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Understanding Student Housing Insecurity and Homelessness: A Mixed Methods and Multi-variable Analysis

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This mixed methods study explores predictive factors for housing insecurity (HI) and homelessness. Using multi-variable analyses with data from an original survey (48% response rate, n = 1,416 students), we found that income, race/ethnicity, awareness of services and being impacted by a natural disaster, all significantly impact HI and homelessness. Focus groups and interviews corroborate the quantitative results. Implications for practice are discussed.

Homelessness and housing insecurity among college students is increasing across the country, raising concerns for administrators and student affairs professionals in higher education in the U.S. (K. Broton & Goldrick-Rab, 2016; Hallett et al., 2019; K. M. Broton & Goldrick-Rab, 2018). Understood as a continuum rather than distinct situations, students with limited resources experience a variety of challenges with securing and maintaining safe and stable housing, which manifest in myriad ways, often with direct implications for their ability to be successful in college (Hallett et al., 2019). There is no doubt that rising costs of tuition and housing has contributed to elevated numbers of students experiencing housing insecurity (Goldrick-Rab, 2016). Housing insecurity has been associated with risk-taking behavior (e.g., substance use), acute stress, isolation, and elevated rates of suicidal ideation (Hallett & Freas, 2017). With regard to their education, housing insecurity can take a significant amount of time, energy, and concentration away from coursework and college social life (Ambrose, 2016). To survive, students report taking on additional work hours, opening multiple lines of credit, and cutting back on meals, social activities, medical care, as well as course textbooks and supplies (K. Broton & Goldrick-Rab, 2016).

While it is clear that housing instability has a significant impact on student success, few studies have systematically investigated what factors predict student housing insecurity and homelessness. We address this gap by rigorously exploring the factors that predict housing

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insecurity and homelessness. This study uses a mixed methods approach, including; a cluster sample with in-class surveys and follow-up focus groups and qualitative interviews with housing insecure and homeless students. Conducted at a large, public institution the considerable sample size and high response rate make this study an important contribution to the growing body of literature on housing insecurity and homelessness among college students.

The current study augments the existing literature in several ways. Cluster sampling and in-class surveying yielded a relatively high response rate (48%) and representative sample, bolstering our confidence in the prevalence estimations. In addition, while previous studies used correlation or qualitative narratives to identify factors related to housing insecurity (e.g., Goldrick-Rab et al., 2018; Silva et al., 2017), the present study employs multivariable regression analyses to estimate the impacts of specific factors, while controlling for others. Finally, this study is unique in examining the impact of a regional natural disaster, a growing reality due to the current climate crisis, with implications for housing insecurity and homelessness among college students.

While there are some valuable theories that contribute to our understanding of both housing insecurity and homelessness among college students, there is a lack of an overall framework that fully and fairly explains this complex issue. By way of example, resilience theory posits that young people who come from under-resourced backgrounds often develop characteristics and coping skills that enable them to be successful despite a number of risk factors. Problematic is the focus on individuals whose job it is to overcome adversity, while ignoring larger systemic barriers which are far more likely to be both the source and ultimately, the solution to widespread inequality (Masten et al., 2014). Theories of housing instability in the general population do not illuminate factors that are specific to students such as academic capabilities and interest and pursuit of an advanced education. The following review of the existing scholarship identifies potential explanations of housing insecurity and homelessness among college students, which we then test.

Literature Review

Financial Need Among College Students

The cost of a 4-year degree has risen dramatically over the past several decades, as has the amount of student debt (Gonzalez et al., 2019), which results in material hardships including housing insecurity. College students are also at high risk for housing insecurity as they often have trouble securing rental lease agreements without a grantor, rental history, or enough funds for a deposit (K. Broton & Goldrick-Rab, 2016). When housing is secured it often accounts for 50% of annual costs for students attending four-year institutions (U.S. Department of Housing & Urban Development, 2015). Financial aid policies and housing support programs have not adjusted to reflect these increased costs (Crutchfield et al., 2016). The link between financial need and housing challenges has been documented in qualitative research (Crutchfield, 2018). Shortfalls in student funding, and the high portion of resources necessary for housing expenses often leads students to miss rental payments, end up living with roommates beyond the capacity of the unit, to be evicted, or to make the choice to forego housing all together to pay for other expenses.

Minoritized Students. Housing resources (e.g., available loans, lease restrictions, accessible neighborhoods, etc.) flow along privileged lines, with non-traditional students (i.e., parents), students of Color, and LGBTQ+ students more likely to experience housing insecurity and

homelessness as compared to their single, White, heteronormative peers (Corliss et al., 2011; Noll et al., 2017; Sutton, 2016).

Student Parents.

As the profile of the typical college student has changed, one of the fastest growing demographics is student parents. In 2016, 26% of the total college population were parents of dependent children (Noll et al., 2017). These parents face significant barriers that are unique to their circumstances—namely, fewer financial resources due to the cost of raising a family (Duke-Benfield, 2015). Student parents are more likely than their counterparts without children to work fulltime (Huelsman & Engle, 2013), often enrolling in college part time, which can then adversely affect their financial aid (Huelsman & Engle, 2013). Goldrick-Rab et al. (2018) found that 50% of student parents reported struggling with both food and housing insecurity. This was compared with 35–41% for students without children.

Students of Color.

Homelessness among African Americans is five times the rate of the general population (Fargo et al., 2012). High prevalence of homelessness within the African American community can be traced back to intergenerational economic disparities as well as discriminatory housing and lending practices including redlining (e.g., Alexander, 2010; Desmond, 2017). In the context of higher education, students of Color (specifically African American and Hispanic/Latinx students) are significantly less likely to have their basic needs met (Martinez et al., 2018). The Hope Lab surveyed over 4,000 community college students across 10 institutions, finding that 52% of African American students experience housing insecurity (18% experience homelessness) versus 35% of non-Hispanic White students (11% experience homelessness; Sutton, 2016). In addition, research has documented discrimination in the rental market by landlords based on race, in particular for African Americans (Hanson & Hawley, 2011; Zhao et al., 2006).

LGBTQ+ Students.

