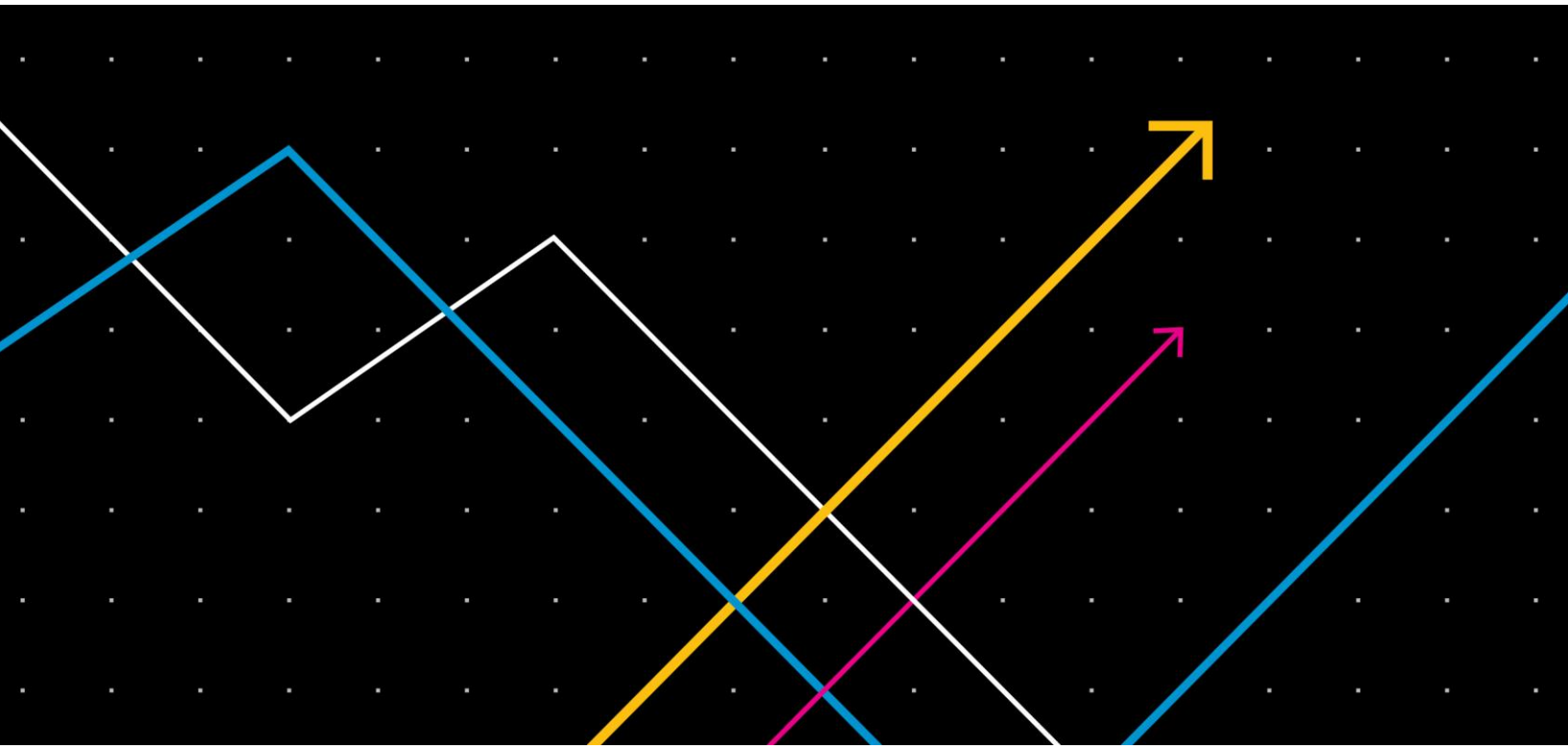

RESEARCH REPORT

The Price of Room and Board

Understanding Trends in On-Campus Living Charges

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URBAN INSTITUTE · ELEVATE · THE · DEBATE

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Executive Summary

On-campus room and board charges have risen faster than the rate of inflation, contributing to the overall increase in the cost of attending a four-year residential institution. In this study, we draw on new analyses of data on colleges and universities and previous research to assess four potential explanations for the rise in on-campus living expenses.

1. Are campuses spending more on high-end amenities in residence halls and college recreation facilities? We find that colleges have built enough dorm rooms over the past 25 years to keep pace with rising undergraduate enrollment. Noninstructional "auxiliary" expenditures, including on dorms and dining halls, have increased but not by enough to match the rise in room and board charges.
2. Is the cost of living (e.g., housing and food prices) increasing in college towns? This may be the case in some places, but overall inflation-adjusted rent and food prices have increased at a slower rate than room and board charges.
3. Have increases in price discounts provided by institutions offset rising room and board charges? We find that increases in institutional discounts have offset much of the increase in the total cost of attendance at private colleges, but not at public colleges.
4. Are institutions overcharging for room and board to subsidize other expenses? We find suggestive evidence that private institutions generate revenue from auxiliary enterprises that might be applied to expenditures in other areas but that public institutions, on average, spend roughly what they take in.

Our results suggest that institutions may have multiple motivations to raise room and board charges but that they raise these charges each year by a more consistent amount than they do for tuition. The average increase in room and board charges is about 2 percent above inflation each year, but ranged from 0.2 to 5.6 percent between 1991 and 2015. In contrast, average changes in tuition and fee charges have been much more variable, ranging from 0.7 to 11.8 percent above inflation.

Policy responses to the rise in these on-campus costs should be guided by specific policy goals. Keeping charges low for all students while updating antiquated facilities may be best accomplished by capital financing programs for the renovation of academic buildings or residence halls. But targeted financial aid programs are likely the best tool for shielding low- and middle-income students from the rising cost of attendance. Finally, federal policymakers need to improve data collection efforts to more accurately track the room and board charges students face.

The Price of Room and Board

For some college graduates, memories of college are linked to their experiences in college dining halls and dormitories. Even though the residential college experience is not the typical experience for today's college student, a large proportion of students do live and study on campus. In the 2011–12 school year, 27 percent of students pursing a bachelor's degree lived on campus.[1]

Living in on-campus housing could yield tangible increases in a student's academic and social development. Living on campus is associated with higher academic performance and critical thinking skills relative to commuting to school (de Araujo and Murray 2010; Pascarella et al. 1992). The choice to live in on-campus housing may be particularly beneficial for black students and for those attending liberal arts schools (Flowers 2004; López Turley and Wodtke 2010). Although students may realize substantial gains from living on campus, they must balance these advantages against the costs of room and board relative to potential savings from off-campus living arrangements.

Room and Board Charges Are Rising Faster Than Inflation

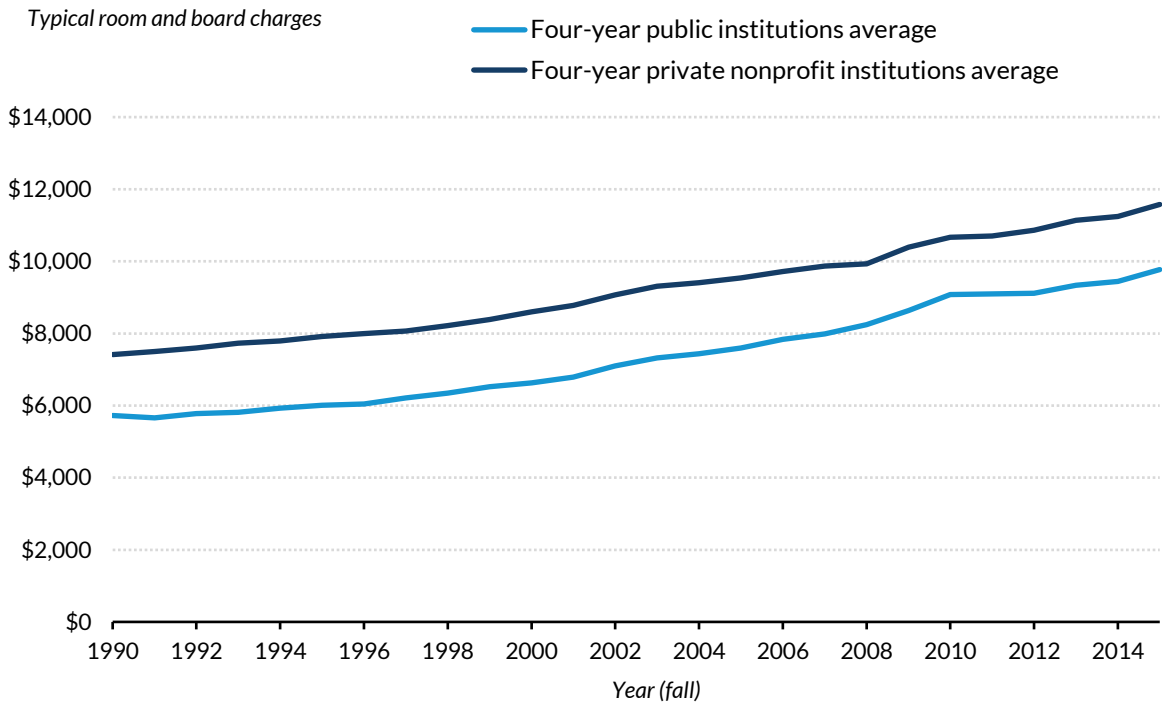
Many policymakers and researchers have focused on rising college tuition as the driver of increases in the cost of college.[2] However, room and board charges have also increased at a rate higher than inflation, which may yield higher prices for those living on campus (Chingos, Lee, and Blagg 2017). From 1990–91 to 2015–16, the average inflation-adjusted room and board charges rose from $5,700 to $9,800 at four-year public institutions and from $7,400 to $11,600 at four-year private nonprofit institutions (figure 1). This rise is equivalent to a 71 percent increase above inflation at public institutions and a 56 percent increase at private institutions.

The startling rise in room and board charges has produced various hypotheses from analysts and commentators regarding the underlying causes of and potential solutions to this trend.[3] In this report, we summarize some of these hypotheses and investigate how previous research, combined with our own analysis of trends over time, may support or refute these theories. Our goal is not to identify a single underlying cause but to provide new evidence on factors that may contribute to the rise in room and board prices.

FIGURE 1

Average Inflation-Adjusted Room and Board Charge, 1990–91 to 2015–16

2015 dollars



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Note: Weighted by room capacity.

We investigate four potential hypotheses:

1. **Increased spending on campus amenities.** Some media outlets have pointed to the increasing prevalence of high-end amenities in residence halls and college recreation facilities as a reason for increasing prices.
2. **Increases in the overall cost of living.** It is possible that the cost of living (i.e., housing and food prices) has gone up in a way that is echoed in the price of on-campus living. This trend could yield room and board prices that are rising beyond the rate of inflation but may be comparable to changes in the cost of rent and food near campus.
3. **Minimal room and board increases because of discounting.** Although room and board charges have gone up, the price discounts that institutions provide to students have also increased. It is possible that these larger discounts, if applied broadly to the cost of attendance, cover the increases in the price of room and board.

4. **Cross-subsidization of other costs.** Institutions generate revenue from multiple sources, such as tuition and fees, room and board charges, and endowments or appropriations. When one source of revenue is constrained, schools might use increased room and board charges to cross-subsidize other expenses.

Data and Methodology

We analyze institution-level data from the US Department of Education's Integrated Postsecondary Data System (IPEDS). We restrict our sample to four-year public or private nonprofit institutions that offer federal financial aid and report having residential housing at least one year over the time period covered by our analysis (1990–91 to 2015–16). These data restrictions yield a set of institutions with a higher proportion of selective and highly selective colleges than is found in the broader universe of US colleges. Just 2 percent of institutions in our study reported they had an open admissions policy in the 2014–15 school year. Roughly 16 percent of public institutions and 21 percent of private nonprofit institutions in our analysis had admission rates of less than 50 percent in the 2013–14 school year.

