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**References**

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**A review of estimates of housing insecurity and homelessness among students in U.S. higher education**

Lack of secure affordable housing is a substantial concern for many of today's college students. Over the past two decades, the price of college has risen, the purchasing power of need-based financial aid has declined, and most family incomes have stagnated. This paper provides a review of estimates of the prevalence of housing insecurity, including homelessness, among college students in the U.S. from peer-reviewed and grey literature and a nationally representative study of undergraduates. Data from the latest National Postsecondary Student Aid Study indicate that nearly 1 in 10 U.S. undergraduates are homeless or self-supporting and at risk of homelessness; results from a review of extant research that utilizes multiple measures and samples is consistent with this national estimate. In addition, weighted results from the literature review indicate that 45% of college students experience some form of housing insecurity including problems related to housing unaffordability, instability, or homelessness. Community college students appear to be at greater risk of housing insecurity and homelessness in comparison to their peers at four-year colleges and universities. Given the scope and implications of this problem, programmatic and policy efforts to promote college success and student well-being must include consideration of students' housing situations.

Keywords: Poverty; housing; homeless; college; higher education

## Introduction

Over the past two decades, the price of college has risen, the purchasing power of need-based financial aid has declined, and most family incomes have stagnated (Goldrick-Rab, [29]). There is growing evidence that substantial shares of students now attend college without securing their basic material needs, including adequate food and shelter (e.g. Broton & Goldrick-Rab, [ 7]; Bruening, Brennhofner, van Woerden, Todd, & Laska, [ 9]; Crutchfield et al., [18]; Crutchfield & Maguire, [20]; Goldrick-Rab, Broton, & Eisenberg, [30]; Goldrick-Rab, Richardson, & Hernandez, [33]; Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, [35]; Nazmi et al., [57]). An emerging body of scholarship, couched in strong theory, indicates that these material hardships are associated with poorer academic performance and health, undermining investments in higher education and hindering upward social mobility (Broton, [ 4]; Goldrick-Rab, Richardson, Schneider et al., [35]; Maroto, Snelling, & Linck, [45]; Martinez, Maynard, & Ritchie, [47]; Morris, Smith, Davis, & Null, [52]; Patton-López, López-Cevallos, Cancel-Tirado, & Vazquez, [58]).

Research on basic needs insecurity among college students often focuses on students' food challenges, rather than their housing experiences (Broton, Weaver, & Mai, [ 8]; Bruening et al., [ 9]; Martinez et al., [47]; Martinez, Frongillo, Leung, & Ritchie, [46]; Martinez, Webb, Frongillo, & Ritchie, [48]). According to a recent systematic review, half of college students are food insecure (Nazmi et al., [57]), but there are no reviews that synthesize extant research on the problem of housing insecurity and homelessness among college students. Instead, studies of students who are housing insecure or homeless often use qualitative methods designed to illuminate students' experiences, including the assets that they draw on when faced with challenging circumstances (e.g. Crutchfield, [16]; Crutchfield, Chambers, & Duffield, [17]; Gupton, [38]; Hallett & Freas, [41]; Tierney, Gupton, & Hallett, [63]; Vasquez, Vang, Garcia, & Harris III, [66]). Importantly, prior research shows that individuals in precarious living situations do not necessarily identify as "homeless" or "housing insecure," so survey studies that simply ask students to self-identify as "homeless" – rather than document their housing experiences – provide a conservative estimate of the problem (Goldrick-Rab et al., [34]; Hallett, [39]; Hallett & Crutchfield, [40]; Morton et al., [53]; Tierney & Hallett, [64]).

Housing insecurity is a multidimensional concept and there are multiple ways to define and measure it (e.g. Cox, Rodnyansky, Henwood, & Wenzel, [15]; Curry et al., [21]; Hallett & Crutchfield, [40]; Morton et al., [53]). It exists on a spectrum with the most extreme form consisting of homelessness or lack of a fixed, regular, and adequate nighttime residence (McKinney-Vento Homeless Education Assistance Improvements Act, [49]). This definition includes students who are living in an emergency or transitional shelter; staying in an abandoned building, storage space, car, or other place not designed for human habitation; doubling up with others for financial reasons; or staying in a motel or campground because there are no alternative accommodations (Curry et al., [21]; Hallett & Crutchfield, [40]; McKinney-Vento Homeless Education Assistance Improvements Act, [49]). Other dimensions of housing insecurity commonly found in the higher education literature include lack of housing affordability or stability (Broton & Goldrick-Rab, [ 7]; Hallett & Crutchfield, [40]). Drawing on

the work of food insecurity scholars (Anderson, [ 1]), Cox, Henwood, Rice, and Wenzel ([14], p. 7) argue that housing insecurity can be defined as the

Limited or uncertain availability of stable, safe, adequate, and affordable housing and neighborhoods; limited or uncertain access to stable, safe, adequate, and affordable housing and neighborhoods; or the inability to acquire stable, safe, adequate, and affordable housing and neighborhoods in socially acceptable ways.

