

2016, pg. 3). They refer to a specific part of the financial aid process, known as verification, as “confusing, difficult, and demoralizing” and use quotes from higher education practitioners to support their argument (TICAS, November 2016, pg. 1). In these quotes, students and their families are often described as intimidated, overwhelmed, humiliated, embarrassed or upset by the process. For example,

The whole language is intimidating to students and families. When you get a note [from the financial aid office indicating], ‘You’ve been selected for verification’ the first response is, ‘I’m scared’, ‘Did I do something wrong?’ They panic, they get very anxious, or they become very offended.  
- Financial Aid Administrator” (TICAS, November 2016, pg. 6).

Moreover, the financial aid process is portrayed as being unfair and further disadvantaging students from low-income families. As one college access professional explained, “the most vulnerable people have to jump the highest hurdles” (TICAS, November 2016, pg., 15). Another said, “financial aid offices spend way too much time and energy asking poor kids to prove that they’re poor” (TICAS, November 2016, pg., 12). From this perspective, the verification process acts as a barrier to college entry since it can be “dragged out” over several months, leaving students without the aid they need to enroll in courses and purchase supplies. So even if there were to be an influx of additional funds into the financial aid system, TICAS argues that changes to the financial aid system are necessary to ensure that the money is used as efficiently and effectively as possible (TICAS, November 2016).

### **Policy Implications**

At first glance, it appears that the Heritage Foundation and TICAS have identified many of the same problems: the high and rising cost of college, associated student debt, and a lack of institutional accountability. However, the exact definitions of the problems, sources of the problems, and potential solutions are widely divergent. The Heritage Foundation limits the

definition of college costs to tuition and fees while TICAS' definition encompasses living costs as well. The Heritage Foundation argues that governmental involvement contributes to rising college costs while TICAS contends that a lack of governmental support is the problem and more intervention is needed to remedy the situation. Neither organization, however, clearly differentiates between the price and cost of college. The Heritage Foundation offers few detailed policy solutions to these problems, but advocates for limited government interference and increased privatization while embracing the potential of innovation. TICAS, on the other hand, regularly puts forth detailed policy ideas. In general, they want to crack down on the for-profit business sector of higher education while simplifying the student financial aid process and expanding government support at the state and federal levels. There is little common ground to work from in the contested education policy space in which intermediary organizations work to shape and re-shape the policy design process.

Despite these divergent views, both advocacy organizations tend to ground their general descriptions of the problems in selective, but reasonably reputable, facts and citations (e.g., sources often include government reports and research conducted by academics). In their portrayal of college students' experiences, however, the Heritage Foundation tends to focus on four-year colleges and universities that predominantly enroll "traditional" college students whereas TICAS tends to elevate community colleges and the experiences of "non-traditional" students.<sup>78</sup> Focusing on different subgroups of college students is one way in which the organizations influence the social construction of college students. These different foci allow the

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<sup>78</sup> I put these first uses of the terms "traditional" and "nontraditional" in quotes to recognize that nontraditional students represent the majority of today's college students. According to the National Center for Education Statistics (2015), approximately three-quarters of undergraduates have at least one non-traditional student characteristic and one-quarter have four or more of the following non-traditional characteristics: being independent for financial aid purposes, having one or more dependents, being a single caregiver, not having a traditional high school diploma, delaying postsecondary enrollment, attending school part time, and being employed full time.

intermediary organizations to construct specific narratives or conceptions related to students' morality and power that are empirically grounded. This approach is possible because today's college students and the institutions that they attend are incredibly diverse (e.g., Gerber & Cheung, 2008; National Center for Education Statistics, 2015).

Through narrative construction, the Heritage Foundation questions the deservingness of college students and especially those who receive federal financial aid. Students are often construed as lazy, uninterested, or even spoiled while taxpayers toil away to subsidize higher education. This is particularly problematic from the Foundation's perspective because they argue that the returns to higher education accrue at the individual level. Since college success is described as relatively undemanding in this viewpoint, the inability to enroll or complete a degree is seen as a personal failure. Though the media sometimes describes college students as criminals or frauds, The Heritage Foundation has not made such strong or explicit allegations in recent years (for an earlier example, see Johnson, December 2003). TICAS, on the other hand, describes students as incredibly deserving of public support. They are constructed as diligent students, responsible workers, and loving caregivers who have little to no time for leisure or pleasure. But despite their positive attitude and incredible effort, the cost of college is simply too high for so many students: the combination of earnings, savings, and grant aid is not enough to cover the full cost of college attendance. Not only are students forced to go into debt to pay for school, but they are often forced to take out risky private loans because their college refuses to participate in federal lending programs. Thus, from this viewpoint, failure to enroll in or complete college is predominantly viewed as the fault of the system, not the individual.

Discussions of power were more complicated and nuanced in many ways. TICAS tended to portray college students with relatively little power. Students were regularly referred to as

“consumers” in need of support and protection. Although narratives can construct consumers as a powerful constituency, TICAS focused on the ways in which students were duped or needed more information to make better choices. The Heritage Foundation, on the other hand, highlighted circumstances in which certain types of students, including those from privileged families and student activists, exuded power. In these instances, students used their power to advance ideals that are in opposition to the Foundation’s core principle of traditional American values. While college students were not constructed as a group with substantial political power in either case, the Heritage Foundation constructed students in a relatively more powerful way in comparison to TICAS.

