NATIONAL MULTIFAMILY HOUSING COUNCIL

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The Future of U.S. Student Housing Demand

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About NMHC

Based in Washington, DC, 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 (defined here as a building with five or more units). For more information, contact NMHC at 202/974-2300, email the Council at info@nmhc.org, or visit NMHC's website at www.nmhc.org.

About the NMHC Research Foundation

In 2016, NMHC formed a non-profit 501(c)(3) research foundation to produce research that will further support the apartment industry's business interests. The work supported by the NMHC Research Foundation raises the industry's standard of performance and encourages worldwide investment in the sector.

The NMHC Research Foundation funds unique and original research on a wide range of topics, including issues related to development and redevelopment activity, affordable and workforce housing, demographics, tax policy, regulatory environment and zoning and land use, among others.

In 2018, NMHC formed the Student Housing Research Fund as part of the NMHC Research Foundation to conduct research focused on the student housing industry to address the paucity and narrowness of research in the industry.

For more information, visit www.nmhc.org/Research-Foundation.

About the Authors

This white paper was prepared by Eigen 10 Advisors, LLC, which provides commercial real estate consulting services in the areas of market and investment analyses, capital formation, investor communications, asset and partner due diligence, portfolio strategy and data analytics.

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Executive Summary

The U.S. institutional student housing market has been a source of consistent demand for real estate investors, supported by steady enrollment in four-year public universities throughout the business cycle. But as the millennial generation gets older, the college-aged population (18-24) has declined, putting downward pressure on enrollment growth. (We expect the number of 18- to 24-year-olds enrolled in post-secondary education to decline slightly in 2020). Yet, over a longer time horizon—from 2020 to 2031—we estimate that enrollment in post-secondary schools will increase annually by 1.1% on average. Even in the face of a more challenging demographic environment, there will still be pockets of opportunity for the more discerning investor.

In this paper, we forecast future student housing demand in order to distinguish between those segments of the industry that are likely to continue to thrive in the coming years and those that face higher levels of risk. To do so, we employ a unique methodology that incorporates population projections from the Census Bureau, employment growth projections by sector from the Bureau of Labor Statistics (BLS) and enrollment rate trends from the National Center for Education Statistics (NCES).

We estimate the student housing market will grow from a total of 8.5 million beds in 2020 to 9.2 million by 2031 (an increase of 734,000 beds), or an average annual increase of 0.8% per year, and that most of that growth will take place in public four-year universities. We project undergraduate beds at those institutions to increase by 448,000 from 2020 through 2031, with another 112,000 needed for graduate students. At private four-year universities, however, we expect the demand for new beds to primarily come from graduate programs, where an additional 96,000 beds will be needed. At public two-year universities, meanwhile, which have experienced more volatile growth than their four-year counterparts, we expect a need for an additional 79,000 beds from 2020 to 2031.

We expect enrollment growth to vary widely by geography. Absent in-migration, Texas has, by far, the largest growing young population—we expect its college-aged population to increase by 101,196 from 2020 to 2031—followed distantly by Nevada (+27,996) and Washington (+14,762). Meanwhile, the youth population in the New England states is declining, which means high quality schools in this region will need to continue to draw from a wide geographic area, and lower quality schools in the region may struggle with a shrinking population.

Looking forward, the student population will also become more diverse. Hispanic students will account for two-thirds of enrollment growth, totaling almost a million of the new students through 2031. Another 144,000, or 10% of total growth, will be Asian, followed by 137,000 (9% of growth) in the “other” category, which includes American Indian/Alaska Native (AIAN), Asian, Native Hawaiian and Other Pacific Islander (NHPI) and 2+ races (all respondents who selected more than one race).

There are several other factors that may benefit institutional student housing operators in the future. They include:

- Post-baccalaureate enrollment may increase more than expected given employment demand for highly educated persons and the large millennial population that is now graduate-school aged.

- The COVID-19 pandemic is highlighting the need for healthier buildings. Larger institutional owners may be better positioned than smaller non-institutional owners to integrate new technology offered by hundreds of companies to create healthy buildings.

- Off-campus properties with better bed-bath parity and single occupancy rooms, which are typical in institutional student housing, are already in demand as universities de-densify on-campus housing in the near-term.