In this paper, I include research that broadly fits within this definition of housing insecurity or homelessness among students attending colleges and universities in the United States.

Given the hidden nature of the problem, it is difficult to measure the prevalence of housing insecurity and homelessness, but several estimates provide insights into housing challenges in the United States. Among K-12 students enrolled in public schools, the incidence of homelessness is growing. Today, 1.3 million students are reported homeless, compared to 795,000 in 2007 (Child Trends, [11]; National Center for Homeless Education, [56]). Among young adults, ages 18–25 years old, 9.7% or 3.4 million were homeless in the prior year, regardless of college enrollment status (Morton et al., [53]). Evidence from the 2011 Survey of Income and Program Participation indicates that 14% of all adults are housing insecure as evidenced by an inability to pay rent/mortgage or utilities (Author's calculations). According to the Department of Housing and Urban Development ([23]), at least 554,000 individuals are homeless at a single point in time and many more are at risk of homelessness. Furthermore, over 38 million households – nearly 1 in 3 – face housing cost burdens so high that they have little room in their budgets for other necessities such as food, healthcare, or higher education (Joint Center for Housing Studies of Harvard University, [43]).

Until recently, the only national estimates of housing insecurity or homelessness among college students came from the FAFSA (Free Application for Federal Student Aid), which is notoriously difficult to complete (Bettinger, Long, Oreopoulos, & Sanbonmatsu, [ 3]; Goldrick-Rab, [29]). Given the nature of the FAFSA estimate, it should be considered a minimum count of student homelessness rather than a representative prevalence rate. 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. 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, [36]). Students who self-identify as homeless through either of these processes must then provide documentation verifying that they lack safe and stable housing, which can be extremely difficult for the majority of students who are not connected to a high school

homeless liaison or shelter system (National Association for the Education of Homeless Children and Youth, [54]). In 2016–2017, over 32,000 college students completed this verification process and were officially determined to be homeless for financial aid purposes, representing a 10% increase over four years (School House Connection, [61]). 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, [60]).

In this paper, I examine evidence on the prevalence of housing insecurity, including homelessness, among U.S. college students by conducting a review of the extant research and existing nationally representative survey studies of college students. Since my review showed that the newly released 2016 National Postsecondary Student Aid Study (NPSAS:16) is the first – and only – nationally representative study of college students to include information about students' housing challenges, but there are no publications using these data, I analyze these data to provide a nationally representative estimate of the share of undergraduates who are homeless or self-supporting and at risk of homelessness. Results from the nationally representative NPSAS:16 survey and extant research on samples of college students from across the U.S. consistently show that approximately 1 in 10 undergraduates were homeless or at risk of homelessness in the prior year. Extant research also indicates that nearly half of college students experience some form of housing insecurity, ranging from instability and unaffordability to outright homelessness. The review indicates that college students are more likely than the overall public to report challenges obtaining an adequate and secure home though a similar share of all 18- to 25-year-olds report experiences with homelessness over the prior year. Among college students, those attending community colleges and for-profit institutions are especially at risk of housing insecurity and homelessness, likely because students from historically marginalized groups (e.g. students of color, low-income students) who are more likely to experience housing insecurities are overrepresented in these sectors (Broton & Goldrick-Rab, [ 7]; Cottom, [13]; Goldrick-Rab et al., [34]).