According to Social Construction and Policy Design theory, TICAS constructed college students as *dependents*, a group with high morality, but low power. Groups in this category may receive pity, but rarely receive overt public benefits or burdens. Instead, their needs are assumed to be the responsibility of charities and faith-based groups. At the state level, prior research suggests that constructing deserving college students as future taxpayers or emerging middle-class citizens may increase their perceived power and garner additional public support for the conferral of benefits (Reich & Barth, 2010). Thus, shifting to a future-oriented life course narrative may be one way in which higher education advocates can translate deservingness narratives into positive political action. In contrast, the Heritage Foundation’s construction of college students pushes them toward the *contender* and *deviant* categories, both of which are deemed unworthy of overt public support. Undeserving groups with higher levels of power are labeled *contenders* and may receive covert or sub rosa benefits while those with lower levels of power are considered *deviants* and are more likely to receive overt burdens or punishment (Figure 1).

## Limitations

Though SCPD theory provides a useful framework for understanding the policy design process and its implications, it is not a fully explanatory model. There may be rational or justifiable reasons that the organizations have pushed their narratives and construction of college students in certain directions that are beyond the scope of this paper. For example, one might argue that is irresponsible to advocate for additional state and federal higher education funding without taking steps to ensure that those funds are used as responsibly and efficiently as possible. Additionally, this paper focuses on how two key advocacy-based intermediary organizations with different ideological orientations make sense of a particular target group. The higher education policy context is much richer and more complex than discussed in this analysis and includes organizations across the ideological spectrum as well as honest brokers. Inter-organizational dynamics beyond those examined here may also influence certain constructions of college students and higher education issues. Among organizations that identify as moderate or more progressive, the field is particularly robust. For example, a recent Gates Foundation initiative on financial aid policy supported 25 intermediary organizations. Yet, we know little about the ways in which narratives, social constructs, and evidence circulates within higher education ideological networks.

This paper focused on advocacy organizations that seek to influence policy through the construction of narratives and presentation of ideas rather than an examination of proposed or enacted policies. The Heritage Foundation, for example, largely operates at a conceptual level in the higher education space. Few documents contained detailed policy proposals. Instead, intermediary organizations like the American Enterprise Institute are known for translating conservative ideals into policy goals. Additional research is needed to examine the ways in

which detailed and specific policy proposals construct and portray college students and key higher education issues.

The analysis was conducted at the organizational level, but future research may want to consider the ways in which influential actors contribute to the construction and understanding of college students and key issues. For example, Robert Shireman is a noted higher education expert who has held multiple roles in government and worked for several different intermediary organizations over time. He is a key architect of student loan reforms and regulations on for-profits (Lederman, 2015). Thus, those working in the higher education policy context may follow Shireman's or other higher education leaders' work across institutions over time.

Finally, social background, and especially conceptions of race and ethnicity, often play a key role in the construction of deservingness and worth (e.g., Hancock, 2004). In the texts used in this analysis, the language used to define and describe race/ethnicity and other background characteristics was often coded such that it may appear benevolent, but has a negative definition or implication for a targeted subgroup (e.g., Lopez, 2015). Additional research from critical race and intersectional perspectives would enhance our understanding of the ways in which students' background may influence their social construction. Overall, the analysis and future research would benefit from a closer examination of power dynamics and processes (Phillips & Hardy, 2002).

### **Conclusion**

The policymaking process exists in a highly-politicized environment. Efforts to increase the use of evidence in education policymaking not only encouraged academics to engage with policy-relevant research questions, but they also provided new opportunities for intermediary organizations. Advocacy-based IOs assemble, package, and disseminate rigorous and anecdotal

evidence in a way that promotes their organization's ideals and understanding of the world. This paper examined the ways in which two such organizations are actively constructing college students and key higher education issues. TICAS was highly influential during the last presidential administration while the Heritage Foundation will likely enjoy increased influence during the current presidential administration. Certainly, the reform efforts put forth by Obama and colleagues have contributed to our current understanding of today's college students, their experiences, and key challenges. Theory and prior empirical evidence indicate that the shaping and framing of competing narratives may have significant policy implications and potentially impact the ways in which society views the worth of college students. This ongoing process of meaning-making builds cognitive structures that help citizens and policymakers make sense of college students' experiences, challenges, and supports.

One of the most concerning findings is the effort to re-define the federal statutory definition of the cost of college attendance.<sup>79</sup> According to Congress, the cost of college includes tuition and fees, books and supplies, room and board, transportation, and personal expenses. While the rising price of tuition and fees has garnered significant attention, the largest drivers of college price are students' living costs and educational supplies. "Between 50 and 80 percent of total sticker prices, and more of the change over time, occurred in those other [non-tuition and fees] components" (Goldrick-Rab, 2016, pg. 41). Prior scholars have noted that when individuals pursue a higher education, the time spent on that education comes at the expense of other things that they could have been doing with their time. In economic terms, this is the opportunity cost

