Student Housing and the Cost of Higher Education*

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Abstract

Student housing rents are a large component of university costs and high rents contribute to student housing insecurity. Using data covering U.S. student housing markets from the 2014–2022, this paper studies changes in student rents and investigates why they vary by location and university. Private-market student housing costs increased by 15% more than national inflation during this period and closely tracked local rents for general-purpose housing, suggesting close integration with the rest of the housing market. In contrast, on-campus rents increased by only 7% and showed little correlation with local rents in the broader housing market. Enrollment increases raised the cost of on-campus but not off-campus housing. We show that universities insulate students from local housing market pressures, effectively providing implicit housing subsidies, particularly in urban areas and at top-ranked institutions.

Keywords: housing affordability, student housing, market integration, rents, higher education costs, non-market housing

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1 Introduction

Housing costs are a large part of the cost of higher education, comprising over one-third the total cost of four-year college attendance in the United States. In recent decades, both overall college costs and the cost of housing have increased faster than inflation. Escalating student housing costs in high-cost markets have been linked to financial distress and increased homelessness among students (Olvera, 2021; Har, 2024; Barrón-López and Weber, 2023; The White House, 2022). The importance of addressing student housing affordability has increased in recent years, as our data shows an increase in off-campus housing costs occurring simultaneously with negative real income growth. This trend potentially exacerbates the already high levels of housing insecurity among American college students, a problem highlighted by recent surveys. For instance, The Hope Center for Student Basic Needs (2024) reports that 48% of college students experienced some form of housing insecurity in 2023.

This paper establishes new facts about the cost of student housing and investigates why costs have changed. We compare on-campus to off-campus student housing costs to study the role that universities can play in mitigating increases in student housing. Time series and cross-sectional data show that student housing rents are linked to rents in the rest of the housing market. We find a near one-for-one association between changes in private-market student housing rents and rents in the general housing market across U.S. cities. This indicates that the private student housing market is highly integrated with the overall housing market, suggesting that the same economic factors driving increases in general housing prices similarly impact student housing. In contrast, dormitory (on-campus) housing costs have not risen as significantly and exhibit a weaker correlation with the general housing market. The disparity between on-campus and private-market rents implies that many universities provide an implicit subsidy to students by maintaining stable on-campus rents, insulating students from volatile general market conditions, particularly in high-cost markets. For instance, in markets where private student housing costs $3,000 per month, dormitory beds cost about half as much. By 2022, the average monthly subsidy per student reached $96,

with top-10 universities providing subsidies $300 higher than their peers.[1]

Our findings are important not only for understanding student affordability, but also for informing broader debates about non-market housing provision. As housing costs rise nationally, many municipalities and private firms have proposed 'workforce housing' projects where employers directly provide subsidized housing to employees.[2] While workforce housing remains rare, university dormitories represent a major existing case of non-market housing provision. Like local governments, universities are often non-profit entities that may optimize different objectives than private landlords (Epple, Romano and Sieg, 2006; Cook, 2024). By analyzing how universities set dormitory prices relative to market rates, our results provide novel evidence on the potential and limitations of non-market housing provision.

We begin by constructing new measures of student housing costs at four-year colleges from 2014 onward, combining institutional reports from the National Center for Education Statistics with proprietary data from Real Page Analytics and market indicators from Zillow. This dataset allows us to track costs across three distinct categories of student housing: university-operated dormitories, purpose-built private student housing, and general market rentals near campus. Student housing costs increased over this time, rising by 15% off-campus and 7% on-campus in real terms. While the number of on-campus beds did increase, most college students continue to live off campus, and the expansion of on-campus beds did not increase sufficiently to improve affordability overall.

We have three main findings. First, off-campus student housing is tightly integrated with the broader housing market but on-campus housing is not. A one percentage point relative increase in local rents is associated with a 0.9 percentage point increase in the cost of private-market student housing near campuses, but a negative and insignificant change in on-campus rents. Understanding the degree of market segmentation or integration is important for

[1] In 2022, Stanford University, the Massachusetts Institute of Technology, Columbia University in the City of New York, and Harvard University provided estimated monthly subsidies of $932, $791, $710, and $469 per student respectively.

[2] For example, media reporting has discussed workforce housing being proposed or built in Colorado (Sun, 2024), Seattle (Craighead, 2024), Philadelphia (WHYY, 2023), Montana (Montana, 2024), and The Hamptons (Staff, 2024)

identifying the drivers behind changes in off-campus student housing rents. If markets are segmented, fluctuations in student housing rents are likely driven by college-specific factors, such as rising enrollments or localized housing supply constraints near campuses. But if the markets are integrated, we would expect a strong cross-sectional correlation between student housing rents and general housing market rents. Our findings mean that off-campus rents are determined by the same factors affecting rents in general, but dormitory rents are set in a different way.

Second, we show that increases in enrollments are not associated with changes in off-campus student rents, consistent with high integration with the general housing market. A one percentage point increase in enrollments is associated with an insignificant 0.05 percentage point change in off-campus rents. On the other hand, a one percentage point increase in enrollment is associated with a 0.1 percentage point increase in on-campus rents, a somewhat higher sensitivity to local enrollments.

Third, we consider the difference between on-campus and off-campus rents an implicit subsidy provided by universities, and show how this subsidy varies by region, university type and over time. Universities trade off revenue against student affordability, particularly in expensive markets where the implicit housing subsidy is largest. With national enrollments declining,[3] universities may be under additional financial pressure, influencing their decisions to maintain stable dormitory prices rather than expanding housing capacity. We find that top-ranked universities and those in urban areas provide the largest subsidies, consistent with using affordable housing to attract diverse, high-quality student populations. This non-market provision of housing effectively insulates many students from local rental market volatility, though the benefits vary substantially across institutions and locations.

Beyond the comparison of on-campus and off-campus rents, we also study the role of purpose-built student housing. Purpose-built student housing is effectively private dormitories, which have many of the same features as on-campus housing, but are owned by

[3]See Figure 2

private landlords. We find that purpose-built housing behaves somewhere between on- and off-campus housing, as it is only partly integrated with the broader housing market.

Our findings contribute to several literatures. First, we provide new evidence on the integration between specialized and general housing markets. While research has examined market segmentation in other contexts like age-restricted housing (Guntermann and Moon, 2002; Dawson, 2010; Zhenguo Lin and Yao, 2010; Kwon and Beamish, 2014) and luxury apartments (Bandyopadhyay, 2020; Cvijanović and Spaenjers, 2021), the student housing market offers a unique laboratory due to the coexistence of market and non-market providers. Our finding of sharp differences between university and private-market pricing behavior adds to work on institutional constraints in housing markets (Glaeser, Gyourko and Saks, 2005; Brueckner, Leather and Zerecero, 2024).

Second, we document a significant case of non-market housing provision, informing debates about employer-provided housing and other alternatives to market allocation. The limited literature on workforce housing has mostly consisted of case studies outside economics (Ford and Schuetz, 2019), while economic research on non-market housing has focused primarily on public housing's effects on residents (Currie and Yelowitz, 2000; Jacob, 2004; Chyn, 2018). Our analysis of university housing provides new quantitative evidence on how non-profit institutions make housing provision decisions.

Third, our work connects to research on housing affordability and supply constraints. Recent work has highlighted how housing costs have increased as people increasingly want to live in supply-constrained areas (Howard and Liebersohn, 2021; Van Nieuwerburgh and Weill, 2010), construction productivity has stagnated (Goolsbee and Syverson, 2023), and financial conditions have tightened (Ghent and Leather, 2021; Greenwald and Guren, 2021). We show how these broader market forces affect student housing costs differently across institutional settings.

Finally, we contribute to research on higher education costs and university decision-making. Among universities that make data available, room and board expenses rose from

35% to 40% of average net college costs from 2014 to 2022 (see Table 1). While extensive work has examined tuition pricing (Epple et al., 2006; Archibald and Feldman, 2011), administrative costs (De Groot, McMahon and Volkwein, 1991; Leslie and Rhoades, 1995; Hedrick, Wassell Jr and Henson, 2009), and financial aid (Winston, 1999; Dynarski, 2000; Dynarski and Scott-Clayton, 2013), housing costs have received less attention despite their growing importance for student affordability. Our finding that universities provide substantial housing subsidies, particularly in expensive markets, adds to evidence that universities optimize objectives beyond profit maximization (Epple et al., 2006; Cook, 2024). Understanding these patterns is important as policymakers grapple with both housing affordability and stable higher education.

2 Data and Empirical Strategy

2.1 Background

Students at four-year universities generally have three housing options: university dormitories, private market housing near campus (known as "student-competitive"), and more recently, purpose-built student housing. Purpose-built student housing represents a hybrid model—privately developed accommodations specifically designed for students, often built with university cooperation but operated by private companies. This institutional structure creates varying incentives: universities may prioritize student accessibility and campus life, private landlords respond to market forces, and purpose-built operators balance both considerations.