### **Data and empirical approach**

The strength of survey research methodology lies in its ability to describe the underlying characteristics or experiences of a target population. In survey research, valid estimates require two inferential steps: ( 1) survey sample to target population, and ( 2) measured items to concept of interest (Groves et al., [37]). In this case, we are interested in learning about the prevalence of housing insecurity, including experiences of homelessness, among college students in the United States. Ideally, there would be a nationally representative survey study of college students that includes comprehensive, valid and reliable measures of the complex concept of housing insecurity, including dimensions of affordability, stability, adequacy, and safety that allow analysts to differentiate levels of severity and duration over time. Since no such dataset yet exists, I review existing nationally representative survey studies of college students that include any measures of housing insecurity or homelessness (i.e. strength is inferential step 1 between sample and population) *and* extant research on housing insecurity among samples of college students in states and communities across the

nations (i.e. strength is inferential step 2 between measured items and concept). Given the state of the literature, these two approaches – together – provide the best evidence on the prevalence of the problem, given their complementary methodological strengths and weaknesses.

The National Center for Education Statistics (NCES) conducts several national survey studies related to education in the U.S., but the 2016 iteration of the National Postsecondary Student Aid Study is the only NCES study that includes a nationally representative sample of undergraduates and information on students' housing challenges during college. The NPSAS:16 is a national study of college students who attend Title IV institutions, including public and private less-than-2-year institutions, community colleges, 4-year colleges, and major universities. Both students who receive financial aid and those who do not receive financial aid participate in NPSAS, which has been conducted every 3–4 years since 1987 (Wine, Siegel, & Stollberg, [67]). In short, it is the most comprehensive NCES study to examine how students and their families pay for college, and the implications of college unaffordability.

In the 2016 NPSAS iteration, for the first time, the survey instrument included a question asking students to indicate if they were self-supporting and at risk of homelessness over the prior year (Wine et al., [67]).[ 1] Students who responded in the affirmative to this survey item or who were determined by a professional to be homeless via the 2015–2016 FAFSA are considered "homeless or at risk of homelessness" according to the NPSAS:16.[ 2] Since no prior publications include information from this new and important data source, I report the total share of undergraduates who are homeless or at risk of homelessness and the share in each institutional sector, since prior research suggests that community college students may be at an increased risk of housing problems (Brotton & Goldrick-Rab, [ 7]; Goldrick-Rab et al., [34]). I use t-tests to examine potential differences across higher education sectors.

While the NPSAS:16 provides a nationally representative estimate of homelessness or risk of homelessness among undergraduates in the U.S., it does not provide a comprehensive assessment of the multidimensional concept of housing insecurity, which ranges in severity from instability to outright homelessness. To better understand this problem among college students, I also review the extant research on housing insecurity, including homelessness, among college students in the United States. In addition to identifying research on the topic across a range of disciplines, I synthesize and evaluate the state of the existing literature, focusing on issues of sample selection, measurement, and generalizability (e.g. Nazmi et al., [57]).

The review includes peer-reviewed journal articles and grey literature such as reports and conference presentations published between 2009 and July 2018.[ 3] Due to the burgeoning state of the field, grey literature often contained the most recent estimates of housing insecurity and homelessness. Moreover, some reports were commissioned by higher education leaders and garnered significant media attention (e.g. Crutchfield & Maguire, [20]; Goldrick-Rab et al., [34]). I

conducted the search using Google Scholar, which includes peer-reviewed journal articles, reports, and conference presentations. Google Scholar's coverage has improved dramatically over the past decade and recent research indicates that it is sufficient to be used alone for systematic reviews (Gehanno, Rollin, & Darmoni, [28]). The terms "housing insecurity" AND "college students" were used to identify studies and a series of robustness checks helped to ensure that the full scope of studies were recorded. In particular, I also used the search terms "housing instability" and "college students" between 2016 and 2018; reviewed all of the articles that cited any of the college housing insecurity articles that were identified in the search process and published prior to 2016; cross-referenced Google Scholar's results with the Wisconsin HOPE Lab's ([68]) annotated bibliography on basic needs insecurity and California State University's Basic Needs Initiative ([10]) research summary; and consulted with leading scholars in the field. I excluded student thesis projects since they almost always rely on small convenience samples at single institutions, limiting their contribution given the state of the literature.

I read resulting titles and abstracts to determine if the document met the study criteria defined above. Then, I read promising articles and reports in full to determine inclusion in the review (Moher, Liberati, Tetzlaff, Altman, & Group, [50]). For inclusion, studies had to report a housing insecurity or homelessness prevalence estimate among college students in the United States, though studies used a variety of definitions and measurements as described below. Studies that only provided an aggregate measure that included being homeless or *knowing* someone who was homeless were excluded. Articles resulting from the search that were not included in the review were excluded for the following reasons: college students were not the target population; the article did not provide an estimated prevalence rate of housing insecurity or homelessness; or the study occurred in another country.