Youth who identify with non-heteronormative sexual orientations are disproportionately at risk for housing insecurity and homelessness (Corliss et al., 2011). In a recent review of research focused on homeless youth, LGBTQ+ youth (many of whom are also youth of Color) were found to be overrepresented in 17 out of 22 studies (National Alliance to End Homelessness, 2010) and are estimated to make up approximately 40% of the homeless youth population (Ferguson & Maccio, 2015). Reasons for LGBTQ+ youth experiencing housing insecurity or homelessness vary, yet one key component is the challenges they experience from others in relation to their sexual orientation or gender expression (Whitbeck et al., 2004). For instance, 48% of LGBTQ+ youth who come out to their family experience some form of negative response including parental rejection, verbal, psychological, or physical abuse, being forced out of their childhood home, or being cut off financially (Ferguson & Maccio, 2015).

Environmental Predictors. Factors in the broader campus environment and community also have implications on the provision and availability of resources to support student success. In this particular region, the university had experienced a devastating wildfire during the previous academic year which had significant implications on the availability of housing. The research team also explored knowledge of campus resources as an additional environmental predictor of housing insecurity and homelessness.

Natural Disasters.

Natural disasters such as tornadoes, wildfires, and pandemics certainly have significant impacts on local and global economies. While existing scholarship has not evidenced a direct link between student housing insecurity and natural disasters, it can be inferred that if there are housing disruptions and shortages as a result of a catastrophic event, there will be impacts on students who are largely renters and rely on affordability.

Natural disasters increase rental costs and disproportionately impact low-income families (Fussell & Harris, 2014). Fothergill and Peek (2004), corroborated these findings with results from multiple analyses of rental markets post-earthquakes and hurricanes. Findings indicated that renters feel the financial impact of natural disasters more acutely than homeowners (Fothergill & Peek, 2004). Wildfires are becoming an annual experience for California residents with profound impacts on housing availability and the housing market. In 2020, there were approximately 9,000 wild fires reported in California, with 4 million acres of land burned, and 5,500 structures destroyed (National Interagency Coordination Center Incident Management Situation Report, 2020).

Awareness of Basic Needs Resources on Campus.

It is common for social service providers to find that despite the availability of community resources and various methods of making those resources known to potential consumers, families often report a lack of awareness of services. This same phenomenon is true on college campuses. On one campus, researchers found that while 85% of students reported reading their e-mail daily, only 61% read e-mails from their academic advisors and even fewer read e-mails from their department or university administration (Straumsheim, 2016). Studies exploring food insecurity indicate that barriers to services included students' lack of knowledge of available resources, coupled with the stigma associated with being food insecure (Haskett et al., 2020).

Our Positionality

The authors on this manuscript each occupy multiple identities and come to this work with various worldviews. While all of us identify as white, cisgender women and academics, we come from different socio-economic, geographical and socio-cultural backgrounds. In the current project, and in all of our research, we are aware that the study language, assumptions, analysis, results and implications are influenced by each of our own biases. To mitigate these impacts we have taken certain precautions in an effort to conduct research which is honest, truthful and ethical. In addition to practicing reflexivity and constant questioning and critiquing of the research processes and products, we have used non-identified information, statistical tools, multiple coders, and consultation with stakeholder groups as best practices to lessen undue influence. This team of researchers is particularly keen to using students as co-researchers and finding other ways to mitigate our privileged social locations whenever possible. With respect to this project, that included students consulting on the survey prior to dissemination, and students in an interdisciplinary class on housing and homelessness working with the survey data for their final class projects (see Kornbluh et al. 2020 for a discussion of the course).

Methodology

To understand the relative explanatory power of the factors identified in the literature, we conducted a sequential mixed methods study at a large public university (student population of ~17,000) during Fall of 2019 (Kornbluh et al., 2022; Wilking et al. 2020). A sequential mixed-method design provides the opportunity to explore the results in greater depth and corroborate

across sources (Creswell & Clark, 2017). For example, qualitative quotes can further illustrate the experiences of housing insecurity, providing a story behind prevalence numbers. The study included a random sample survey of 1,416 students, and follow-up focus groups/interviews with 14 students who self-identified as housing insecure or homeless in the survey (Kornbluh et al., 2022; Wilking et al., 2020). Due to the limited sample of students in the qualitative component of the study, we consider this a QUAN -> qual design, often referred to as big “quant” and little “qual” (Creswell & Clark, 2017). Mixed method designs with a heavy emphasis on the quantitative analysis are well-established within the mixed methods literature (Creswell & Clark, 2017). Qualitative excerpts are intentionally integrated throughout the quantitative results to provide illustrative, in-depth, and contextual considerations regarding participants’ lived experiences (Creswell & Clark, 2017). When excerpts are provided, we indicate the commonality or novelty of the experience across focus groups/interviews (Kornbluh et al., 2022; Wilking et al., 2020).

Quantitative Design

Data. Using a random cluster sample design, and in collaboration with the office of Institutional Research, 94 courses were randomly sampled from all Fall 2019 courses, involving 2,937 unique students. Researchers contacted sampled instructors via e-mail prior to the start of the semester, informing them that their course was randomly selected and asking that they dedicate class time to administer the survey (via Qualtrics) during the first weeks of the semester (Kornbluh et al., 2022; Wilking et al., 2020). Sampled students who had not completed the survey by the third week of the study were emailed by researchers and invited to participate, with an incentive of being entered into a lottery. 1,416 completed surveys were received for a response rate of 48.2%. Of these, 77.5% (n = 1,098) of responses came from students who took the survey in class or at the request of their instructor. The final 22.5% (n = 318) of respondents took the survey online in response to direct outreach by the researchers (Kornbluh et al., 2022; Wilking et al., 2020). The sample demographics are provided in Table 1, and mirror the general student population at the university. χ^2 tests for equality of proportions in race/ethnicity and gender, and a T-test for difference in mean age revealed no statistically significant difference from campus population parameters.

The close match between the sample and the general population at the institution provides confidence in the generalizability of the results to the broader population at the institution (Kornbluh et al., 2022; Wilking et al., 2020).