Local housing market shocks should affect operating costs similarly across all three types—construction, maintenance, and labor costs vary with local market conditions. However, different ownership structures and objectives may lead to varying price responses to local demand shocks in the general housing market. Moreover, demand shocks from enrollment changes might affect housing types differently depending on their degree of market

integration.

We focus on four-year colleges and universities. We think that the landscape for housing at two-year colleges and community colleges is very different, since dormitories are much more unusual and purpose-built student housing is irrelevant. Moreover, our motivating questions about the rise in college costs are more applicable to four-year campuses than to two-year ones.

2.2 Data

We construct a panel of U.S. universities from 2014 to 2022.[4] We use a proprietary dataset from Realpage Analytics of purpose-built student-housing (i.e., privately owned and operated dorm rooms) and student-competitive housing costs. Student-competitive housing consists of private market rental housing that has been identified as competitive with the purpose-built and on-campus housing market. The Realpage sample covers the years 2014 to 2021, and is extended by one-year until 2022. The dataset from Realpage is then combined with another panel dataset, the Integrated Postsecondary Education Data System (IPEDS) published by NCES, which includes information on university characteristics. The data most relevant to this study are on-campus housing costs, on-campus bed capacity, and university enrollments. The IPEDS data is self-reported by the universities.

To extend the RealPage student housing cost data from 2021 to 2022, we use the ZORI from nearby zip codes. We identify the ZIP codes near each university where rents are most closely correlated with student-competitive rents from RealPage, and use data from these ZIP codes to extend the series. For more details see Appendix A.1.

We use the Zillow Observed Rent Index (ZORI) to measure overall market rents aggregated at the metropolitan statistical area (MSA) geography. Data on median household income and geographic populations are taken from the U.S. Census Bureau. We convert nominal price data into real prices using the Personal Consumption Expenditures: Chain-

[4]Note that throughout this paper, references to specific years correspond to academic years; for example, 2022 refers to the 2022–23 academic year.

type Price Index (PCE) published by the U.S. Bureau of Economic Analysis. Data on the supply elasticity of space is taken from Baum-Snow and Han (2024) at the census tract level. We then use the Zip Code Distance Database published by the National Bureau of Economic Research (NBER) to aggregate the supply elasticity data within 10 miles of each university in our dataset.

Our analysis sample includes 226 universities for which we have data points for 2014 and 2022.[5] Of these universities, we have data on purpose-built student housing for 91 universities. We drop universities with less than 1,000 local enrollments and drop those not classified as 4-year degree-granting institutions by IPEDS. In addition, we drop universities from our sample for which greater than 25% of enrolled students are "distance learners"—meaning they exclusively take online classes.

Summary statistics are presented in Table 1. Figures 1, A1, and 2 show how the analysis sub-sample compares to the full sample. Figure 1 shows our different measures of student housing costs adjusted for inflation compared to real median household income from years 2014 to 2022.

We assess the contribution of housing costs to total higher education expenses for private universities by computing the ratio of average room and board costs to average net attendance costs using IPEDS data through the 2021–22 academic year (data for 2022–23 are not available yet at the time of writing). The numerator—average room and board costs—is a weighted average across three living arrangements (on-campus, off-campus without family, and off-campus with family), with weights determined by the reported share of students in each arrangement. Universities self-report these costs. The denominator—average net cost—combines two components: average net cost for students receiving financial aid (weighted by the share receiving aid) and total cost of attendance for students receiving no aid (weighted by the share receiving no aid). Due to incomplete reporting of average net costs for students

[5]Because many universities chose not to report to IPEDS during the 2020-21 academic year (likely due to the COVID-19 pandemic), we refrain from constraining our analysis sub-sample to include all universities for which we have complete data from 2014–2022.

receiving financial aid, we can compute this ratio for only 120 of the 226 universities in our analysis sample. For the approximately 10% of institutions not reporting off-campus room and board costs, we impute values using that year's average off-campus costs adjusted by a scale factor—the institution's relative on-campus room and board costs (calculated as the ratio of institution's reported on-campus room and board costs to mean on-campus room and board costs that year across all reporting institutions). For public universities, due to limited data on average net costs, we present room & board as a percentage of the total cost for in-state residents.

Figure A1 shows how real student-competitive (off-campus) and on-campus housing costs compare to real general market rents as measured by ZORI at the metro level for which the university resides. The two aforementioned series are similar across the full and analysis sample. In contrast, Figure 2 shows that university enrollments and on-campus bed capacity grew much faster in the analysis sample compared to the full sample. On-campus bed capacity grew by close to 10% in the analysis sub-sample, while only growing by roughly 3% in the full sample. Total enrollments (both local and distance learning) grew by roughly 6% in the analysis sample while falling by a half-percentage point in the full sample from 2014 to 2022. Over the twenty-year period from 2002–2022, dorm room capacity has grew by 30%, which is 10 percentage points greater than the university enrollments which, grew by 20% over the same period. However, we estimate the ratio of dorm beds per students enrolled grew by less than 3% over the twenty-year period, from from roughly 30% in 2002 to 32.75% in 2022.

2.3 Empirical Strategy

Our empirical strategy examines two key questions: (1) what are the general patterns of rents and implicit subsidies in the student housing market (2) how integrated is student housing with the rest of the market? We begin with descriptive evidence on affordability trends, then exploit variation in local housing costs and enrollment to identify market integration.

First, we estimate how changes in local market rents pass through to different types of student housing:

$$\Delta \text{Price}_{\text{Student},i} = \beta \Delta \text{Price}_{\text{General},i} + \gamma X_i + \epsilon_i \tag{1}$$

where $\Delta \text{Price}_{\text{Student},i}$ is the change in student housing costs (either dormitory, purpose-built, or student-competitive) in location i, and $\Delta \text{Price}_{\text{General},i}$ measures changes in the local rental market. The coefficient β captures market integration—a value near 1 indicates strong integration, while values near 0 suggest segmentation. Under full integration, student housing providers are price-takers in the local market. Under segmentation, student housing costs may respond differently to local conditions.

The identifying assumption for equation 1 is that changes in local market rents are independent of other determinants of student housing rents. More precisely, we assume that changes in local housing demand—driven by factors such as employment growth, migration, or supply constraints—do not systematically coincide with unobserved shocks to student housing demand. This assumption could be violated if, for example, a local jobs boom not only raises market rents but also makes a university more popular, leading to increased enrollment and, consequently, increased demand for on-campus housing. Such a scenario would mean that on-campus rents are partially responding to the same underlying shock affecting the local housing market but not responding directly to it, leading to an upward biased regression coefficient. However, university enrollment is typically slow to adjust to local economic changes and we do not find much effect of local prices on college enrollments. To further support the identifying assumption, we conduct robustness checks and include a vector of controls X_i containing both 2014 levels and 2014-2022 changes in MSA characteristics: population, real personal income, educational attainment (percent with bachelor's degree or higher), total employment, unemployment rate, and median age.

Our second specification examines how enrollment changes affect housing costs:

$$\Delta \text{Price}_{\text{Student},i} = \beta \Delta \text{Enrollment}_i + \gamma X_i + \epsilon_i. \tag{2}$$

If student housing markets are segmented, enrollment increases should drive up student housing costs more than general market rents. Conversely, if markets are integrated, enrollment effects should be minimal as students compete with other renters in the broader market. Similar to equation 1, the identifying assumption is that increases in enrollment do not coincide with unobservered shocks to the local housing market that might independently drive up rents. Again, we address this concern by including controls for factors that might jointly influence both enrollment and local rents, such as regional economic conditions or migration patterns, and show that the estimates are robust to the inclusion of such controls.

Finally, we examine quantity responses:

$$\Delta\text{Quantity}_{\text{Student},i} = \beta\Delta\text{Price}_{\text{Market},i} + \gamma X_i + \epsilon_i \tag{3}$$

where $\Delta\text{Quantity}_{\text{Student},i}$ represents the change in the quantity of new student housing units constructed in location i, and $\Delta\text{Price}_{\text{Market},i}$ is the change in general housing market prices.

This specification tests whether universities expand dormitory capacity more in areas where private housing becomes less affordable. Depending on their cost structure and objective function, universities may respond to high market rents by increasing supply rather than raising prices.

3 Results

3.1 Descriptive and Time Series Evidence

Our analysis shows substantial heterogeneity in student housing costs across markets and time. In 2014, the average monthly rent per bed was $754 for dormitories, somewhat below student-competitive rent of $935 and purpose-built rent of $772 (Table 1). Over the next eight years, all three types of student housing saw nominal cost increases roughly proportional to general university costs—for instance, out-of-state tuition rose by around 28%, from

$27,487 to $35,223.

However, this average masks important variation in the upper tail of the distribution. While dormitory costs show relatively compressed variation (standard deviation roughly one-quarter of the mean), student-competitive housing exhibits much wider dispersion (standard deviation one-half of mean). The highest average cost per bed in 2014 was $1,444 for dormitories but $3,025 for student-competitive housing. This disparity in the right tail provides initial evidence that universities constrain on-campus rents in expensive markets.

