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Comparing the Costs of On-Campus and Off-Campus Student Housing

AN ANALYSIS OF HOUSING OPTIONS AT 22 UNIVERSITIES

By NMHC and
Axiometrics, a RealPage
Company

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About NMHC

Based in Washington, D.C., the National Multifamily Housing Council (NMHC) is a national association representing the interests of the larger and most prominent apartment firms in the U.S. NMHC's members are the principal officers of firms engaged in all aspects of the apartment industry, including ownership, development, management and financing. NMHC advocates on behalf of rental housing, conducts apartment-related research, encourages the exchange of strategic business information and promotes the desirability of apartment living. Nearly one-third of Americans rent their housing, and almost 15 percent live in an apartment (buildings with 5 or more units). For more information, contact NMHC by phone at 202/974-2300, email at info@nmhc.org, or on the website at www.nmhc.org.

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Executive Summary

Under this alternative framework, a purpose-built unit offered more value to a student compared with both off-campus student-competitive units and on-campus residence halls at the 22 universities studied.

Private, purpose-built student housing properties have become known for their luxurious amenities and state-of-the-art finishes. As this reputation has emerged and the cost of earning a college degree continues to rise, some have begun to question the affordability of these amenity-rich housing options. One common response to that criticism has been to argue that students living off campus in purpose-built student housing are getting much more for their money than students living on campus. Until now, no quantitative evidence was available to defend this response.

This paper presents a first step towards a comprehensive analysis of this issue. It examines the cost differences between different kinds of on-campus and off-campus housing options, including purpose-built student housing and student-competitive conventional apartments. In addition, this study presents a general assessment of how amenities, proximity to campus, bedroom offerings and the type of university appear to influence rental rates of the various housing types.

SCOPE OF STUDY AND METHODOLOGY

The National Multifamily Housing Council (NMHC) and Axiometrics, a RealPage Company, assembled data on annual per-bed rent levels, as well as a multitude of housing characteristics, such as the number of students per bedroom and distance from campus, for 885 on-campus housing options (771 traditional residence hall floorplans and 114 on-campus apartment floorplans), 2,550 purpose-built student housing floorplans and 4,615 student-competitive floorplans at 22 universities across the U.S.

The off-campus data came from Axiometrics' existing dataset, while NMHC collected corresponding on-campus housing data from university websites. The resulting combined dataset is likely the first of its kind to include both on- and off-campus housing records.

We chose 22 universities that represented a variety of geographic locations. There was also a sizable purpose-built and student-competitive presence at each of these schools, allowing for a robust

comparison between on- and off-campus housing options.

Next, we developed a statistical model to estimate, relative to off-campus purpose-built housing, the rent premium or discount corresponding to on-campus housing options (both traditional residence halls and on-campus apartments) and off-campus student-competitive housing, when all other factors were held constant. We then examined the degree to which various housing features and amenities influenced rent levels within the on-campus, purpose-built and student-competitive samples.

KEY FINDINGS

Analysis of the dataset showed that a bed in the average off-campus purpose-built floorplan cost a student \$10,965 per year. This compares with average annual rents of \$7,717 per bed for on-campus residence halls, \$7,056 for on-campus apartment floorplans and \$13,093 for off-campus student-competitive floorplans.

While this type of cost comparison suggests that on-campus housing is often less expensive overall than off-campus purpose-built and student-competitive options, it offers a limited view of the value of each housing option. Here's why.

These types of on-campus and off-campus housing units rarely have identical features or amenity offerings. For example, on-campus residence halls often house two or more students in one bedroom and have no in-unit bathroom. In contrast, every off-campus floorplan in the data studied came with an in-unit bathroom and only a handful (3 percent) of purpose-built floorplans featured two beds per bedroom. On-campus residence halls in the sample were also much less likely to contain in-building fitness centers or offer units with full, in-unit kitchens equipped with stoves, ovens and dishwashers.

Because our analysis controls for these factors and features, it offers a more comprehensive look at housing costs and value for students. Under this alternative framework, a purpose-built unit offered more value to a student compared with both off-

campus student-competitive units and on-campus residence halls at the 22 universities studied.

On average, a student paid 9 percent more each year to live in a student-competitive apartment compared to an identical purpose-built apartment (i.e., same number of students per bedroom, proximity to campus, etc.). On-campus residence halls came with a similar 9 percent premium.

On-campus apartments, on the other hand, provided more value. On average, a student paid 26 percent less for an on-campus apartment similar to an off-campus purpose-built unit.

ASSIGNING VALUE TO VARIOUS FEATURES AND AMENITIES

Our analysis, aside from estimating inherent premiums or discounts associated with living in specific housing types, also revealed a number of housing characteristics and features that influenced the pricing of student housing options.

Location

In student housing, location is one of the most significant factors in pricing. For our analysis, we measured location in three ways: distance from campus, region of the country and urban-rural classification.

In the dataset studied, proximity to campus was a significant driver of apartment rents. Every additional mile off campus brought with it a 17 percent discount in annual per-bed rents at purpose-built communities and 10 percent less in per-bed student-competitive annual rents. For on-campus housing, this was obviously an irrelevant factor.

Across all housing types, rents tended to be higher in more urban areas. (The study classified a geographic area as either rural, urban or very large city urban). Compared with those in urban areas, beds for units in rural areas were associated with discounted annual rents (per bed) of 17 percent for on-campus housing, 14 percent for purpose-built, and 18 percent for student-competitive. Beds in very large city urban areas (compared to urban) were associated with significant annual rent premiums—52 percent for beds in on-campus housing options, 35 percent for those in purpose-

built units and 56 percent for those in student-competitive units.

However, it is important to note that more than half of the schools studied (15 of 22) were in the Southern region of the United States. These Southern schools offered annual per-bed rents that were lower on average than those offered in the Midwest—22 percent lower in the on-campus sample, 25 percent lower in the purpose-built sample and 23 percent lower in the student-competitive sample. Since only one school was represented from the Northeast (University of Pittsburgh) and two from the West (San Diego State University and University of Arizona), region is likely to have had some degree of influence on overall results, although further study is needed to understand those regional nuances.

Type of University

There are two major types of universities—those that are privately held and those that are publicly funded. This classification also was associated with different premiums and discounts on annual per-bed rent for the various housing options.

For example, private institutions charged per-bed annual rent premiums of 10 percent over their public counterparts for on-campus floorplans. In the off-campus portion of the dataset, however, private universities were associated with rent discounts of 15 percent for purpose-built floorplans and 19 percent for student-competitive floorplans.

It is important to remember that only two private universities—The University of Notre Dame and Baylor University—were included in the sample dataset, and future research that includes more private schools may provide more clarity on these findings.

Number of Students per Bedroom/Unit

Students living with more roommates either per room or per unit captured greater rent savings. These discounts were apparent in both the on- and off-campus samples, although the discounts varied across housing types.

Within the on-campus sample, which included both residence halls and apartments, the majority of floorplans had two or more beds per bedroom. Single rooms (one student per bedroom) made up

39 percent of the on-campus sample. Relative to a single, a student paid 14 percent less per year to live in a double room and 22 percent less per year to live in a triple or quad, all else being equal. This is one of the main reasons why overall on-campus rents appeared to be so much cheaper than their off-campus counterparts.

However, while a student still benefitted from a savings when living with more roommates per unit (versus per room), the discount was less. An on-campus floorplan with three or more students per unit cost 5 percent per bed less annually than a floorplan housing just one or two students.

Within the off-campus purpose-built sample, double rooms (two students per bedroom) similarly commanded a 15 percent annual per-bed discount over single rooms. However, this type of floorplan accounted for a mere 3 percent of the purpose-built sample; triples and quads were only found in the on-campus sample.

Students living in off-campus purpose-built apartments also found value by living with one or more roommates in the unit (as opposed to per bedroom). Versus living alone, a student could expect to pay 19 percent less per year to live in a purpose-built apartment unit with one other roommate, 21 percent less to live with two roommates and 21 percent less to live with three roommates.

If that student were living in an off-campus student-competitive unit, they would pay 15 percent less per year with one roommate, 14 percent less with two roommates and 8 percent less with three roommates. The off-campus student-competitive sample did not include any floorplans with more than one bed per room.

On-Campus Housing Type

Within the on-campus sample, two different types of housing were compared—traditional residence halls and on-campus apartments.

Relative to residence halls, on-campus apartments commanded a 35 percent annual per-bed rent discount. Only eight of the 22 universities studied offered on-campus apartments, however, so it is possible that the inclusion of more schools in the study would yield different results.

In-Unit Bathroom

The location or proximity of a bathroom was an important factor in per-bed rent rates. Some units in the sample lacked an in-unit bathroom, with students using a shared community bathroom on the floor. Some had an in-unit bathroom that was shared among two or more roommates. And others offered one full private bathroom for every student, otherwise known as bed-bath parity.

Out of the various housing types, the on-campus dataset had the greatest variety of bathroom options, although not all of these options had an impact on rents. On-campus floorplans with an in-unit bathroom (either shared or private), relative to those with community bathroom access, were associated with 14 percent more in per-bed annual rent.

In contrast, all off-campus floorplans in the sample, whether purpose-built or student-competitive, offered in-unit bathrooms (either shared or private). However, off-campus student-competitive floorplans with a one-to-one student-to-bathroom ratio commanded a 20 percent premium over rooms with shared in-unit bathrooms. No meaningful effect was observed in the purpose-built sample.

Fitness Center

Students continue to report that fitness centers are a much-desired community amenity. However, this study showed that only one housing type had an associated rent premium for an in-building or on-property fitness center.

More specifically, off-campus student-competitive units showed a 17 percent annual per-bed rent premium for having fitness centers on the property.

Among on-campus and off-campus purpose-built floorplans, on the other hand, no statistically significant relationship was found between in-building or on-property fitness centers and rent. While this finding is somewhat surprising, it does not necessarily mean that fitness centers provide no value in these housing types. It could be the case, for example, that variables excluded from the dataset, such as year structure built, quality of management or the presence of some other amenity, distorted the effect of fitness centers on rent. Further research with a larger dataset would

provide a more accurate picture on the effect of fitness centers on rent rates.

Living Room

A defined in-unit living room was associated with higher rents across all housing types in the dataset. In fact, floorplans with a living room had a 19 percent per-bed annual rent premium. This pricing premium reflects the fact that all off-campus purpose-built and student-competitive floorplans in the dataset included a living room or living area. However, that premium shrunk to 8 percent when only on-campus housing was analyzed.

In-Unit Washer/Dryer

Data regarding the presence of an in-unit washer/dryer was only available for on-campus housing, where floorplans had an 8 percent per-bed annual rent premium.