Outcomes. The survey included multiple measures of housing insecurity and homelessness, as well as questions regarding mental and physical wellness. Demographic, academic, and financial data were added to respondent survey data, post data-collection, by the university’s office of Institutional Research.

Survey items measuring housing insecurity and homelessness were grounded in other existing vetted instruments, including ones from the Hope Lab (Goldrick-Rab et al., 2018) and the CSU Basic Needs Phase II study (Crutchfield & Maguire, 2017). Multiple campus and community stakeholders were consulted during the survey design, and researchers piloted the survey twice in online courses (Kornbluh et al., 2022; Wilking et al., 2020).

The measure of housing insecurity employed an eight item scale. The scale included questions from previous surveys conducted by the Hope Lab, at CSU, Sacramento, as well as questions developed in consultation with local stakeholders. All housing insecurity items asked respondents to reflect on their experiences over a 12-month period. The following three

Table 1

Sample Demographics

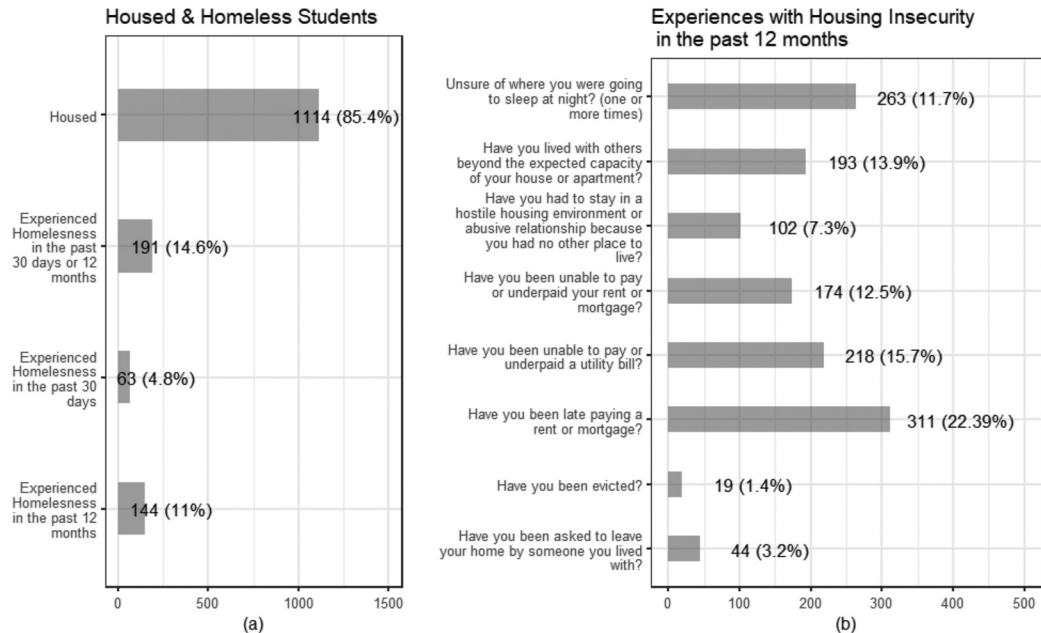
Race and Ethnicity	% (n)
Asian	5.2 (74)
Black/African American	2.9 (41)
Caucasian	43.5 (616)
Hispanic/Latino	36.4 (516)
Native American	0.6 (9)
Pacific Islander	0.4 (5)
More than one race/ethnicity	6.9 (97)
Unknown	1.6 (22)
Gender	
Male	43.4 (613)
Female	54.9 (775)
Transgender	0.5 (7)
Other	0.5 (7)
Mean age and standard deviation	22.4, sd = 4.7

questions were used from the Hope Lab's six item scale (Goldrick-Rab et al. 2018): *"Have you been unable to pay or underpaid your rent or mortgage? Have you been unable to pay or underpaid a utility bill? Have you lived with others beyond the expected capacity of your house or apartment?"* Three questions were used from the Sacramento State Basic Needs Survey: *"Have you been asked to leave your home by someone you lived with? Have you been evicted? How many times have you been unsure of where you are going to sleep at night?"* Finally, the following questions were developed based on feedback from campus stakeholders, comprised of students, mental health professionals, and student affairs representatives,: *"Have you been late paying a rent or mortgage? and Have you had to stay in a hostile housing environment or abusive relationship because you had no other place to live?"*. These additional two items increase the scale reliability coefficient from 0.55 to 0.65 (Kornbluh et al., 2022; Wilking et al., 2020).

More than half (56.2%, n = 783) of respondents did not report experience of any incidents of housing insecurity, 21.8% (n = 304) reported one of these experiences, and 9.6% (n = 133) of the sample reported 2 or more experiences that are considered indicators of housing insecurity (Wilking et al., 2020). The rate of individuals reporting one or more experiences with housing insecurity (43.9%, n = 610) is at a level consistent with national trends (Baker-Smith et al., 2019). For analysis, housing insecurity was measured conservatively; a respondent was coded as housing insecure if they had three or more indicators of housing insecurity (12.4%, n = 173) (Wilking et al., 2020).

We followed the definition of homelessness based on the McKinney-Vento Act of 1987, to measure homelessness. The measure asks students to identify where they have slept in the last 30 days or 12 months. A student is coded as homeless if they indicated staying in any of the following places: at a shelter, temporarily with friends or relatives, temporarily at a hotel or

Fig.1. Levels of homelessness and housing insecurity.



motel, in transitional housing, at a group home, outside, in a vehicle, or in a space not meant for human habitation (Kornbluh et al., 2022; Wilking et al., 2020).¹

Figure 1 shows that 14.6% ($n = 191$) of respondents had experienced homelessness in either the last 30 days or the past 12 months, at the time of survey completion. The most common experience of homelessness among respondents was couch surfing, followed by staying in a vehicle (Wilking et al., 2020).² This is consistent with other national studies on homelessness in higher education (K. Broton & Goldrick-Rab, 2016; Low et al., 2017).³

¹ For any given experience, such as sleeping in one's car, a respondent could not select both the past 30 days and the past 12 months. A respondent could select different time frames across the options, for example, reporting sleeping in one's car in the past 30 days, and sleeping in a shelter in the past 12 months. For this reason, the percentages and total respondents provided in bars three and four of Figure 1 (past 30 days and past 12 months) do not total to the second bar, which combines experiences of homelessness in the past 30 days and 12 months. In other words, the estimate of 14.6% of students who have experienced homelessness in the past 30 days or the past 12 months includes 191 unique students.