For each relevant document or study sample, I report the state(s) and higher education institution(s) included in the study; how housing insecurity or homelessness was measured; sample information including sampling strategy, response rate, and sample size; and the type of document reviewed. Following Nazmi et al. ([57]), I present weighted estimates of the share of students experiencing housing insecurity or homelessness based on study sample sizes. Accounting for sample size is important since relatively large sample sizes reduce nonresponse bias when compared to smaller samples with the same response rate (Fosnacht, Sarraf, Howe, & Peck, [27]). Furthermore, I classify the studies into three groups based on sampling strategy and generalizability: surveys of entire university systems (e.g. all 23 campuses in the California State University); multi-site surveys (e.g. Wisconsin HOPE Lab studies that include multiple institutions across several states); and single-site surveys (i.e. studies conducted at a single college or university). Based on a synthesis of this information, I highlight the strengths and weaknesses of the extant literature on housing insecurity among college students and offer recommendation for future research.

## Limitations

The review of extant research relied on Google Scholar and the parameters described above. Similarly, the review of nationally representative survey studies of college students relied on my reading of technical documentation and direct communication with survey staff and professionals in the field. Additional searching, such as adding search engines and terms, could yield in the inclusion of additional studies or estimates.

## Findings

Results from the nationally representative NSPAS:16 indicate that 8.8% of U.S. undergraduates reported that they are homeless or self-supporting and at risk of homelessness. In the four-year sector, 5.7% of students attending public institutions and 6.1% of students attending private non-profit institutions responded in the affirmative; there is no evidence that rates vary by public or private non-profit status in this higher education sector ( $p > .05$ ). Among students attending public two-year colleges, 10.0% indicated that they are homeless or self-supporting and at risk of homelessness, a statistically significant difference with respect to the public and private four-year sectors ( $p < .05$ ). Finally, 19.0% of students attending a private for-profit institution reported problems with homelessness or risk of it. Again, this represents a statistically significant difference when compared to the two- or four-year public and private non-profit sectors ( $p < .05$ ) (Table 1). The strength of the NPSAS:16 study lies in the generalizability of the survey sample to U.S. undergraduates, but it only provides one measure of homelessness or risk of homelessness that requires individuals to identify with a stigmatized term. As a result, some students who do not have a home, but do not self-identify as "homeless or at risk of homelessness" (e.g. couch surfers) are likely excluded from this estimate of the problem, resulting in an undercount of the problem (Goldrick-Rab et al., [34]; Hallett, [39]; Hallett & Crutchfield, [40]; Morton et al., [53]; Tierney & Hallett, [64]).

Table 1. Nationally representative estimate of homelessness among college undergraduates.

Sector	Prevalence	95% Interval	Confidence Standard Error	t- test	Weighted Sample Size
Total	8.8	[8.5–9.1]	0.152		19,532
Public 4-year	5.7	[5.2–6.2]	0.257	*	6156
Private nonprofit 4-year	6.1	[5.4–6.8]	0.339	*	2706
Public 2-year	10.0	[9.4–10.6]	0.309	*	6897
Private for-profit	19.0	[18.1–20.0]	0.501	*	1718
Other or more than one school	9.1	[8.3–10.0]	0.410		2055

Notes: Data come from the National Postsecondary Student Aid Study (NPSAS:16) and indicate an affirmative response to being homeless or at risk of homelessness. Weight used in frequency: (WTA000). T-tests examine differences between each sector and the total at  $p < .05$  level.

## Review of extant research

What does extant research – none of which used nationally representative samples of college students, but employed multiple measures of housing insecurity – tell us about the scope and depth of the problem? The search resulted in 309 studies about housing insecurity and college students. Thirteen studies provided 17 distinct estimates of housing insecurity and/or homelessness among U.S. college students (Figure 1).

Graph: Figure 1. Review of extant research on housing insecurity and homelessness among college students. Notes: Eligible studies were published between 2009 and July 2018 in English and included an estimate of the prevalence of housing insecurity or homelessness among U.S. college students.