For most of the statistics we report, we apply a weight based on each institution's room capacity (e.g., an institution with capacity for 1,000 students counts 10 times as much as an institution with room to house 100 students). This practice allows us to best estimate the charges that a typical on-campus student would face. We recognize that, in some instances, an institution could have a higher room capacity than number of undergraduates. This situation can occur when an institution is underenrolled, but it can also occur when housing is set aside for faculty or graduate students. To avoid overweighting these institutions, we cap room capacity at the number of full-time equivalent (FTE) undergraduates enrolled in the same year. Roughly 10 percent of our institutions were subject to this cap for the 2013–14 school year.

Has Spending on Residence Amenities Increased?

A popular media narrative points to an increase in college amenities as the reason for the rise in on-campus room and board charges. Many of the articles that describe the "luxification" of college apartments focus on off-campus apartments, where private development companies lure students with private bedrooms and bathrooms, roof decks, and flat-screen televisions.[4] However, news articles also show that colleges are increasingly upgrading their own on-campus housing and dining options.[5]

Journalists also chronicle a college "recreation center arms race" in which universities have invested in lazy rivers and pool climbing walls.[6]

Those who are involved in this "amenities arms race" give different reasons for the growth of both on-campus and off-campus "luxury" dorms. Some developers believe that off-campus student housing could be "recession-resistant" because college enrollment tends to go up when the economy faces a downturn.[7] Colleges may also improve residence facilities with an aim to attract applicants, provide necessary upgrades to antiquated dormitories, and keep students engaged in residential and academic life on-campus (Kirshstein and Kadamus 2012).[8] One private developer characterizes colleges as playing "catch up" to "upgrade the student-housing experience."[9]

The luxury residence hall race could have costs beyond a higher price tag. Some students point to the fact that high-end student housing inevitably results in a segregation of students based on their ability and willingness to pay for housing. Those who can afford higher-cost housing, whether on or off campus, end up segregating themselves from those who cannot afford the cost of more expensive dorms.[10] Students from low-income families may opt to live far from campus to save on living costs, commuting to classes rather than spending extra money to live on campus or in nearby off-campus housing.[11] Perhaps as a result of this trend, one article hypothesizes that the amenities race may be slowing down on certain campuses, as institutions rein in room and board spending as a way to lower the prices faced by students.[12] Further support for the slowing of the amenities race is the fact that new construction at colleges, measured in total square footage, is now at its lowest level since at least 2000.[13]

Previous Evidence on Amenities Spending

Previous academic work suggests that four-year colleges may have an incentive to invest in on-campus amenities. Empirical research indicates that marginal increases in amenities spending will typically increase enrollment, particularly the enrollment of students from wealthier families who appear to value amenities spending (Jacob, McCall, and Stange 2013). A study of college rankings from the *Princeton Review* and *US News and World Report* demonstrates that higher quality-of-life ratings, such as being included on a positive amenities-based list, such as "Top 20 Most Beautiful Campuses" or "Top 20 Happiest Students," tends to increase the number of applicants to a given school, while being included on a negative list (e.g., "unattractive campuses") tends to depress the number of applicants (Alter and Reback 2014).

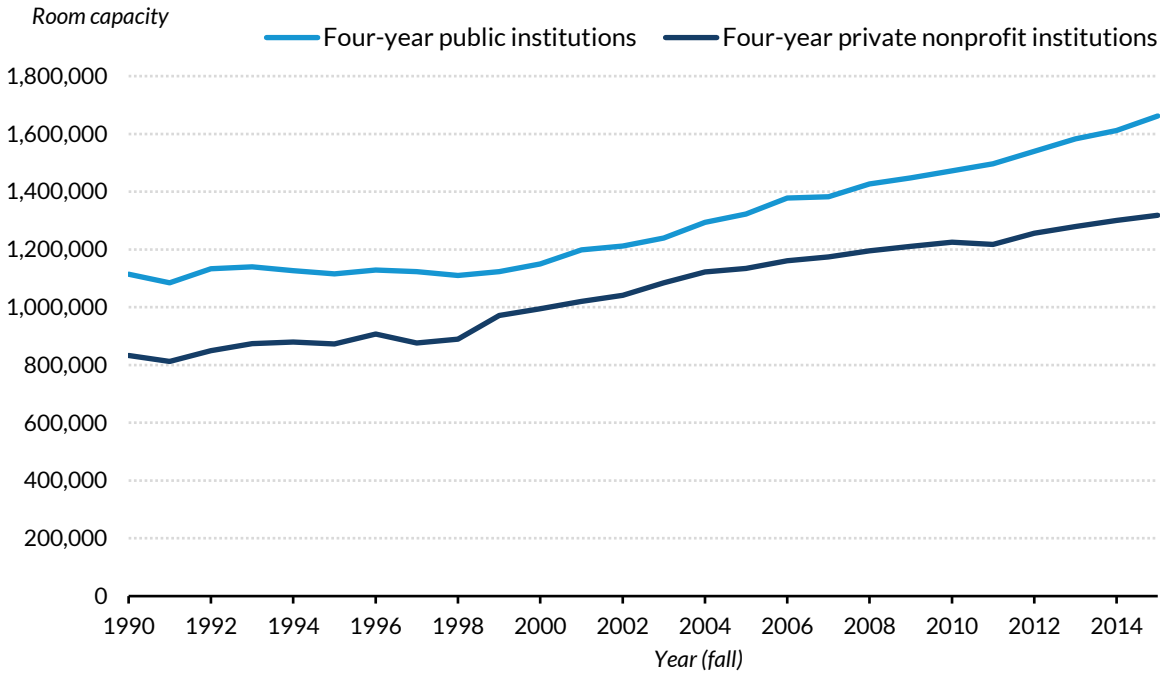
There is also some evidence that institutional expenditures on on-campus student services, such as intramural sports, health services, and student organizations, are associated with higher student retention and graduation rates. One study estimated that increasing expenditures on student services by $100 per student would yield an average 0.2 percentage point increase in an institution's six-year graduation rate, while a similarly large increase in spending on instruction and academic support would yield an increase of just 0.08 percentage points (Webber and Ehrenberg 2010).

Trends in Residence Spending

Our analysis suggests that four-year institutions have, overall, increased the number of available beds on campus.[14] Total room capacity at four-year public institutions grew from roughly 1.1 million in the 1990–91 school year to nearly 1.7 million in the 2015–16 school year, and from about 0.8 million to 1.3 million at four-year private institutions (figure 2). The median four-year public institution increased its room capacity by about 34 percent (approximately 544 beds) from 1990–91 to 2015–16, and the median four-year private institution increased capacity by 39 percent (254 beds). The trend we observe in the IPEDS data is largely consistent with outside data showing an increase in construction of nonacademic space over this period (Sightlines 2016).

FIGURE 2

Total Room Capacity, 1990–91 to 2015–16

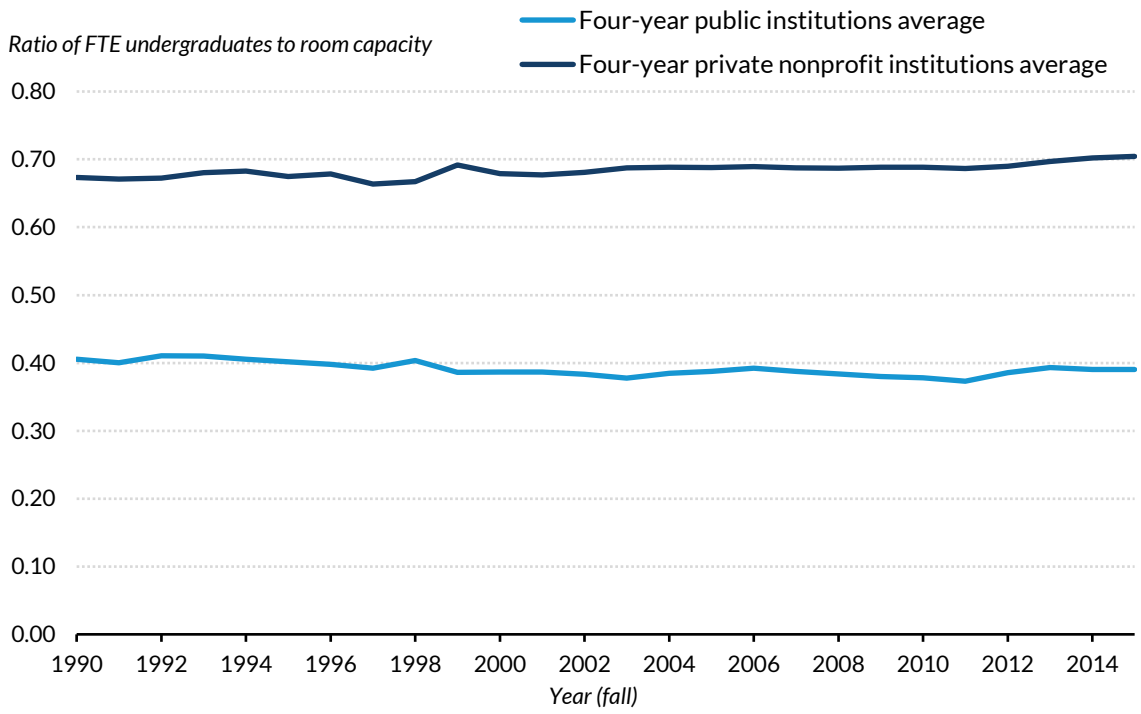


Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.

Despite this rise in room capacity, there is no correlation at the institution level between the percentage point increase in residence hall capacity and the percentage point increase in inflation-adjusted average undergraduate room charges during this period (r = -0.06 for public four-year colleges; r = -0.07 for private four-year colleges). Instead, it appears that four-year institutions may be building to accommodate increased enrollment numbers. Average room capacity per FTE undergraduate student decreased slightly for four-year public institutions, from a ratio of 0.40 rooms per student in 1990–91 to a ratio of 0.38 in 2015–16. Average room capacity per FTE undergraduate did not change for private four-year institutions, from a ratio of 0.66 rooms per student to a ratio of 0.67 (figure 3).

FIGURE 3

Ratio of FTE Undergraduates to Room Capacity, 1990–91 to 2015–16



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Note: Weighted by room capacity.