Figure 1 plots the evolution of real student housing costs alongside median incomes. From 2014-2018, student housing costs increased more slowly than real median incomes across all categories. Student-competitive costs tracked closest to income growth, while dormitory and purpose-built housing showed more muted increases. Since the start of the COVID-19 pandemic, changes in housing demand have led to dramatic increases in housing costs in general (Howard and Liebersohn, 2021; Davis, Ghent and Gregory, 2024). This pattern is reflected differently across student housing markets. Student-competitive rents track general market rents nearly one-for-one since 2020, but with an important difference—they show a sharp initial dip in 2020 that does not appear in the general market, likely reflecting temporary drops in student demand.[6] While real median incomes increased following the COVID-19 stimulus plan but have since stabilized, student-competitive rents surged well above pre-pandemic trends. In contrast, on-campus rents have actually fallen in real terms since 2021, suggesting universities actively maintained affordability during this period of market volatility.

3.2 Cross-Section of Rents

Table 2 estimates equation 1, showing how general market rents are passed through to rents in the student housing market. For student-competitive housing, we estimate a coefficient of 0.9, indicating a nearly one-for-one correlation between general private market costs and

[6]Online Appendix Figure A1 compares student housing costs to general market rents as measured by the national Zillow Observed Rent Index.

student housing costs. We take this to be consistent with a highly integrated market for housing. The relationship persists even after controlling for local economic conditions in Column 2, supporting the market integration interpretation.

For on-campus housing, we find a different pattern. The estimated pass-through is near zero (-0.05) and statistically insignificant, suggesting dorm costs are unrelated to costs in the private market. An implication of this is that in the markets where student housing costs have increased the most, the implicit subsidy that universities provide to students has increased. On the other hand, markets that were already affordable or became somewhat more so did not see a relative increase in affordability at on-campus housing. The pattern remains unchanged when including regional controls in Column 4.

Purpose-built student housing, shown in Column 5, falls between these extremes, with a pass-through coefficient of 0.592 that increases to 0.708 with controls. This intermediate position suggests that while purpose-built housing is more integrated with the market than dormitories, its specialized nature still creates some market segmentation.

These pricing patterns are reflected in quantity responses, shown in Columns 7 to 10. Both on-campus and purpose-built bed capacity expand more in areas with higher rental growth (coefficients of 0.5 and 0.8 respectively), though estimates for purpose-built housing become much larger (3.815) and highly significant when including controls. While the sensitivity to controls and small sample size suggest some caution in interpretation, the results indicate that both universities and purpose-built operators respond to high market rents by expanding supply rather than raising prices.

3.3 Effect of Enrollment Growth

Table 3 estimates how changes in university enrollment affect student housing costs. Panel A shows results for the analysis sample, while Panel B focuses on small towns, i.e., in the bottom half of the population distribution. This specification provides another test of market integration—if student-competitive housing is highly integrated with the broader

rental market, enrollment increases should have minimal effect on rents. Conversely, if markets are segmented, enrollment-driven demand shocks should be reflected in higher prices.

For student-competitive housing, shown in Column 1, we estimate a small and statistically insignificant coefficient of 0.049. This pattern, robust to regional controls, provides additional evidence that the private student housing market is integrated with the broader rental market. However, dormitory and purpose-built housing show larger responses, with positive and statistically significant coefficients of 0.1 and 0.3 respectively.

The dormitory result shows an asymmetry in university pricing behavior. While universities do not raise prices in response to market rent increases, they do raise dorm costs when enrollment grows. This could reflect higher marginal costs of expansion as universities fund new construction or build in new areas, rather than profit-maximizing behavior. The stronger response of purpose-built housing (coefficient near 0.3) suggests its operators behave more like profit-maximizers, capitalizing on enrollment-driven demand shocks while potentially facing different market conditions than general student-competitive housing. These patterns persist with regional controls.

We might expect stronger effects in small college towns where students comprise a larger share of the rental market. However, Panel B shows similar or slightly smaller coefficients when restricting to below-median population areas. The effect on student-competitive rents falls to 0.039 (not significant), dormitory effects fall to 0.038 (not significant), and purpose-built housing effects decline to 0.219 (not significant). This pattern suggests that even in small markets, the private rental market sufficiently absorbs enrollment changes without significant price effects. As Saiz (2010) documents, smaller cities typically have more elastic housing supply, potentially dampening price responses to demand shocks.

3.4 Patterns in University Housing Subsidies

Our market integration results imply that universities provide substantial implicit housing subsidies, particularly in expensive markets where they maintain stable dormitory prices de-

spite high local rents. We quantify this subsidy as the difference between student-competitive and dormitory rents, scaled by enrollment.[7] [8] The average monthly subsidy per student increased by 92% over our sample period, from $50 in 2014 to $96 in 2022. In Table 1, we calculate subsidy levels in general as well as split by university ranking and by urban-rural status. The magnitude of these subsidies varies systematically across institutions. Universities ranked in the top 10 by U.S. News provide subsidies $303 higher per student than their peers, while those ranked 11–50 show no significant difference. Urban universities provide an additional $52 per student in subsidies compared to rural institutions, reflecting higher local market rents

In Online Appendix Table A1, we show further breakdowns in the level of the per-student subsidy. We split by institution quality, cost of attendance, institution type, location type, and endowment size.

4 Discussion

4.1 Market Segmentation of Student Housing

We motivate our empirical approach by asking how segmented the student housing market is. While student-competitive housing shows near-complete integration with local rental markets, on-campus pricing shows different institutional objectives. This contrast is particularly striking since both types of housing face similar local cost pressures for construction, maintenance, and labor.

[7] Our calculation of the subsidy implicitly assumes that operating expenses per bed are similar between university dormitories and student-competitive housing. While there may be differences in operating costs, we believe these differences are unlikely to systematically bias our comparisons across time or between universities. For example, the finding that highly ranked universities provide larger subsidies than lower-ranked universities is unlikely to be explained by highly ranked universities being more efficient at maintaining dorms.

[8] Our measure of enrollment is based on 12-month full-time equivalent (FTE) student as defined by IPEDS. This approach accounts for students who are enrolled part-time at all levels of education, providing a more accurate representation of the student population than simple headcounts. By using FTE enrollment, we ensure that part-time students are appropriately weighted in our calculations, which is important for accurately estimating per-student subsidies and analyzing housing demand.

The patterns we document suggest universities optimize objectives beyond profit maximization. Even as private market rents rise, universities maintain affordable dormitory prices, especially in expensive markets and at top-ranked institutions. The systematic variation in these implicit subsidies is telling—top-10 ranked universities and urban universities provide larger subsidies.[9] This behavior aligns with evidence from Cook (2024) that universities target socioeconomic diversity and from Epple et al. (2006) that they use subsidies to promote greater diversity in student affluence. Notably, these subsidies are largest precisely where housing affordability constraints might otherwise limit diversity—at urban institutions and highly-ranked universities where private market rents often exceed $3,000 per month. Moreover, the subsidies have grown over time, increasing by 92% from 2014 to 2022, suggesting universities actively manage housing costs to maintain access as market pressures intensify.

This non-profit maximizing behavior extends beyond housing. When we examine other university costs in Table A2 of the Online Appendix, we find no significant relationship between local market rents and growth in room costs, tuition, or fees—in fact, these relationships are uniformly negative though small. This pattern sharply distinguishes universities from both private landlords and purpose-built housing operators, whose pricing closely tracks market conditions.

4.2 Competition and Market Structure

The divergence between university and private market behavior raises a puzzle: why don't universities exploit raise rents when the market would allow them to? Beyond different institutional objectives, another possibility is that national competition for students constrains local pricing power. While universities could raise dormitory rents in expensive markets, doing so might disadvantage them in attracting talented, lower-income students who choose

[9] See Table A4.

among institutions nationally.[10]

Figure A2 shows that in low-cost markets, dormitory and student-competitive rents are similar. However, the relationship flattens dramatically in expensive markets—where student-competitive beds cost $3,000 per month, dormitory beds cost roughly half as much. Table A3 shows this pattern is most pronounced at private institutions, where the off-campus premium is $309 higher, and in supply-inelastic areas, where it is $299 higher.

The evolution of prices over time supports this competitive interpretation. Figure A3 shows that student-competitive rents have converged across markets—the gap between highest and lowest price quintiles has narrowed considerably, driven by rents in the bottom quintile nearly doubling from 2014-2020. In contrast, on-campus prices remain more compressed, with similar growth rates across all quintiles regardless of local market conditions. This pattern suggests universities actively manage housing costs to remain competitive nationally, even at the expense of local revenue opportunities.