² Evidence from experiences piloting the survey, as well as with focus group and interview participants suggests respondents were generally interpreting these options as intended—staying with friends or family or in a vehicle due to a lack of other housing. This is a commonly used measure across studies of homelessness in higher education, and these studies have not reported issues with the validity of this measure.

³ The Department of Housing and Urban Development employs a more restrictive definition of homelessness. Of the options provided to respondents in the survey, HUD considers the following as experiences of homelessness: staying at a shelter, in a transitional housing or independent living program, in an outdoor location such as street, sidewalk, alley, park, etc., in a car, truck, van, RV or camper or in a closed area/space with a roof not meant for human habitation such as an abandoned building, garage, tent, etc. If the HUD rather than the McKinney-Vento definition is employed, 2.2% ($n = 29$) of respondents experienced homelessness in the prior 30 days, 5% ($n = 65$) experienced homelessness in the previous 12 months, and 6.8% ($n = 89$) experienced homelessness in either the past 30 days or 12 months.

Independent Variables. Almost half (47.2% $n = 688$) of respondents in the sample had family income at or below the federal cutoff for Pell Eligibility. According to our measure of race/ethnicity, based on student self-report to the university at the time of enrollment, 54.6% ($n = 742$) of the sample identified as a student of Color. Survey questions were used to capture the other student populations of theoretical interest; student parents, and LGBTQ students. 3.9% ($n = 55$) of the sample are student parents, and 13.8% identify as LGBTQ ($n = 195$).

We were also interested in broader community or environmental predictors, namely the impact of a natural disaster and awareness of Basic Needs resources. Impact of the recent natural disaster was captured by a survey question explicitly asking respondents about the impact of the disaster on their lives. Response options included: a permanent move, a temporary move, increase in housing expenses and fees, or other impact, and respondents could select more than one impact (Kornbluh et al., 2022; Wilking et al., 2020). 38.7% ($n = 487$) of respondents reported they were impacted by the natural disaster. Of these, 22.5% ($n = 321$) experienced increased housing expenses, 3% ($n = 44$) had to permanently move, 9.9% ($n = 140$) had to temporarily move, and 7.3% ($n = 104$) reported some other impact of the fire.

Awareness of services relevant to basic needs, and housing specifically, was measured by questions asking students their levels of awareness and use of Basic Needs services. When asked about their awareness and use of resources, on average students were aware of or used three services. Respondents were most aware of the food pantry (57%, $n = 770$) and financial aid advising (49.8%, $n = 660$). Roughly one third of students were aware of housing services such as emergency housing (31.7%, $n = 417$) and the off-campus housing liaison (33.1%, $n = 433$). For analysis, we use the count of services students were either aware of or had used (Wilking et al., 2020).

Analytical Technique. While several studies have explored levels of housing insecurity and homelessness in higher education (Crutchfield et al., 2016; Goldrick-Rab et al., 2018; Silva et al., 2017), few go beyond prevalence to understand factors that contribute to housing insecurity and homelessness among college students. To understand what type of student or experiences increase the likelihood of housing insecurity or homelessness, and given the binary nature of the dependent variables, we employ multivariable logistic regression analyses (e.g., Abdelmonem et al., 2019).

We explored multiple modeling strategies including a multi-level model to account for clustered sampling design, and multiple imputation (Rubin, 2004) to assess the impact of missing data on the results (Kornbluh et al., 2022; Wilking et al., 2020). From the multilevel model, we found that the inter-class correlation coefficients, representing the proportion of total variance explained by differences between clusters, were very small (0.05 and 0.03), respectively for the housing insecurity and homelessness models. Additionally, the Likelihood ratio test between the multilevel model and the logistic model without clustering were non-significant for both models ($\chi^2_{df} = 1.41, p = 0.12$ and $\chi^2_{df} = .88, p = 0.17$) for the housing insecurity and homeless models respectively. These results combined indicate that a multilevel model is not necessary to account for the clustered sampling design.

We assessed the impact of missing data in both the predictors and the response variables on the results by comparing the results of our final model run on the complete cases to the results of the same model run after conducting Multiple Imputation using MICE (Buuren & Groothuis-Oudshoorn, 2010). The estimates and standard errors did not differ notably and the interpretation of the effects did not change. Multilevel modeling and multiple imputation did not result in different effects or interpretations. For this reason, we present the simpler logistic regression models (one for each dependent variable), including the independent variables above, rather than imputed or hierarchical models. Odds Ratios with corresponding 95% confidence intervals are reported and compared against

a value of 1. This value represents the null hypothesis that both groups have equal odds of experiencing the outcome (homelessness or housing insecurity). Following the published guidelines on p-values by the American Statistical Association (Wasserstein & Lazar, 2016), we chose not to report p-values directly, instead allowing the reader to evaluate how far the confidence interval overlaps (or does not overlap) with the value of 1 in context of the study. Traditionally if a 95% confidence interval does not cover 1, one could say that there is a statistically significant effect at $p < 0.05$.

Qualitative Design

Sample. Respondents who identified as housing insecure or homeless in the survey were invited to participate in focus group discussions. Focus groups were moderated by a licensed psychologist, and a master's student in social work. Participants were provided with food, and \$20–40 dollars in gift cards. Incentives were increased in a second round of invitations in order to promote participation. Six focus groups/interviews consisting of one to four participants were conducted and varied in length from 34 minutes to 1 hour and 24 minutes. A total of 14 students participated in focus groups or interviews. Focus groups/interviews were audio recorded, and transcribed with all identifying information removed from the transcriptions (Wilking et al., 2020).

Protocol. Researchers posed 11 overarching questions with additional probing questions to focus group/interview participants. Specifically, we explored the relationship between housing insecurity and subjective well-being (e.g., *If someone were to ask you, "How does housing impact the health and well-being of college students?" what would you tell them?*) and experiences accessing services (e.g., *What was your experience accessing these services? Were they beneficial? Which ones, and in what way?*) (Wilking et al., 2020).