The extant research indicates that housing insecurity is a challenge for a substantial share of college students. Studies report that between 2 and 20% of surveyed college students are homeless – the most extreme form of housing insecurity – and 15–52% are housing insecure (including homelessness). A simple average suggests that 11% are homeless and 38% are housing insecure, but this estimate ignores meaningful differences in sample sizes as illustrated in Figure 2 by the size of each bubble. After taking into account the sample size of each estimate, the weighted average indicates that 12% of students are homeless and 45% are housing insecure since some of the larger studies report higher rates of housing problems.

Graph: Figure 2. Weighted study estimates of the share of housing insecure and homeless college students. Notes: Study numbers correspond to Study IDs listed in Table 2. They are listed chronologically within each type. Definitions of housing insecurity and homelessness vary across studies and are described in Table 2. Bubble sizes are weighted by sample sizes.

### University system studies

While sample size is important, there are other meaningful differences between sample estimates. For instance, three studies provide system-wide estimates of housing insecurity or homelessness; the City University of New York (CUNY) and California State University (CSU) system studies provide prevalence rates for all system students while the University of Wisconsin system study only includes students from low-income families (Table 2, Figure 2, Study IDs 1–3). Researchers at CUNY conducted the only university system-wide study focused on housing insecurity. They invited nearly 7000 randomly sampled undergraduates from all 17 campuses to participate in a survey and almost 1100 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 (Tsui et al., [65]; Study ID 1). A supplemental sample that included students at eight CUNY campuses found that 48% of respondents were housing insecure (Tsui et al., [65]; Study ID 4). Additionally, 24% of low-income students attending one of Wisconsin's 42 public two- and four year colleges and universities indicated that they were unable to pay the rent/mortgage or utilities on time in the past year. The study was designed to capture a broad range of student

experiences and included 1436 students for a 77% response rate (Brotton & Goldrick-Rab, [ 7]; Study ID 2). More recently, Crutchfield and Maguire ([20]; Study ID 3) distributed a survey that included several questions about homelessness to students at all 23 campuses in the CSU System. Over 24,000 students responded (6% response rate) and 10.9% reported that they were homeless in the past year (Figure 2, Table 2).

Table 2. Summary of the review of extant studies of housing insecurity and homelessness among college students.

Study ID	Author & Year	State	College University	or Housing Measures	Sample Information	Results	Document Type
1	Tsui et al. (2011)	New York	All 17 CUNY community college four-year schools are enrolled	One or more of twelverandomly sampled students were invited to participate in the survey and problems common the survey and include notresponded for a having 16% response enough rate. money to pay rent or experiencing a rent increase that made it difficult to pay rent.	A total of 688341.7% housing instable	41.7% housing instable	Report
2	Brotton and Goldrick-Rab (2018) <sup>a</sup>	Wisconsin	All two- and four-year colleges and universities in Wisconsin	Housing insecurity was defined as inability to pay the rent/mortgage on time or inability to pay	Students had to be recent high school graduates who received a Pell grant to be eligible for the 4-yr study.	24% insecure (32% 2-yr students & 19% of the students)	Peer-reviewed paper in Educational Researcher

the utilities billsurvey had a on time in the77% response past year. rate and included 1436 students.

3 CrutchfieldCalifornia and Maguire (2018) All 23 California State University campuses Several questions based on the Housing and Urban Development and U.S. Department of Education homeless definitions; reference period was one year. The survey was distributed to ahomeless census sample and 24,324 students responded for a 10.9% response rate. Report

Multi-site Studies

4 Tsui et al.New York (2011) 8 CUNY institutions including community colleges and four-year schools One or more of twelvedistributed andhousing collected in unstable person at the 8 CUNY campuses with the highest rates of students receiving public assistance for a convenience sample of 1114 students. The two most common problems of students experiencing a rent increase that made it difficult to pay rent. Report

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 money to help  
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homeless

8	Broton and Goldrick-Rab (2018)	24 states	73 community colleges	Housing insecurity includes full amount of rent/mortgage, didn't pay full	The sample includes students who didn't pay full response, was 4%.	24,608 and insecure survey (including homeless) rate was 14%.	Peer-reviewed paper in Educational Researcher
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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.