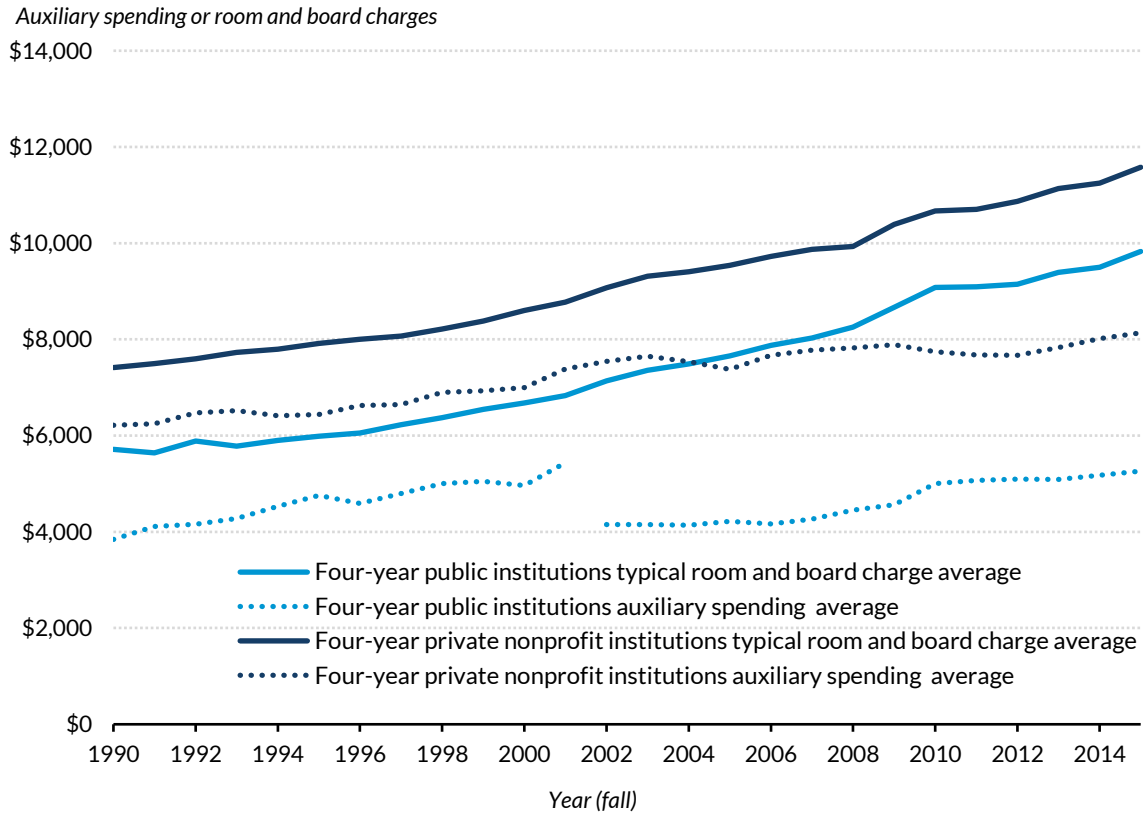
Of course, increased room capacity may not reflect increased per student institutional expenditures on room and board. For example, some schools may invest in more austere, utilitarian dormitories and cafeterias, while others might invest in suite-style residences and athletic centers with lazy rivers. To take a deeper look at the relationship between institutional expenditures on student accommodation and student charges, we examine institutional spending as reported in the Delta Cost Project dataset.[15] Although institutions do not directly report how much they spend on student residences and dining halls, they do report expenditures in auxiliary enterprises. Auxiliary enterprises include spending on residence halls, food services, student health services, self-supporting student athletics, college stores, parking, and faculty housing.

Our analysis of inflation-adjusted spending on auxiliary enterprises per FTE undergraduate indicates that spending per student on auxiliary services has generally increased over time (figure 4). However, levels of spending and corresponding room and board charges differ by sector. On average, private institutions appear to have spent more, in inflation-adjusted dollars, on auxiliary services per FTE undergraduate over time than public institutions. At both public and private institutions, inflation-

adjusted room and board sticker prices have continued to increase, while auxiliary spending per FTE undergraduate increased at a much slower rate.

FIGURE 4

Average Inflation-Adjusted Auxiliary Spending and Room and Board Charges, per FTE Undergraduate



Source: Urban Institute analysis of Integrated Postsecondary Education Data System and Delta Cost Project data.
Notes: Expenditures and charges for four-year public institutions are aggregated to the state level. Weighted by room capacity. Reporting standards for auxiliary expenses for public institutions changed in fall of 2002, which is reflected by a break in the trend line.

Taken together, these trends indicate that residential colleges have substantially increased room capacity over the past 25 years, but this building spree was largely matched by an increase in the number of FTE undergraduates. Although inflation-adjusted auxiliary expenditures have also increased over this period, the trend in these expenditures has, on average, not kept pace with the trend in room and board charges.

Have Costs of Living Overall Increased?

Another potential explanation behind the rise of room and board charges is that the cost of housing and food are simply rising faster than inflation overall. Cost of living varies substantially by region, and media reports have noted that young adult renters, in particular, can face high rent burdens in cities like New York City and San Francisco.[16] It is possible that residential four-year institutions are more likely to be located in these high-cost-of-living regions. If this is the case, higher room and board charges may be an appropriate response to local prices. However, other reports that counter this narrative indicate colleges may be charging more than students would otherwise spend on housing and food. For example, an analysis of campus dining contracts indicated that institutions charge about $18.75 a day for a full meal plan, much higher than the average $11 a day that a single person is estimated to spend on food.[17]

Previous Evidence on College Costs Relative to Cost of Living

The issue of identifying appropriate inflation and regional cost adjustments is an ongoing concern for administrators, policymakers, and researchers. The Consumer Price Index,[18] which we use for inflation adjustment in our study, estimates changes in prices for goods and services for urban consumers, who make up roughly 89 percent of the US population.[19] However, an inflation index that includes spending on apparel, medical care, and entertainment may not be an appropriate measure for estimating relative changes in room and board charges.

Higher education analysts have suggested two alternative measures for estimating changes in higher education costs. The first, the Higher Education Price Index, incorporates eight categories of institutional expenditures: fringe benefits, miscellaneous services, supplies and materials, utilities, and the salaries of faculty, administration, clerical workers, and service employees.[20] The second alternative measure, the Higher Education Cost Adjustment, was developed from two federal measures: the Employment Cost Index, which represents personnel costs, and the Gross Domestic Product Implicit Price Deflator, which represents nonpersonnel costs (SHEEO, n.d.). Although these indices may be useful for internal budget forecasting by institutions, researchers note they are rarely appropriate for external analyses of college costs (Gillen and Robe 2011).

Researchers have suggested that the rise in residence hall costs is correlated with the overall rise in the standard of living, as the average size of the American house and the number of amenities in a typical house have increased since the 1960s and 1970s (Archibald and Feldman 2011). However,

others argue that increases in housing prices since the 1970s are attributable to restrictions on new supply in high-demand cities rather than to increased amenities (Glaeser, Gyourko, and Saks 2005).

Trends in Costs of Living

In our analysis, we first assess whether there are, in fact, regional differences in room and board charges. We find variation in average room charges based on urbanization level (i.e., city, suburb, town, or rural) and the region of the country where an institution is located. In the 2015–16 school year, we estimate that the average room charges for a private institution located in a city or suburb ($6,370 and $6,620, respectively) are substantially higher than room charges for institutions in towns and rural areas ($5,110 and $5,100, respectively). This trend holds true even when accounting for the sector of the institution (appendix figure A.1). In line with this observation, we also find variation in average typical room charges by US region, from a high of $8,140 for private New England institutions to a low of $4,340 for public institutions in the Rocky Mountains (appendix figure A.1). These findings support the hypothesis that institution room charges are somewhat tied to local markets.

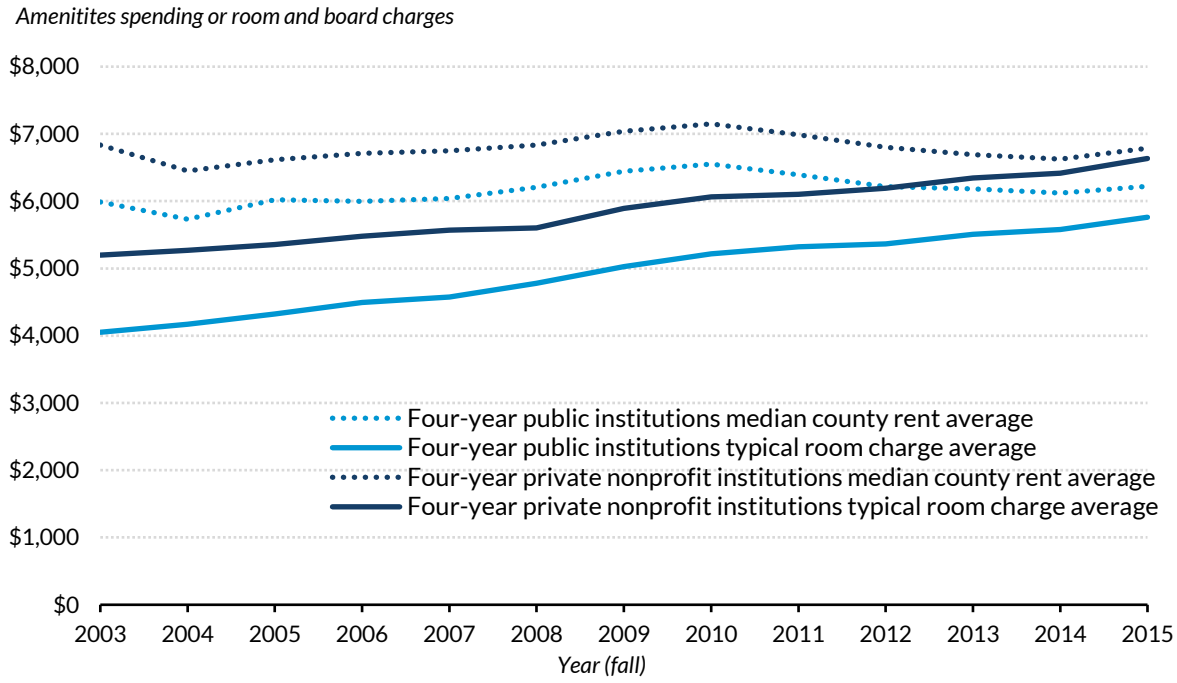
Research has shown there are statistically significant differences in US regional food prices, ranging from 11 percent higher than the national average in the West to 7 percent lower than average in the South (Leibtag 2007). Although we find variation in typical board charges across regions and locales, we observe that variation in board charges appear to be more driven by the sector of the institution than by the institution's urbanicity or region (appendix figure A.2). This variation could be because of quality and taste differences in dining options across the public and private sectors, but it could also be because of differences in meal plan patterns across sectors. For example, students at four-year private institutions might be allowed a higher number of meals per week than students at four-year public institutions, or students at four-year private institutions may be more likely to have "flexible" dining plans that bill students based on the meal time and venue.

To assess trends in room and board changes relative to local living costs, we first compare local rent prices with on-campus room charges. We estimate local living costs as the median fair-market rent (as determined by the US Department of Housing and Urban Development) in the institution's county for eight months in a one-bedroom apartment. On average, both private and public institutions have historically charged room prices that were below local fair-market rent for their county location. However, growth in institutional room charges has outpaced growth in local rent prices, and average room charges in both sectors now roughly approach the equivalent local fair-market rent (figure 5).

Figure 5 also shows that private colleges, in addition to charging more for rooms than public colleges, tend to be located in areas with higher market rents.

FIGURE 5

Average Inflation-Adjusted Room Charges, Relative to Average Median Fair-Market Rent



Source: Urban Institute analysis of Integrated Postsecondary Education Data System and US Department of Housing and Urban Development data.
Notes: Rent average is calculated at the fair-market rent for a one-bedroom apartment for eight months in the given year. Weighted by room capacity.

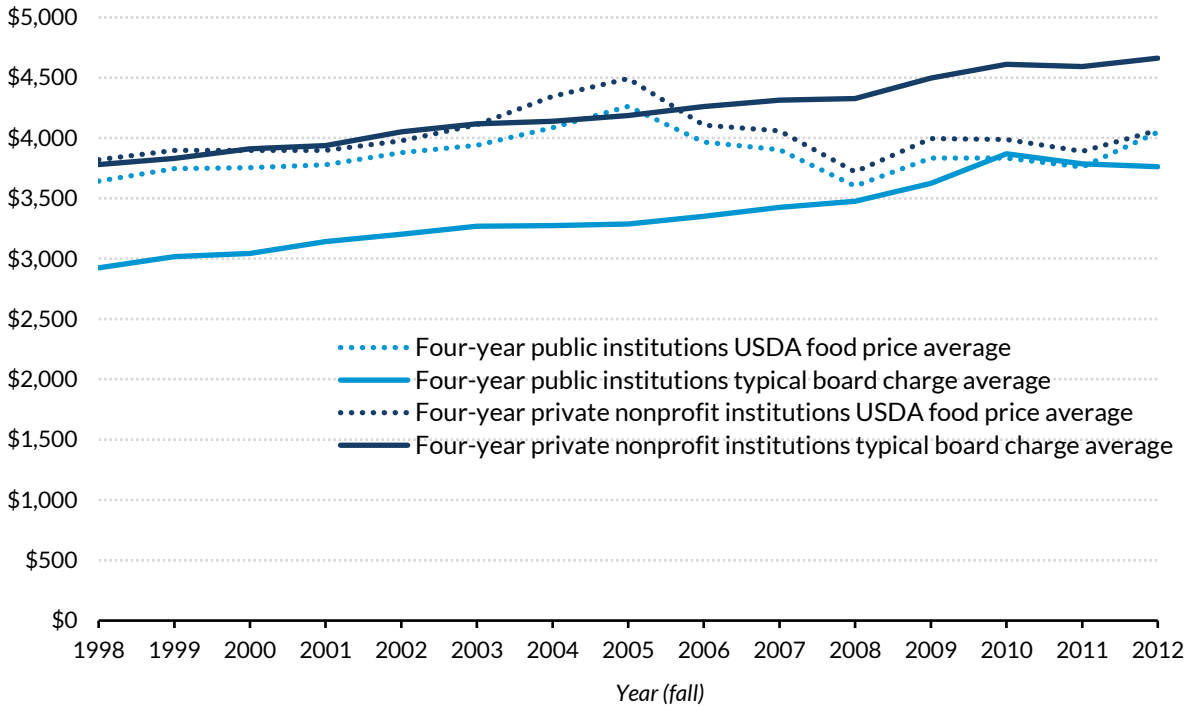
We conduct a similar analysis to compare board charges with regional food prices. The US Department of Agriculture reports estimates of the average price of food prepared away from home for seven US regions. This measure implicitly includes the costs of equipment and labor in the production and service of food.