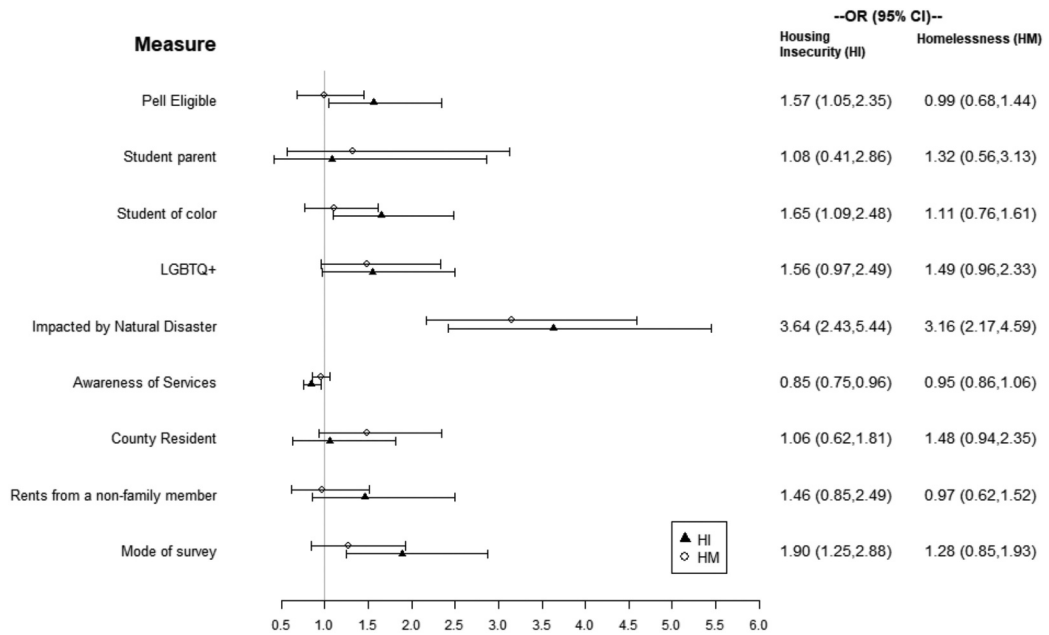
Analytical Technique. Focus groups were selected as they provide a supportive forum for participants to express their ideas evoking multiple perspectives and in-depth exploration (Kitzinger, 1995). Researchers have stressed that these group interactions have the potential to enhance participation, building off the responses of other group members to produce shared terminology and reconsideration of individual perceptions (Patton, 2002; Shoaf & Shoaf, 2006). In the context of this study, we hoped these shared discussions would provide the opportunity to de-stigmatize housing challenges and provide an opening for resource and information sharing.

A research team member experienced in qualitative analysis reviewed and analyzed focus group/interview transcripts. An inductive approach was utilized in which initial themes (i.e., significant or meaningful ideas and experiences) were identified across transcripts and drafted into a formalized codebook (Krippendorff, 2004). Codes were then applied across transcripts encompassing: (a) factors contributing to housing insecurity and/or homelessness (e.g., limited resources, poor living conditions, challenges with locating housing, impact of natural disaster), (b) interactions with housing and basic need services systems (e.g., court disputes, filling out forms, locating assistance programs), and (c) impact of housing instability (e.g., interpersonal relationships, academics, and mental well-being). Findings were reviewed for saturation across data sources, as well as novelty in experiences. The first and second author reviewed the findings to assess for credibility and consistency in code-application (Wilking et al., 2020).

Results

Figure 2 presents forest plots of the quantitative analyses, demonstrating the effect size (odds ratio) of each variable, as well as the confidence interval around each point estimate.

Figure 2. Forest plots of multivariable regression analyses.



First, students with greater financial need are more likely to experience housing insecurity but not homelessness. Pell Eligible students have 1.57 (95% CI 1.05, 2.35) times the odds of experiencing housing insecurity, relative to their peers who are not eligible for federal Pell assistance.

We explore several factors relating to student identity, including student parents, race/ethnicity, and LGBTQ+ status. The relationship of status as a student parent with both housing insecurity and homelessness was not strong in the multi-variable analyses, likely due to controlling for correlated factors such as financial need (Duke-Benfield, 2015). We found that students of Color have 1.65 times the odds (95% CI 1.09, 2.58) of being housing insecure than their White counterparts, but there is no difference in the likelihood of reporting homelessness. We also found that LGBTQ+ students have 1.56 (95% CI 0.97, 2.49) times the odds of experiencing housing insecurity and 1.49 (95% CI 0.96, 2.33) times the odds of experiencing homelessness than their straight counterparts. For both of these factors, the confidence intervals are almost entirely above an odds ratio of 1.

Students who were impacted, either directly or indirectly, by the natural disaster have 3.64 times the odds (95% CI 2.43, 5.44) of experiencing housing insecurity, and 3.16 times the odds (95% CI 2.17, 4.59) of experiencing homelessness. Additionally, awareness of basic needs services provides a protective buffer for students with respect to housing insecurity; those with less awareness of services have 1.18 times the odds (95% CI 1.04, .1.33) of experiencing housing insecurity.

There are several notable take-aways from the multivariable analysis, and focus group and interview data assist in the understanding and contextualization of the quantitative results. First, the multivariable regression results clearly indicate that the natural disaster had a very large impact on student experiences with housing insecurity and homelessness.