4.3 Implications for Housing Policy

Our findings inform broader debates about non-market housing provision. Purpose-built student housing—despite its specialized nature—behaves more like general market housing than university dormitories. This suggests ownership structure and incentives matter more than physical characteristics or target market for determining pricing behavior. These results have implications for proposed "workforce housing" initiatives where employers directly provide housing. The university example suggests non-profit institutions can effectively maintain affordability even in expensive markets, providing implicit subsidies that grow with market pressure. However, the purpose-built housing evidence indicates that private operators, even when building specialized housing stock, tend to price more in line with market conditions.

The contrast between university and private-market behavior also informs debates about housing affordability solutions. Traditional supply-side policies focus on enabling private con-

[10] This competitive pressure appears strongest among elite institutions—Online Appendix Figure A7 shows the mean monthly per-student subsidy declines monotonically across U.S. News ranking bins.

struction, but our evidence suggests ownership structure also significantly influences pricing decisions. National competition is another possible constraint on university behavior. Just as universities maintain affordable housing to compete nationally for students, other non-profit housing providers might face similar pressures if operating at sufficient scale. This suggests potential benefits from coordinated regional or national approaches to non-market housing provision.

5 Conclusion

This study provides new evidence on the integration of student housing markets with the general housing market in the United States between 2014 and 2022. Our analysis demonstrates that while private-market student housing costs are closely tied to local housing market conditions—reflecting a high degree of market integration—university-operated dormitory rents remain largely unaffected by changes in local market rents. This suggests that universities intentionally maintain stable and affordable housing options for students, effectively insulating them from housing market volatility.

The substantial implicit subsidies provided by universities are most pronounced in high-cost areas and among top-ranked institutions. By keeping dormitory rents low in expensive markets, universities may enhance access and socioeconomic diversity within their student bodies. This behavior aligns with the notion that universities prioritize objectives beyond profit maximization, such as promoting affordability and attracting a diverse student population. It could also be the result of universities competing nationally for a diverse set of students.

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6 Figures

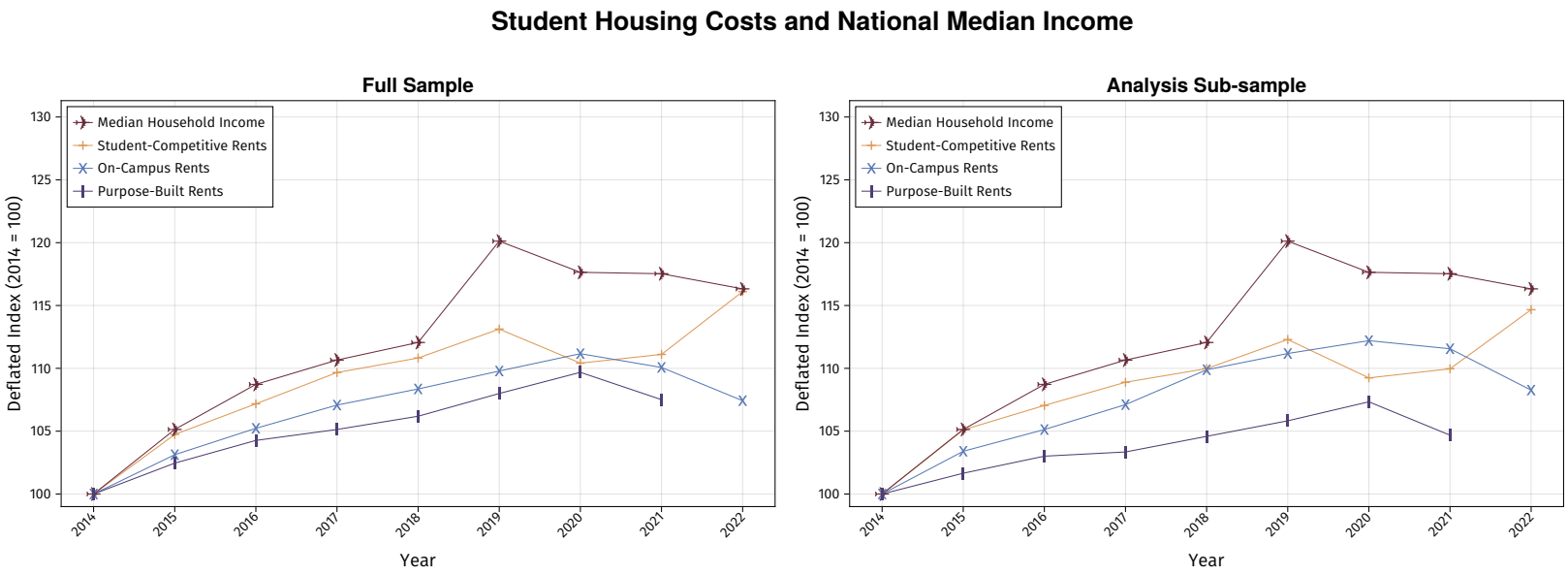

Figure 1: Time Series of Student Housing Costs.

Notes: This figure shows the time series of real student housing costs (indexed to 2014) for on-campus, purpose-built, and student-competitive housing. The series is adjusted for inflation using the Personal Consumption Expenditures (PCE) price index. The student-competitive and on-campus housing series extend to 2022, while the purpose-built series ends in 2021. Data for on-campus housing is from IPEDS, while student-competitive and purpose-built data come from RealPage. Median household income is also included for comparison, reflecting data from the U.S. Census Bureau. See Section 2 for further details on data sources and adjustments.

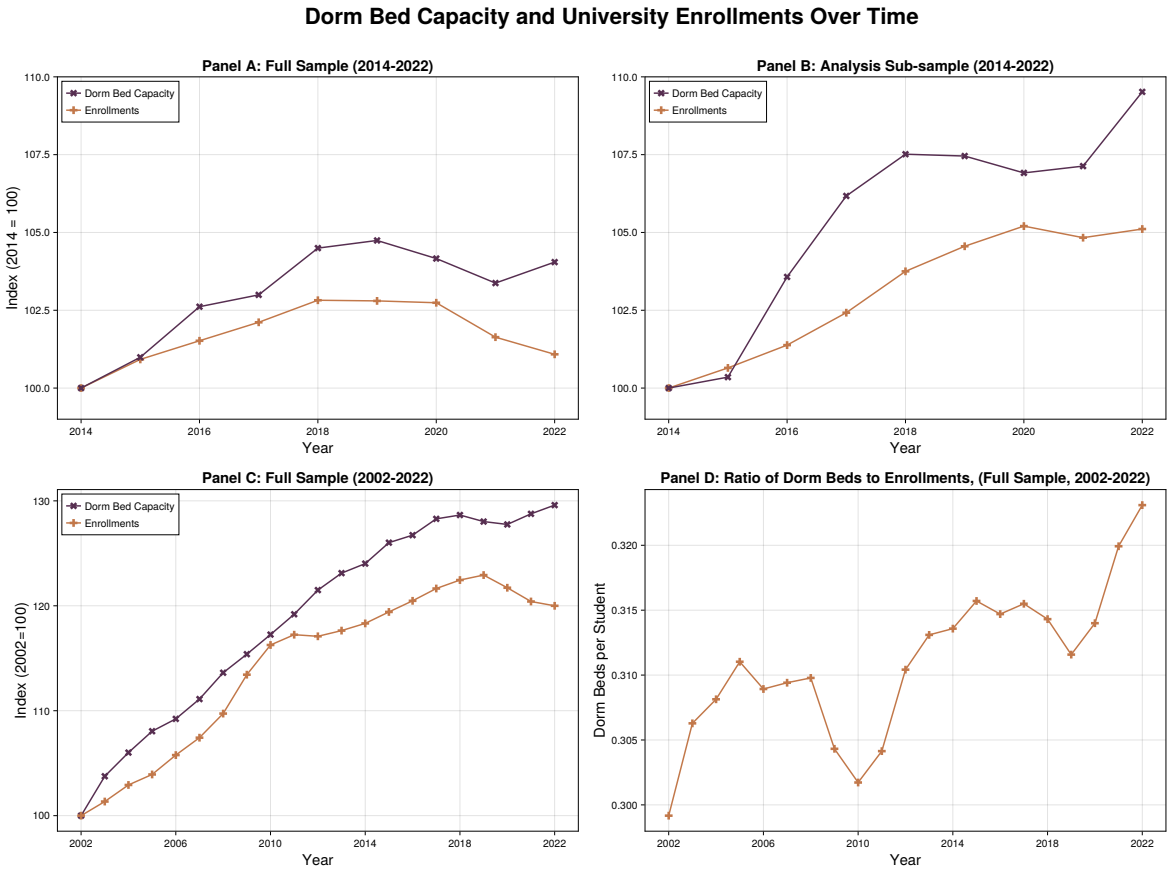

Figure 2: Dorm Room Capacity and Student Enrollments

Notes: This figure compares the time series of total student enrollments and dorm room capacity at four-year universities. Data for on-campus bed capacity and student enrollments are from the Integrated Postsecondary Education Data System (IPEDS). Panel A and B show the full sample and analysis sample respectively for the sample period, 2014–2022. Panel C shows results for the full sample for an extended period, 2002–2022. Panel D shows the ratio dorm beds to enrollments (as measured as 12-month full-time equivalent enrollments) from 2002–2022. The analysis sample includes 226 U.S. four-year universities, showing that while total enrollments have grown modestly, the capacity of on-campus dorms has increased more substantially, particularly in the analysis sample. See Section 2 for further details on data and methodology.