We compare average typical board charges with the average price of 14 prepared meals for 30 weeks (the duration of two semesters, with an average of two meals a day). We find that inflation-adjusted growth in board costs generally tracked inflation-adjusted growth in away-from-home food prices from 1998 to about 2005, with four-year private institutions charging relatively more, on average, than public institutions. From 2005 onward, although inflation-adjusted regional food prices

were generally stagnant or even decreased, board charges at both public and private institutions continued to climb (figure 6).

FIGURE 6

Average Inflation-Adjusted Board Charges, Relative to Food Prices



Source: Urban Institute analysis of Integrated Postsecondary Data System and USDA data.
Notes: USDA = US Department of Agriculture. Price of food is measured as the price of 14 meals away from home, for 30 weeks, for the institution's region. Weighted by room capacity.

Our analysis indicates that, overall, local housing and food prices are probably not driving up room and board charges at four-year institutions. Local inflation-adjusted rent and food prices have generally increased at a slower rate than comparable room and board charges. Although we may be able to dismiss this hypothesis for the average institution, we must also acknowledge that we are limited by our definition of "local" for estimating differences in costs. For example, we cannot rule out the possibility that institutions may face neighborhood-level housing costs that are much higher than county-level estimates, or that institutions may have higher city-level prepared food costs than indicated by regional estimates.

Are Room and Board Subject to Discounting?

In the previous sections, we compared institutional spending and local housing and food costs with the published room and board charges at four-year public and private institutions. However, as is widely reported, the "sticker price" published by institutions is often not the actual price paid by a student and her family.[21] In some cases, colleges have used higher tuition charges as a means of signaling the quality of the institution while simultaneously raising student aid.[22] Tuition discounting practices have become so prevalent at private institutions that some colleges have initiated tuition "resets" as a means of more accurately representing the prices that students will face.[23]

Although relatively few students may receive a "full-ride" scholarship that includes the costs of room and board, the trend of tuition discounting is still relevant for our examination of on-campus living costs. If the practice of discounting extends into discounting room and board charges, the amount that institutions charge for room and board may not reflect the amount they actually receive for providing room and board. Further, if the full price of college for residential students includes tuition, fees, room, and board, then discounts, even if they are nominally applied to one portion of the charges, end up reducing the overall price of attendance. Changes in the generosity of institutional and other grant aid could outpace growth in the overall "sticker price" of a college, meaning that the average net price of attendance could remain relatively stable even in the face of rising room and board charges.

Previous Evidence on Discounting and Net Price

Tuition discounts are most prevalent among private four-year private institutions, but four-year public institutions have also begun using institutionally funded aid as a means of managing revenue (Hillman 2012). Four-year private institutions vary in their use of tuition discounts; large discounts are more prevalent among colleges with lower yields (percentage of accepted students who enroll) and among colleges with higher endowments per FTE student (Baum, Lapovsky, and Ma 2010). Among public four-year colleges, flagship schools and institutions with higher percentages of out-of-state students tend to have higher discount rates (Baum and Lapovsky 2006).

On average, students from low-income backgrounds receive more generous institutional discounts than students from high-income backgrounds. Dependent students at four-year public institutions with family incomes in the lowest quartile (below $30,000) received an average discount of 20 percent in the 2011–12 school year, and dependent students with family incomes in the highest quartile (at or above $106,000) received an average discount of 13 percent (Ma et al. 2016). At four-year private

institutions, discounts are more targeted to low-income students. Dependent students with family incomes in the lowest quartile received an average discount of 47 percent, and dependent students with family incomes in the highest quartile received a discount of 33 percent, on average (Ma et al. 2016).

Trends in Student Revenue and Discounting

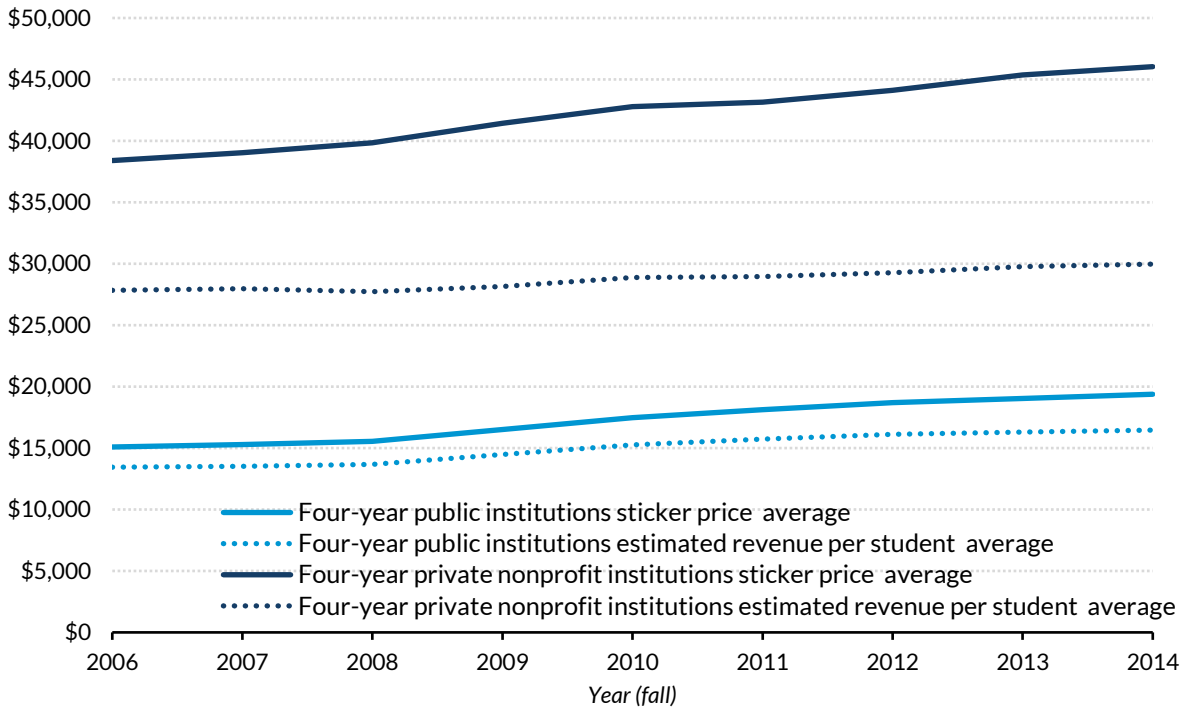
In our analysis, we focus first on discounting as it affects the average net revenue generated by first-time, full-time undergraduate students, because they are the most likely to live on campus and therefore incur room and board charges. To calculate the average net revenue generated for a given institution, we estimate the average revenue expected per first-time, full-time student, given the published prices, and then subtract average institutional grant aid per student (Duggan and Mathews 2005).

We calculate the average inflation-adjusted sticker price for four-year public institutions by taking the average of tuition and fee charges by student segment (in district, in state, out of state, and unknown), weighted by the number of first-time, full-time students in each segment, and add reported typical on-campus room and board charges, weighted by the percentage of students who lived on campus. For four-year private institutions, we estimate the average inflation-adjusted sticker price by taking the tuition and fee charges for a first-time, full-time student and reported typical on-campus room and board charges, weighted by the percentage of students who lived on campus (estimated using data from Title IV or institutional grant recipients).[24]

We estimated that the average sticker price for first-time, full-time students at four-year private institutions increased from roughly $36,000 in 2006–07 to $43,600 in 2014–15 (figure 7). However, the average revenue generated per first-time, full-time student, net of institutional grant aid, rose much more slowly. Average estimated revenue at four-year private institutions increased from about $26,100 to $28,200 in this period. On average, the institutional discount rate for the total sticker price also increased, from 27 percent in 2006–07 to 35 percent in 2014–15, in line with estimates of the trend in discount rates for private four-year schools during this time (NACUBO 2017).

FIGURE 7

Average Inflation-Adjusted Published Price and Revenue per First-Time, Full-Time Student



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Notes: Four-year private institutional data are available only for institutions with a tradition of requiring full-time students to live on campus in their first year. Sticker price is the estimated average per student price, including tuition, fees, room, and board. Weighted by the number of first-time, full-time undergraduate students.

In line with previous observations, we find that discounting at four-year public institutions is much less prevalent. The average typical sticker price, inclusive of on-campus room and board, rose from $15,100 in 2006–07 to $19,400 in 2014–15. Average net revenue per student grew at a similar, but slightly slower, rate (from $13,400 in 2006–07 to $15,500 in 2014–15), and the average discount rate rose slightly, from 11 to 15 percent.

From this analysis, it appears that both public and private institutions receive substantially more in inflation-adjusted revenue per first-time, full-time student than they did eight years ago ($2,100 more at private residential institutions and $3,100 more at public institutions). Among our sample of residential four-year private institutions, the rate of this increase is substantially less than the $7,600 average increase in sticker price over the same period, owing to the increased prevalence of tuition discounting. However, at four-year public institutions, the revenue generated per student more closely

follows increases in sticker price ($4,400, on average). Our estimates echo findings from the College Board's Annual Survey of Colleges (Ma et al. 2016).

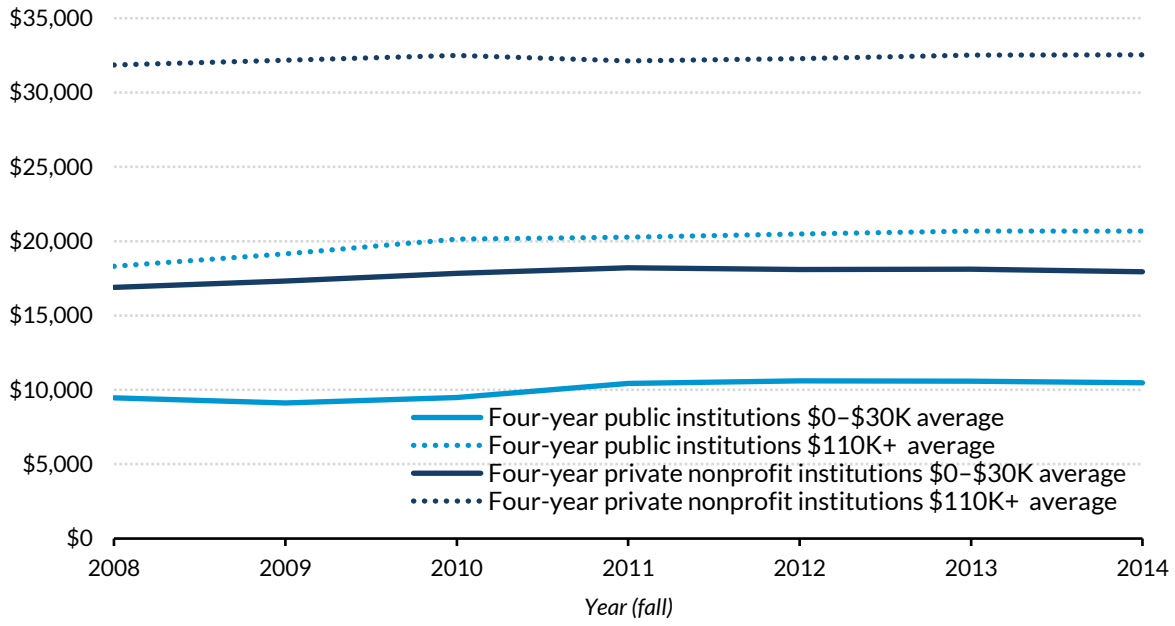
Although this analysis provides a sense of the average revenue per student at these institutions, it does not give us a sense of the distribution of institutional discounts and other grant aid. For example, it is possible the overall net price increased at a given institution, but the typical price for students with substantial need did not increase at the same rate, or even at all.