Impacts of the disaster included both direct impacts, such as having one's home destroyed, and indirect impacts, such as experiencing increases in housing expenses. The increase in expenses is not surprising, given the short supply of housing prior to the disaster, and the loss of roughly 14,000 homes or 14% of the county's housing stock in the event. The high demand and low supply of housing in the community, exacerbated by the event, clearly had impacts for student housing security. For example, 22.5% (n = 320) of respondents reported an increase in housing expenses despite a local moratorium on rent increases above 10%, immediately after the event. If students were living on the margins financially, increases in housing expenses are likely evidenced as one or more forms of housing insecurity. The impact of the wildfire on housing expenses was corroborated in the qualitative data. *"Well, and after the fire happened, my rent went up 10% where I was living, and that happened to three people I know."* Furthermore, interviewees stressed a looming fear surrounding rental prices continuing to increase due to the ongoing housing shortage. *"I'm scared that next year, I won't have anywhere to live because they're going to raise the rent so much that I won't be able to afford it."*

Interviewees also noted that the wildfire further enhanced the imbalance in power between student tenants and landlords, which may have contributed to housing insecurities. Due to high demand in the housing market, some landlords may have become less responsive in their duties. For instance, one interviewee described their frustration with their landlord's lack of follow-through in the upkeep and maintenance of their housing unit: *"The fire happened. Like floods happened and all this stuff, and like, our stuff got ruined, and she just didn't take responsibility for it. I was like, 'Okay, I need to get out of there.'"* Another interviewee stressed, *"They know that you're going to pay at this point, especially after the fire. They didn't care."*

Several factors explain student housing insecurity and homelessness, such as financial need. Even after controlling for these factors, the natural disaster had the largest substantive impact on student housing insecurity and homelessness. The link between financial need and housing insecurity also emerged in the qualitative data. In 4 out of the 6 focus groups, students described financial struggles and stressors surrounding paying rent and accessing affordable housing. In the quote below, the interviewee noted her embarrassment in asking her roommates to help cover expenses:

I'm like, borrowing money from my roommate to pay for it [rent] . . . I can't afford it. I'm literally asking every month: "Oh, I'll pay you back next semester when financial aid comes in." I don't want to be late on payments. And, like, sometimes I'll go without food, like just to pay rent (Wilking et al., 2020).

Discussion and Implications for Practice

This study importantly contributes to the existing literature on student homelessness and housing insecurity with implications for student development. First, due to the high response rate and close match with the overall student population, the sample in this study is highly generalizable to the university student body. As a large, public university, the results from this study likely generalize to other public institutions located in areas that experience natural disasters. Second, in contrast to the majority of the existing research, this study utilized multi-variable statistics to control for various influences on the results, aiding in the understanding of

the relationship between variables and their relevance to the problem of homelessness and housing insecurity. This type of analysis gives further credence to the findings and a deeper understanding of the problem. Like any study, this research is not without limitations. Specifically, “housing insecurity” is not well defined or consistently measured within the literature. In line with stakeholder feedback, we added items to the measure of housing insecurity, making comparisons across studies on this outcome variable more difficult. Further, this is a cross-sectional rather than longitudinal study, so it will not be possible to track changes over time in the impact of the natural disaster on individual respondents.

Despite these limitations, the results are aligned with national evidence surrounding the rising number of students’ experiencing housing insecurity and homelessness, and students most vulnerable to housing instabilities. This study corroborates, with multi-variable analyses, the correlational findings that students who are under-resourced financially, and those from underrepresented communities are even more likely to struggle with unstable housing. This is due largely to a shortage of resources coupled with a scarcity of affordable options. There may also be some discrimination on the part of landlords and a lack of university support networks, which would serve as a protective factor in many situations (Wilkling et al., 2020). Thus, universities ought to publicize and offer an array of supports (e.g., rapid re-housing programs, affordable housing options, legal support for student tenants) for students whom are experiencing landlord misconduct or discrimination.

Additionally, based on our research this is the first study to explore the impact of a natural disaster on housing insecurity among college students. As such, this research establishes the clear and direct relationships between natural disasters, housing supply, and student homelessness and housing insecurity. It is projected that by 2050, the U.S. population exposed to climate extremes will nearly double (Batibeniz et al., 2020). In an effort to mitigate additional housing inequities after a natural disaster, universities will do well to explore partnerships with local governments in order to quell rising housing markets and put in place stricter regulations to protect tenant rights.

More broadly, housing insecurity and homelessness among college students will be addressed by affordable higher education, and assistance that covers the real costs of college, including living expenses (Goldrick-Rab, 2016). At individual institutions, administrators can accurately reflect the actual cost of housing in their housing markets, when assessing the cost of attendance upon which financial aid packages are based (e.g., Wolin et al., 2019). Administrators should also advocate for policy change at the federal level to accurately and completely cover the costs of attending college in financial aid packages. The \$35 billion for higher education in the American Rescue Plan, and the Biden administration’s calls for cancellation of \$10,000 of student debt address some of the hardships students face during the COVID-19 pandemic (Goldrick-Rab & Welton, 2020), and the shortfalls caused by current federal policy. Efforts to reduce costs of higher education, such as the plan proposed during President Biden’s campaign to make public college and university tuition free for families making under \$125,000 annually, begin to address the issue more directly, and should be supported by administrators.

In the absence of federal policy that mitigates resource deficits among college students, states and universities are designating resources to support student basic needs. For example, outlined in AB74: Addressing College Student Homelessness, the State of California allocated \$19 million to public higher education across the State to support rapid rehousing efforts that assist homeless and housing insecure college students. Funds are distributed on and off campus to support a variety of options such as, emergency on-campus housing in residence halls or other

facilities; vouchers for temporary shelter such as hotels; social work case managers who identify resources and supports; rental subsidies, emergency grants; and partnerships with community housing providers. Hallett et al. (2019) suggested integrated basic needs centers where students can access food, housing, and financial support in one, central site thus reducing problems of knowledge and access to available resources. Universities would also do well to consider a variety of housing solutions to meet the diverse needs of this student population, similar to the general population of people experiencing homelessness, who need a variety of solutions (Hallett et al., 2019). These types of multi-pronged approaches hold great promise as we continue to work to understand this complex issue and identify viable solutions.