- 9 Goldrick- 20 states and 66 colleges and Housing The survey had 36% 4-Report  
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10	Wood and Harris III (2018)	California	5 southern California colleges	Data were derived from the Community College Success Measure (CCSM), institutional needs assessment tool, including lack of stable housing.	Surveys were collected from a census sample of students in randomly selected sections. The study includes 6103 students.	36% in housing insecure	Peer-reviewed paper in Educational Researcher
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Single  
 Campus

Studies

11	Wood, Harris III, and Delgado (2016)	California	College information was not reported.	Measures were defined.	The study includes students. additional information was reported.	33% housing No insecure	Report
12	Peterson, Taylor, and Fargo (2014)	Utah	Utah State University	Experiences of homelessness occurring in the past year include staying in hotel, car 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 students in Utah State University. No additional information was reported.	20% homeless at State No	Conference Presentation
13	Fletcher and Altholz (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	The study includes undocumented or undergraduates enrolled at Berkeley at the time of the study.	21% homeless housing at stable	Report

			been enrolled at Berkeley?		
14	Crutchfield et al. (2016)	California California State University, Long Beach	Homeless or displaced housing 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 students and 1039 responded for a 21% response rate.	12% Report
15	Martinez et al. (2016)	California Humboldt State University	Experienced homelessness at some point since starting college.	All students were invited to participate and 1554 completed the survey.	15% Report
16	Silva et al. (2017)	Massachusetts University Massachusetts Boston	Homelessness was explicitly defined, but the reference period was since starting college. Survey participants were asked where	183 courses were randomly selected to participate in the study and 28 instructors agreed for a sample size of 390 students. would continue	5% Peer-reviewed in a paper in the Journal of College Student Retention

they slept last night and if they could continue sleeping there for the next 2 weeks.

17	Haskett, North Carolina North Carolina Majumder, State Wright, and Kotter- Grühn (2018)	HomelessnessA	9.6%	Report
was defined representative homeless using a sample of nine questions students were drawn from invited to the McKinney-participate in a Vento Acts survey and definition and 1703 asked about responded for a experiences in 24% response the past year. rate.				

Notes: This table includes brief summaries of the 17 distinct estimates of housing insecurity or homelessness among college students. The Study ID is referenced in the graphic summary of results (Figure 2). <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, and Goldrick-Rab ([ 5]) and the following reports: "Hungry and Homeless in College" by Goldrick-Rab, Richardson, et al. ([33]) and "Hungry to Learn" by Goldrick-Rab et al. ([30]). All of the survey studies reported in these publications can be found in "Going Without" by Broton and Goldrick-Rab ([ 7]) along with additional estimations.

Due to their defined sampling frame and relatively large scope, these system-wide studies make an important contribution to our understanding of housing insecurity and homelessness among college students, but they have several limitations. The Wisconsin study had a relatively high response rate while the New York and California studies had relatively low response rates, but the Wisconsin study included just two indicators of housing insecurity whereas the New York and California studies included a more comprehensive set of survey measures. The trade-offs between response rates and measurement makes it difficult to directly compare these estimates. Moreover, studies that take place in New York and California, two states known for their high price of living, may be less generalizable to other parts of the nation.

**Multi-site studies**

Several multi-site studies provide additional information on the problem. Most of these studies rely on convenience samples and have low response rates, but they represent the experiences of more than

40,000 college students. The largest study was conducted by the Wisconsin HOPE Lab in 2016 and includes housing information from over 24,000 students attending 73 community colleges in 24 states; the study had a 4% response rate and included multiple measures of housing insecurity and homelessness. Results indicate that 51% of respondents experienced some form of housing insecurity in the past year, including 14% who reported that they were homeless (Broton & Goldrick-Rab, [ 7]; Study ID 8). These results are consistent with the Wisconsin HOPE Lab's 2015 survey (9% response rate) in which they found that 52% and 13% of students at 10 community colleges were housing insecure and homeless, respectively (Broton & Goldrick-Rab, [ 7]; Study ID 7). However, a study of students at 10 public and private two- and four-year colleges in Wisconsin had a 64% response rate and indicated much lower rates of housing problems: fifteen percent were housing insecure, including 2% who were homeless in the past year. The sample was drawn from a larger study in which students were required to meet several eligibility criteria including being from a low- or moderate-income family and demonstrating interest in science, technology, engineering, or math, limiting generalizability (Broton & Goldrick-Rab, [ 7]; Study ID 6). In between these extremes, Wood and Harris III ([69]; Study ID 10) reported that 36% of students at five southern California colleges were housing insecure while Dubick et al. ([24]; Study ID 5) indicated that 48% of students at 34 colleges were housing insecure, including 9% who were homeless (Figure 2, Table 2). Again, differences in response rates, measurement tools, and sampling frames make it difficult to directly compare study findings.