Internet

Similarly, data regarding internet options were not available for off-campus housing options. The availability of ethernet was associated with a 28 percent premium in rent for on-campus floorplans. However, in the off-campus data, internet was included for all units in the sample, so premiums could not be calculated.

Square Footage

Many universities do not provide information publicly on the size of on-campus living units. As a result, we excluded square footage from our on-campus models.

Square footage was available for the off-campus portion, and unsurprisingly, larger units brought higher rents. A 100-square foot increase in square footage per student resulted in a 7 percent increase in rent per bed annually for a purpose-built unit and a 10 percent increase for student-competitive units.

LIMITATIONS AND FURTHER RESEARCH

The housing characteristics studied in this paper, such as students per bedroom and distance from campus, were able to explain some, but not all, variation in rent.

These unexplained differences are most likely due to limitations in the data. Data were only available for on-campus housing units by consulting university websites and calling university representatives, making it difficult to obtain every variable desired. As a result, there were several housing characteristics excluded from the data—year structure built, quality of management, the presence of other amenities (e.g., pools), etc.—that are also likely to influence rent levels, as well as the estimated impact of other variables. Going forward, efforts can be made to expand the existing dataset so that rent levels can be more accurately assigned to distinct housing features and amenities.

Despite these limitations, the statistical model using the variables that were available for the entire dataset explained much of the difference in rent levels found across the different housing types. More specifically, the model accounted for 73 percent of the variation in off-campus student-competitive rent levels, 63 percent of the variation in off-campus purpose-built rent levels and 52 percent of the variation in on-campus rent levels.

Clearly, the variables included in the dataset more effectively explain off-campus rents than on-campus rents. This is likely due, at least in part, to any number of university policies that influence their pricing strategies for on-campus housing.

Schools often offer one or two price points for all their on-campus doubles or singles, for example. The University of Notre Dame, for instance, set just one rent level for all its dorms. A pricing strategy like this results in rent levels being less variable, making it is more difficult for the model to explain rent variations with different combinations of housing characteristics and amenities.

In addition, since universities often require students to live on campus for a certain number of years, they have greater leeway to deviate from market prices as they see fit. This results in rent variations that can only be explained by the administration of individual schools.

On the other end of the spectrum, the off-campus student-competitive model had the most explanatory power. Since these units do not cater specifically to university students, their rents were likely less prone to the idiosyncrasies of individual schools.

IMPLICATIONS FOR STUDENT HOUSING PRACTITIONERS

This paper should be viewed as a critical first step in contributing to knowledge about the costs of on- and off-campus student housing rather than a definitive result. Our analysis results indicate certain characteristics that appear to have an influence on rents, though a larger dataset, both in terms of the number of schools studied as well as the variables collected, would provide further explanatory power.

Our analysis highlights the importance of evaluating both the market at and around each university as well as individual housing characteristics when determining rent levels.

From a market perspective, our findings uncovered regional variations—rents tended to be lower in the Southern region when compared to other parts of the United States, density considerations—rents were higher near universities in large cities—as well as a positive relationship between proximity to campus and rent. Moreover, our analysis quantified

the value of a number of physical characteristics, explaining much of the variation in rents between on- and off-campus housing. For example, results showed that putting a fitness center into a student-competitive property garners less of a rent premium than offering a private bathroom for each resident.

However, this paper did not analyze individual amenities that are commonly found in purpose-built and student-competitive properties such as a pool, a business center or parking. This is due in part to the fact that these amenities were either not offered or not available for on-campus floorplans.

For practitioners, our key findings should serve to inform how rent premiums and discounts could factor in to their operating budgets, investment decisions and targeting of students at a range of price points.

Introduction

Many factors play into deciding what student housing option to choose—such as a student's or, in many cases, their parents' financial situation, proximity to campus, security and amenities. Based on these factors and/or residency requirements, students have a wide variety of choices for housing today.

These choices can be grouped into several different categories: on-campus housing, which can range from traditional “dorm-style” residence halls to on-campus apartments, and off-campus housing, which can include both traditional apartment communities to apartment communities specifically built for college students (known as purpose-built student housing).

Residence halls simply used to be places where students could sleep, dress and study while attending college. They were the simplest of spaces, providing each student a bed, desk and a place to keep some clothes. And they were usually one of the least-expensive housing options, often made of institutional-like cinder block construction. In fact, this view of has been so pervasive that the Census Bureau treats university housing as group quarters and excludes it from residential permitting totals.

An alternative option for students is to live in existing market-rate apartments—also known as student-competitive units—near campus. Student-competitive apartments are conventional apartment properties that benefit from student demand for housing because of their proximity to campus. The quality and appearance of student-competitive properties varies by age and upkeep.

However, a new housing option that has developed in recent decades is purpose-built student housing properties. This relatively new phenomenon coincided with increases in enrollment at many public universities. To capture this growing demand, owners and managers of these properties developed a new type of product, often with different features and a variety of amenities that reflect students' unique living needs and preferences. As the sector has grown, purpose-built student housing properties have become known for offering luxurious amenities and state-of-the-art finishes. However, as the cost of obtaining a college degree continues to rise, some industry watchers question the affordability of these amenity-rich housing options and ultimately the returns.

While it is easy for students and their parents to compare the list of amenities and features when deciding between housing options, the financial value of the differences in features and amenities is less clear. To that end, this paper has two goals.

First, we aim to estimate difference in cost between on-campus, off-campus purpose-built and off-campus student-competitive housing options after the presence of various features and amenities are taken into consideration. In simpler terms, how would three identical student housing units be priced if they were on-campus, off-campus purpose-built or off-campus student-competitive? Second, we intend to estimate the value associated with various housing characteristics such as distance from campus and number of students per bedroom and unit.

NMHC and Axiometrics, a RealPage Company, partnered to provide this analysis of the features, amenities and pricing of student housing located both on-campus and off-campus. The basis for this analysis is a dataset developed by both organizations that provides a look at off-campus and on-campus offerings at 22 universities across the United States.

This paper is a first step in providing quantitative evidence of how on- and off-campus housing options compare for university students. Further research is needed to further refine the variables collected, as

well as to collect additional observations for a more robust sample size. While the results in this paper cannot provide a practitioner with a definitive value for a given amenity, it does provide clarity and guidance as to why there are price differentials between on- and off-campus housing.

This paper is organized into several sections. First, a methodology section details the data compilation process for student housing options available at the 22 universities studied. This section also describes the statistical techniques employed to compare the differences in cost for the on- and off-campus floorplans themselves, as well as the costs associated with individual amenities, features and characteristics.

Second, the descriptive characteristics of on- and off-campus housing are then presented in an aggregated format. While this provides a picture of how many variations of floorplans are available, it stops short of offering any sort of clarity regarding how much value to assign to the different aspects of each floorplan. The findings and analysis section details the regressions employed to provide that clarity, followed by a discussion section of the results. Finally, the concluding section discusses the implications for the student housing industry, as well as analyzes opportunities for potential future research projects.

Data Profile and Aggregation Methodology

To compare costs between on-campus and off-campus student housing offerings, we developed an original dataset with information on pricing, amenities and features, as an existing dataset could not be located. NMHC and Axiometrics, a RealPage Company, worked together to build such a dataset, with NMHC compiling on-campus floorplans and Axiometrics taking the lead on off-campus options.

Due to the labor involved with such an undertaking, we took a sampling of universities around the U.S., choosing schools that represent a variety of geographic locations. We also looked for schools where there was also a large number of purpose-built and student-competitive properties surrounding the schools. This allowed for a more reliable comparison between the on-campus and off-campus options. Schools included in the dataset are shown in Table 1.

Table 1. List of University Markets Included in Dataset

University Name	City	State	Type
Appalachian State University	Boone	NC	Public
Auburn University	Auburn	AL	Public
Baylor University	Waco	TX	Private
College of Charleston	Charleston	SC	Public
Florida International University	Miami	FL	Public
Florida State University	Tallahassee	FL	Public
Georgia Southern University	Statesboro	GA	Public
Louisiana State University	Baton Rouge	LA	Public
North Carolina State University	Raleigh	NC	Public
San Diego State University	San Diego	CA	Public
University of Alabama	Tuscaloosa	AL	Public
University of Arizona	Tucson	AZ	Public
University of Florida	Gainesville	FL	Public
University of Michigan	Ann Arbor	MI	Public
University of Mississippi	Oxford	MS	Public
University of Missouri	Columbia	MO	Public
University of Notre Dame	South Bend	IN	Private
University of Oklahoma	Norman	OK	Public
University of Pittsburgh	Pittsburgh	PA	Public
University of Texas at Austin	Austin	TX	Public
University of Wisconsin - Madison	Madison	WI	Public
Western Michigan University	Kalamazoo	MI	Public

ON-CAMPUS DATA COLLECTION

Unlike off-campus data, resources for examining on-campus housing are extremely limited, making data collection much more challenging. To collect these data, NMHC drew information both from university websites and placed phone calls to campus representatives.

The resulting on-campus dataset consists of 885 unique floorplans from 378 distinct buildings, spanning 22 universities.

OFF-CAMPUS DATA COLLECTION

Axiometrics and its parent company have a vast database of apartment records that include both off-campus purpose-built apartment data and off-campus student-competitive data. The annual per-bed rental rate assessment for off-campus costs was based on 2,550 floorplans in purpose-built properties and 4,615 floorplans in student-competitive properties. Each individual floorplan was counted as one observation.

We excluded single-family rentals from this analysis given that many of these rentals are owned and operated by individuals rather than professional enterprises. This makes it both difficult to obtain information about availability and to compare features and amenities.

Purpose-Built Apartments. Rents and amenities at 414 stabilized properties were included, based on 2,550 floorplans. Unit types included were a mix of studios, one-, two-, three-, four-, five- and six-bedroom floorplans. Some of the rents included were based on double-occupancy bedrooms, but the majority were single, privately occupied bedrooms. Annual rents per-bed ranged from \$3,526 to \$26,820.

Student-Competitive Apartments. We analyzed 616 stabilized, market-rate properties, comprising 186,555 beds and 115,863 units. Unit types included were a mix of studios, one-, two-, three-, four-, five- and six-bedroom floor plans, but the unit of measurement for this study was per bed. The per-bed rental rates for these floorplans ranged from \$3,422 to \$30,959 annually.

ANALYSIS METHODOLOGY

Floorplans vs. Units

One important limitation of both the on- and off-campus samples is that they do not include information on each unit within every building studied. For example, if a dorm contained 50 double rooms at one rate and three singles at another, only one double and one single floorplan would have been included in the data. The rent recorded for each floorplan was recorded as the rent per bed, or the rent everyone in the floorplan would pay. The reason for this is that universities will typically not disclose the exact composition of floorplans within a given building. As a result, the overall average rent per bed for the on- and off-campus samples are not particularly representative or meaningful. Instead, the data should be used to measure *differences* in rent levels across various floorplan types.