7 Tables

Table 1: Summary Statistics

	2014				2021/22			
	Mean	SD	Min	Max	Mean	SD	Min	Max
On-Campus Housing Cost ($)	754	189	362	1,444	946	247	444	1,890
Student-Competitive Rent/Bed ($)	935	536	294	3,025	1,275	611	425	3,688
Purpose-Built Rent/Bed ($)	772	216	404	1,452	897	252	406	1,948
Zillow Rent Index	1,434	500	763	2,405	2,045	646	969	3,281
Room Capacity	3,369	3,037	128	16,527	3,724	3,492	250	22,884
Purpose-Built Beds Sampled	2,205	3,195	24	16,841	3,723	4,392	134	22,638
Local Enrollments	15,825	13,162	1,145	64,071	15,355	13,826	1,127	62,982
Distance Enrollments	729	1,249	0	10,302	1,766	2,279	0	19,398
Out-of-State Tuition ($)	27,487	10,845	70	48,646	35,223	14,867	7,050	63,804
Out-of-State Fees ($)	1,706	2,971	0	27,901	1,719	1,944	0	20,593
Room & Board / Avg. Net Cost (%, Private)	36	6	25	55	40	8	26	74
Room & Board / In-State Cost (%, Public)	53	8	37	71	54	8	37	73
Off-Campus Premium	182	451	-573	2,084	329	496	-681	2,575
Monthly Subsidy Per Student ($)	50	139	-255	805	96	172	-183	932
Monthly Subsidy Per Student ($, Ranked Top 10)	388	301	-10	805	424	401	-12	932
Monthly Subsidy Per Student ($, Ranked 11+)	41	121	-255	679	86	150	-183	653
Monthly Subsidy Per Student ($, Urban)	65	147	-255	679	118	174	-183	791
Monthly Subsidy Per Student ($, Not Urban)	23	120	-145	805	54	161	-177	932
Observations	226				226			

Notes: This table presents summary statistics for key variables in 2014 and 2022, except for purpose-built student housing which is only available until 2021. Data for on-campus housing costs, local and distance enrollments, room capacity, and purpose-built beds are derived from the Integrated Postsecondary Education Data System (IPEDS), self-reported by U.S. universities. Data for student-competitive and purpose-built rents come from RealPage, while general market rents are from the Zillow Rent Index (ZORI). Out-of-state tuition and fees data are also from IPEDS. All monetary values are presented in nominal dollars and not adjusted for inflation. Summary statistics reflect data for 226 four-year U.S. universities. Data for 2021/22 include the 2021-2022 academic year, depending on data availability. Room capacity refers to total on-campus dormitory beds. The Zillow Rent Index represents average rents across the metropolitan area where each university is located. Purpose-built rent/bed includes privately developed student housing marketed to students, typically located near universities. *Off-campus premium* is computed as the difference between student-competitive rents and on-campus rents and is monthly. *Monthly subsidy per student* is computed the ratio of the *off-campus premium* to number 12-month full-time equivalent enrolled students. For *Room & Board / Avg. Net Cost* and *Room & Board / In-State Cost* see Section 2.

Table 2: Effects on Rents and Number of Beds by Housing Type

	Student Housing Costs						Supply of Student Beds			
	Student-Competitive		On-Campus		Purpose-Built		On-Campus		Purpose-Built	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log-Difference ZORI	0.904***	0.690***	-0.050	-0.152	0.592***	0.708***	0.533***	0.893***	0.862	3.815***
	(0.117)	(0.154)	(0.111)	(0.183)	(0.137)	(0.257)	(0.160)	(0.292)	(0.877)	(1.156)
Regional Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	226	226	226	226	91	91	226	226	91	91
R-squared	0.357	0.449	0.002	0.094	0.165	0.309	0.061	0.157	0.011	0.438

Notes: This table presents regression results analyzing the effects on rents and the number of beds across different housing types: student-competitive, on-campus, and purpose-built housing. The dependent variables are the log-differences in rents between 2014 and 2021/22. Columns (1) to (6) show the effects on rents, while columns (7) to (10) display the effects on the number of beds. Each housing type includes both the original regression and the regression with regional controls. Regional controls include the value in 2014 (in levels or logs) and the log-differences from 2014 to 2021/22 for the following variables: Metropolitan Statistical Area (MSA) population, real personal income, the percentage of the population with a bachelor's degree or higher, total employment, the unemployment rate, and the median age. All regional data are derived from the American Community Survey (ACS) 1-year estimates. The Zillow Observed Rent Index (ZORI) is from Zillow. Robust standard errors are reported in parentheses. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table 3: The Impact of Enrollment on Nominal Rents by Housing Type (2014–2022)

Panel A: Full Sample	Student-Competitive		On-Campus		Purpose-Built	
	(1)	(2)	(3)	(4)	(5)	(6)
Log-Difference Local Student Enrollment	0.049	0.051	0.106**	0.103**	0.291***	0.310***
	(0.057)	(0.048)	(0.046)	(0.047)	(0.102)	(0.103)
Regional Controls	No	Yes	No	Yes	No	Yes
Observations	226	226	226	226	91	91
R-squared	0.004	0.395	0.029	0.114	0.099	0.333
Panel B: Small Town Sample	Student-Competitive		On-Campus		Purpose-Built	
	(1)	(2)	(3)	(4)	(5)	(6)
Log-Difference Local Student Enrollment	0.039	0.059	0.038	0.063	0.219	0.286*
	(0.086)	(0.080)	(0.051)	(0.061)	(0.149)	(0.148)
Regional Controls	No	Yes	No	Yes	No	Yes
Observations	106	106	106	106	56	56
R-squared	0.002	0.402	0.004	0.123	0.050	0.456

Notes: The dependent variable in each regression is the log-difference in nominal rents between 2014 and 2022 for student-competitive and on-campus housing, and between 2014 and 2021 for purpose-built housing. The table presents the results for three housing types: student-competitive, on-campus, and purpose-built, with and without regional controls. Regional controls include the value in 2014 (in levels or logs) and the log-difference from 2014 to 2021/22 for the following variables: MSA population, real personal income, percent of the population with a bachelor's degree or higher, total employment, the unemployment rate, and the median age. All regional data are derived from the ACS 1-year estimates. Robust standard errors are reported in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A Online Appendix

A.1 Extending Student-competitive Housing Series

Realpage provides data at the university level on the off-campus housing market which competes with the purpose-built student housing market. The series unfortunately only extends until the 2021-22 academic year which was still somewhat affected by the COVID-19 pandemic. We extend the series one-year, until the 2022-23 academic year, with the methodology described in this section to connect the Zillow Observed Rent Index with the proprietary data from Realpage.

1. **Compute Weighted Average ZORI for Each University, Distance, and Time:**

   (a) For each university u, for each distance $d \in \{1, 2, \ldots, 50\}$ miles, and for each time period t:

      i. Let $\mathcal{Z}_{u,d}$ be the set of zip codes whose centroids are within d miles of the centroid of the zip code where university u is located.

      ii. Compute the population-weighted average ZORI for university u at distance d and time t:

$$\text{ZORI}_{u,d,t} := \frac{\sum_{z \in \mathcal{Z}_{u,d}} w_z \times \text{ZORI}_{z,t}}{\sum_{z \in \mathcal{Z}_{u,d}} w_z}$$

      where $\text{ZORI}_{z,t}$ is the ZORI for zip code z at time t, and w_z is the zip code population for year t provided by the U.S. Census Bureau.

2. **Compute Penalized Correlation with RealPage Series:**

   (a) For each university u and distance d, calculate the penalized correlation between $\text{ZORI}_{u,d,t}$ and the RealPage student competitive series $\text{StudentCompetitive}_{u,t}$ over time periods t:

$$\text{PenalizedCorr}_{u,d} := \text{corr}\left(\text{ZORI}_{u,d,t},\ \text{StudentCompetitive}_{u,t}\right) - 0.005 \times d$$

   where $\text{corr}(\cdot,\ \cdot)$ denotes the Pearson correlation coefficient calculated over the available time periods t.

3. **Select Optimal Distance:**

   (a) For each university u, identify the distance d^* that maximizes the penalized correlation:

$$d^* = \underset{d \in \mathcal{Z}_{u,d}}{\arg\max}\ \text{PenalizedCorr}_{u,d}$$

4. **Perform Regression and Prediction:**

   (a) Using the optimal distance d^* for each university u, perform a linear regression over time periods t:

$$\text{StudentCompetitive}_{u,t} = \beta_{0,u} + \beta_{1,u}\,\text{ZORI}_{u,d^*,t} + \epsilon_{u,t}$$

   where $\beta_{0,u}$ and $\beta_{1,u}$ are regression coefficients specific to university u, and $\epsilon_{u,t}$ is the error term at time t.