However, some multi-site studies allow for the direct comparison of housing insecurity across higher education sectors. For instance, Goldrick-Rab and colleagues ([34]; Study ID 9) surveyed students attending 31 community colleges and 35 four-year colleges and universities in 2017 (7% response rate). They find that 46% of students at two-year colleges and 36% of students at four-year colleges experienced housing insecurity in the past year and 12% and 9%, respectively, experienced homelessness (Figure 2, Table 2). These findings and those from other studies indicate that community colleges are at a greater risk of housing insecurity than their peers at four-year institutions (e.g. see also Broton & Goldrick-Rab, [ 7]; Study ID 2).

### Single campus studies

Finally, there are several single-site studies that indicate between 21 and 33% of students are housing insecure and 5–20% are homeless (Crutchfield et al., [18]; Fletcher & Altholz, [26]; Haskett et al., [42]; Maguire, O'Neill, & Aberson, [44]; Peterson et al., [59]; Silva et al., [62]; Wood et al., [70]; Study IDs 11–17). 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 et al., [59]; Study ID 12). The lowest rate of homeless was reported by Silva et al. ([62]; Study ID 16) in their study of 390 students at the University of Massachusetts Boston. These single-site estimates are concentrated in the four-year sector and are most useful in the local context, where they can be used for planning

purposes and in developing responses to students' housing problems (Figure 2, Table 2).

### **Evaluation of research on housing insecurity**

The extant research on housing insecurity and homelessness among college students is limited; just three peer-reviewed journal articles appear on the topic although there is a growing body of grey literature. The diversity of institutions and geographic areas represented in these studies, however, is a key strength of the literature. Together, 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. In addition, over three-quarters of the studies include sample sizes of more than 1000 students; these relatively large sample sizes can reduce nonresponse bias when compared to smaller samples with the same response rate (Fosnacht et al., [27]).

However, there are also significant limitations with this body of work. Despite considerable geographic and institutional variation, just three of the estimates include students from an entire university system. Seven estimates include data from students across multiple institutions and seven 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. The majority of studies reported response rates below 25% or did not report a response rate. Low response rates do not necessarily mean that the findings are biased (Groves et al., [37]), but few scholars provided information that would aid the reader in gauging the potential level or direction of bias.

Studies of college students' housing challenges also used inconsistent definitions and measures of housing insecurity and homelessness, limiting direct comparison across studies or to national studies. This is not surprising since there is no agreed upon definition of housing insecurity, let alone a validated survey instrument, and federal agencies used different definitions of homelessness (Curry et al., [21]; Hallett & Crutchfield, [40]). As expected, studies that included a more comprehensive set of housing insecurity and homelessness measures tended to report higher prevalence rates than those that relied on fewer indicators. Finally, there are no studies of college students' housing insecurity 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.

The NPSAS:16 analysis presented above addresses concerns about generalizability since it provides a nationally representative estimate. However, the survey included just one item that asked students to self-identify as homeless or at risk of being homeless. Because students who lack fixed, adequate and stable housing do not always identify with the stigmatized term, "homeless," this likely represents a conservative estimate of the problem. The inclusion of additional survey items that ask about students' experiences across a range of housing insecurity domains would provide a more comprehensive estimate of the problem and allow researchers to study consequences for student

success and well-being (Crutchfield & Maguire, [19]; Goldrick-Rab, Richardson, & Kinsley, [34]).

### **Discussion and conclusion**

As the net price of college increases and family income's stagnate, substantial shares of students enroll in college, but do not complete their degrees (Bailey & Dynarski, [ 2]; Goldrick-Rab, [29]; Ziolk-Guest & Lee, [71]). Recent research indicates that experiences of housing and food insecurity are associated with poorer academic outcomes (Brotton, [ 4]; Crutchfield & Maguire, [20]; Goldrick-Rab, Richardson, Schneider, et al., [35]), but relatively few studies of college success and student well-being include information on students' material challenges. Scholars and research agencies interested in higher education and social stratification must collect comprehensive measures of basic needs insecurity, including measures of housing insecurity and homelessness, in nationally representative samples of college students to better understand this problem so that we can take the necessary steps to alleviate it (Brotton & Goldrick-Rab, [ 6]).