Annual Rent

Lease Term

On-campus units are typically rented for the academic year, while off-campus units have an annual lease term. We elected not to adjust rents to compensate for the unequal lease terms for two reasons:

- 1) It was assumed that most students would not be staying at school during the summer months.
- 2) It was assumed that those students with a 12-month lease would be unable to sublet their apartment during the summer months.

So long as these two assumptions hold true, it would be appropriate for students to compare on-campus, academic year rents with student-competitive, 12-month rents. Thus, through the entirety of this paper, on-campus, academic year rents are referred to simply as annual rents.

Adjustments

The rents for off-campus purpose-built and student-competitive properties include charges for utilities, furniture and laundry. In instances where these items were not already included or available for a known fee, rent levels were adjusted upwards by \$25 for unfurnished units, \$10 per bed for water, sewer and trash, \$10 for cable, \$10 for internet, \$30 for electricity and gas and \$25 for washer and dryer.¹ The vast majority of on-campus observations include these charges in rent, as well, with the exception of 35 on-campus apartment floorplans that do not come furnished and for which no furniture charge is factored into pricing. Thus, no standard adjustments were made to on-campus rent levels.

Characteristics of Student Housing Options

A preliminary analysis of the data presents descriptive statistics of each individual housing variable, allowing readers to better understand the composition of the dataset being studied. More specifically, within each student housing type—on-campus, off-campus purpose-built and off-campus student-competitive, the distribution of both floorplans and rent levels were calculated across several key housing characteristics (e.g., number of floorplans and average rent by students per bedroom or number of floorplans and average rent by distance to campus). These cross tabulations show how rent levels vary by one factor at a time, which, while intuitive, fail to consider the compositional effects of other key variables.

Regression Analysis

We conducted several ordinary least square regression analyses to isolate the rent premiums associated with individual housing characteristics, overcoming some of the limitations of summary values identified in the previous section. The first regression was applied to the entire dataset with the purpose of estimating rent premiums associated with on-campus, off-campus purpose-built, and student-competitive housing options.

However, the rent premium associated with any given housing characteristic often differed between on-campus, off-campus purpose-built and off-campus student-competitive housing. For instance, the number of students per bedroom appeared to have a much greater influence on rent levels for on-campus housing than for off-campus purpose-built. Moreover, in the world of off-campus student-competitive housing, this variable was irrelevant since there was never more than one student per bedroom. As a result, additional regressions were used to evaluate the influence of different features and amenities on pricing within each type of housing (on-campus, student-competitive and purpose-built student housing). This will provide practitioners guidance on how to value these features.

¹ Amounts estimated from surveys conducted by Axiometrics.

Characteristics of Student Housing Options

This section offers a discussion of the descriptive statistics for each of the variables collected in both the on-campus and off-campus living options available for students. More detail regarding these variables is provided than is typically seen in academic papers because much of this data has never been compiled before, particularly in the case of the on-campus dataset. The data collected give an indication of just how wide a variety of student housing options is available. Rental rates for floorplans and units vary tremendously by amenities and features.

It should be noted that the list of amenities and features collected in the dataset and presented in this paper is not exhaustive. The main goal of the dataset was to compare on- and off-campus housing options for students, and there are many off-campus amenities that simply are not offered in on-campus units or are offered elsewhere on-campus (such as pools, which are often located in recreation facilities on campus but not in the residence hall itself). These amenities were not included in this analysis.

ON-CAMPUS HOUSING

The on-campus portion of the dataset is comprised of 885 different floorplans across 22 universities.

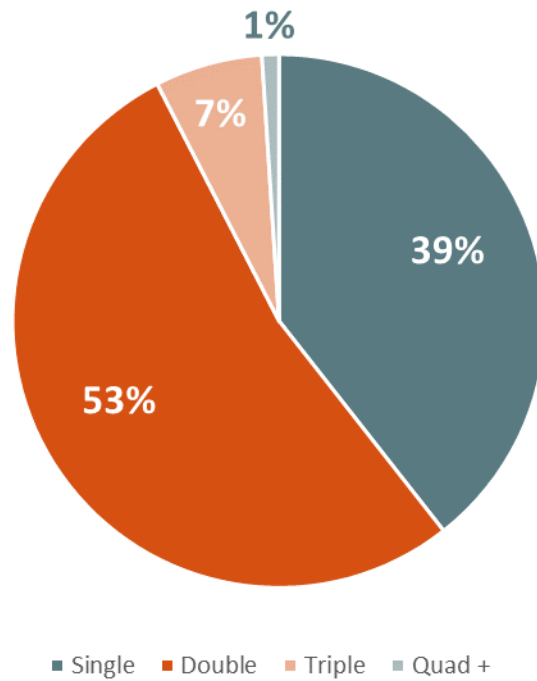
Annual Rent and Lease Terms

Annual rents (also referred to as academic year rents throughout) in the on-campus sample ranged from \$2,880 to \$17,771 per-bed, with 90 percent of observations falling between \$5,239 and \$10,598. The average floorplan from the sample had an annual rent of \$7,717 per-bed for traditional residence halls and \$7,056 per-bed for on-campus apartments.

Students per Bedroom

Unlike the conventional apartment world, where units are distinguished by number of bedrooms, on-campus residence halls tend to be classified by the number of students per bedroom. Double rooms (two students per bedroom) made up over half (53 percent) of all floorplans recorded in the on-campus dataset, followed by singles (39 percent), triples (7 percent) and quads (1 percent).

Figure 1. On-Campus Floorplans by Students per Bedroom



Annual per-bed rents tended to be lower for floorplans with more students per bedroom, averaging \$8,296 for singles, \$7,304 for doubles and \$6,254 for rooms containing three or more students.

This relationship was consistent across schools, as shown in Table 2. Eighteen out of the 22 universities studied reported higher average rents where there were fewer students per bedroom. The University of Michigan and the University of Oklahoma were the only two exceptions to this pattern, while the remaining two schools—Appalachian State University and the University of Notre Dame—offered only double rooms to their students, so no such comparison could be made.

Table 2. Average Annual Per-Bed Rent by Students per Bedroom

University	Students per Bedroom		
	1	2	3 or More
Appalachian State University	N/A	\$4,743	N/A
Auburn University	\$9,360	\$6,440	N/A
Baylor University	\$9,386	\$7,389	\$6,288
College of Charleston	\$8,242	\$7,010	\$6,024
Florida International University	\$7,889	\$5,260	N/A
Florida State University	\$7,571	\$6,900	\$6,442
Georgia Southern University	\$6,821	\$5,323	\$4,940
Louisiana State University	N/A	\$7,170	\$6,202
North Carolina State University	\$7,202	\$6,389	N/A
San Diego State University	\$12,613	\$9,946	\$9,285
University of Alabama	\$9,050	\$5,969	N/A
University of Arizona	\$10,988	\$7,227	\$6,450
University of Florida	\$5,960	\$5,680	\$4,642
University of Michigan	\$13,212	\$11,726	\$12,083
University of Mississippi	\$6,887	\$5,851	N/A
University of Missouri	\$9,029	\$7,356	N/A
University of Notre Dame	N/A	\$8,130	N/A
University of Oklahoma	\$8,860	\$9,517	N/A
University of Pittsburgh	\$7,566	\$7,220	\$6,150
University of Texas at Austin	\$15,451	\$11,329	N/A
University of Wisconsin - Madison	\$9,218	\$8,684	\$7,875
Western Michigan University	\$5,580	\$5,307	N/A

Housing Type

One might associate on-campus housing with the traditional dorm room, which contains little more than a bunk bed, microwave oven and small refrigerator and shares a common hallway bathroom with other rooms. Yet, many campuses now offer apartment-style housing options as well, which include full in-unit kitchens, living rooms, bathrooms and separate bedrooms for each student. Within the on-campus dataset, floorplans in traditional residence halls were most common (87 percent), while the remaining 13 percent consisted of apartment units.

On-campus apartments, despite frequently providing more features and amenities, were consistently priced lower than their residence hall counterparts. Annual rents averaged \$7,056 per bed for on-campus apartment floorplans and \$7,717 for on-campus residence hall floorplans. On-campus apartments had a lower per-bed average annual rent than on-campus residence hall floorplans, even when controlling for the number of students per bedroom (see Figure 2 below).

Figure 2. Average Per-Bed Rent by On-Campus Housing Type and Students per Bedroom



For example, when looking just at the on-campus universe of single rooms (one student per bedroom), the average annual rent listed for traditional dorms, \$8,728 per bed, was much higher than the \$6,599 per bed asked of the average on-campus apartment. This difference was less pronounced among on-campus double rooms, where the average residence hall floorplan was only \$328 more per bed annually than the average on-campus apartment double.

Urban/Rural Classification

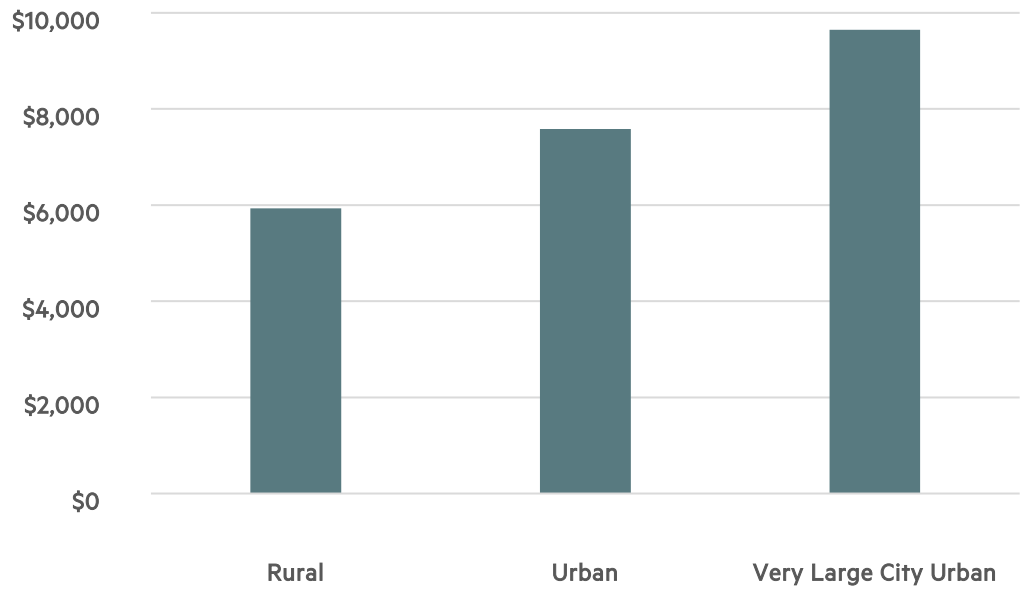
The College Board utilizes two urban/suburban/rural classification systems of varying specificity. The first, broader classification labels a university location as either rural, suburban or urban. Then, within each of these categories, The College Board distinguishes between towns and cities of different sizes, from small towns to very large cities.