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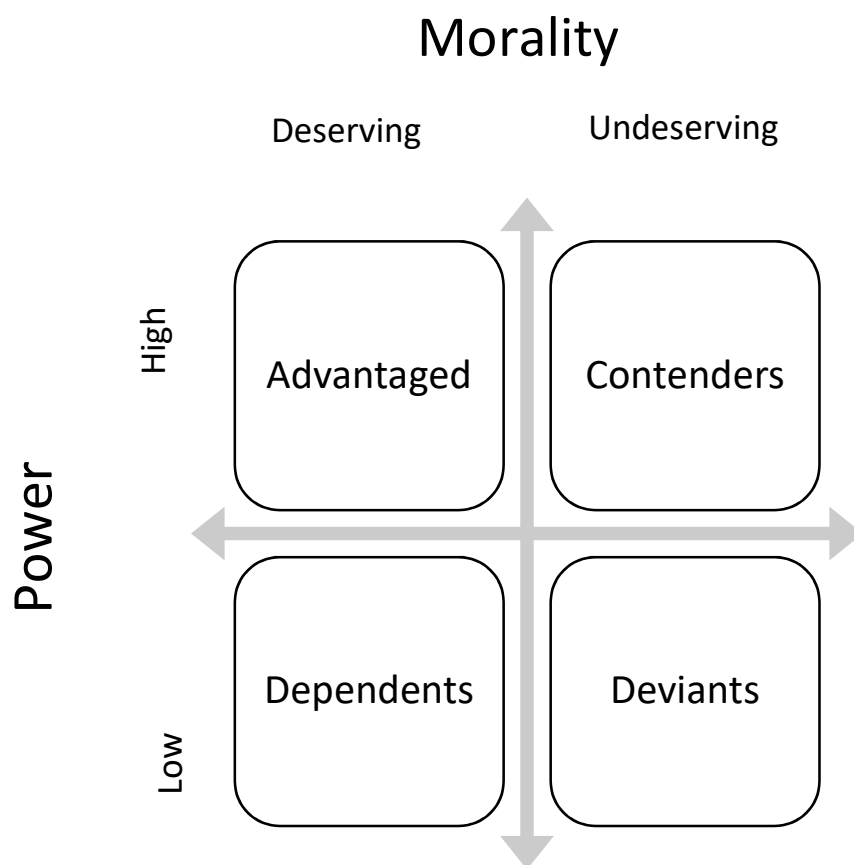
<sup>79</sup> Note that scholars have argued that the way in which the official cost of college attendance is estimated understates the true cost of college attendance (e.g., Kelchen, Goldrick-Rab & Hosch, 2017). That debate largely focuses on the ways in which room and board, books and supplies, transportation, and personal expenses are estimated and used in financial aid calculations. That debate is not about the inclusion of such expenses in the cost of attendance.



of attending college. Students often cut back on employment, forgo current wages, and invest in a college education because it is associated with higher wages and other benefits in the long term. So even though individuals have living expenses regardless of whether or not they attend college, students trade time at college for wages that could otherwise be used to cover such expenses. This is why living costs are essential to the definition of the cost of college. Language that describes students' living expenses as "indirect" or "noneducational" costs diminishes the necessity of these goods for college success and discourages education scholars from focusing on these dimensions of college attendance (Goldrick-Rab, 2016).

To the extent that the social construction of students is being debated along the *dependent-contender* continuum, it is not surprising that the Higher Education Act is well past due for reauthorization and there are no strong signs that substantive higher education policy will be introduced in the near future (Schneider & Ingram, 1997, 2008; Stratford, 2016). Yet, the priorities of the current President are clearly defined in the recent Budget Blueprint, which proposes to cut financial grant aid in order to "make college education more affordable" (Office of Management and Budget, March 2017, pg. 17). TICAS called the plan "destructive," while the Heritage Foundation described the education cuts as "long-overdue" (Burke & Fleming, March 16, 2017; TICAS, March 29, 2017). Thus, the latest policy proposal suggests that those currently in positions of political power view college students as *deviants* while those on the other side of the aisle continue to fight back with constructions of deservingness in efforts to minimize the reductions in public support for college students.

Figure 1. Social Construction and Policy Design Theory



*Note:* This figure is a stylized representation of Social Construction and Policy Design framework by Schneider & Ingram (1993, 1997, 2005, 2008).

## CHAPTER SIX

### Conclusion and Implications

College students across the nation are struggling with basic needs insecurity. Most of the prior research in this area has focused on food challenges, and food insecurity appears to impact a greater share of undergraduates than housing insecurity. Evidence from multi-site studies indicates that between 39 and 76% of surveyed college students report that they are food insecure and 15 to 53% are housing insecure, including 2 to 14% who report that they are or recently were homeless. Community college students are especially vulnerable to material hardship challenges, but the problem exists at every college that has been studied. Data limitations impede our ability to precisely estimate that share of college students experiencing material hardship or how the prevalence has changed over time. The best evidence, however, indicates that the problem has gotten worse over the past twenty years.

#### **Material hardship and academic success**

Conceptually, there are several reasons to hypothesize that basic needs insecurity may hinder college success, including those related to cognition, stress, and logistical barriers. Furthermore, prior research on children and youth indicates that material hardship is associated with poorer academic performance, even after considering other background factors like family income. This study used three data sources to investigate the relationships between material hardship and academic success. Overall, results indicate that both food and housing insecurity are independently associated with poorer academic achievement and attainment. After accounting for background factors, housing insecurity remains a statistically significant predictor of academic success while food insecurity does not.

Two study samples allow for an examination of later credential attainment or persistence. Results from both studies indicate that housing insecurity is statistically associated with poorer attainment, net of background characteristics. In the Wisconsin sample of two- and four-year college students, housing insecurity (with or without homelessness) during students' first year of college is associated with a nearly 10 percentage point reduction in the probability of earning a degree or being enrolled four years later.<sup>80</sup> In the national community college sample, results indicate that a change from housing secure to homeless status is associated with an 8 percentage point reduction in the probability of earning a degree or being enrolled one year later.<sup>81</sup> The magnitude of these associations is consistent across samples and substantively meaningful. For example, they are comparable in size to gaps in later educational attainment or persistence by gender and childhood food security status.

Additional covariate-adjusted analyses indicate that housing insecurity (with or without homelessness) is associated with lower cumulative GPA, a lower probability of earning a 2.0 or higher GPA, and a higher probability of enrolling part-time, rather than full-time, in the short-term.<sup>82</sup> Students who do not earn a 2.0 or higher GPA often fail to meet satisfactory academic progress, which is required to remain eligible for need-based financial aid. In addition, students who enroll part-time are eligible for less need-based financial aid and accumulate credits at a slower rate, extending time to degree. Thus, these short-term relationships suggest that both

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<sup>80</sup> This study did not include questions about homelessness so I cannot disaggregate the housing insecure group.