(b) Use the estimated model to predict the student competitive rental rates based on the 2021 value of $\text{ZORI}_{u,d^*,t}$:

$$\widehat{\text{StudentCompetitive}}_{u,2022} = \hat{\beta}_{0,u} + \hat{\beta}_{1,u}\,\text{ZORI}_{u,d^*,2022}$$

where $\hat{\beta}_{0,u}$ and $\hat{\beta}_{1,u}$ are the estimated coefficients.

Notes

- The penalization term $0.005 \times d$ in the correlation accounts for the trade-off between correlation strength and proximity; larger distances are penalized to favor more localized data.
- The result of the algorithm is only employed in the analysis if the maximum correlation between $\text{corr}\left(\text{ZORI}_{u,d^*,t},\ \text{StudentCompetitive}_{u,t}\right) \geq 0.5$.
- The correlation and regression analyses are performed over the same time periods t to ensure consistency.

We show the results of the procedure for four universities of varying population-density in Figure A6. In the top-right panel, we find that for New York University the optimal distance is 2 miles with a correlation between the two series of 86.7%. In the top-right, the optimal distance for the University of San Diego is 3 miles with a correlation of 97%. The optimal distance for the University of Chicago is 6 miles, with a correlation of 95.1%. The University of Connecticut—a land-grant university notable less-dense than the previous three universities, resulted in an optimal distance of 13 miles, with a correlation of 79.5% with the Realpage series.

A.2 Figures

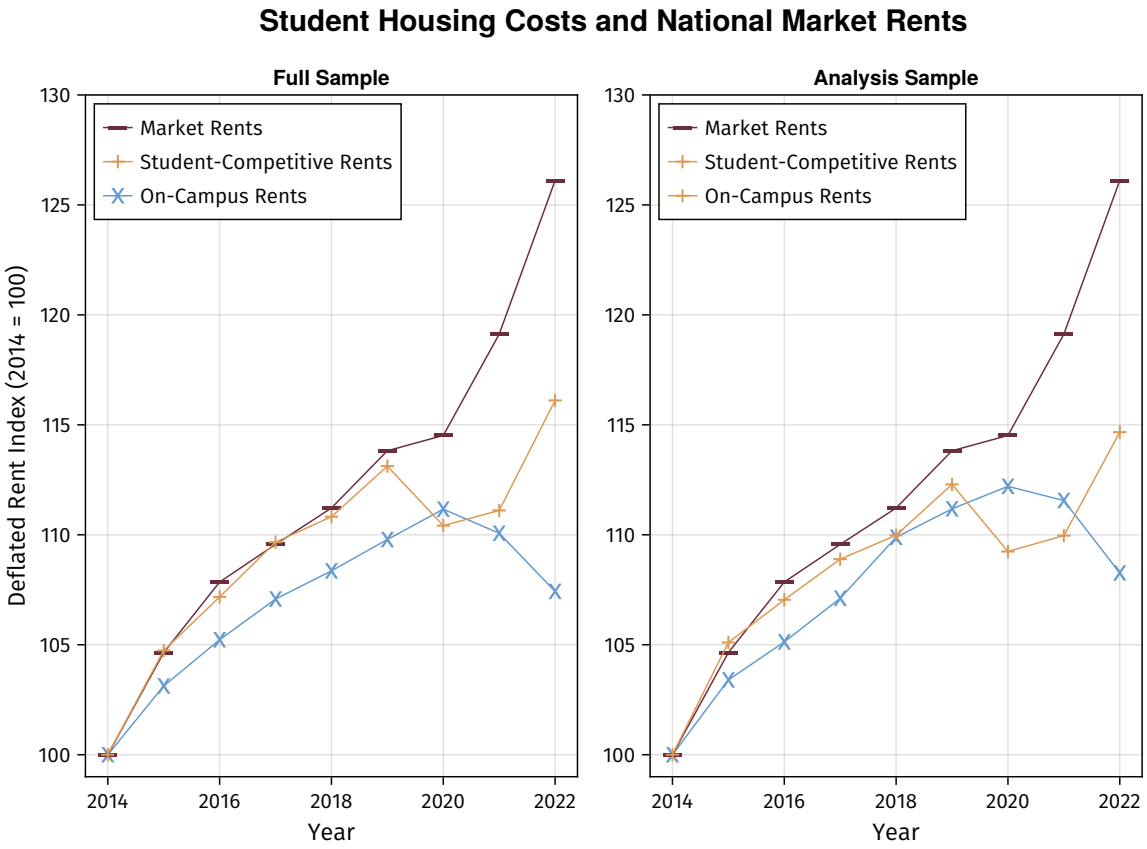

Figure A1: Comparison to Market Rents. This figure shows the time series of real student housing costs (indexed to 2014) for on-campus, student-competitive housing, and national general housing market rents as measured by the national Zillow Observed Rent Index. The series is adjusted for inflation using the Personal Consumption Expenditures (PCE) price index. Data for on-campus housing is from IPEDS, while student-competitive and purpose-built data come from RealPage. Data for market rents is from Zillow. See Section 2 for further details on data sources and adjustments.

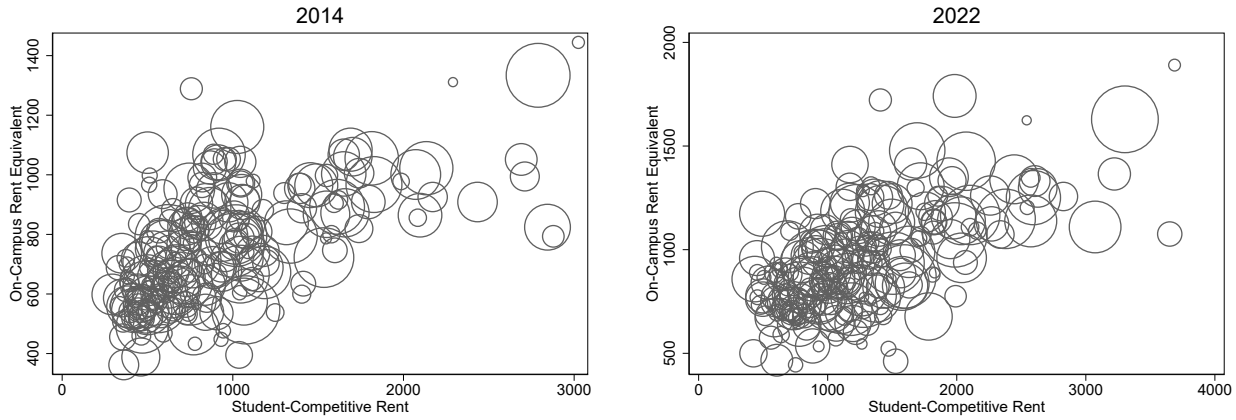

Figure A2: Cross-section of on-campus and student-competitive housing costs in 2014 (left) and 2022 (right). The size of each marker is proportional to the local enrollments of the each university.

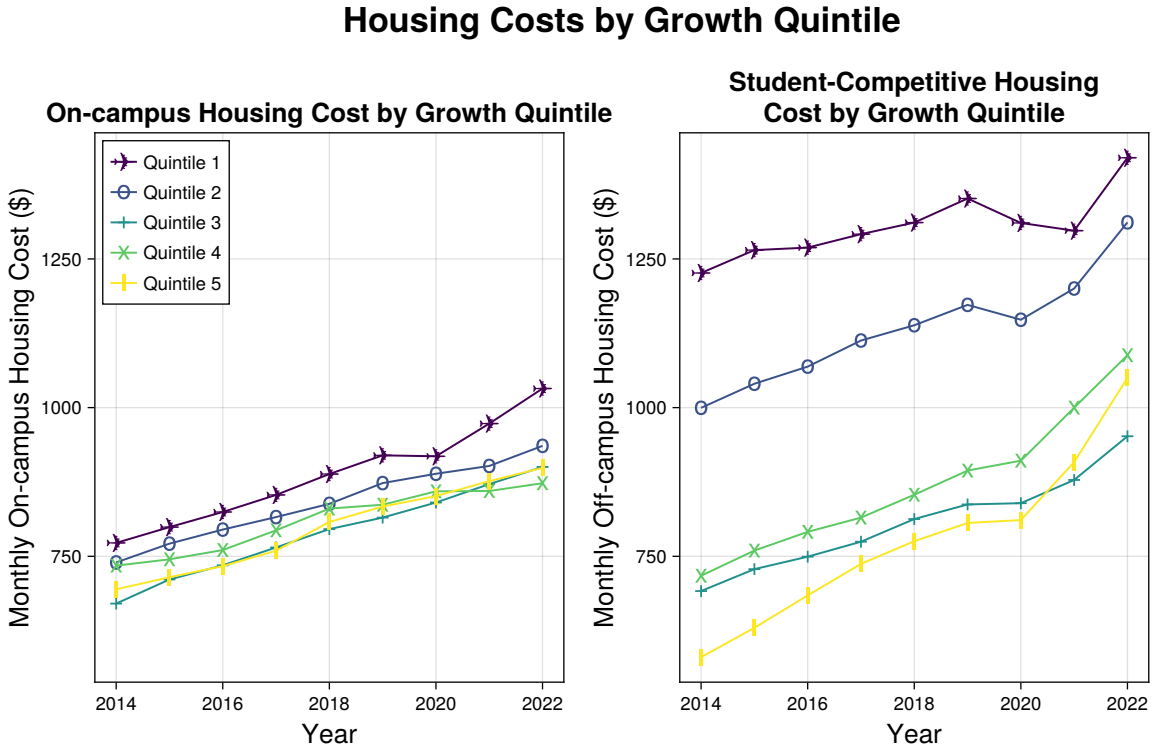

Figure A3: Nominal on-campus and student-competitive monthly housing costs by quintiles of student-competitive housing cost growth from 2014–2022. Data points are are computed as within-quintile averages weighted by total university enrollment. Quintile 1 (5) is the bottom (top) 20% of student-competitive growth rates.