For this study, The College Board’s classifications were condensed into just three geographic categories—rural, urban and very large city urban.² Fourteen of the twenty-two schools included in the study were in urban areas, five were in very large city urban areas and the remaining three—Appalachian State University, Georgia Southern University and University of Mississippi—were in rural settings.

Per-bed annual rents for on-campus floorplans tended to be higher at universities in larger cities and more urban environments.

² The urban category in this study includes The College Board’s suburban areas and urban areas that are not very large cities; the rural category corresponds directly to The College Board’s rural classification; and the very large city urban category corresponds to The College Board’s very large city urban areas.

Figure 3. Average Per-Bed Rent by Rural-Urban Designation



Region

Over two-thirds (70 percent) of the floorplans in the on-campus sample—and 15 of the 22 universities studied—were located in the South. The Midwest had the second highest representation in the on-campus sample, with 154 floorplans from four schools, and the West included 62 floorplans from the University of Arizona and San Diego State University. Meanwhile, the University of Pittsburgh and its 50 floorplans was the sole representative from the Northeast.

The average per-bed annual rent for the two regions with the greatest representation in the sample—the South and Midwest—was relatively similar at \$7,674 and \$7,634, respectively.

Private versus Public Universities

The average private-school floorplan had a per-bed annual rent of \$8,148, compared to \$7,553 for the average public-school floorplan. Since there were only two private universities in the sample—Baylor University and the University of Notre Dame—it was difficult to produce further cross-tabulations. However, the regression analysis conducted in the following section allowed for this private school designation to be studied in conjunction with a host of other variables.

Kitchen Amenities

Refrigerators were the most common kitchen amenity provided to students living in on-campus housing. A full nine out of 22 universities in the sample offered refrigerators in all their housing options, while three of the schools provided none. Within the remaining 10 universities, over one-third (35 percent) of floorplans came with refrigerators.

It was also very common for on-campus rooms to include microwaves. While six universities did not supply microwaves in any of their rooms, three schools offered them to all students. Meanwhile, 42 percent of the on-campus floorplans in the remaining 13 universities came with microwaves included.

Because so many of the universities in the on-campus portion of the dataset provided refrigerators and/or microwaves at either all or none of their dorm rooms, comparing average rents of floorplans with or without these amenities would be difficult to interpret.

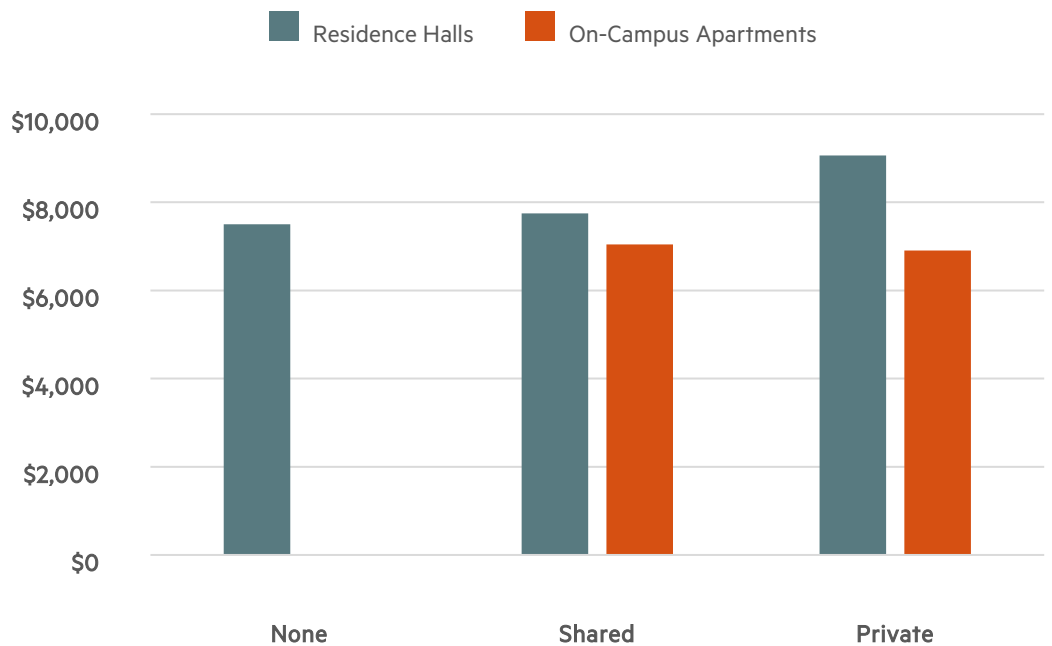
Where one would expect to find a much greater source of value is in the offering of full kitchens, equipped with a refrigerator, oven and stovetop. Twenty percent of floorplans in the on-campus sample included a full kitchen, the majority (62 percent) of which were apartment units (even though apartments made up only 13 percent of on-campus floorplans). In fact, there were few (approximately 5 percent) on-campus apartment floorplans without a full kitchen. This makes it even more surprising that on-campus apartments offered lower average annual rents than other on-campus floorplans.

Furthermore, the average annual rent for on-campus residence hall floorplans with a full kitchen, at \$7,586, was slightly less than the \$7,729 average annual rent for residence hall floorplans without a full kitchen. Still, absent the consideration of other factors, such as geographic location, bedroom square footage and students per bedroom, it was difficult to determine with certainty any meaningful relationship between full kitchens and rent.

In-Unit Bathrooms

Many on-campus residence halls feature floorplans with no in-unit bathroom. Instead, students in these dorms must use a community hallway bathroom. Other on-campus floorplans offer in-unit bathrooms that are shared amongst two or more roommates (shared in-unit bathroom), while the remainder offer an in-unit bathroom for every roommate (referred to as a private in-unit bathroom for this study).

Figure 4. Average Annual Per-Bed Rent by In-Unit Bathroom Configuration



Among on-campus residence halls, floorplans with shared in-unit bathrooms recorded an average per-bed annual rent of \$7,748, which was only slightly higher than the \$7,502 recorded for floorplans with no in-unit bathroom. Residence hall floorplans with an in-unit bathroom for every student in the unit (private in-unit bathrooms), meanwhile, charged a much higher average annual per-bed rent of \$9,063. On-campus apartments with private in-unit bathrooms had average rents that were negligibly lower than apartments with shared in-unit bathrooms.

In-Unit Furnishings, Living Areas and Amenities

All residence halls in the on-campus sample were fully furnished, as were 70 percent of on-campus apartment floorplans. Conversely, almost no traditional residence hall floorplans (1 percent) included a washer/dryer in the unit, compared to 42 percent of on-campus apartment floorplans.

One-third (33 percent) of floorplans in the on-campus sample included an in-unit living room—23 percent of traditional residence hall floorplans and almost all (95 percent) apartment-style floorplans. Among on-campus residence halls, floorplans that included living rooms were an average of \$4,163 more per-bed annually than floorplans that did not.

In contrast with off-campus housing, few amenities were located on site at on-campus housing communities. This is hardly surprising, given that most universities offer the amenities frequently located on site in off-campus properties in different locations around the campus. Many universities, for example, offer pools at recreation facilities open to all students and staff. To that end, roughly 10 percent of on-campus floorplans were in buildings that had fitness centers located on site.

Internet

The cost advertised for on-campus housing almost always included all utilities, with the exception of a few schools that charged separate fees for internet and cable. Any such separate fees for internet and cable were factored into annual rent figures to facilitate comparison across universities.

OFF-CAMPUS HOUSING

There were two different types of off-campus housing examined—purpose-built student housing and student-competitive apartments. These properties were all located near the same 22 universities examined in the on-campus sample. Because floorplans in purpose-built and student-competitive properties offer similar amenities and features, the variables examined for both types of housing options are compared together.

Purpose-built student housing properties are off-campus apartments built specifically for college students whereas student-competitive apartments are conventional, market-rate apartment properties that benefit from student demand for housing because of their proximity to campus. Proximity to campus and pricing often determines the percentage of units leased to students.

The key differentiator between purpose-built student housing and student-competitive apartments is the leasing model. Whereas student-competitive properties typically lease by the unit, purpose-built properties almost always lease by the bed (a few properties cater to both). The leasing cycle is another differentiator. Purpose-built properties lease for 12 months but allow 50 weeks of occupancy (to prepare for the next leasing season). Unlike conventional apartments that execute leases with terms beginning throughout the year and thus have staggered turnovers, purpose-built student housing has a rush of new or returning students right before the school year starts.

Students per Bedroom

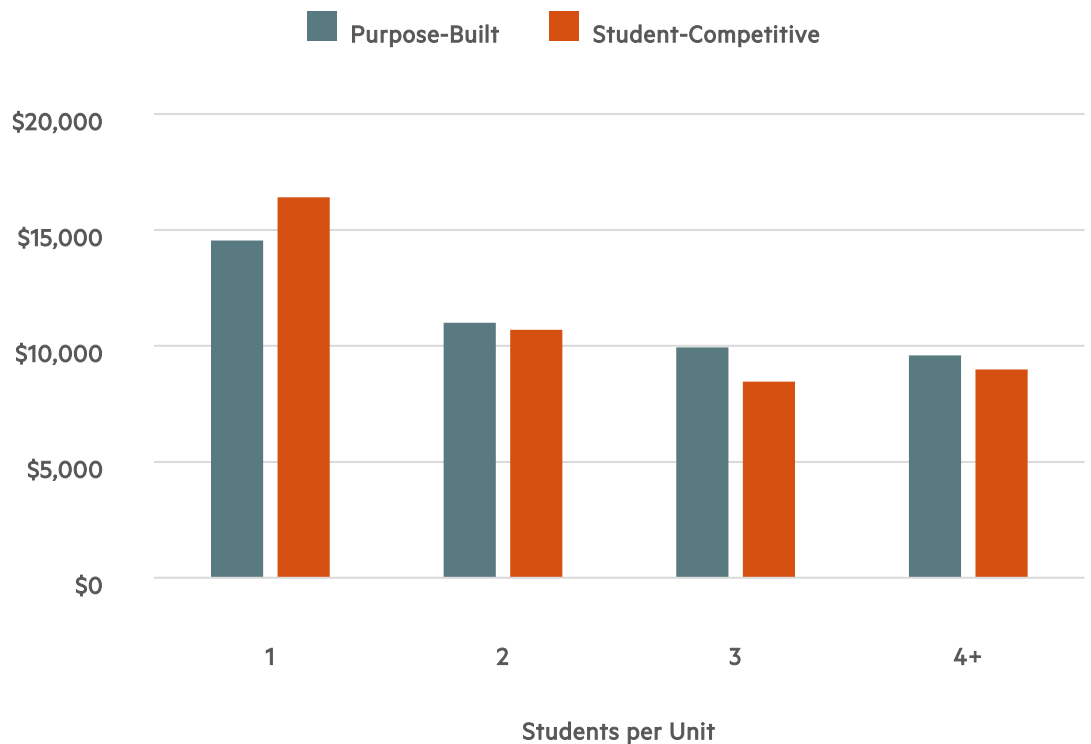
In the sample, student-competitive units never had more than one person per bedroom, and it was uncommon for purpose-built student housing to offer bedrooms with more than one bed—in fact, these floorplans made up just 3 percent of the purpose-built sample. Even so, as was the case for on-campus housing, the analysis revealed a significant discount for students willing to live two per bedroom (there were no records of three or more beds per bedroom in the purpose-built sample). The average annual rent for a purpose-built single was \$11,003, compared to \$9,575 for a double.