<sup>81</sup> In this sample, housing insecurity (without homelessness) is not a statistically significant predictor of later attainment or persistence.

<sup>82</sup> There is one exception to this summary. In the HMS sample, housing insecurity (with or without homeless) is not statistically associated with earning a 2.0 or higher GPA.

reductions in academic achievement and credit attainment contribute to lower rates of later degree attainment.

Food insecurity is independently associated with poorer academic outcomes, but this relationship is not statistically significant at traditional levels once background factors are considered.<sup>83</sup> There are multiple explanations for the failure to isolate a statistically significant association. For instance, experiences of food insecurity are often episodic and associated with other challenges and experiences of poverty. Imprecise measurement and small sample sizes may have also inhibited the detection of a relationship. In prior work that failed to show a significant relationship between food insecurity and k-12 academic success, scholars argued that it is empirically difficult to tease apart the correlated experiences of poverty. Rather than conclude that food insecurity status is unimportant, they argue that students from low-income or otherwise vulnerable families often face multiple risk and resilience factors that contribute to overall school success (Miller, 2011). Additionally, exploratory analyses suggest that the relationship between food insecurity and later academic attainment or enrollment depends on contextual factors. Results indicate that among students with food insecurity challenges, family and community resources serve as protective factors and are associated with an increased probability of academic success. Greater investigation of the conditions under which food insecurity is associated with academic success is needed in future research.

### **Higher education policy perspectives**

Education policymaking exists in a highly-politicized environment in which study findings and published research are just one of several levers of influence. Intermediary

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<sup>83</sup> The traditional level of statistical significance is defined as  $p < .05$ . In the STEM study, food insecurity was marginally associated with a lower cumulative GPA and in the WSLs study it was marginally associated with a higher probability of earning a 2.0 or higher GPA ( $p < .10$ ). The other seven analyses were statistically insignificant.

organizations operate in the space between basic research and policymaking. They seek to influence policy design by assembling and packaging evidence in a way that supports their organizations' ideals and objectives. According to Social Construction and Policy design theory and related empirical evidence, the social construction of problems and target groups can have a significant impact on the types of policies that are designed and how those policies contribute to our understanding of particular groups and problems.

In the analysis and comparison of documents from two intermediary organizations with contrasting ideological positions, I find divergent definitions of the key problems facing today's college students and constructions of students' morality. For example, both organizations argue that the rising cost of college is a key challenge for college students. However, the conservative IO limits the definition of college costs to only include tuition and fees whereas the more progressive IO defines the cost of college to include tuition, fees, room and board, transportation, and other personal expenses. The latter definition is in accordance with the federal statutory definition of the cost of college attendance. These contrasting definitions of the problem have important implications for the social construction of students and policy recommendations. Based on the narrow definition of the cost of college, the conservative IO argues that students' financial need is largely met through federal and state financial aid programs. In this view, students living costs – and related research about students' food and housing – is beyond the bounds of higher education policy discussions and reform. On the other hand, the more progressive IO argues that adequate room and board is essential to college success and must be considered in future policy developments. In this view, federal and state financial aid falls short of supporting students and the organization constructs a narrative of college students as incredibly deserving and worthy of additional public support. The outcome of this debate has

clear implications for college affordability. Furthermore, the application of Social Construction and Policy Design theory suggests that it is unlikely that college students will receive additional public support in the near term.

### **Implications for future scholarship**

Prior research has examined how students' sociodemographic characteristics, including family income, are related to college success. In these analyses, low income or low socioeconomic status often serves as a proxy for poverty. However, poverty is multidimensional concept. Those with low incomes and those who experience material hardship form distinct, though overlapping, groups. Results from this study indicate that housing insecurity is an independent source of educational disadvantage. Thus, consideration of material hardship and other measures of students' daily experiences and well-being – including health and nutrition, childcare, and transportation challenges – is important to furthering our understanding of college academic success.

Future research should extend beyond academic outcomes to examine how material hardship relates to other college experiences and decisions. Other domains of interest include the relationships between material hardship and work behaviors; financial aid decisions including loan behavior; public benefits support; health and well-being; and academic and community engagement. We need a more robust conceptualization and understanding of how material hardship is related to these factors and others that are important for overall success and student development.

Although material hardship contributes to our understanding of student success, scholars should not be complacent with describing a problem and its implications. Research examining programmatic and policy responses to students' material hardship challenges is crucial to

promoting college attainment. There is a growing body of research on the correlates of material hardship, but we lack understanding about the causes of hardship among college students.<sup>84</sup> This impedes our ability to design and develop promising solutions. For example, if housing insecurity is primarily driven by a lack of available housing, then providing students with additional financial resources might do little to solve the problem. Instead, providing appropriate housing accommodations for students might be incredibly beneficial. Future research on the determinants of material hardship among college students should extend beyond sociodemographic characteristics to include a study of social, environmental, and policy factors.

### **Limitations and future research**

Although higher education practitioners report that they have long worked with students who struggle to make ends meet, the study of material hardship among college students is a relatively recent and underdeveloped area of scholarly inquiry. This study provides the first systematic review of existing evidence on the problem as well as the first estimates of the relationship between material hardship and academic attainment. Yet, there are significant limitations to the study.

Currently, no nationally representative studies of college students include measures of material hardship. In order to obtain precise and representative estimates of food and housing insecurity among college students, these measures must be added to existing national surveys. Several researchers, organizations, and legislators are advocating for better data collection efforts in this area. For example, the Wisconsin HOPE Lab and American Council on Education (2015) recommended that future iterations of the National Postsecondary Student Aid Study include

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<sup>84</sup> Note that this is not necessarily unique to the study of material hardship among college students. We lack a clear understanding of the causes of material hardship in the overall population as well, but certain causes may be unique to college students.



measures of material hardship and the Government Accountability Office (2017) recently agreed to undertake a study of food insecurity among college students.