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References

- Abdelmonem, A. A., May, S. J., Donatello, R. A., & Clark, V. A. (2019). *Practical multivariate statistics* (6th ed.). CRC Press.
- Alexander, M. (2010). *New Jim Crow: Mass incarceration in the age of colorblindness*. New Press.
- Ambrose, V. K. (2016). *It's like a mountain: The lived experience of homeless college students* [Unpublished doctoral dissertation]. University of Tennessee, Knoxville.
- Baker-Smith, C., Coca, V., Goldrick-Rab, S., Looker, E., Richardson, B., & Williams, T. (2019). *#Real college 2020: Five years of evidence on campus basic needs insecurity*. The Hope Center. <https://hope4college.com/realcollege-2020-five-years-of-evidence-on-basic-needs-insecurity>
- Batibenz, F., Ashfaq, M., Diffenbaugh, N. S., Key, K., Evans, K. J., Turuncoglu, U. U., & Öno, B. (2020). Doubling of US population exposure to climate extremes by 2050. *Earth's Future*, 8(4), 1-14. <https://doi.org/10.1029/2019EF001421>
- Broton, K., & Goldrick-Rab, S. (2016). The dark side of college (un) affordability: Food and housing insecurity in higher education. *Change: The Magazine of Higher Learning*, 48(1), 16-25. <https://doi.org/10.1080/00091383.2016.1121081>
- Broton, K. M., & Goldrick-Rab, S. (2018). Going without: An exploration of food and housing insecurity among undergraduates. *Educational Researcher*, 47(2), 121-133. <https://doi.org/10.3102/0013189X17741303>
- Buuren, S. V., & Groothuis-Oudshoorn, K. (2010). Mice: Multivariate imputation by chained equations in R. *Journal of Statistical Software*, 45(3), 1-68. <https://doi.org/10.18637/jss.v045.i03>
- Corliss, H. L., Goodenow, C. S., Nichols, L., & Austin, S. B. (2011). High burden of homelessness among sexual-minority adolescents: Findings from a representative Massachusetts high school sample. *American Journal of Public Health*, 101(9), 1683-1689. <https://doi.org/10.2105/AJPH.2011.300155>
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage.
- Crutchfield, R. M., Chambers, R. M., & Duffield, B. (2016). Jumping through the hoops to get financial aid for college students who are homeless: Policy analysis of the College Cost Reduction and Access Act of 2007. *Families in Society: The Journal of Contemporary Social Services*, 97(3), 191-199. <https://doi.org/10.1606/1044-3894.2016.97.25>
- Crutchfield, R. M., & Maguire, J. (2017). *Researching basic needs in higher education: Qualitative and quantitative instruments to explore a holistic understanding of food and housing security*. CSU Basic Needs Initiative. <http://www.calstate.edu/basicneeds>
- Crutchfield, R. M. (2018). Under a temporary roof and in the classroom: Service agencies for youth who are homeless while enrolled in community college. *Child & Youth Services*, 39(2-3), 117-136. <https://doi.org/10.1080/0145935X.2018.1469403>
- Desmond, M. (2017). *Evicted: Poverty and profit in the American city*. Penguin Books.
- Duke-Benfield, A. (2015). *Bolstering non-traditional student success: A comprehensive student aid system using financial aid, public benefits, and refundable tax credits*. Center for Law and Social Policy (CLASP).