To assess this question, we look at the average net price of first-time, full-time students receiving Title IV financial aid at four-year institutions. Average net price is calculated as the average total cost of attendance (tuition and required fees, average room and board, books and supplies, and other expenses) minus all grant and scholarship aid.[25] A student is included in the average net price calculation even if her aid is solely in the form of loans (meaning that the net price would still be equivalent to the published cost of attendance). Net price is calculated for five categories of students, based on family income level (family income of $0–$30,000, $30,001–$48,000, $48,001–$75,000, $75,001–$110,000, and $110,001 or more).[26]

The average net price faced by students from low-income families has crept up slightly over time (figure 8). We estimate that in the 2008–09 school year, students in the lowest family income level had an average inflation-adjusted net price of about $16,900 at four-year private institutions and a net price of $9,500 at four-year public institutions. Seven years later, in the 2014–15 school year, these net price estimates rose to $18,000 and $10,500, respectively. Average net price for students from high-income families stayed relatively stable for students at four-year private institutions ($31,900 in 2008–09 and $32,500 in 2014–15). Average net price for these students at four-year public institutions rose from $18,400 in 2008–09 to $20,700 in 2014–15.

FIGURE 8

Average Inflation-Adjusted Net Price, by Family Income



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Notes: Net price for four-year public institutions is calculated using the lesser of in-district or in-state published tuition and fees and is calculated only for students who paid in-state or in-district tuition. Weighted by room capacity.

Much of the increase in net price for students from low-income families occurred in the 2011–12 school year. This increase may be, in part, because of a change in the way that a student's expected family contribution was calculated on the Free Application for Federal Student Aid. The cutoff for an automatic zero for the expected family contribution (and therefore a maximum Pell award) was lowered from $31,000 to $23,000, potentially lowering the size of the average Pell award.[27] Nonetheless, it appears that students from the lowest-income families generally face slightly higher net prices today than their predecessors seven years ago, indicating they may also spend more on room and board relative to 2008–09.

Our analysis indicates that the average institution appears to receive slightly more overall revenue from tuition, fees, room and board, in inflation-adjusted dollars, per first-time, full-time student than it did in 2006–07. At both public and private institutions, students from low-income backgrounds also appear to pay slightly more, on average, in net price over these years. Though institutions in both sectors have also increased their average institutional discounts over this period, it does not appear that these discounts have fully subsumed the increase in average cost of attendance, including room and board costs, for low-income students.

Do Institutions Regard Revenue as Fungible?

A final theory put forward for the rise in college living costs is a relatively simple one: increased room and board charges generate increased revenue, which can be applied not only to the costs of providing housing and student services, but to the institution more generally. Although funds from donors and certain revenue streams may be restricted, some commentators have described revenue within universities as potentially fungible across programs or spending categories.[28] One article posits that institutions, especially public four-year institutions in states where campuses may not have tuition-setting authority, may be slowing tuition growth in favor of increasing funds received from room and board charges.[29]

Previous Evidence on Institutional Revenues and Expenditures

Though little research has been conducted on the interplay between revenues and expenditures on auxiliary services such as student residence halls and dining facilities, revenue from auxiliaries has been recognized as an opportunity for mitigating budgetary shortfalls from other revenue streams (Hearn 2006; Keppler 2010).[30] Research on the relationships between higher education revenue and expenditures shows that public and private four-year institutions tend to follow different patterns in how they spend tuition dollars and other revenue across programs and spending categories (Toutkoushian and Paulsen 2016). At public research institutions, revenues from tuition are closely associated with expenditures on student instruction. Dollars from tuition at private universities are less closely tied to expenditures on instruction and are associated with expenditures on research activities (Leslie et al. 2012).

Much of the current research on cross-subsidization within higher education spending categories has focused on public institutions, as these institutions generally have restricted authority to set in-state tuition. As of 2012, two state legislatures had direct tuition-setting authority for four-year public institutions. Twenty-eight states have tuition that is set by a state system, board of higher education, or a state board of education, and 23 states have tuition that is set by multi- or single-campus boards (Zinth and Smith 2012). Even when the level of tuition may be under the control of a campus board, the level of higher education appropriations granted by the state will likely affect the setting of tuition levels (Koshal and Koshal 2000).

Researchers have shown that public institutions may pursue different revenue strategies when their ability to raise funds through increased tuition is restricted. Explicit or implicit caps on tuition are

associated with an increase in student fees, indicating that public institutions may use fees as a means of generating additional revenue when they are unable to increase tuition (Kelchen 2016). Although public institutions did not appear to use nonresident tuition dollars to replace lost revenue in the period between 1979 and 1998 (Rizzo and Ehrenberg 2004), more recent work has shown a relationship between increasing nonresident enrollment and declining state appropriations (Jaquette and Curs 2015).

Trends in Auxiliary Revenues and Expenditures

Institutions do not directly report spending on residence halls and dining facilities. Instead, they report spending on auxiliary enterprises, which consist of all operating expenses that provide services to students, faculty, or staff. This category includes spending on residence halls and student food services, but it may also include spending on student health, self-supporting intercollegiate athletics programs, and college stores. We have used this measure to assess spending per FTE undergraduate on amenities relative to room and board charges. However, directly correlating room and board charges with spending is not appropriate in this case, in which we hypothesize that institutions may take in more actual revenue for these services than they spend.

To assess this hypothesis, we examine the ratio of revenue to expenditures in the category of auxiliary enterprises. A ratio of 1 would indicate the institution takes in the same amount of revenue for these services as it spends (the expected result, as public institutions and private nonprofit institutions are not expected to make a profit on these services). A ratio higher than 1 would indicate the institution generates more revenue from auxiliary services than it spends, suggesting that revenue from this category may be subsidizing expenses in other categories.

The reporting standards for revenue and expenditures in the auxiliary category have changed over time, making long-term trend comparisons difficult. When looking at this indicator within consistent reporting time frames, we find that the average ratio between annual auxiliary revenues and expenses at four-year public institutions generally stays close to 1 and does not trend up or down. In contrast, four-year private institutions appear, on average, to take in more auxiliary revenue than they spend per year (i.e., have a ratio higher than 1). Further, the average ratio for private institutions rose in recent years, from 1.27 in 2009–10 to 1.38 in 2015–16 (appendix table A.6).

Contrary to what might be expected, we find more evidence that, compared with public institutions, private institutions generate revenue from auxiliary enterprises that might be applied to expenditures

in other areas. Public institutions largely spent the same amount of revenue they received from auxiliary enterprises. However, it is difficult for us to assert that these surplus revenues were generated directly from room and board charges. It is possible, for example, that these funds came from other sources, such as changes in the operations of campus unions and bookstores, or other forms of revenue diversification that fall in this category.[31]

Conclusion

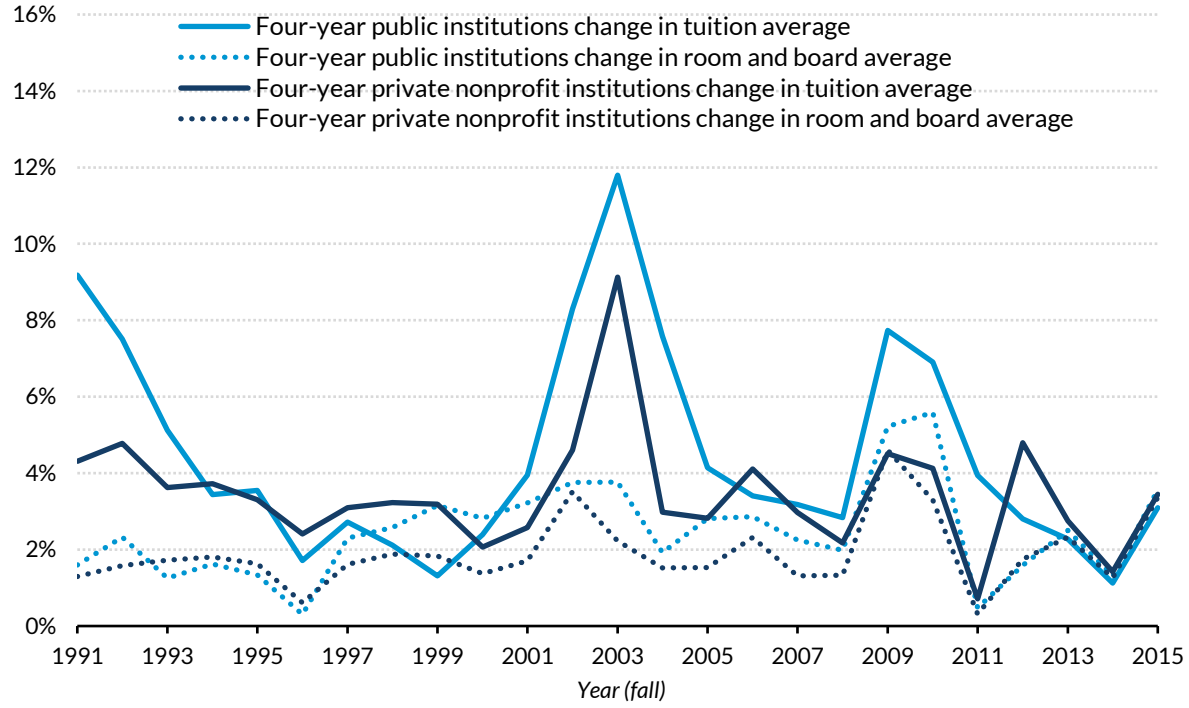
The trend of rising on-campus room and board charges deserves the attention of policymakers and advocates. Increases in room and board charges have outpaced increases in comparable housing and food options, and, as a result, students face increased cost of attendance. However, getting at the root cause of rising on-campus room and board prices is difficult.

It is possible that institutions face multiple incentives for raising room and board charges. Increases in these charges could fund improvements on campus, capture additional revenue from wealthy students, or subsidize other services provided by the university. At the institution level, the relative importance of these objectives may vary by a school's sector, selectivity, donor base, and institutional mission. Moreover, these priorities may change over time, even within a single institution. For example, increasing charges to support the construction of new residence halls may make sense in a booming economy, but may seem less feasible in a recession.

When we look at institution-level increases in room and board charges over time, we find that institutions typically increase these charges at an average rate of about 2 percent above inflation each year, though these annual increases ranged from 0.2 to 4.6 percent among private institutions and from 0.3 to 5.6 percent among public institutions (figure 9). In contrast, average changes in tuition and fee charges have been much more dramatic over this period, ranging from 0.7 to 9.1 percent above inflation among private institutions and from 1.1 to 11.8 percent among public institutions. These results suggest that institutions, on average, make different decisions about the rate of room and board increases over time, increasing charges in some years while holding back increases in others. However, despite this trend, changes in tuition and fees still seem to account for the lion's share of institutional price increases (and revenue responses) over time.

FIGURE 9

Average Percentage Change in Tuition and Fees and Room and Board Charges



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Note: Weighted by room capacity.