Next, the methods used to estimate relationships between material hardship and academic success are limited in their ability to draw causal conclusions.<sup>85</sup> Though I took several steps to limit selection bias and examine the robustness of the reported findings, omitted variable bias remains a concern. For a subsample of more advantaged college students, I was able to control for additional prior academic and financial aid factors. In two supplemental analyses, the relationship between housing insecurity and later degree attainment or enrollment is statistically significant and substantively larger at 19 and 12 percentage points, respectively. Additionally, very low food security status is statistically associated with a 14 percentage point decline in the probability of later attainment or enrollment in one of the supplemental analyses.<sup>86</sup> Overall, the housing insecurity findings are robust across model specifications whereas the food insecurity findings are sensitive to model specification.

Just one of the study samples includes information on students' academic outcomes several years after reported experiences of material hardship (i.e., WSLs sample measured outcomes after four years). In the future, I plan to continue to follow this cohort of students to determine if materially insecure students eventually catch up with their more advantaged peers over time. Moreover, I plan to track the academic progress of students in the Wisconsin STEM Study as they advance through college in the coming years. Additionally, existing studies of material hardship only measure food and/or housing insecurity at a single point in time. In the

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<sup>85</sup> Because it is unethical to randomly assign students to conditions of food and/or housing insecurity, experimental methods suitable for causal inference are inappropriate for this area of study. Future research should focus on quasi-experimental methodological approaches and other rigorous methods, which will likely have associational interpretations.

<sup>86</sup> For details, see Chapter 3 Appendix.

future, researchers should consider adding repeated measures of material hardship to longitudinal studies to better understand these challenges over time and their potential cumulative effect.

The ways in which college costs, experiences, and students are constructed and come to be taken for granted through policy and narrative debates has significant implications for the distribution of political benefits and burdens. This study provides insights into the ways in which two influential organizations are currently constructing and defining these issues, but other organizations and actors are also shaping the higher education policy context. Additional research is needed to better understand the field of actors operating in this space as well as the ways in which knowledge and evidence are used to promote ideological-based policy objectives.

Finally, race and ethnicity are interwoven with poverty and policy in the United States. For example, existing research indicates that states with larger shares of racial/ethnic minorities typically have less generous and more punitive social policies and that these policies are related to the incidence of food insecurity (e.g., Borjas, 2004; Soss, Fording, and Schram, 2011). In higher education, a growing share of students are racial/ethnic minorities and these students are more likely to report material hardship challenges. In some cases, legislators have referred to public support for college students as welfare, which remains one of the most racially charged political domains (Brown, 2013; Gilens 1999; Goldrick-Rab, 2016; Hancock, 2004). Additional research is needed to explicitly examine the racial/ethnic dimensions of material hardship among college students and higher education policy.

### **Implications for Policy and Practice**

The challenge of basic needs insecurity among college students would benefit from a coordinated multi-sector programmatic and policy response. Higher education leaders often lack the proper training and expertise to appropriately address students' material challenges, but k-12

education officials, social welfare agencies, community organizations, and faith groups have long served individuals and families in need (Broton et al., 2014). While there is an important role for partnerships and initiatives that focus on serving college students, the problem of basic needs insecurity is not a new challenge for a substantial share of students. According to one estimate, approximately half of undergraduates with very low food security in college reported that growing up, there was not enough to eat at home.<sup>87</sup> Interventions that promote basic needs security and well-being among children and families more broadly may also promote stability and security among college students.

### **Addressing food insecurity in college**

There is a growing public and policy awareness of basic needs insecurity among college students. Practitioners have played a key role in highlighting this problem and many work to alleviate material challenges for their students. There are multiple approaches, but one of the most common is the implementation of a campus food pantry. The first campus food pantry was established at Michigan State University in 1993 and today, there are over 450 food pantries on college campuses across the nation (CUFBA, 2017). In addition to non-perishable food items, some pantries distribute fruits and vegetables, toiletries, and school supplies. Campus food pantries often partner with local food banks and seek charitable donations to operate. In some cases, student fees fund the pantry. While students are the primary clientele, some colleges and universities also serve staff and faculty in need. Those seeking to start a campus food pantry can join the College and University Food Bank Alliance, a network for new and existing pantries devoted to alleviating student hunger and food insecurity. Students and practitioners report that

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<sup>87</sup> See Chapter 3, Table 1. Note that this sample only includes students from low-income families.

the pantries help fulfill a critical need in the campus community, but the impact of campus food pantries has not been systematically evaluated (CUFBA, 2017).

Additionally, some colleges and universities operate meal voucher programs to support students struggling with food insecurity. Program models vary across institutions with some relying on students to donate unused meals and others using charitable donations or university funds to support the program. At some institutions, any student in need can request a meal voucher while others have certain eligibility requirements. For example, one university requires students to exhaust all financial aid options, including loans, before students are eligible for the meal voucher program. Another institution helps students identify local, state, and federal public benefits that they may be eligible for in order to draw down on any existing resources (e.g., Goldrick-Rab, Broton & Gates, 2013). Next fall, Sara Goldrick-Rab and I will undertake the first study of campus meal voucher programs using a randomized design to evaluate the impact on academic success and student well-being. Results from the study will further our understanding of this programmatic intervention and influence future policy proposals.

Though charitable and programmatic assistance play an important part in hunger alleviation efforts, policy interventions have the potential for greater systemic change. In addition to the college-level programs discussed above, practitioners and scholars are also partnering with policymakers to reduce material hardship on college campuses. For example, Sara Goldrick-Rab, Emily Brunjes Colo and I (2016) drafted a proposal to expand the National School Lunch Program to higher education. In the proposal, we called for a phased rollout with pilot studies to examine program implementation and impact. In May 2016, Representative Bobby Scott (D-VA) introduced an amendment to the Child Nutrition Act that reiterated our

proposal. As planned, after getting the issue on the record, he withdrew the amendment saying he will pursue it in the Higher Education Act reauthorization.