- Fargo, J., Metraux, S., Byrne, T., Munley, E., Montgomery, A., & Jones, H. (2012). *Prevalence and risk of homelessness among US veterans*. Preventing Chronic Disease.
- Ferguson, K. M., & Maccio, E. M. (2015). Promising programs for lesbian, gay, bisexual, transgender, and queer/questioning runaway and homeless youth. *Journal of Social Service Research, 41*(5), 659–683. <https://doi.org/10.1080/01488376.2015.1058879>
- Fothergill, A., & Peek, L. A. (2004). Poverty and disasters in the United States: A review of recent sociological findings. *Natural Hazards, 32*(1), 89–110. <https://doi.org/10.1023/B:NHAZ.0000026792.76181.d9>
- Fussell, E., & Harris, E. (2014). Homeownership and housing displacement after Hurricane Katrina Among Low-Income African-American Mothers in New Orleans. *Social Science Quarterly, 95*(4), 1086–1100. <https://doi.org/10.1111/ssqu.12114>
- Goldrick-Rab, S. (2016). *Paying the price: College costs, financial aid, and the betrayal of the American dream*. University of Chicago Press.
- Goldrick-Rab, S., Richardson, J., & Hernandez, A. (2017). *Hungry and homeless in college: Results from a national study of basic needs insecurity in higher education*. The Hope Center. <https://hope4college.com/wp-content/uploads/2018/09/Hungry-and-Homeless-in-College-Report.pdf>
- Goldrick-Rab, S., Richardson, J., Schneider, J., Hernandez, A., & Cady, C. (2018). *Still hungry and homeless in college*. Wisconsin HOPE Lab.
- Goldrick-Rab, S., Baker-Smith, C., Coca, V., Looker, E., & Williams, T. (2019). *College and university basic needs insecurity: A National #RealCollege Survey Report*. The Hope Center. Retrieved January 2, 2020, from https://hope4college.com/wp-content/uploads/2019/04/HOPE_realcollege_National_report_digital.pdf
- Goldrick-Rab, S., Baker-Smith, C., Coca, V., & Looker, E. (2019). *Guide to Assessing Basic Needs Insecurity in Higher Education*. The Hope Center. <https://hope4college.com/wp-content/uploads/2019/11/RealCollege-survey-guide-layout-FINAL.pdf>
- Goldrick-Rab, S., & Welton, C. (2020). *#Realcollege during the pandemic. The hope center for college, community, and justice*. The Hope Center. https://hope4college.com/wp-content/uploads/2020/06/Hopecenter_RealCollegeDuringthePandemic.pdf
- Goldrick-Rab, S., & Welton, C. (2021, January 19). *#RealCollege Statement on the Biden American Rescue Plan* [Press Release]. The Hope Center. <https://hope4college.com/realcollege-statement-on-the-biden-american-rescue-plan/>
- Gonzalez, J., Ahlman, L., & Fung, A. (2019). *Student debt and the class of 2018*. The Institute for College Access and Success.
- Hallett, R. E., & Freas, A. (2017). Community college students' experiences with homelessness and housing insecurity. *Community College Journal of Research and Practice, 22*(1), 724–739. <https://doi.org/10.1080/10668926.2017.1356764>
- Hallett, R., Crutchfield, R., & Maguire, J. (2019). *Addressing homelessness and housing insecurity in higher education: Strategies for educational leaders*. Teachers College Press.
- Hanson, A., & Hawley, Z. (2011). Do landlords discriminate in the rental housing market? Evidence from an internet field experiment in US cities. *Journal of Urban Economics, 70*(2–3), 99–114. <https://doi.org/10.1016/j.jue.2011.02.003>
- Haskett, M., Kotter-Grühn, D., & Majumder, S. (2020). Prevalence and correlates of food insecurity and homelessness among university students. *Journal of College Student Development, 61*(1), 109–114. <https://doi.org/10.1353/csd.2020.0007>
- Huelsman, M., & Engle, J. (2013). *Student parents and financial aid*. Working Paper. Washington, D.C.: Institute for Women's Policy Research. <http://www.iwpr.org/initiatives/student-parent-success-initiative/student-parents-and-financial-aid/view>
- Kitzinger, J. (1995). Introducing focus groups. *British Medical Journal, 311*(7000), 299–302. <https://doi.org/10.1136/bmj.311.7000.299>
- Kornbluh, M., Wilking, J., Roll, S., Banks, L., Stone, H., & Candela, J. (2020). Learning and doing together: Student outcomes from an interdisciplinary, community-based research course on homelessness in a local community. *Journal of Community Engagement and Scholarship, 13*(1), 36–49.
- Kornbluh, M., Wilking, J., Roll, S., & Donatello, R. (2022). Exploring housing insecurity in relation to student success. *Journal of American College Health*. Advance online publication.
- Krippendorff, K. (2004). Measuring the reliability of qualitative text analysis data. *Quality and Quantity, 38*(6), 787–800. <https://doi.org/10.1007/s11135-004-8107-7>
- Low, J., Hallett, R., & Mo, E. (2017). Doubled-Up homeless: Comparing educational outcomes with low-income students. *Education and Urban Society, 49*(9), 795–813. <https://doi.org/10.1177/0013124516659525>
- Martinez, S., Webb, K., Frongillo, E., & Ritchie, L. (2018). Food insecurity in California's public university system: What are the risk factors? *Journal of Hunger & Environmental Nutrition, 13*(1), 1–18. <https://doi.org/10.1080/19320248.2017.1374901>
- Masten, A., Cutuli, J., Herbers, J., Hinz, E., Obradović, J., & Wenzel, A. (2014). Academic risk and resilience in the context of homelessness. *Child Development Perspectives, 8*(4), 201–206. <https://doi.org/10.1111/cdep.12088>
- National Alliance to End Homelessness (2010). *Incidence and vulnerability of LGBTQ homeless youth*. <http://www.endhomelessness.org/content/article/detail/2141>
- National Interagency Coordination Center Incident Management Situation Report. (2020, October 2). Friday. <https://www.nifc.gov/nicc/sitreprt.pdf>
- Noll, E., Reichlin, L., & Gault, B. (2017). *College students with Children National and Regional Profiles*. Institute for Women's Policy Research. <https://iwpr.org/wp-content/uploads/2017/02/C451-5.pdf>
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications.
- Rubin, D. B. (2004). *Multiple Imputation for Nonresponse in Surveys Wiley Series in Probability and Statistics*. Wiley.
- Shoaf, L. M., & Shoaf, M. G. (2006). The hidden advantages of focus group interviews in educational research. *Journal of School Public Relations, 27*(3), 342–354. <https://doi.org/10.3138/jspr.27.3.342>

- Silva, M. R., Kleinert, W. L., Sheppard, A. V., Cantrell, K. A., Freeman-Coppadge, D. J., Tsoy, E., Roberts, T., & Pearrow, M. (2017). The relationship between food security, housing stability, and school performance among college students in an urban university. *Journal of College Student Retention: Research, Theory & Practice*, 19(3), 284–299. <https://doi.org/10.1177/1521025115621918>
- Straumsheim, C. (2016, March 2). Read and unread. *Inside Higher Ed*. <https://www.insidehighered.com/news/2016/03/02/study-explores-impact-social-media-texting-email-use>
- Sutton, H. (2016). Study finds high rates of food, housing insecurity among community college students. *Recruiting & Retaining Adult Learners*, 18(7), 8. <https://doi.org/10.1002/nsr.30183>
- U.S. Department of Housing & Urban Development (2015). *Barriers to success: Housing insecurity for U.S. College Students*. https://www.huduser.gov/portal/periodicals/insight/insight_2.pdf
- Wasserstein, R. L., & Lazar, N. A. (2016). The ASA statement on p-values: Context, process, and purpose. *The American Statistician*, 70(2), 129–133. <https://doi.org/10.1080/00031305.2016.1154108>
- Whitbeck, L. B., Chen, X., Hoyt, D. R., Tyler, K. A., & Johnson, K. D. (2004). Mental disorder, subsistence strategies, and victimization among gay, lesbian, and bisexual homeless and runaway adolescents. *Journal of Sex Research*, 41(4), 329–342. <https://doi.org/10.1080/00224490409552240>
- Wilking, J., Roll, S., & Kornbluh, M. (2020). *Assessing student homelessness and housing insecurity at Chico State post-Camp Fire*. https://www.csuchico.edu/ir/_assets/documents/assessing-housing-insecurity-chico-state-final-2-27-20.pdf
- Wolin, J., Torres, A., Campos, C., Shiang, E., Farrukh Sultan, F., Peterson, I., Meza, J., Sweazey, J., Than, M., Perez, M., Wilson, N., Lum, R., Eisemann, R., & Le, T. (2019). *Student housing insecurity and homelessness at San Francisco State University*. SF State Basic Needs Initiative. <https://basicneeds.sfsu.edu/sites/default/files/documents/SFSU%20Student%20Housing%20Insecurity%20and%20Homelessness%20Report%20FINAL.pdf>
- Zhao, B., Ondrich, J., & Yinger, J. (2006). Why do real estate brokers continue to discriminate? Evidence from the 2000 Housing Discrimination Study. *Journal of Urban Economics*, 59(3), 394–419. <https://doi.org/10.1016/j.jue.2005.12.001>