We investigate some commonly suggested reasons for the rise in on-campus room and board charges, but we do not find—nor did we expect to find—a "smoking gun" that fully explains this trend. Our results suggest that policymakers who aim to curb increases in room and board charges should consider different options depending on their policy goals.

Policymakers who want to keep charges low for all students while updating antiquated facilities may want to consider providing capital financing programs for the renovation of academic buildings or residence halls, similar to programs that already exist for historically black colleges and universities and low-income and minority-serving institutions.[32] State policymakers could also enact appropriations specifically for capital projects such as renovation or construction of residence facilities (Tandberg and Ness 2010). Those who are concerned about the costs faced by low-income students may wish to pursue policies that provide additional need-based grant aid to students to cover the increases in room and board costs not covered by institutional aid.

This report highlights the paucity of publicly available data on students who live in residence halls or have board plans and, by implication, calls attention to the difficulty of conducting research on issues that affect these students. Although IPEDS collects estimates of "typical" room and board charges, we do not have an indication of the variation in housing and food options (and prices) offered to students. Further, we cannot readily determine exactly how many undergraduate students are living on campus (institutions only report the number of students living on campus for first-time, full-time undergraduates who received grant or Title IV aid) or how the institution prioritizes beds on campus (e.g., if students with financial need receive a preference).

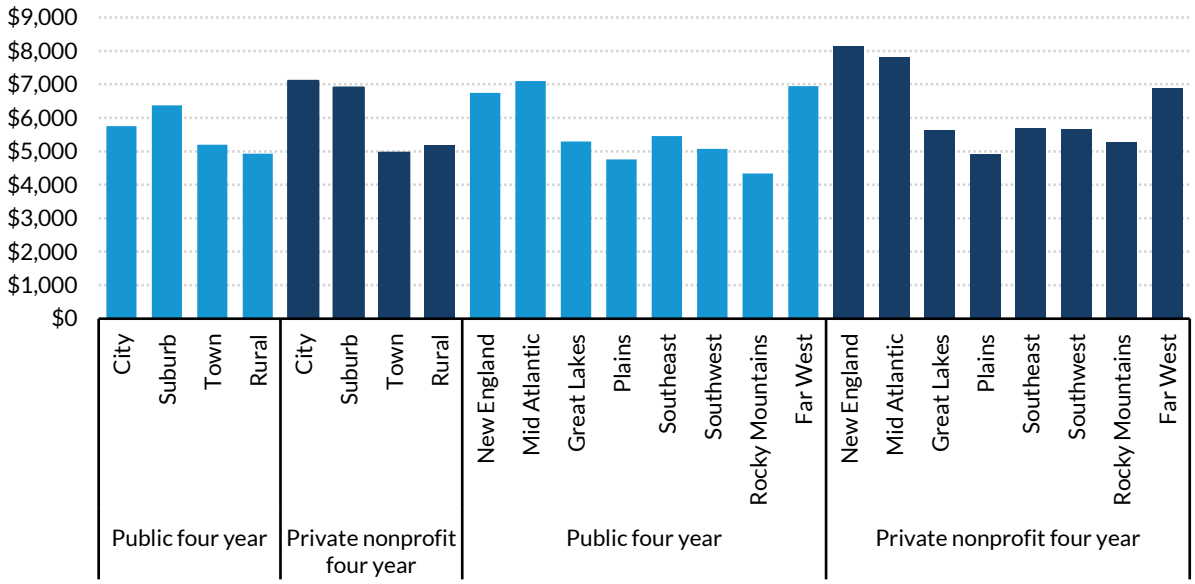
The typical college experience is not lived out in a residence hall, but researchers and policymakers should still pay attention to, and continue to document, the room and board charges that on-campus students face.

Appendix A. Figures and Tables

FIGURE A.1

Average Typical Room Charges in 2015–16, by Urbanicity and Region

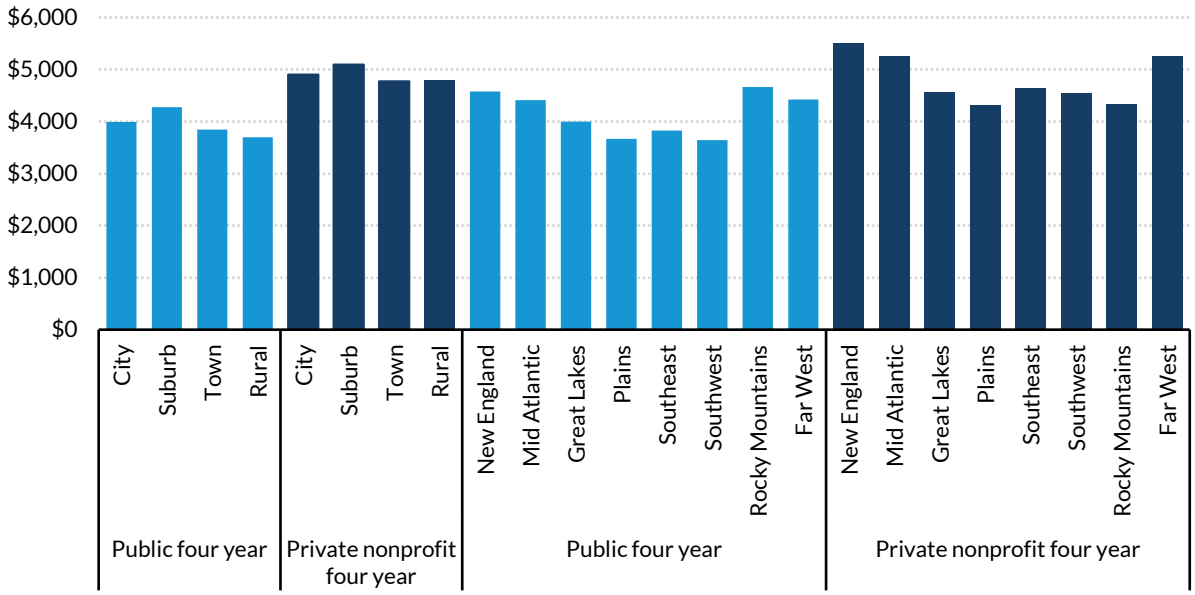
Weighted by room capacity



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Note: Weighted by room capacity.

FIGURE A.2

Average Typical Board Charges in 2015–16, by Urbanicity and Region



Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Note: Weighted by room capacity.

TABLE A.1

Ratio of Full-Time Equivalent Undergraduates to Room Capacity, 1990–91 to 2015–16

Weighted by room capacity

	Four-Year Public Institutions				Four-Year Private Nonprofit Institutions			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1990	0.41	0.29	0.40	0.51	0.67	0.49	0.66	0.83
1991	0.40	0.27	0.40	0.51	0.67	0.50	0.66	0.81
1992	0.41	0.28	0.39	0.50	0.67	0.50	0.66	0.85
1993	0.41	0.28	0.39	0.51	0.68	0.49	0.68	0.83
1994	0.41	0.28	0.39	0.51	0.68	0.50	0.67	0.84
1995	0.40	0.28	0.39	0.50	0.67	0.51	0.67	0.83
1996	0.40	0.27	0.39	0.49	0.68	0.51	0.67	0.84
1997	0.39	0.27	0.39	0.48	0.66	0.50	0.67	0.82
1998	0.40	0.27	0.38	0.49	0.67	0.51	0.66	0.81
1999	0.39	0.26	0.38	0.47	0.69	0.51	0.67	0.81
2000	0.39	0.27	0.36	0.48	0.68	0.53	0.67	0.82
2001	0.39	0.26	0.37	0.47	0.68	0.52	0.67	0.81
2002	0.38	0.26	0.36	0.47	0.68	0.52	0.68	0.82
2003	0.38	0.26	0.36	0.47	0.69	0.52	0.69	0.83
2004	0.38	0.27	0.37	0.47	0.69	0.52	0.69	0.83
2005	0.39	0.27	0.37	0.49	0.69	0.53	0.68	0.83

	Four-Year Public Institutions				Four-Year Private Nonprofit Institutions			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2006	0.39	0.28	0.37	0.49	0.69	0.52	0.68	0.83
2007	0.39	0.27	0.37	0.49	0.69	0.52	0.67	0.84
2008	0.38	0.28	0.36	0.48	0.69	0.52	0.66	0.84
2009	0.38	0.27	0.36	0.47	0.69	0.53	0.67	0.84
2010	0.38	0.27	0.36	0.47	0.69	0.52	0.67	0.84
2011	0.37	0.27	0.35	0.46	0.69	0.53	0.67	0.84
2012	0.39	0.27	0.35	0.48	0.69	0.53	0.67	0.85
2013	0.39	0.28	0.36	0.48	0.70	0.53	0.68	0.85
2014	0.39	0.28	0.36	0.48	0.70	0.53	0.69	0.86
2015	0.39	0.28	0.36	0.47	0.70	0.53	0.68	0.87

Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.

TABLE A.2A

Inflation-Adjusted Auxiliary Spending and Room and Board Charges, per Full-Time Equivalent Undergraduate

Four-year public institutions, weighted by room capacity

	Typical Room and Board Charge				Auxiliary Spending			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1990	$5,718	$4,911	$5,514	$6,488	$3,843	$3,184	$3,795	$4,396
1991	$5,641	$4,860	$5,450	$6,276	$4,114	$3,397	$3,977	$4,883
1992	$5,889	$5,029	$5,795	$6,371	$4,158	$3,388	$4,163	$4,843
1993	$5,778	$5,065	$5,602	$6,453	$4,279	$3,134	$4,103	$4,982
1994	$5,904	$5,105	$5,774	$6,516	$4,530	$3,250	$4,291	$5,250
1995	$5,990	$5,170	$5,968	$6,558	$4,757	$3,566	$4,377	$5,383
1996	$6,051	$5,190	$6,019	$6,535	$4,588	$3,350	$4,218	$5,488
1997	$6,224	$5,465	$6,358	$6,750	$4,795	$3,363	$4,395	$5,674
1998	$6,374	$5,625	$6,467	$7,000	$5,001	$3,390	$4,332	$5,621
1999	$6,544	$5,617	$6,610	$7,129	$5,052	$3,535	$4,281	$5,400
2000	$6,681	$6,154	$6,788	$7,275	$4,960	$3,753	$4,442	$5,054
2001	$6,829	$6,041	$6,864	$7,696	$5,434	$3,579	$4,250	$6,763
2002	$7,137	$6,236	$7,335	$7,887	$4,150	$2,996	$3,952	$4,797
2003	$7,355	$6,382	$7,577	$8,064	$4,149	$3,149	$3,798	$4,699
2004	$7,488	$6,674	$7,499	$8,127	$4,136	$2,983	$3,853	$4,945
2005	$7,659	$7,006	$7,701	$8,304	$4,220	$3,219	$3,975	$4,943
2006	$7,878	$7,207	$8,025	$8,568	$4,167	$3,305	$3,881	$4,894
2007	$8,029	$7,051	$8,228	$8,875	$4,265	$3,363	$4,077	$4,985
2008	$8,255	$7,194	$8,382	$9,070	$4,448	$3,474	$4,154	$5,278
2009	$8,665	$7,658	$8,671	$9,553	$4,562	$3,592	$4,187	$5,452
2010	$9,079	$7,924	$9,115	$10,146	$5,002	$3,806	$4,649	$5,725
2011	$9,091	$8,158	$9,047	$9,992	$5,068	$3,802	$4,762	$5,933
2012	$9,145	$8,255	$8,952	$10,309	$5,093	$3,793	$4,612	$6,269
2013	$9,390	$8,538	$9,332	$10,434	$5,087	$3,855	$4,499	$6,148

	Typical Room and Board Charge				Auxiliary Spending			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2014	$9,500	$8,378	$9,468	$10,386	$5,178	$3,715	$4,324	$6,395
2015	$9,828	$8,813	$9,717	$10,504	$5,262	$3,833	$4,435	$6,389

Source: Urban Institute analysis of Integrated Postsecondary Education Data System and Delta Cost Project data.
Note: Expenditures and charges for public four-year institutions were aggregated to the state level.