Policy advocates are also working to ensure that our nation's higher education and social policies are aligned in ways that promote student success. The Center for Law and Social Policy has examined student aid, public benefits, and tax credit policies and identified several policy recommendations to improve alignment and increase up-take among eligible individuals. For instance, they recommend six changes to existing SNAP (Supplemental Nutrition Assistance Program, formerly known as food stamps) policy, including the ability to average work hours across a month, rather than a week, in order to simplify paperwork and reduce churning on and off the roles due to work schedule variations (Duke-Benfield, 2015). Results from a pilot study indicate that students who accessed public benefits, including SNAP, cash welfare or childcare assistance, were more likely to persist in college than observably similar peers. Moreover, those who received three or more benefits had higher rate of success than those who received two or fewer public benefits (Price et al., 2014). Additional research is needed to better understand the policy barriers and potential benefits for students.

### **Addressing housing insecurity in college**

Programmatic and policy responses to undergraduates' housing challenges are less common. Some colleges and universities provide temporary accommodations, such as a dorm room, for students in crisis and others have connections to local shelters that can support students in need. Emergency grant aid programs can also be used to help students obtain housing (Dachelet & Goldrick-Rab, 2015). University of California Los Angeles students, Louis Tse and Luke Shaw, created and run a shelter for homeless college students in the L.A. area. Shelter residents receive a bed, storage locker, two meals per day, bus passes, and a connection to

medical services. Though the impacts of the shelter have not been formally examined, the provision of shelter and connection to wraparound services has the potential to positively impact college retention. However, the shelter only has nine beds and is the only one like it in the country, falling far short from serving the number of students in need of safe and secure housing (Students for Students, formerly Bruin Shelter, n.d.). Results from this study suggest that colleges and universities may want to consider additional housing supports for students in need.

Unlike SNAP, federal housing assistance is not an entitlement. Nationally, housing assistance programs reach only about one in four households in need. Public Housing Authorities (PHA) have discretion, however, in establishing community preferences among those who meet eligibility requirements (Duke-Benfield, 2015). In 2014, the Tacoma, Washington PHA and local community college partnered to form the Tacoma Community College Housing Assistance Program. Each year, up to 25 homeless college students and their dependents receive rental assistance for up to three years or until they graduate from college. Students participate in support workshops and must enroll full-time and earn a least a 2.0 GPA. Results are preliminary, but promising. After the first year, 21 out of 22 (95%) participating students persisted in college while just 24% (35 out of 146) of eligible students on the waiting list persisted. The program “seeks ways to spend a housing dollar not only to house needy families but to get two other outcomes: help students succeed in school; [and] promote the success of the Tacoma schools and educational institutions serving low-income students. When it works, it becomes a very good use of a housing dollar” (Tacoma Housing Authority, 2015, pg. 2). Beginning in fall 2017, Sara Goldrick-Rab and I will evaluate the impact of the Tacoma Community College Housing Assistance Program over three year using a randomized evaluation design. We plan to study program implementation and feasibility as well as impacts on academic success and well-being.

The efficacy of programs and policies designed to reduce material hardship and promote college success must be rigorously studied and the results disseminated to practitioners and policymakers. Moreover, research-practice-policy partnerships may provide a promising approach to better understanding and ameliorating basic needs insecurity among college students. The HOPE Center for College, Community and Justice opening in fall 2018 may provide one such model. The Center is founded by Dr. Goldrick-Rab and the Director of Community Engagement is Clare Cady, cofounder of the College and University Food Bank Alliance. According to Cady (2017), the partnership will “develop research to better understand the impacts of campus pantries and other food insecurity interventions” and “curate and share best practices in campus pantries and other food insecurity interventions” among practitioners. These types of collaborative and mutually beneficial relationships have the potential to push forward scholarly conceptualizations of poverty, inequality, and education as well as support students in their educational pursuits.

### **Conclusion**

Over the past half century, the American higher education system has expanded and diversified. Despite improvements in access, college completion rates among those from low-income or disadvantaged families remain low, limiting the individual and societal benefits associated with credential attainment. Growing public and policy discourse suggests that material hardship may be impeding students’ ability to do their best in college and earn a degree. Yet, there is limited evidence documenting the problem of basic needs insecurity among college students or examining how it might be related to college academic success.

Results from this study indicate that significant shares of students are struggling to make ends meet and report challenges obtaining adequate food and shelter. These material hardships

are independently associated with poorer academic achievement and attainment. Housing insecurity, in particular, appears to be an independent source of educational disadvantage and the magnitude of the relationship warrants further attention. Currently, some intermediary organizations argue that students' living expenses and their ability to consistently meet basic material goods is beyond the scope of higher education reform. Yet, evidence from this study indicates that college students who are not secure in their housing situation are less likely to be academically successful than observably similar students. Thus, efforts to promote college completion must consider the lived experiences of students, including experiences of material hardship.

With greater awareness of the problem and the academic implications of basic needs insecurity, higher education practitioners and policymakers can work to alleviate material hardship or address the root causes of it. Organizations and networks like the College and University Food Bank Alliance, Single Stop, Working Families Success Network, and Scholarship America's Dreamkeepers are working directly with colleges and universities to develop cost-effective solutions that minimize material hardship and promote college success. Politicians and advocacy organizations including the Center for Law and Social Policy and MAZON: A Jewish Response to Hunger are working to ensure that state and federal social safety net policies appropriately support college students who are struggling to make ends meet. And others are working to reduce the price of college or increase need-based financial aid for students. Future research studies, including those conducted in collaboration with practitioners and policymakers, are essential to examining programmatic and policy responses to students' material hardship challenges. Moreover, ongoing discussions of higher education reform and



college completion must include consideration of students' living expenses and basic material security.