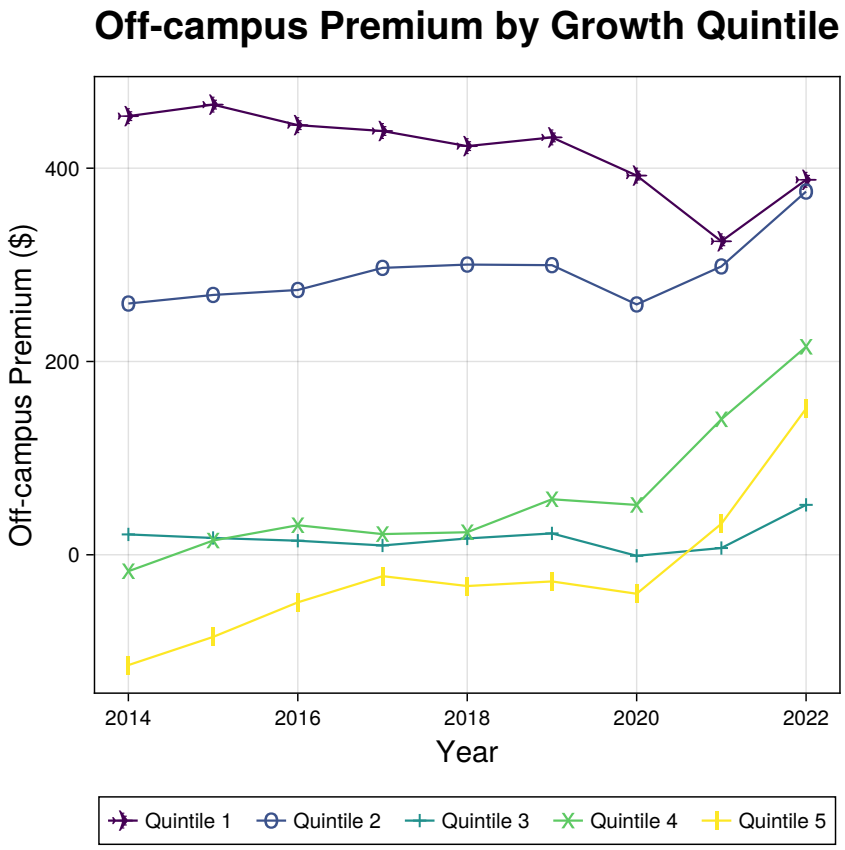

Figure A4: Nominal off-campus premium by quintiles of student-competitive housing cost growth from 2014–2022. The off-campus premium is computed as the difference between monthly student-competitive housing costs and on-campus housing costs. Data points are are computed as within-quintile averages weighted by total university enrollment. Quintile 1 (5) is the bottom (top) 20% of student-competitive growth rates.

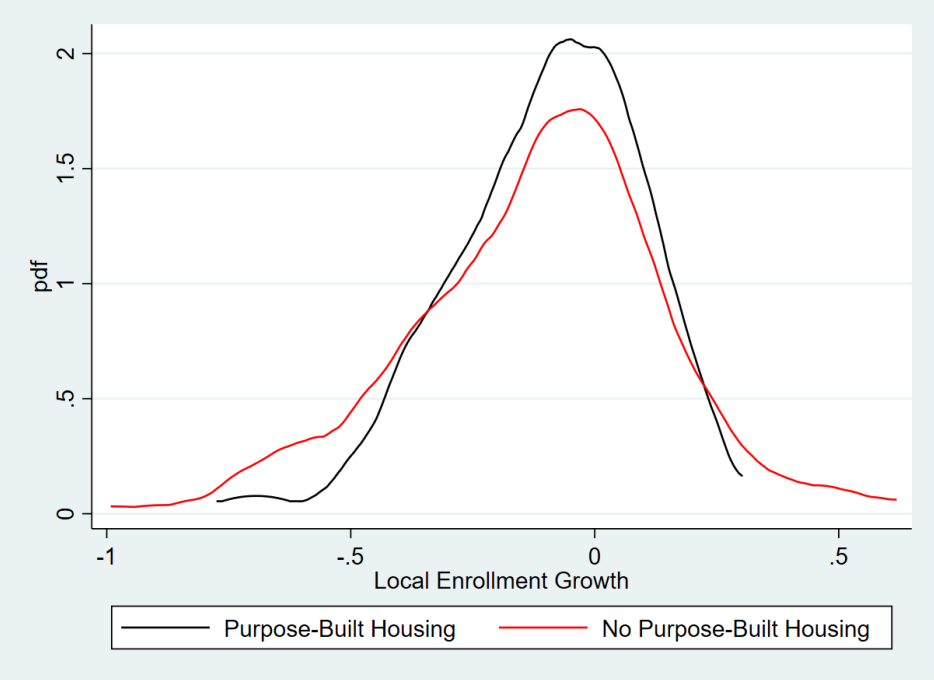

Figure A5: Local Enrollment Growth Distribution by Presence of Purpose-Built Student Housing. Local enrollment growth is defined as the log-difference between local enrollments from 2014–2022.