Students per Unit

A more illuminating comparison for the off-campus dataset was the number of students per unit. The off-campus purpose-built sample consisted of apartment floorplans that housed one (19 percent), two (27 percent), three (20 percent), four (27 percent) and five students (6 percent). Similar to the rent trends observed when the number of students per room increased, an inverse relationship existed between the number of students per unit and annual per-bed rents. Since double rooms (two students per bedroom) were rare in the purpose-built sample, this means that apartment floorplans with more bedrooms tended to charge less per student.

Within the student-competitive portion of the dataset, there was always just one bed per bedroom. Therefore, for this subset of the off-campus dataset, one can speak of students per unit and bedrooms per unit nearly interchangeably (except for one-bedrooms and studios). One-bedrooms and studios were the most abundant unit type within the off-campus student-competitive sample, accounting for approximately 42 percent of apartment floorplans, followed by two-bedroom units (39 percent) and three-bedroom units (9 percent). Six-bedroom units were the largest student-competitive floorplans included, although they made up less than 1 percent of the sample. Like in the purpose-built data, an inverse relationship was observed between number of students per unit and average per-bed rents.

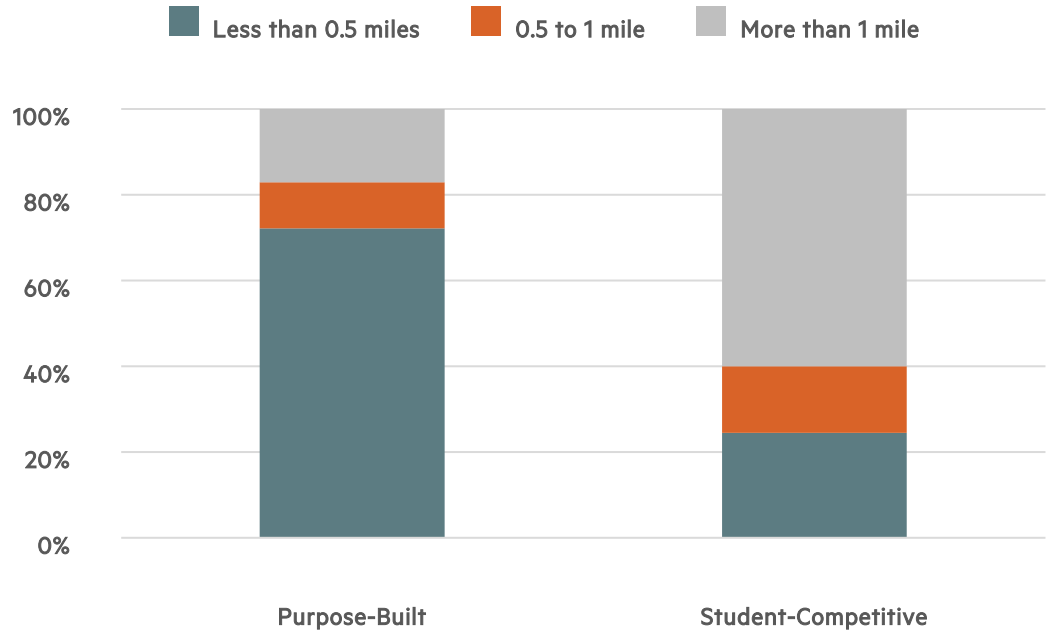
Figure 5. Average Annual Per-Bed Rent by Students per Unit



Distance from Campus

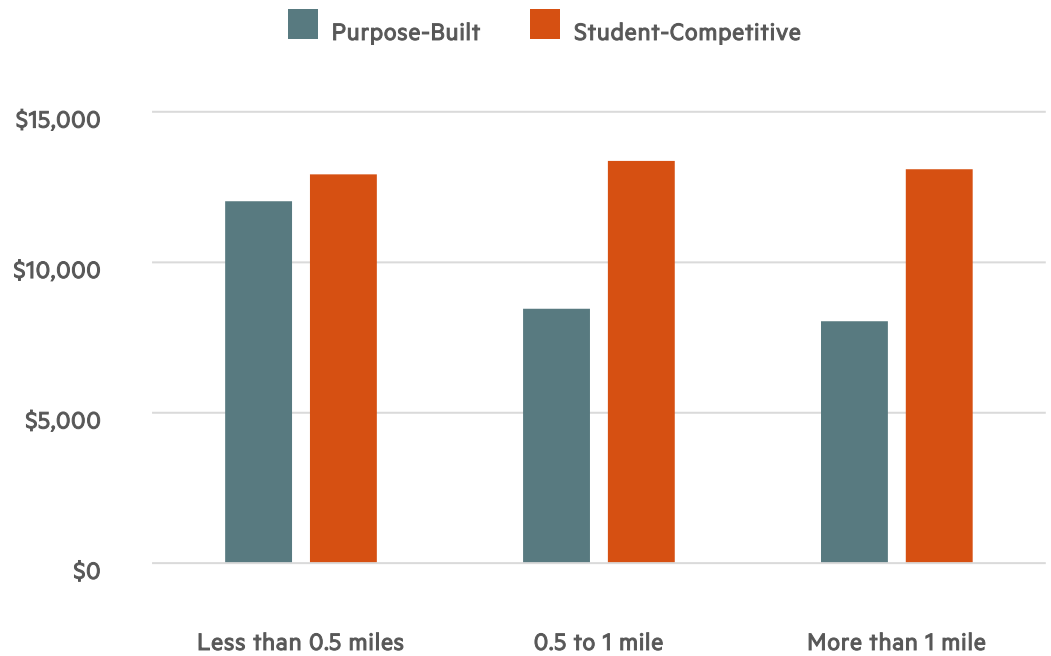
Industry experts often tout proximity to campus as a primary factor in attracting student demand. For properties located within walking distance of campus, for example, students do not require a car to access campus, a convenience that could be associated with a rent premium.

Figure 6. Percentage of Floorplans by Distance to Campus



Seventy-two percent of floorplans in the purpose-built sample were in properties located less than a half mile from the university, 11 percent were at properties between a half mile and a mile from campus and 17 percent were located more than a mile away. In the student-competitive data, 24 percent of floorplans were in properties located less than a half mile from the university, 16 percent were in properties located between a half mile and a mile from campus and 60 percent were located more than a mile away.

Figure 7. Annual Per-Bed Rent by Distance from Campus



Units in purpose-built properties located closest to campus tended to charge a premium for their location—floorplans at properties located less than a half mile from campus were charging an average of \$3,836 more per bed annually than those at properties located farther from campus.

This positive relationship between proximity to campus and price did not hold true for student-competitive properties. In fact, floorplans in student-competitive properties located less than a half mile from campus charged the lowest average rent levels per bed relative to properties located farther from campus—\$442 less than floorplans in properties located a half mile to a mile from campus and \$171 less than those at properties located more than a mile away. Even so, it was difficult to discern any definitive relationship because these properties had other differing characteristics.

Private versus Public Universities

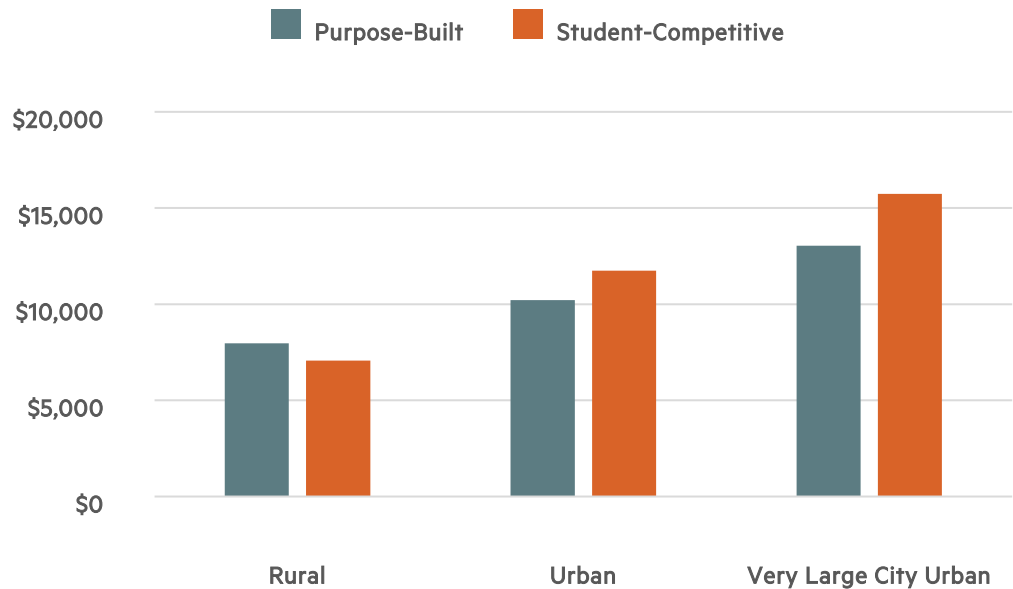
As previously mentioned, two private and 20 public institutions were included in the study. We intentionally included fewer private universities in the sample because purpose-built properties are generally less common at private schools than they are at public schools. However, in contrast to the relationship seen in the on-campus data, purpose-built floorplans near private universities averaged \$9,308 per bed, compared to \$11,058 per bed at public universities.

The data showed that student-competitive floorplans at private universities also yielded a lower price point relative to floorplans at public universities. The floorplans surrounding private universities averaged \$8,646 per bed, \$4,620 less annually than the \$13,267 per-bed average at public universities.

Urban/Rural Classification

The universities included in the data were spread across the United States in rural, urban and very large city urban areas. Within the purpose-built sample, average rents were highest in very large city urban areas and lowest in rural settings. This relationship held true in the student-competitive sample, with average rent per bed in very large city urban areas standing at nearly double the level found in rural and urban settings.