## APPENDIX A

### Food Insecurity in the United States: A Brief History and Measurement Overview

In the late 1960s, shortly after the War on Poverty legislation was introduced, hunger became an important public issue in America. The 1968 CBS television documentary, “Hunger in America,” helped average citizens realize that hunger was a problem in the land of plenty. In response to growing awareness, government officials, academic researchers and advocacy organizations tracked and measured hunger, but there was little consensus on the definition or measurement of “hunger” (National Research Council, 2006; Radimer, Olson & Campbell, 1990; RTI International, 2014)

By the early 1980s, “adverse economic conditions and efforts to limit federal spending led to a general belief that hunger was widespread in the United States and may have been increasing” (National Research Council, 2006, pg. 24). In September 1983, President Reagan issued an executive order establishing a Presidential Task Force on Food Assistance to examine food assistance programs and make recommendations for improvement. By January 1984, the Task Force “concluded that ‘hunger does persist’ in America but that ‘allegations of rampant hunger simply cannot be documented’” (Pear, January 9, 1984, np). The committee report states that there is “no official ‘hunger count’ to estimate the number of hungry people, and so there are no hard data available to estimate the extent of hunger directly” (Presidential Task Force on Food Assistance Report, 1984, pg. 37). In these early studies, hunger was regularly not defined or conflated with other concepts including unemployment, poverty, or malnutrition (National Research Council, 2006; Presidential Task Force on Food Assistance Report, 1984; Radimer et

al., 1990). Thus, this Task Force provided the impetus for the development of scientifically valid and reliable measure of food security and insecurity in the U.S. (Bickel et al., 2000).

Through the 1980s and 1990s, academic researchers and government officials worked to clarify the concept of hunger and food insecurity and design and test survey items to measure the concepts (e.g., Radimer et al., 1990; Wehler, Scott & Anderson, 1992). In 1990, the Life Sciences Research Office convened an expert panel that placed hunger within the context of food insecurity. They defined food security as

access by all people at all times to enough food for an active, healthy life and includes at a minimum: a) the ready availability of nutritionally adequate and safe foods, and b) the assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, and other coping strategies). Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain. Hunger, in its meaning of the uneasy or painful sensation caused by a lack of food, is in this definition a potential, although not necessary, consequence of food insecurity (Anderson, 1990, pg. 1575-1576).

These definitions provided the conceptual basis for developing standardized survey measures to track food insecurity as mandated by the National Nutrition Monitoring and Related Research Act of 1990. Moreover, these definitions remain the conceptual basis for the measurement of food security and insecurity today (National Research Council, 2006).

In 1994, the Conference on Food Security Measurement and Research brought together key experts, researchers and government officials to discuss the best way to implement a national food insecurity measure. After the conference, an interagency working group was formed to review potential survey questions, which were then sent to survey experts at the Census Bureau for extensive cognitive assessment and field testing. As noted in a National Academies report, “it is unusual for an agency to undertake such comprehensive research prior to the start of a survey, and the panel has been very impressed” (National Research Council, 2006, pg. 114).

In April 1995, the food security questionnaire was piloted as a supplement to the Current Population Survey. Over the next five years, U.S. Department of Agriculture (USDA) researchers in conjunction with analysts from Abt Associates, Inc. and Mathematica Policy Research used data from the pilot study to test and validate the survey scale (e.g., Hamilton et al., 1997). Analysts employed Item Response Theory (IRT) methods to create a valid and reliable scale that was not overly burdensome to respondents. According to RTI (2014, pg. C-3),

The final scale, selected after exhaustive testing of each candidate question, and subsets of questions to identify the set that performed best together, was a valid, reliable, and ‘very-well ordered’ set of 18 questions. Being well-ordered meant that if a respondent answered affirmatively to any particular question, they had a very high probability (approaching certainty) of also having answered affirmatively to all less-severe questions. This property of the scale is critical for identifying severity levels and categorizing households by level of severity of the condition being measured.

The U.S. Household Food Security Scale continued to be tested, evaluated, and improved over time. Between 2003 and 2006, the National Academies convened the Committee on National Statistics to review food security measurement methods, as mandated by law. The expert panel conducted a comprehensive review and concluded that the USDA should continue to measure and monitor food security in a household survey. In addition, they made several recommendations related to concepts and definitions; survey measurement; IRT modeling; and survey vehicle (i.e., examine alternatives or additions to the Current Population Survey).

The Committee concluded that “the broad conceptual definition of household food insecurity includes more elements than are included in the current USDA measure of food insecurity” (National Research Council, 2006, pg. 48). Specifically, the scale focuses on uncertainty and insufficiency rather than nutritional adequacy, safety, social unacceptability of food access, or hunger. Though it is not necessary for the scale to measure all dimensions of food insecurity, the labels and definitions used to explain the scale should more closely match the

measurement. Thus, the panel recommended eliminating the term “hunger” from the food security scale severity labels. They argued that hunger is a separate construct that is not captured by the scale. Instead, hunger and related concepts, including deprivation, alienation, and distress should be examined in future studies and measures (National Research Council, 2006). In 2006, the USDA implemented this recommendation and changed the food security scale labels from food secure, food insecure without hunger, and food insecure with hunger to the following:

1. **High food security**—Households had no problems, or anxiety about, consistently accessing adequate food.
2. **Marginal food security**—Households had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.
3. **Low food security**—Households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.
4. **Very low food security**—At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.