TABLE A.2B

Inflation-Adjusted Auxiliary Spending and Room and Board Charges, per Full-Time Equivalent Undergraduate

Four-year private nonprofit institutions, weighted by room capacity

	Typical Room and Board Charge				Auxiliary Spending			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1990	$7,414	$5,738	$7,150	$9,057	$6,216	$3,210	$4,731	$7,088
1991	$7,499	$5,829	$7,308	$9,208	$6,247	$3,195	$4,958	$7,348
1992	$7,599	$5,957	$7,382	$9,261	$6,472	$3,190	$4,857	$7,560
1993	$7,728	$6,068	$7,524	$9,299	$6,522	$3,179	$5,071	$8,098
1994	$7,795	$6,197	$7,552	$9,456	$6,412	$3,219	$4,895	$7,607
1995	$7,917	$6,267	$7,652	$9,672	$6,439	$3,213	$4,872	$7,802
1996	$7,999	$6,342	$7,786	$9,800	$6,627	$3,190	$4,928	$7,935
1997	$8,071	$6,447	$7,705	$9,872	$6,648	$3,190	$4,948	$7,989
1998	$8,218	$6,535	$8,013	$10,002	$6,900	$3,461	$5,070	$7,876
1999	$8,384	$6,751	$8,179	$10,272	$6,931	$3,615	$5,160	$8,317
2000	$8,598	$6,921	$8,424	$10,405	$7,000	$3,546	$5,197	$8,066
2001	$8,774	$7,028	$8,697	$10,586	$7,382	$3,545	$5,163	$8,545
2002	$9,074	$7,326	$8,955	$10,879	$7,541	$3,633	$5,387	$8,692
2003	$9,311	$7,534	$9,230	$11,135	$7,647	$3,747	$5,449	$8,952
2004	$9,404	$7,650	$9,275	$11,250	$7,540	$3,706	$5,338	$8,650
2005	$9,540	$7,775	$9,523	$11,432	$7,380	$3,678	$5,406	$8,570
2006	$9,722	$7,965	$9,735	$11,682	$7,667	$3,807	$5,471	$8,719
2007	$9,871	$8,124	$9,793	$11,830	$7,776	$3,788	$5,469	$8,636
2008	$9,929	$8,230	$9,880	$11,858	$7,822	$3,769	$5,526	$8,784
2009	$10,389	$8,661	$10,454	$12,353	$7,890	$3,968	$5,653	$8,434
2010	$10,667	$8,897	$10,737	$12,646	$7,744	$3,859	$5,526	$8,331
2011	$10,701	$8,950	$10,893	$12,659	$7,675	$3,868	$5,582	$8,323
2012	$10,866	$9,060	$10,949	$12,813	$7,673	$3,898	$5,601	$8,324
2013	$11,138	$9,302	$11,200	$13,160	$7,832	$3,851	$5,804	$8,319
2014	$11,249	$9,370	$11,340	$13,330	$8,015	$3,933	$5,706	$8,567
2015	$11,578	$9,590	$11,638	$13,678	$8,136	$4,026	$5,783	$8,903

Source: Urban Institute analysis of Integrated Postsecondary Education Data System and Delta Cost Project data.
Note: Expenditures and charges for public four-year institutions were aggregated to the state level.

TABLE A.3A

Inflation-Adjusted Room Charges, Relative to Median Fair-Market Rent

Four-year public institutions, weighted by room capacity

	Rent				Typical Room Charge			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2003	$5,988	$4,634	$5,459	$7,043	$4,052	$3,290	$4,017	$4,734
2004	$5,732	$4,490	$5,280	$6,705	$4,171	$3,393	$4,105	$4,885
2005	$6,021	$4,646	$5,537	$7,158	$4,325	$3,521	$4,224	$5,052
2006	$5,999	$4,663	$5,456	$6,844	$4,492	$3,649	$4,477	$5,286
2007	$6,039	$4,679	$5,463	$6,858	$4,576	$3,762	$4,537	$5,343
2008	$6,206	$4,902	$5,562	$6,926	$4,782	$3,912	$4,662	$5,610
2009	$6,443	$5,025	$5,782	$7,286	$5,025	$4,193	$4,976	$5,936
2010	$6,552	$5,049	$5,834	$7,490	$5,219	$4,345	$5,178	$6,084
2011	$6,393	$4,990	$5,645	$7,056	$5,320	$4,412	$5,303	$6,035
2012	$6,218	$4,903	$5,562	$6,856	$5,363	$4,505	$5,381	$6,178
2013	$6,183	$4,888	$5,655	$6,895	$5,507	$4,641	$5,509	$6,374
2014	$6,119	$4,824	$5,584	$6,824	$5,577	$4,662	$5,558	$6,424
2015	$6,223	$4,936	$5,592	$7,016	$5,762	$4,820	$5,730	$6,660

Source: Urban Institute analysis of Integrated Postsecondary Education Data System and US Department of Housing and Urban Development data.
Note: Rent average is calculated as the fair-market rent for a one-bedroom apartment for eight months in the given year.

TABLE A.3B

Inflation-Adjusted Room Charges, Relative to Median Fair-Market Rent

Four-year private nonprofit institutions, weighted by room capacity

	Rent				Typical Room Charge			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2003	$6,835	$5,046	$5,975	$8,225	$5,198	$3,782	$4,967	$6,432
2004	$6,450	$4,870	$5,720	$7,780	$5,269	$3,900	$5,044	$6,438
2005	$6,618	$4,995	$5,992	$7,773	$5,356	$3,981	$5,106	$6,595
2006	$6,709	$4,899	$6,004	$7,720	$5,477	$4,118	$5,192	$6,698
2007	$6,747	$4,934	$6,028	$7,925	$5,567	$4,218	$5,315	$6,829
2008	$6,834	$5,130	$6,178	$7,817	$5,604	$4,237	$5,390	$6,838
2009	$7,038	$5,298	$6,442	$8,219	$5,893	$4,446	$5,614	$7,216
2010	$7,150	$5,337	$6,627	$8,136	$6,063	$4,569	$5,810	$7,412
2011	$6,988	$5,166	$6,443	$8,442	$6,103	$4,578	$5,880	$7,402
2012	$6,803	$4,969	$6,066	$8,026	$6,195	$4,711	$5,974	$7,457
2013	$6,694	$5,059	$6,161	$7,711	$6,343	$4,886	$6,100	$7,681
2014	$6,625	$4,832	$6,056	$7,840	$6,417	$4,950	$6,248	$7,800
2015	$6,787	$5,064	$6,216	$7,880	$6,635	$5,100	$6,490	$8,020

Source: Urban Institute analysis of Integrated Postsecondary Education Data System and US Department of Housing and Urban Development data.
Note: Rent average is calculated as the fair-market rent for a one-bedroom apartment for eight months in the given year.

TABLE A.4A

Inflation-Adjusted Board Charges, Relative to Median Prices of Food

Four-year public institutions, weighted by room capacity

	USDA Food Price				Typical Board Charge			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1998	$3,642	$3,427	$3,465	$3,704	$2,924	$2,422	$2,861	$3,408
1999	$3,748	$3,620	$3,647	$3,796	$3,017	$2,599	$3,044	$3,462
2000	$3,756	$3,557	$3,734	$3,807	$3,043	$2,636	$3,022	$3,519
2001	$3,778	$3,620	$3,761	$3,843	$3,141	$2,653	$3,106	$3,554
2002	$3,879	$3,630	$3,881	$3,941	$3,203	$2,746	$3,274	$3,670
2003	$3,940	$3,752	$3,842	$4,005	$3,270	$2,732	$3,332	$3,813
2004	$4,085	$3,719	$3,893	$4,226	$3,273	$2,755	$3,315	$3,838
2005	$4,263	$3,756	$4,252	$4,284	$3,288	$2,781	$3,328	$3,896
2006	$3,967	$3,691	$3,848	$4,410	$3,352	$2,820	$3,398	$3,953
2007	$3,902	$3,572	$3,915	$4,309	$3,426	$2,873	$3,415	$4,032
2008	$3,602	$3,605	$3,709	$3,776	$3,477	$2,906	$3,485	$3,993
2009	$3,834	$3,663	$3,791	$4,199	$3,625	$3,003	$3,564	$4,158
2010	$3,835	$3,524	$3,794	$4,249	$3,870	$3,161	$3,763	$4,294
2011	$3,761	$3,734	$3,736	$4,040	$3,786	$3,219	$3,727	$4,288
2012	$4,049	$3,888	$3,933	$4,343	$3,762	$3,189	$3,708	$4,266

Source: Urban Institute analysis of Integrated Postsecondary Education Data System and USDA data.
Notes: USDA = US Department of Agriculture. Price of food is measured as the price of 14 meals away from home, for 30 weeks, for the institution's region. Weighted by dorm capacity.

TABLE A.4B

Inflation-Adjusted Board Charges, Relative to Median Prices of Food

Four-year private nonprofit institutions, weighted by room capacity

	USDA Food Price				Typical Board Charge			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1998	$3,820	$3,465	$3,623	$4,478	$3,781	$3,219	$3,770	$4,350
1999	$3,897	$3,647	$3,680	$4,504	$3,831	$3,300	$3,834	$4,445
2000	$3,897	$3,557	$3,734	$4,543	$3,911	$3,353	$3,850	$4,430
2001	$3,897	$3,761	$3,843	$4,399	$3,938	$3,350	$3,926	$4,513
2002	$3,978	$3,824	$3,881	$4,615	$4,053	$3,477	$4,037	$4,673
2003	$4,111	$3,752	$3,948	$5,025	$4,119	$3,593	$4,113	$4,727
2004	$4,345	$3,893	$4,226	$5,167	$4,139	$3,615	$4,125	$4,725
2005	$4,493	$4,252	$4,284	$5,325	$4,187	$3,630	$4,199	$4,719
2006	$4,107	$3,848	$4,394	$4,418	$4,260	$3,729	$4,229	$4,838
2007	$4,061	$3,915	$4,309	$4,359	$4,314	$3,762	$4,332	$4,907
2008	$3,720	$3,709	$3,766	$4,113	$4,328	$3,775	$4,347	$4,906
2009	$3,995	$3,663	$3,972	$4,660	$4,497	$3,953	$4,510	$5,069
2010	$3,987	$3,524	$3,866	$4,719	$4,611	$4,033	$4,602	$5,232
2011	$3,891	$3,736	$3,787	$4,408	$4,592	$4,000	$4,557	$5,223
2012	$4,066	$3,888	$3,933	$4,228	$4,662	$4,079	$4,635	$5,253

Source: Urban Institute analysis of Integrated Postsecondary Education Data System and USDA data.
Notes: USDA = US Department of Agriculture. Price of food is measured as the price of 14 meals away from home, for 30 weeks, for the institution's region. Weighted by dorm capacity.

TABLE A.5A

Inflation-Adjusted Published Price and Revenue per First-Time, Full-Time Student

Four-year public institutions

	Sticker Price				Estimated Revenue per Student			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2006	$15,089	$10,821	$14,668	$17,977	$13,448	$9,697	$13,010	$16,268
2007	$15,294	$11,294	$14,909	$18,260	$13,521	$10,136	$13,012	$16,382
2008	$15,589	$11,526	$15,329	$18,609	$13,716	$10,136	$13,377	$16,431
2009	$16,635	$12,281	$16,329	$20,073	$14,592	$10,796	$14,288	$17,700
2010	$17,588	$13,062	$16,760	$21,237	$15,371	$11,452	$14,671	$18,812
2011	$18,254	$13,582	$17,288	$21,895	$15,863	$12,217	$15,335	$19,163
2012	$18,791	$14,265	$17,847	$22,340	$16,220	$12,073	$15,678	$19,625
2013	$19,112	$14,195	$18,380	$23,070	$16,353	$12,098	$15,743	$20,065
2014	$19,445	$14,574	$18,277	$23,556	$16,523	$12,369	$15,889	$20,012

Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Notes: Four-year private institutional data are available only for institutions with a tradition of requiring full-time students to live on campus in their first year. Sticker price is the estimated average per student price, including tuition, fees, room, and board. Weighted by number of first-time, full-time degree-seeking students.