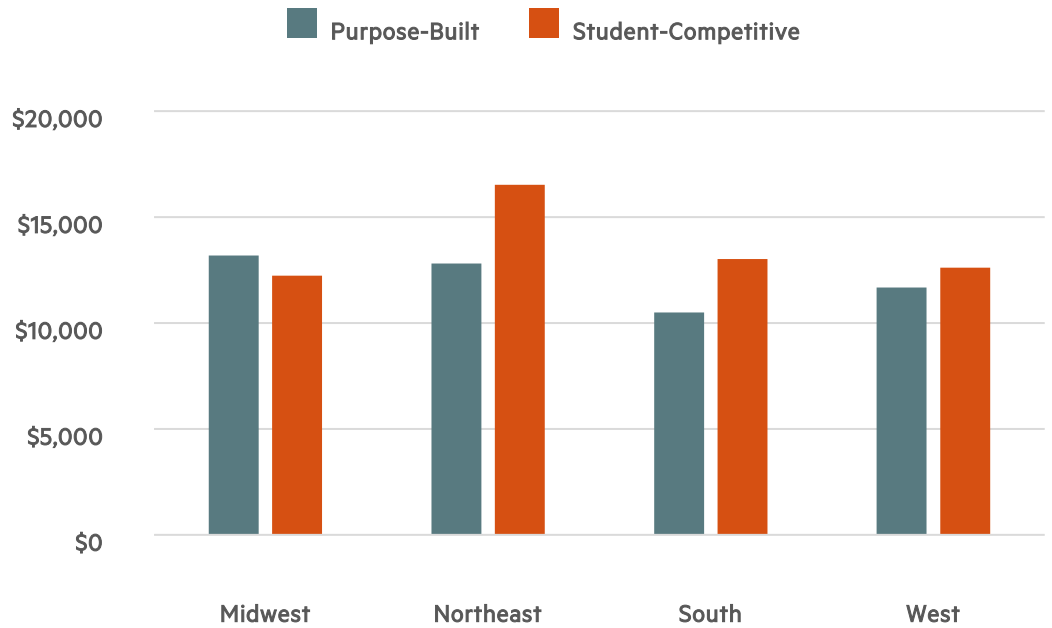
Figure 8. Annual Per-Bed Rent by Urban/Rural Classification



Region

The vast majority (77 percent) of the purpose-built floorplans were located in the South, followed by the Midwest (13 percent of the sample), West (9 percent) and Northeast (less than 1 percent). The regional distribution of student-competitive floorplans was somewhat less skewed, with 57 percent of floorplans from the South, 25 percent from the Midwest and around 9 percent from both the West and Northeast regions.

Figure 9. Average Annual Per-Bed Rent by Region



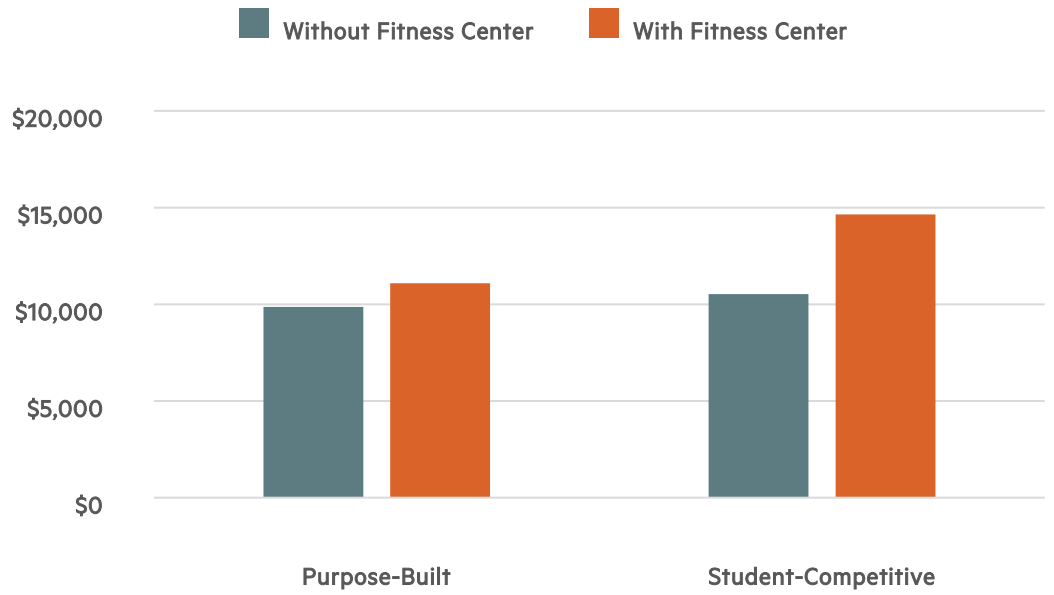
The average purpose-built rent in the South, at \$10,498 per year, was notably lower than that in other regions. Among student-competitive floorplans, those in the Northeast had by far the highest average annual per-bed rent at \$16,516. Yet, because of the Northeast's small sample size, as well as compositional differences in the regional data, it was difficult to discern any reliable relationship between region and rent levels.

Fitness Centers

On-site fitness centers have become increasingly prevalent at both purpose-built and student-competitive properties. Nearly all floorplans (91 percent) in the purpose-built sample were in buildings with a fitness center, as were almost two-thirds (62 percent) of the student-competitive sample.

This factor was associated with rent premiums. Off-campus floorplans with access to an on-site fitness center reported higher average annual per-bed rents, especially among student-competitive apartments.

Figure 10. Average Annual Per-Bed Rent by Presence of On-site Fitness Center



Findings and Analysis

Dollar for dollar, students paid more for the limited set of features and amenities in on-campus residence halls than they would in off-campus purpose-built housing.

At first glance, on-campus housing appeared to be significantly less expensive than off-campus alternatives. The average floorplan in the on-campus database reported an annual rent per bed of \$7,717 for residence halls and \$7,056 for on-campus apartments. In comparison, the average annual rent for off-campus purpose-built and student-competitive housing was \$10,965 and \$13,093, respectively.

However, it was difficult to gauge the relative value of these averages without considering the bundle of features and amenities being provided. For example, was the on-campus residence hall cheaper per bed than purpose-built student housing because it is an inherently less expensive housing option, or was it cheaper because most on-campus residence halls offer double rooms and purpose-built includes more singles?

To begin to answer questions like these, we ran a regression analysis that compares the annual per-bed rent levels of on-campus (both residence halls and apartments), off-campus purpose-built and student-competitive housing *after* all other housing characteristics are taken into account. Subsequent regressions estimated the effect that each individual characteristic had on the pricing of student housing.

COMPARING ON-CAMPUS VERSUS OFF-CAMPUS HOUSING

An ordinary least squares regression on the total dataset, the output of which is displayed in Table 3 below, found a 9 percent³ per-bed rent premium associated with on-campus residence halls (relative to purpose-built apartments). On-campus apartments, on the other hand, offered a steep 26 percent per-bed rent discount to students compared to purpose-built units. At the other end of the spectrum, off-campus student-competitive apartments were priced 9 percent above the rent level of purpose-built floorplans, after controlling for a number of other variables.

³ Since this paper uses regressions where the dependent variable is the log-transformation of annual rent, an estimated coefficient, β_1 , can be interpreted as a $((e^{\beta_1} - 1) * 100)$ percentage change in annual rent for every unit increase in X_1 .

Dependent Variable: Natural Log of Annual Per-Bed Rent

Variable	Coefficient	p-value	% Change in Annual Per-Bed Rent
Intercept	9.1780	0.00	
Student-Competitive Housing (relative to purpose-built)	0.0867	0.00	9%
On-Campus Residence Hall (relative to purpose-built)	0.0852	0.00	9%
On-Campus Apartments (relative to purpose-built)	-0.3006	0.00	-26%
Rural Area (relative to urban)	-0.1411	0.00	-13%
Very Large City Urban Area (relative to urban)	0.4197	0.00	52%
Northeast (relative to Midwest)	0.1470	0.00	16%
South (relative to Midwest)	-0.2230	0.00	-20%
West (relative to Midwest)	-0.3830	0.00	-32%
Private University (relative to public)	-0.1049	0.00	-10%
Distance from Campus (in miles)	-0.1068	0.00	-10%
Two students per unit (relative to one)	-0.3072	0.00	-26%
Three students per unit (relative to one)	-0.3721	0.00	-31%
Four or more students per unit (relative to one)	-0.3348	0.00	-28%
Private Bathroom (relative to shared/no in-unit)	0.1810	0.00	20%
On-site Fitness Center	0.1842	0.00	20%
Living Room in Unit	0.1698	0.00	19%
R-squared	0.6235		

So, how do we reconcile the fact that, in the aggregate, on-campus housing commanded the lowest annual rents per bed—\$7,717 for traditional residence halls and \$7,056 for on-campus apartments versus \$10,964 and \$13,093 for off-campus purpose-built and student-competitive, respectively—and, yet, on-campus residence halls had a 9 percent rent premium over purpose-built units? On-campus apartments, in contrast, had a discount.

The answer lies in the rent premiums associated with various housing characteristics. The average on-campus residence hall floorplan was less expensive than its off-campus counterparts in part because it had fewer features and amenities. But, dollar for dollar, students paid more for the limited set of features and amenities in on-campus residence halls than they would in off-campus purpose-built housing.

For example, the research showed that on-site fitness centers added 20 percent to per-bed annual rents; however, few students living in on-campus residence halls had access to on-site fitness centers. Only 9 percent of units in residence halls had an on-site fitness center, compared to 90 percent of off-campus purpose-built units.

Similarly, floorplans that provided an in-unit bathroom for each roommate were found to charge, on average, 20 percent more in per-bed rent than those that did not. These private bathroom configurations were least common in the on-campus residence hall sample, accounting for just 7 percent of observations. Meanwhile, 43 percent of on-campus apartment floorplans, 78 percent of purpose-built floorplans and 80 percent of student-competitive floorplans offered a one-to-one bathroom-to-bed ratio.

Finally, the presence of a designated living room in the unit brought with it a 19 percent per-bed rent premium compared to units without a living space. While all purpose-built, student-competitive and nearly all (95 percent) on-campus apartment floorplans contained a living room, more than three-fourths (77 percent) of on-campus residence hall floorplans did not.

In sum, on-campus apartments offered more value, as evidenced by the annual per-bed rent discount, compared to off-campus purpose-built apartments, while beds in traditional on-campus residence halls and off-campus student-competitive apartments provided less for the money.