The panel also offered several detailed recommendations regarding survey measurement, noting that the wording of questions should be updated to reflect modern cognitive questionnaire design principles. They also reported that questions related to the concept of a “balanced meal” and “not eating enough” may not be interpreted consistently across groups (National Research Council, 2006, pg. 68) and questioned the use of a 12-month reference period, noting seasonality effects and reduced reliability of responses (National Research Council, 2006, pgs. 66-67). In the future, the panel recommends that revised measures should better address issues of frequency and duration, noting that these dimensions are not adequately captured by the current scale (National Research Council, 2006). In response to these recommendations, the USDA changed

the “resource constraint” wording of several questions to better standardize it, regrouped several questions, and commissioned two studies of duration and reoccurrence (Nord, 2012).

Members of the expert panel also questioned the use of the Rasch IRT model to classify households’ food security level, noting that the assumptions may not be met and that more flexible models may make better use of the survey information collected (National Research Council, 2006). The USDA followed up on this recommendation and concluded that “introducing more complex statistical models would improve measurement of food security little, if at all, while making results and methods more difficult to explain to policy officials and the public” (Nord, 2012, np). Thus, food security categorization continues to be determined by counting the number of affirmative responses to the scale and following the cut points identified in testing (Bickel et al., 2000). The current food security scales are included at the end of this appendix.

### ***Strengths and weaknesses of food security measures***

The food security scale is the result of more than two decades of research, but healthy debate remains about the validity and reliability of the measure. The food security scale has been tested over time and across cultural and linguistic groups and psychometric assessments “generally finding good evidence of validity and reliability of the measures,” especially when focus groups or cognitive interviews are used to ensure high-quality translation (Nord, 2014, pg. 2). However, the scale is not without limitations and it has not been tested with college students. Because there is evidence that some subgroups respond differently to food security questions, future research should consider the validity and reliability of the food security scale with this population (e.g., Matheson & McIntyre, 2014).

There is an extensive body of research documenting the associations between food insecurity and more objective measures of well-being as well as adverse outcomes in children and adults. For instance, food security is associated with income and food expenditures. In 2013, for example, the typical food-secure household spent 30% more on food than the typical food-insecure household of the same size and household composition (Coleman-Jensen, Gregory & Singh, 2014). Food security is also correlated with inadequate nutritional intake and increased risk of obesity, diabetes, hospitalization, and poor physical and mental health, including depression. In a study of Canadian college students, those with severe food insecurity consumed fewer fruits and vegetables and were more likely to report fair or poor physical and mental health in comparison to students with higher levels of food security (Farahbakhsh et al., 2016). For children, these challenges are associated with poorer academic performance and in adults, food insecurity is associated with limited labor force participation (see National Research Council, 2006 and RTI International, 2014 for a review of studies). Yet, most of these studies use cross-sectional designs and fail to capture other dimensions of hardship, limiting our understanding of the relationship between food security and well-being (Nord, 2014).

A growing body of evidence suggests that the food security scale may provide a conservative estimate of food insecurity, especially among marginalized groups including those with very low incomes, households experiencing severe deprivation, and in children and adolescents (e.g., Gunderson & Ribar, 2005; RTI International 2014). Moreover, the Current Population Survey, which is used to officially measure national food security, excludes certain subpopulations that are at greater risk of food insecurity. Thus, this coverage bias also contributes to underestimates of food insecurity nationwide (National Research Council, 2005). A recent report compares food insecurity rates from three nationally-representative surveys and

indicates that 16 percent of FoodAPS households reported low or very low food security compared with 11 percent reported in the National Health Interview Survey and 8 percent in the Current Population Survey Food Security Supplement (Clay et al., 2016).

### ***Household Food Security Scales***

#### ***18-item household and 10-item adult scales***

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

*(Questions 11-18 were asked only if the household included children age 0-17)*

11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food." Was that often, sometimes, or never true for you in the last 12 months?



12. "We couldn't feed our children a balanced meal, because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?
13. "The children were not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for you in the last 12 months?
14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No)
15. In the last 12 months, were the children ever hungry but you just couldn't afford more food? (Yes/No)
16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No)
17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
18. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

### ***6-item short-form scale***

The six-item short form of the survey module and the associated Six-Item Food Security Scale were developed by researchers at the National Center for Health Statistics in collaboration with Abt Associates Inc. and documented in "The effectiveness of a short form of the household food security scale," by S.J. Blumberg, K. Bialostosky, W.L. Hamilton, and R.R. Briefel (published by the American Journal of Public Health, vol. 89, pp. 1231-34, 1999). ERS conducted additional assessment of classification sensitivity, specificity, and bias relative to the 18-item scale. If respondent burden permits, use of the 18-item U.S. Household Food Security Survey Module or the 10-item U.S. Adult Food Security Survey Module is recommended. However, in surveys that cannot implement one of those measures, the six-item module may provide an acceptable substitute. It has been shown to identify food-insecure households and households with very low food security with reasonably high specificity and sensitivity and minimal bias compared with the 18-item measure. It does not, however, directly ask about children's food security, and does not measure the most severe range of adult food insecurity, in which children's food intake is likely to be reduced (USDA, 2012, np).

Transition into Module: These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.

NOTE: If the placement of these items in the survey makes the transition/introductory sentence unnecessary, add the word “Now” to the beginning of question HH3: “Now I’m going to read you....”

FILL INSTRUCTIONS: Select the appropriate fill from parenthetical choices depending on the number of persons and number of adults in the household.

HH3. I’m going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month). The first statement is, “The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

HH4. “(I/we) couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?  Yes  No (Skip AD1a)  DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?  Almost every month  Some months but not every month  Only 1 or 2 months  DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?  Yes  No  DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?  Yes  No  DK

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