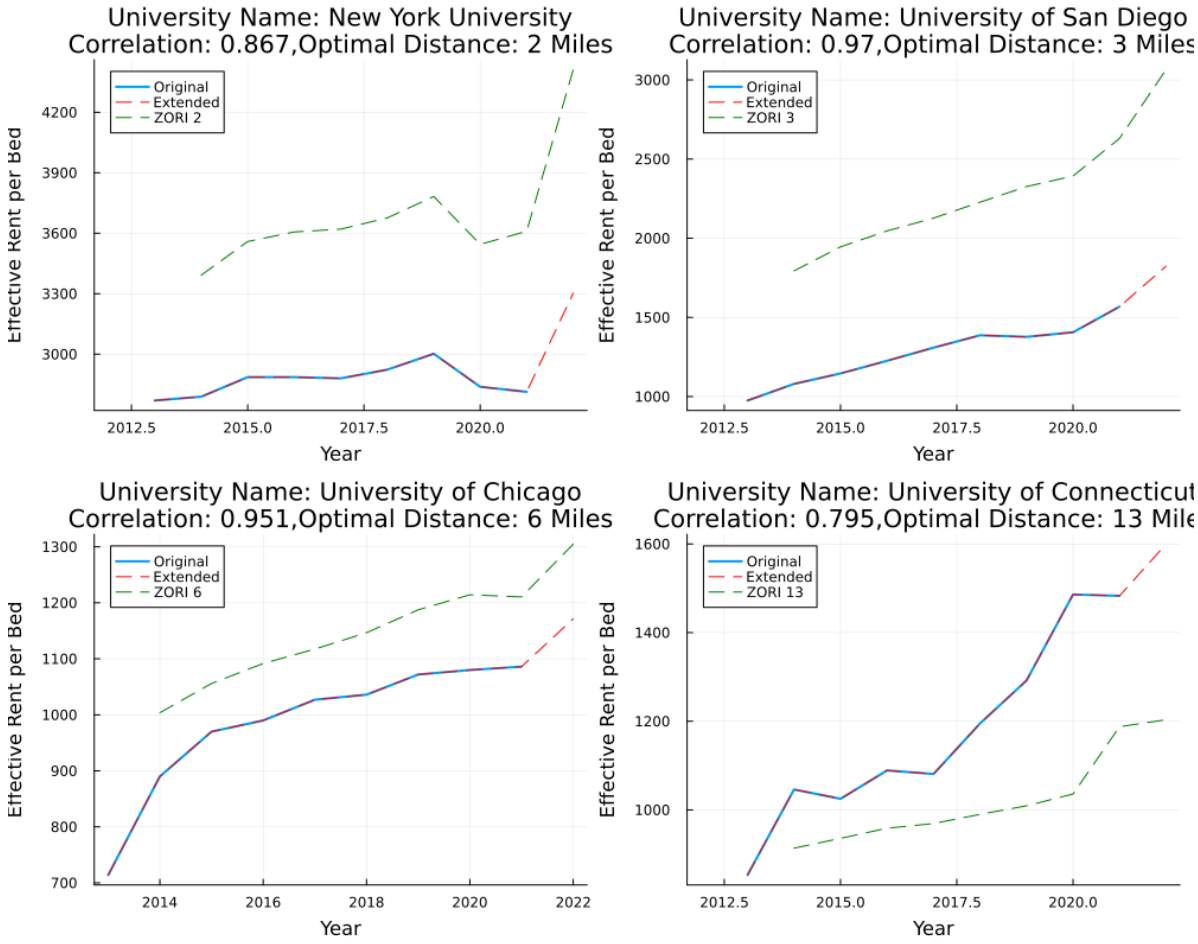

Figure A6: Imputation of student-competitive housing Costs. We illustrate the result of the procedure by which we extend the student-competitive housing costs for four universities: New York University, University of San Diego, University of Chicago, and University of Connecticut. The blue line is the proprietary student-competitive series from Realpage which ends in 2021. The green dashed line shows the aggregated ZORI series around the university at chosen distance, d^*. And the red dashed line is the result of extending the series by one data-point by projecting the ZORI series onto the student competitive series. In the title of each subfigure is the optimal chosen distance, and Pearson's correlation between the original series and ZORI series.

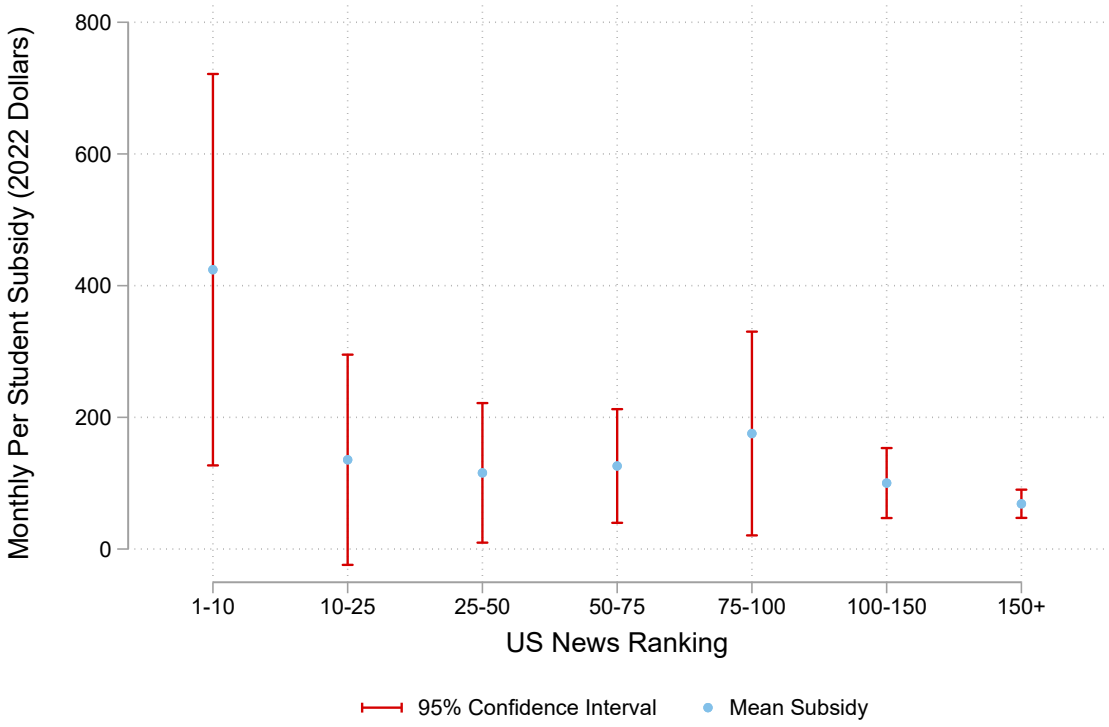

Figure A7: Average monthly per-student subsidy (in 2022 dollars) by US News ranking categories, with 95% confidence intervals. The figure shows a declining trend in subsidies as ranking position decreases, with top-ranked institutions (1-10) receiving substantially higher average subsidies compared to lower-ranked institutions. Error bars indicate wider uncertainty in estimates for top-ranked institutions.

A.3 Tables

Table A1: Monthly University-provided Housing Subsidy per Student Across Groups

Panel A: Monthly Per Student Subsidy (level, 2022 Dollars)

	Bottom 50% / No	Top 50% / Yes	Difference	Std. Error	p-value
US News Ranking	78.66	173.41	94.75	28.83	0.0012
Cost of Attendance	53.33	139.98	86.65	22.22	0.0001
Public	135.38	51.19	-84.19	22.32	0.0002
Urban	54.05	117.66	63.61	23.93	0.0084
Endowment Size	73.13	119.82	46.69	22.75	0.0413
Tuition Reliance	82.51	111.58	29.07	22.91	0.2059
Large	99.47	93.49	-5.97	23.02	0.7956

Panel B: Change in Monthly Per Student Subsidy from 2014–2022

	Bottom 50% / No	Top 50% / Yes	Difference	Std. Error	p-value
US News Ranking	45.95	45.39	-0.56	13.43	0.9667
Cost of Attendance	35.47	56.41	20.94	10.35	0.0443
Public	54.65	35.69	-18.96	10.40	0.0696
Urban	28.93	54.41	25.49	10.92	0.0205
Endowment Size	47.63	44.03	-3.60	10.44	0.7304
Tuition Reliance	41.20	51.00	9.80	10.44	0.3490
Large	61.23	32.49	-28.74	10.29	0.0057

Notes: This table shows the result of several two-sided t-tests across different binary groupings sorted in reverse-order by the absolute value of the difference in means of the monthly per student housing subsidy. Panel A shows the results for the level of subsidy in 2022, while Panel B shows the change in subsidy from 2014–2022 in nominal terms. US News rankings is split into rankings 1—75 (Top 50%) and 75+ (Bottom 50%). Cost of attendance is computed as the sum of out-of-state tuition plus fees.

Table A2: Effects of Local Rent Changes on University Costs

	Log-Difference (2014-2022)		
	Room Costs	Tuition	Fees
	(1)	(2)	(3)
Log-Difference Zillow Rent Index	−0.050	−0.120	−0.015
	(0.111)	(0.240)	(0.328)
Constant	0.252***	0.290***	0.131
	(0.040)	(0.072)	(0.130)
Observations	226.000	225.000	206.000
R^2	0.002	0.001	0.000

Notes: This table presents results from simple regressions to examine whether universities internalize general housing market costs in non-housing prices, such as tuition or fees. The independent variable is the log-difference in MSA-level ZORI from 2014–2022.

Table A3: Off-Campus Premium by University Type

	(1)	(2)	(3)	(4)	(5)
Public University	-308.882***			-335.029***	-221.344***
	(97.218)			(113.391)	(78.225)
Large University		106.530		252.984***	123.946*
		(71.703)		(94.804)	(67.664)
Supply-elastic University			-298.938***	-253.171***	-33.456
			(65.235)	(83.359)	(81.403)
ZORI ($)					0.434***
					(0.062)
Constant	586.805***	293.327***	532.885***	521.171***	-469.233***
	(86.107)	(48.727)	(46.080)	(68.573)	(142.339)
Observations	226	226	223	223	223
R-squared	0.084	0.006	0.087	0.179	0.420

Notes: This table presents regression results examining the off-campus housing premium across different university types. The off-campus premium is defined as the difference between student-competitive housing costs and on-campus housing costs for each university in the sample. Dummy variables for supply-elastic and large universities are created by splitting the sample at the median. The results demonstrate statistically significant differences in conditional means across university types. Columns (1)-(3) uses each dummy separately as a covariate, column (4) uses includes all dummies. Column (5) also includes the MSA-level ZORI index as a covariate.
Standard errors are in parentheses.
Significance levels: * p<0.10, ** p<0.05, *** p<0.01

Table A4: Effect of University Ranking on Housing Subsidy

Dependent Variable: Per-student Subsidy	(1)	(2)
Ranked Top 10	342.67**	303.51**
	(2.42)	(2.01)
Ranked 11 to 50	40.18	5.43
	(0.90)	(0.12)
Top 50% Cost-of-Attendance		46.99
		(1.53)
Top 50% Endowment Size		-8.57
		(-0.34)
Top 50% Tuition Reliance		14.67
		(0.47)
Public University		-25.51
		(-0.66)
Urban Location		52.34**
		(2.28)
Constant	81.57***	37.44
	(8.03)	(0.88)
R^2	0.12	0.18
N	226.00	226.00

Robust t-statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$