ASSIGNING VALUE TO HOUSING FEATURES AND AMENITIES

The first regression model was useful for comparing the rents of on- and off-campus housing options. However, the rent premium associated with any given housing characteristic often differs between our three main housing types—on-campus, off-campus purpose-built and off-campus student-competitive housing.

For instance, the number of students per bedroom appeared to have a meaningful influence on rent levels for on-campus and off-campus purpose-built units, but, in the world of off-campus student-competitive housing, this variable was irrelevant since there was never more than one student per bedroom. Similarly, distance from campus was a relevant variable only for off-campus units. As a result, to assign more accurate values to the numerous housing features and amenities tracked in the data, three separate regressions were run for each of the three housing types, each with its own appropriate mix of independent variables.

On-Campus Housing

The following regression was applied only to the on-campus portion of the data, revealing the factors that had the greatest influence on on-campus rents (see Table 4 below).

Table 4. Regression Results – On-Campus Sample

Dependent Variable: Natural Log of Annual Per-Bed Rent

Variable	Coefficient	p-value	% Change in Annual Per-Bed Rent
Intercept	8.8981	0.00	
On-Campus Apartments (relative to purpose-built)	-0.4314	0.00	-35%
Rural Area (relative to urban)	-0.1861	0.00	-17%
Very Large City Urban Area (relative to urban)	0.4175	0.00	52%
Northeast (relative to Midwest)	-0.2650	0.00	-23%
South (relative to Midwest)	-0.2501	0.00	-22%
West (relative to Midwest)	-0.3126	0.00	-27%
Private University (relative to public)	0.0975	0.00	10%
Three or more students per unit (relative to one)	-0.0465	0.02	-5%
Double - two students per bedroom (relative to single)	-0.1506	0.00	-14%
Three or more students per bedroom (relative to single)	-0.2422	0.00	-22%
In-Unit Bathroom (relative to none)	0.1350	0.00	14%
Washer/Dryer in Unit	0.2607	0.00	30%
Living Room in Unit	0.0753	0.00	8%
Ethernet included	0.2487	0.00	28%
R-squared	0.5156		

Urban/Rural Classification

Much of the variation in annual rents within the on-campus sample could be attributed to the urban/rural classification of a school's geography. Rural areas were associated with a 17 percent discount in annual

per-bed rent relative to urban areas. Very large city urban areas, on the other hand, were associated with a 52 percent per-bed rent premium.

Region

Relative to student housing options in the Midwest, units in the Northeast (i.e., those at the University of Pittsburgh) and South offered similar 23 percent and 22 percent savings in per-bed annual rent, respectively. The sample's Western universities—San Diego State University and the University of Arizona—similarly charged 27 percent less annually per bed than their Midwestern counterparts.

Students per Bedroom/Unit

Students living on campus could save on housing costs by sharing a bedroom with one or more roommates. Living in a double was associated with a 14 percent discount in rent per person, and living in a triple or quad was associated with a 22 percent discount for each student (compared to if they lived in a single).

Students could also save by simply sharing their unit in some cases. A 5 percent rent discount was observed in units that housed three or more students, relative to floorplans with only one or two students per unit. Thus, a greater number of students in both the bedroom and unit were associated with lower per-bed rents.

Residence Type

The on-campus regression output indicated a 35 percent per-bed annual rent discount associated with campus-owned apartments compared to living in a traditional residence hall.

It is unclear why on-campus apartments would provide such a better value proposition than on-campus residence halls, but it is worth noting that only eight of the 22 universities studied offered on-campus apartments (13 percent of all on-campus floorplans). Hence, the discounted rents recorded for on-campus apartments may just have something to do with those eight universities represented. More study is necessary to be able to make more specific conclusions.

In-Unit Bathrooms

In the on-campus sample, floorplans that advertised in-unit bathrooms (either shared or private) charged, on average, 14 percent more in per-bed rent than those floorplans that contained no in-unit bathrooms. A little over half (51 percent) of on-campus residence hall floorplans featured in-unit bathrooms, while the remainder had access only to community hallway bathrooms.

Private versus Public Universities

This analysis showed a 10 percent per-bed annual rent premium associated with private school housing relative to public school housing. While this makes sense given that private schools are traditionally more expensive than public schools, it is important to note that only two private universities (representing 118 observations in the database) were included in this dataset; a dataset with observations from more private universities may yield different results.

In-Unit Amenities

An on-campus floorplan with an in-unit living room was found to charge 8 percent more per-bed annually than a floorplan without a living room. And, despite its rarity in on-campus housing (7 percent of on-campus floorplans), the presence of an in-unit washer and dryer was associated with a 30 percent annual rent premium for each student.

Wi-Fi did not have a significant relationship with the annual rent per-bed; however, ethernet did, garnering a 28 percent per-bed annual premium over units with no ethernet access included.

Fitness Center

There was no statistically significant relationship between the presence of an on-site fitness center and rent in the on-campus sample. This also represented a small portion of the on-campus sample, with less than 10 percent of floorplans recorded featuring a fitness center on site. It is likely that many schools do not provide this amenity in their housing communities since, in most cases, it can be found elsewhere on campus.

Off-Campus Purpose-Built Housing

Like the on-campus regression in Table 4, a regression using just off-campus purpose-built housing revealed that individual characteristics accounted for much of the variation in pricing between floorplans (see Table 5). Additional variables were used in this regression, some because they were only present in the off-campus dataset (such as proximity to campus) or because they were insignificant in the on-campus regression.

Table 5. Regression Results – Off-Campus Purpose-Built Sample

Dependent Variable: Natural Log of Annual Per-Bed Rent

Variable	Coefficient	p-value	% Change in Annual Per-Bed Rent
Intercept	9.4017	0.00	
Rural Area (relative to urban)	-0.1543	0.00	-14%
Very Large City Urban Area (relative to urban)	0.2993	0.00	35%
Northeast (relative to Midwest)	0.0600	0.31	6%
South (relative to Midwest)	-0.2836	0.00	-25%
West (relative to Midwest)	-0.3054	0.00	-26%
Private University (relative to public)	-0.1589	0.00	-15%
Double - two students per bedroom (relative to single)	-0.1681	0.00	-15%
Two students per unit (relative to one)	-0.2068	0.00	-19%
Three students per unit (relative to one)	-0.2399	0.00	-21%
Four or more students per unit (relative to one)	-0.2353	0.00	-21%
Distance from Campus (miles)	-0.1845	0.00	-17%
Square Footage per Student	0.0007	0.00	0%
R-squared	0.6318		

Urban/Rural Classification

Like in the preceding on-campus analysis, the urban classification of campuses explained much of the variation in annual rents among off-campus purpose-built floorplans. The rural designation of a floorplan, relative to urban, was associated with a 14 percent savings in annual rent per bed. The very large city urban classification was similarly associated with a 35 percent premium in annual rent per bed.

Region

There were significant regional differences in rent levels within the purpose-built portion of the dataset. Floorplans at communities in the South stood at a 25 percent discount relative to those in the Midwest. There was no significance found between Northeastern floorplans and rent premiums compared to other

regions. Since only one school was represented from the Northeast (University of Pittsburgh) and two from the West (San Diego State University and the University of Arizona), it was difficult to disentangle the influence of these regions from their individual universities.

Private versus Public Universities

In contrast with the on-campus regression, which showed a premium for units on private university campuses, there was a discount for purpose-built units located near private schools. A purpose-built off-campus unit near a private university in the sample was found to cost 15 percent less per bed annually than an equivalent unit near a public university.

Students per Bedroom/Unit

Like on-campus housing, students living in off-campus purpose-built housing could save money by sharing their bedroom with a roommate—an approximate 15 percent per year. Unlike on-campus housing, however, no more than two students ever lived in one bedroom in the off-campus purpose-built sample.

Students also benefitted from savings by sharing the overall housing unit with others. Compared to living alone, a student paid 19 percent per year less if they lived with one other person, 21 percent less if they lived with two others and 21 percent less if they lived with three others.

Distance from Campus

It is conventional wisdom in the student housing world that apartments located closer to campus can command higher rents. This is consistent with the purpose-built regression output, which indicated a 17 percent discount in per-bed annual rent for each additional mile that a property was located from campus.

Square Footage per Student

Square footage demonstrated a slightly positive association with annual per-bed rent levels within the purpose-built portion of the data. More specifically, every additional 100 square feet per student was linked with 7 percent more in annual per-bed rent.

Off-Campus Student-Competitive Housing

In contrast with purpose-built student housing, off-campus student-competitive housing was not developed to a comparable alternative to on-campus housing. Instead, it was built as traditional market-rate multifamily housing. Like the off-campus purpose-built student housing, there were variables that were not included in the on-campus regression that were included in this particular regression focused only on the off-campus student-competitive sample portion of the dataset (see Table 6 below).

Table 6. Regression Results – Off-Campus Student-Competitive Sample

Dependent Variable: Natural Log of Annual Per-Bed Rent

Variable	Coefficient	P-value	% Change in Annual Per-Bed Rent
Intercept	8.7512	0.00	
Rural Area (relative to urban)	-0.1929	0.00	-18%
Very Large City Urban Area (relative to urban)	0.4479	0.00	56%
Northeast (relative to Midwest)	0.1226	0.00	13%
South (relative to Midwest)	-0.2674	0.00	-23%
West (relative to Midwest)	-0.3824	0.00	-32%
Private University (relative to public)	-0.2117	0.00	-19%
Two students per unit (relative to one)	-0.1580	0.00	-15%
Three students per unit (relative to one)	-0.1465	0.00	-14%
Four or more students per unit (relative to one)	-0.0888	0.01	-8%
One bathroom per student (relative to shared in-unit baths)	0.1828	0.00	20%
Distance from Campus (miles)	-0.1026	0.00	-10%
Square Footage per Student	0.0010	0.00	0%
On-site Fitness Center	0.1589	0.00	17%
R-squared	0.7346		

Urban/Rural Classification

Of the three housing options, units within the student-competitive sample showed the greatest sensitivity in rent levels to differences along the urban/rural spectrum. Units in very large city urban areas commanded 56 percent more in annual per-bed rent than those in urban areas. Meanwhile, a rural designation was associated with an 18 percent discount in annual rent per-bed, again, in comparison to the default urban area.

Region

The relationship between region and rent levels within the student-competitive sample was similar to that observed in the purpose-built data. All else being equal, floorplans in the South were associated with a 23 percent annual per-bed discount compared to those in the Midwest.

Private versus Public Universities

Like the purpose-built sample, a discount was associated with private universities, where floorplans charged 19 percent less in annual rent per bed than those at public universities, all other variables remaining constant. While this may be a counterintuitive finding to what one might expect to see, there were only two private universities included in the sample. A larger sample may show different results.