TABLE A.5B

Inflation-Adjusted Published Price and Revenue per First-Time, Full-Time Student

Four-year private nonprofit institutions

	Sticker Price				Estimated Revenue per Student			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2006	$36,007	$28,233	$35,673	$45,578	$26,125	$20,050	$25,598	$32,958
2007	$36,577	$28,615	$36,536	$46,551	$26,255	$19,934	$25,650	$33,308
2008	$37,614	$29,604	$37,762	$47,489	$26,212	$19,852	$25,586	$32,403
2009	$39,128	$30,633	$39,275	$49,221	$26,571	$20,114	$25,584	$32,706
2010	$40,261	$31,906	$40,619	$50,279	$27,117	$20,598	$26,290	$33,883
2011	$40,677	$32,256	$41,077	$50,969	$27,232	$20,610	$26,285	$33,760
2012	$41,540	$33,088	$42,201	$52,070	$27,486	$20,704	$26,316	$34,584
2013	$42,810	$34,073	$43,703	$53,781	$28,006	$20,767	$26,517	$35,232
2014	$43,584	$34,948	$44,232	$54,921	$28,230	$21,047	$26,890	$35,685

Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Notes: Four-year private institutional data are available only for institutions with a tradition of requiring full-time students to live on campus in their first year. Sticker price is the estimated average per student price, including tuition, fees, room, and board. Weighted by number of first-time, full-time degree-seeking students.

TABLE A.6

Ratio of Revenue to Expenditures on Auxiliary Enterprises

	Four-Year Public Institutions				Four-Year Private Nonprofit Institutions			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1990	1.01	0.94	0.99	1.07	1.19	1.01	1.10	1.26
1991	0.99	0.95	0.99	1.02	1.23	1.01	1.11	1.28
1992	0.98	0.97	1.00	1.03	1.21	1.01	1.13	1.31
1993	1.00	0.97	1.01	1.03	1.21	1.02	1.14	1.32
1994	0.99	0.97	0.99	1.03	1.23	1.02	1.16	1.35
1995	0.98	0.96	0.99	1.01	1.26	1.02	1.17	1.36
1996	1.00	0.96	1.00	1.02	1.27	1.03	1.20	1.38
1997	0.99	0.96	1.00	1.02	1.26	1.02	1.18	1.38
1998	0.99	0.96	1.01	1.03	1.19	0.98	1.13	1.29
1999	1.00	0.97	1.01	1.02	1.19	0.99	1.14	1.31
2000	1.03	0.95	1.00	1.05	1.24	1.00	1.15	1.34
2001	0.98	0.94	0.98	1.02	1.24	0.98	1.14	1.35
2002	1.17	0.99	1.14	1.23	1.22	0.97	1.13	1.34
2003	1.19	1.01	1.13	1.21	1.20	0.96	1.13	1.33
2004	1.22	1.03	1.15	1.24	1.23	0.98	1.15	1.34
2005	1.19	1.00	1.15	1.26	1.22	0.98	1.14	1.35
2006	1.21	1.04	1.13	1.23	1.23	0.98	1.17	1.36
2007	1.23	1.02	1.15	1.23	1.22	0.99	1.18	1.36
2008	1.10	0.95	1.12	1.20	1.21	0.99	1.18	1.36
2009	1.08	0.94	1.12	1.17	1.27	0.99	1.19	1.38
2010	1.00	0.90	1.00	1.10	1.28	1.03	1.22	1.43
2011	1.00	0.90	1.00	1.08	1.37	1.04	1.22	1.43
2012	1.00	0.93	1.03	1.10	1.31	1.04	1.24	1.47
2013	0.99	0.89	0.97	1.09	1.32	1.04	1.26	1.51
2014	1.00	0.89	0.97	1.10	1.32	1.05	1.28	1.51
2015	1.01	0.89	0.98	1.11	1.38	1.05	1.29	1.55

Source: Urban Institute analysis of Integrated Postsecondary Education Data System data.
Notes: Ratios for public institutions are aggregated to the state level. Weighted by room capacity.

TABLE A.7A

Percentage Change in Tuition and Fees and Typical Room and Board Charges

Four-year public institutions

	Change in Tuition				Change in Room and Board			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1991	9.2%	1.9%	5.1%	9.9%	1.6%	-0.4%	1.8%	3.4%
1992	7.5%	2.1%	5.3%	10.9%	2.3%	0.1%	1.8%	3.6%
1993	5.1%	1.5%	3.9%	7.8%	1.3%	-0.8%	1.0%	2.9%
1994	3.4%	1.0%	2.6%	4.9%	1.6%	0.0%	1.4%	2.9%
1995	3.6%	0.4%	2.2%	4.5%	1.3%	-0.1%	1.3%	3.0%
1996	1.7%	-0.6%	0.9%	2.6%	0.3%	-0.8%	0.3%	1.4%
1997	2.7%	0.5%	1.9%	4.5%	2.3%	0.7%	1.9%	3.6%
1998	2.1%	0.5%	2.1%	3.8%	2.6%	0.6%	1.9%	4.2%
1999	1.3%	-1.5%	1.8%	3.6%	3.2%	0.8%	2.3%	5.0%
2000	2.4%	-0.5%	1.3%	3.8%	2.8%	0.0%	1.2%	3.1%
2001	4.0%	0.5%	3.2%	6.1%	3.2%	0.9%	2.1%	4.1%
2002	8.3%	3.9%	6.8%	11.9%	3.8%	2.1%	3.6%	5.7%
2003	11.8%	5.1%	10.2%	16.2%	3.8%	1.0%	2.9%	4.6%
2004	7.6%	2.7%	6.0%	9.9%	1.9%	0.1%	1.4%	3.3%
2005	4.1%	1.2%	3.2%	5.9%	2.8%	0.1%	1.6%	4.0%
2006	3.4%	0.8%	3.2%	5.8%	2.9%	1.0%	2.4%	4.5%
2007	3.2%	0.5%	2.6%	5.3%	2.2%	0.0%	1.5%	3.7%
2008	2.8%	0.3%	2.4%	5.1%	2.0%	0.1%	1.4%	3.1%
2009	7.7%	3.8%	5.9%	9.7%	5.2%	3.4%	5.0%	6.6%
2010	6.9%	3.2%	4.8%	8.9%	5.6%	1.8%	3.3%	4.9%
2011	3.9%	1.0%	2.5%	5.6%	0.5%	-1.4%	0.1%	1.6%
2012	2.8%	1.0%	2.4%	4.1%	1.6%	0.3%	1.5%	2.8%
2013	2.3%	-0.1%	1.9%	3.8%	2.5%	0.9%	2.3%	3.7%
2014	1.1%	-1.3%	0.6%	2.6%	1.3%	-0.5%	1.1%	2.3%
2015	3.1%	0.8%	2.9%	4.8%	3.6%	1.9%	3.1%	4.3%

Source: Urban Institute analysis of Integrated Postsecondary Data System data.
Notes: Weighted by room capacity.

TABLE A.7B

Percentage Change in Tuition and Fees and Typical Room and Board Charges

Four-year private nonprofit institutions

	Change in Tuition				Change in Room and Board			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
1991	4.3%	2.5%	3.6%	5.1%	1.3%	0.7%	1.9%	3.5%
1992	4.8%	2.7%	3.7%	4.9%	1.6%	0.1%	2.0%	3.4%
1993	3.6%	2.3%	3.2%	4.7%	1.7%	0.0%	1.5%	2.9%
1994	3.7%	2.4%	3.3%	4.6%	1.8%	0.5%	1.8%	3.0%
1995	3.3%	2.1%	2.9%	4.2%	1.6%	0.4%	1.6%	2.8%
1996	2.4%	1.1%	1.8%	3.1%	0.6%	-0.5%	0.7%	1.6%
1997	3.1%	2.0%	2.9%	3.8%	1.6%	0.7%	1.9%	2.9%
1998	3.2%	1.8%	2.6%	3.6%	1.9%	0.2%	1.4%	2.4%
1999	3.2%	1.7%	2.7%	3.9%	1.8%	0.2%	1.5%	2.8%

	Change in Tuition				Change in Room and Board			
	Average	25th percentile	50th percentile	75th percentile	Average	25th percentile	50th percentile	75th percentile
2000	2.1%	0.9%	1.7%	2.8%	1.4%	0.1%	1.0%	2.2%
2001	2.6%	1.2%	2.0%	3.4%	1.7%	0.3%	1.2%	2.4%
2002	4.6%	3.0%	3.8%	5.0%	3.5%	1.8%	2.9%	4.2%
2003	9.1%	2.5%	3.4%	4.6%	2.2%	1.1%	2.2%	3.5%
2004	3.0%	1.6%	2.5%	3.6%	1.5%	0.2%	1.4%	2.4%
2005	2.8%	1.5%	2.5%	3.6%	1.5%	0.2%	1.2%	2.3%
2006	4.1%	2.4%	3.3%	4.5%	2.3%	1.1%	2.2%	3.4%
2007	3.0%	1.6%	2.4%	4.0%	1.3%	0.1%	1.1%	2.3%
2008	2.2%	1.2%	2.0%	2.9%	1.3%	0.3%	1.1%	2.2%
2009	4.5%	3.6%	4.3%	5.1%	4.6%	3.0%	4.0%	5.3%
2010	4.1%	2.7%	3.3%	4.1%	3.3%	2.1%	3.0%	3.9%
2011	0.7%	-0.1%	0.4%	1.3%	0.3%	-0.9%	-0.1%	0.7%
2012	4.8%	1.6%	2.0%	2.9%	1.7%	1.0%	1.8%	2.6%
2013	2.8%	2.0%	2.9%	3.5%	2.3%	1.5%	2.4%	3.0%
2014	1.4%	0.9%	1.6%	2.1%	1.3%	0.4%	1.2%	2.0%
2015	3.4%	3.0%	3.5%	4.0%	3.4%	2.5%	3.3%	4.1%

Source: Urban Institute analysis of Integrated Postsecondary Data System data.
Notes: Weighted by room capacity.

Notes

1. Author's calculation from the National Postsecondary Student Aid Study, 2011–12.
2. Danielle Douglas-Gabriel, "College Costs Rising Faster than Financial Aid, Report Says," *Washington Post*, October 26, 2016, https://www.washingtonpost.com/news/grade-point/wp/2016/10/26/college-costs-rising-faster-than-financial-aid-report-says/?utm_term=.540ed5e84a58.
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14. The number of available beds on campus was measured by the "room capacity" variable in IPEDS. Room capacity is measured as institutionally controlled on- or off-campus housing. We acknowledge that this variable may include housing for graduate students or faculty in certain cases (though we restricted to FTE undergraduate students if room capacity was greater than FTE students).

15. Previous research has identified weaknesses in the Delta Cost Project dataset for the analysis of public institutions (Jaquette and Parra 2016). To account for issues in relating system-level expenditures to institutional room and board charges, we collapse IPEDS and Delta Cost data on four-year public institutions to the state level. We weight institution-level charges by room capacity and estimate expenditures per FTE undergraduate by using state-level aggregate numbers.

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18. Also known as the Consumer Price Index for All Urban Consumers (CPI-U).

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26. Net price has been calculated for seven years of incoming students, but the income categories for net price have not been adjusted for inflation. We note that, all else equal, we might expect students in the earlier cohorts to have slightly higher inflation-adjusted net prices relative to students in later cohorts who are in the same income group. For example, in inflation-adjusted terms, students in the lowest family income group in the 2008–09 cohort have reported family incomes that range from $0 to about $34,130, adjusted for inflation relative to the 2014–15 cohort (using an inflation adjustment from the year before enrollment, i.e., 2007 to 2013 dollars). An individual student's net price is a function of many factors (e.g., assets, family size) beyond family income. Although inflation adjustment in these categories may be a concern for longer-term estimates

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