For practitioners and policymakers working with students, however, the conclusion is clear: substantial shares of college students are struggling to secure adequate, safe, and stable housing. As scholars work to address methodological limitations related to generalizability and measurement, practitioners and policymakers must recognize that despite different methodological strengths and weaknesses, even the most conservative estimates indicate a meaningful problem that must be addressed. The synthesis of extant research indicates approximately 1 in 10 college students are homeless and 45% are housing insecure, defined as a broad range of challenges related to housing affordability and stability, including homelessness. These national estimates should spur local action to determine the scope and depth of the problem on your campus or in your state.

Higher education institutions and policymakers from across the nation are already responding to the problem and working to alleviate housing insecurity and homelessness in higher education. Since students attending two-year or community colleges are more likely to report housing challenges than those attending four-year colleges and universities, many initiatives are concentrated in this sector, which serves a greater share of students from marginalized backgrounds (e.g. Crutchfield & Maguire, [20]; Goldrick-Rab, Richardson, Schneider, et al., [35]). In Tacoma, Washington, for example, Tacoma Community College (TCC) collaborates with the Tacoma Housing Authority to run the College Housing Assistance Program (CHAP), which offers housing vouchers and support to current TCC students who are homeless or near homeless. Pilot data indicate that the program was successful in retaining 21 of 22 students and the Hope Center for College, Community, and Justice is currently working with CHAP to evaluate the impacts of its expanded program (Goldrick-Rab, Brotton, & Hernandez, [32]). State lawmakers in Washington also passed a sweeping higher education bill and recently gave students experiencing homelessness access to assistance facilities, like laundry, showers, and storage (Ellis, [25]). These programmatic and policy efforts – and others like emergency housing accommodations – have the potential to improve student well-being and academic success, but we need rigorous research to ensure that they are meeting the intended

goals (Daugherty, Johnston, & Tsai, [22]; Goldrick-Rab, Broton, et al., [32]).

Direct actions to alleviate housing insecurity and homelessness are critical to serving today's college students, but scholars, practitioners, and policymakers must also consider the systemic or root causes of this problem, including college unaffordability. Today's college students are more likely to work and work longer hours than prior generations, but they cannot simply work their way through college. The price of college is too high and wages are too low (Goldrick-Rab, [29]). Efforts to reduce the net price of college attendance through grants that reduce tuition, food vouchers that enable students to secure nutritious meals, or textbook programs that reduce the price of educational supplies can help students shift available resources toward housing costs. In this sense, emergency aid programs, need-based financial aid, and access to public benefits can help students make ends meet so that they can concentrate on their educational goals (Daugherty et al., [22]; Goldrick-Rab, Broton, & Gates, [31]). Even in the relatively more affordable two-year college sector, the total price of college attendance represents a significant financial burden for many students from low- and moderate-income families and additional support is necessary (College Board, [12]; Monaghan & Goldrick-Rab, [51]).

While the magnitude of the housing insecurity problem may challenge stereotypical notions of students and their college experiences, just a fraction of today's undergraduates are young adults who attend and focus on school full time. In reality, three-quarters of 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, two-thirds are employed, one-third delayed college enrollment by a year or more, and nearly half attend part-time (National Center for Education Statistics, [55]). Relatively high rates of housing insecurity may be less surprising in the context of these factors.

In conclusion, the existing evidence suggests that millions of college students are housing insecure. With greater awareness of the problem, college leaders, practitioners and policymakers must consider ways to better serve students who are living on the margins and struggling to make ends meet. Improving students' basic material experiences, including access to safe, secure, and affordable housing has the potential to improve student well-being and academic success. This payoff not only benefits individual students, but also the communities and health of our nation more broadly. Today's programmatic and policy efforts to support students in their pursuit of a higher education must consider their material well-being and ensure that their basic needs are met so that they can learn.

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### **Data availability statement**

The data are publicly available.

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No potential conflict of interest was reported by the author.

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### Notes

*1 Specifically, "At any time on or after July 1, 2015, were you determined to be self-supporting and also at risk of being homeless?"*

*2 This variable should not be compared to past NPSAS indicators of homelessness because previous versions applied only to students 23 years of age and younger, and did not include student-reported "risk of homelessness" responses.*

*3 The first study of material hardship among U.S. college students was published in 2009 though the first study on housing does not appear until 2011. Articles must be written in English.*

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