Distance from Campus

The output from the student-competitive regression model again supported the notion that proximity to campus positively affects rent levels. The model estimated that properties charged 10 percent less in annual rent per bed for each additional mile they were located away from campus.

Students per Unit

Because all floorplans within the student-competitive sample recorded one student per bedroom, the number of students per unit was also the number of bedrooms per unit. Relative to units with just one person, there was a 15 percent discount in annual rent per bed associated with two people living in the housing unit, a 14 percent per-bed discount associated with three people and 8 percent for four people.

Private In-Unit Bathroom

Student-competitive floorplans that offered a bathroom for every student (private in-unit bathrooms) commanded a 20 percent per-bed annual premium over floorplans where there were fewer bathrooms than students (shared in-unit bathroom). All student-competitive floorplans offered at least one in-unit bathroom.

Square Footage per Unit

Like in the purpose-built regression, square footage per student had a strong positive relationship with rents across student-competitive floorplans. More specifically, each additional 100 square feet for a student in a student-competitive unit was linked to a 10 percent increase in annual rent.

Fitness Center

The model output revealed a premium of 17 percent in annual rent per bed in student-competitive units with an in-building or on-property fitness center.

REGRESSION NOTES

Explanatory Power

The student-competitive regression model reported a coefficient of determination, or R-squared value, of 0.73, meaning that 73 percent of the variation in annual rents was explained by the variables included in the model. The purpose-built model yielded an R-squared of 0.63, and the on-campus model yielded an R-squared of 0.52.

What this suggests is that the on-campus model had the least explanatory power. This is likely due to the way in which universities set their housing prices. It is common, for example, for schools to offer one or two price points for all their on-campus doubles or singles. In the most extreme case, the University of Notre Dame set the same rent level for all its dorms. Because this results in less-variable rent levels, it is more difficult for the model to explain rent variations with different combinations of housing characteristics and amenities.

In addition, since universities often require students to live on campus for a certain number of years, they have greater leeway to deviate from market prices as they see fit. This results in rent variations that can only be explained by the administration of individual schools and are less likely to be based on real estate-related business decisions.

On the other end of the spectrum, the off-campus student-competitive model had the most explanatory power. Since these units do not cater specifically to university students, their rents were likely less prone to the idiosyncrasies of individual schools.

Omitted Variables

While we were able to identify many variables and quantify their effects on annual rents, there are many additional variables that are likely to influence rent levels that we were unable to capture or otherwise omitted. For example, we were unable to include the age of on-campus housing in the dataset as most schools did not provide this information on their website.

The presence of on-site fitness centers is one particular variable that's effect is likely skewed to some degree by data limitations. Fitness centers are probably more common in newer apartment buildings, and newer apartments are known to command higher rents. For this reason, the rent premiums previously ascribed to the presence of fitness centers—17 percent among student-competitive floorplans—could be overstated because of a lack of data on that variable for other housing types.

Similarly, we found a unit's square footage per student to have a statistically significant positive relationship with rent levels in both the off-campus purpose-built and student-competitive samples. However, this variable was unavailable for the on-campus portion of the dataset. The omission of square footage could have had a combination of two effects on the on-campus regression output. First, its omission could have led to a reduction in the model's explanatory power of rents, seen in a lower R-squared. Alternatively, the influence of square footage on on-campus rents could have been falsely ascribed to some other variable that is correlated to unit size.

As more housing characteristics are added to the dataset, this differential in housing costs between on-campus (both residence halls and apartments), purpose-built and student-competitive options could change. Future efforts to expand the breadth of the dataset, both in the number of universities represented and housing characteristics recorded, will produce more accurate and meaningful results.

Discussion and Conclusion

On-campus residence halls, despite frequently charging lower rents, offered less value than off-campus purpose-built student housing.

This paper sought to determine whether off-campus purpose-built student housing provided more or less value to students than on-campus housing, including both traditional residence halls and apartments, as well as off-campus student-competitive housing.

The analysis suggests that on-campus residence halls, despite frequently charging lower rents, offered less value than off-campus purpose-built student housing. A student living in a campus dorm may pay a lower dollar amount, but he or she might also have to share a bedroom with one or more other students, share a community hallway bathroom with other rooms or have access to fewer building amenities.

On-campus apartments, on the other hand, had a greater value proposition for students vis à vis off-campus purpose-built student housing. These units had a lower average annual per-bed rent and also a significant rent discount in comparison to other off-campus housing options, suggesting the greatest value for students in terms of more features and amenities for the price. While these findings are interesting, they are also inconclusive. Since there were so few on-campus apartment observations in the dataset (114 floorplans total at eight universities), more data is needed to verify these findings and offer more detailed conclusions.

Moreover, not only were off-campus student-competitive apartments the most expensive, they also provided less value than off-campus purpose-built housing. Students essentially paid more for a similar set of features and amenities.

IMPLICATIONS FOR STUDENT HOUSING PRACTITIONERS

The results of this analysis provide useful information for practitioners when determining per-bed rent levels. The closer a property is to campus, the higher the rent the property will likely be able to generate. Similarly, a property that is in a very large city urban area will likely be able to charge higher rents than if that property were in a rural area. And a property in the South, for example, will likely garner lower rents than a property near a university in the Midwest.

Affordability for college students and their parents is also a growing concern, and the analysis suggests several findings to mitigate some of these concerns.

First, even though on the aggregate, per-bed annual rent totals are greater for off-campus purpose-built units than on-campus housing units, the regression results indicate that purpose-built housing offers better value than traditional on-campus residence halls, because students get more features and amenities for their money in a purpose-built unit.

Second, for those that are more concerned with aggregate rent, the regression results indicate that there are several ways for students to pay a lower amount. These options include sharing a bedroom or having more roommates in the housing units.

While these takeaways are useful to practitioners as they invest, design and manage their properties, they also suggest a need for additional study on student affordability. This paper only focuses on the costs of various student housing options and does not examine the financial characteristics of students and their families, which likely influences how students choose their housing.

Appendix

DATA DICTIONARY

Annual Rent per Bed. The dollar amount (for the 2017-2018 academic year) that each student would pay in a single housing unit, also known as rent per lease or rent per bed. See the following section regarding the calculation for annual rent.

Distance from Campus. A continuous variable that indicates the number of miles from campus the property where the housing unit is located. For on-campus housing, a value of 0 was recorded.

Ethernet. The availability of an ethernet connection in the housing unit. This was only included in the on-campus dataset. See the regression methodology for information regarding inclusion in the rent.

Fitness Center. Only floorplans where the fitness center was in the building itself or, for off-campus units located in garden-style properties, on the property.

Furnished. Housing units where furniture (such as a bed and desk) is provided were categorized as being offered as furnished.

Geographic Location. Universities were categorized as belonging to rural, urban or very large city urban areas. The urban category in this study includes The College Board-defined suburban areas and urban areas that are not very large cities; the rural category corresponds directly to The College Board's rural classification; and the very large city urban category corresponds to The College Board's very large city urban areas.

In-Unit Bathrooms. A ratio was calculated of the number of students per housing unit to the number of bathrooms per housing unit. Units were characterized as either having no in-unit bathroom, an in-unit shared bathroom (less than 1:1 ratio) or an in-unit private bathroom (1:1 ratio).

In-Unit Washer/Dryer. A floorplan was recorded as having an in-unit washer/dryer only if the washer/dryer was in the specific housing unit itself, not just in the building. This was only included in the on-campus dataset.

Living Room. A living room was defined as present if there was a separately defined living area present in the housing unit.

Number of Students per Bedroom. The number of students was included as a categorical variable, up to a value of 3 (triples and quads were both given the value of 3).

Number of Students per Housing Unit. The number of students in each housing unit was included as a categorical variable, up to a value of 4 (which included four or more students).

Off-Campus Purpose-Built Housing. Units in private apartment properties that are located near university campuses and cater exclusively to college students.

Off-Campus Student-Competitive Housing. Units in private apartment properties that are located near university campuses and, thus, provide a housing option for college students but are not specifically targeted to college students.

On-Campus Student Housing. Units located on university campuses in university-owned buildings. These units were categorized into either traditional residence halls or on-campus apartments. On-campus apartments included bedrooms, a kitchen and a separate, in-unit living area. All other housing units were characterized as traditional residence halls.

Public/Private Status. The College Board's definition of public and private universities was used to categorize each university in the sample as either public or private.

Region. Four regions were included—the Midwest (Indiana, Michigan and Wisconsin); Northeast (Pennsylvania); West (Arizona and California); and South (Alabama, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina and Texas).

Square Footage. Square footage was only included in the off-campus dataset. The total square footage of each housing unit was divided by the total number of bedrooms in the housing unit.

Wi-Fi. Wi-Fi was available in the unit. This was only included in the on-campus dataset. See the regression methodology for information regarding inclusion in the rent.

INTEGRATING THE ON-CAMPUS AND OFF-CAMPUS DATASETS

Defining and Calculating Rent (2017-2018 school year)

There were several obstacles to conducting an apples-to-apples comparison of rents between on-campus student housing and conventional apartments. For starters, there was the issue of incongruent lease lengths. Conventional apartments typically require residents to sign a 12-month lease, and rent figures are quoted by the month. This is true of many purpose-built student housing communities as well, while others offer a 9- or 10-month lease to better parallel the school year. On-campus housing, on the other hand, almost always charges students by the semester. Thus, the rent figures had to be standardized before any comparisons could be made.

To address this, it was assumed that students only required accommodation for the duration of the school year and, furthermore, were not able to sublet their apartments during the summer months. Thus, for on-campus housing, annual rent was set equal to academic year rent, or the rent charged for two semesters of school. In the off-campus portion of the data, annual rent was set equal to twelve months' worth of rent.

The rents for off-campus purpose-built and student-competitive properties include charges for utilities, furniture, and laundry. In instances where these items were not already included or available for a known fee, rent levels were adjusted upwards by \$25 for unfurnished units, \$10 per bed for water, sewer and trash, \$10 for cable, \$10 for internet, \$30 for electricity and gas, and \$25 for washer and dryer⁴. The vast majority of on-campus observations include these charges in rent, as well, with the exception of 35 on-campus apartment floorplans that do not come furnished and for which no furniture charge is factored into pricing.

REGRESSION AND VARIABLE DIAGNOSTICS

Regression Methodology

An ordinary least squares (OLS) regression was employed for this analysis. While the dependent variable, annual rent per-bed, had a relatively normal distribution, using the log of the dependent variable resulted in a slightly higher R-squared value.

⁴ Amounts estimated from surveys conducted by Axiometrics.

Multiple variables showed a colinear relationship with one another and needed to be excluded from the regression analysis, particularly the overall regression using both the on-campus and off-campus datasets. This was unsurprising, given the limited data availability for the on-campus sample and the differing nature of the on- and off-campus sample.