- Universities suffering from reduced revenues due to the 2020 recession may pursue more public-private housing programs to improve building quality as part of their efforts to compete for students.

- Student housing investors will increasingly need to analyze university business models as well as market demographics as college-aged demographic growth slows. This may favor more sophisticated investors.

Population Projections

Population projections are one of the primary drivers of student housing demand. The U.S. Census Bureau provides forward estimates of the U.S. population by single year of age, sex, race and Hispanic origin from 2016 to 2060. The data are generally released every three years. The most recent data were produced in 2017 and updated in 2018 using 2016 population estimates. To produce the population projections, the U.S. Census Bureau models assumptions about fertility, mortality and immigration rates.

Age-specific fertility rates are estimated and projected for women aged 14 to 54 in six nativity, race and Hispanic origin groups using birth registration data compiled by the National Center for Health Statistics (NCHS) in conjunction with data from the Census Bureau's Intercensal Estimates, Decennial Censuses, and the American Community Survey (ACS) Immigration forecasts. Fertility rates for minority sectors are projected by the Census Bureau to become more similar to the U.S.-born white fertility rates by 2060. For example, the foreign-born Hispanic fertility rate will fall from a peak of near 16% in 2017 to just under 14% in 2060, although that is still above the peak rate of around 11% for U.S.-born white.[1]

The Census Bureau also models life expectancy and mortality rates by sex, age, race and Hispanic origin. Mortality rates in the 18- to 24-year-old age group are extremely small, in the 0.1% range with slightly higher rates for males in non-Hispanic Black/American Indian and Alaska Native (AIAN) groups, with slightly lower rates for all segments of the female population. The Census Bureau projects that mortality rates will fall below 0.1% for all segments of the 18- to 24-year-old U.S. population by 2060, including U.S.- and foreign-born.[2]

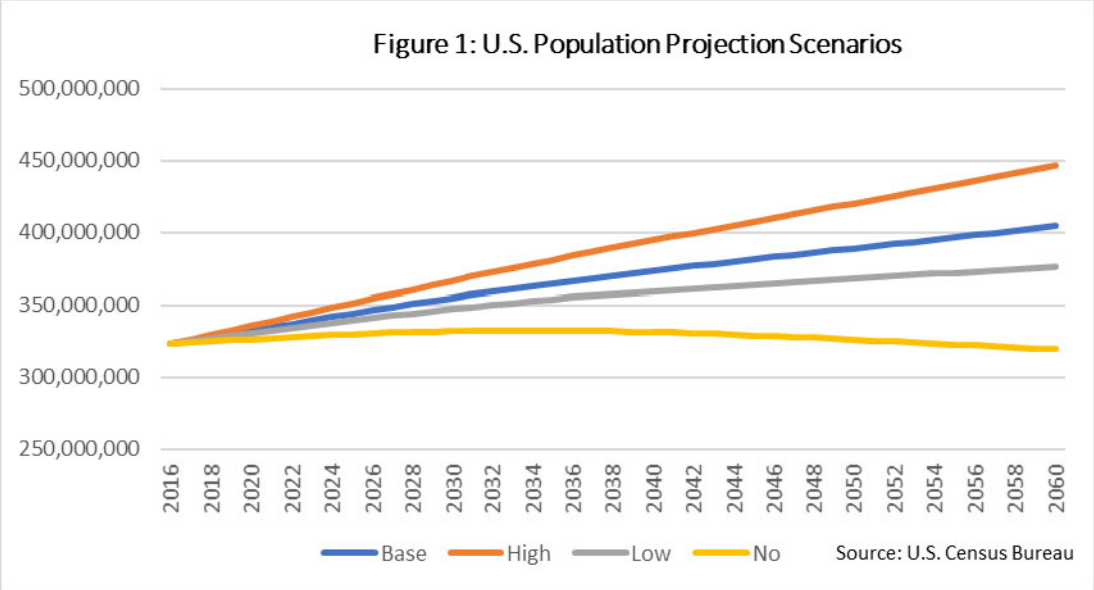
The most uncertain element of the Census Bureau assumptions underlying their projections is immigration, as it can be volatile and heavily influenced by political policies. Thus, the Census Bureau creates four population projection scenarios using varying immigration scenarios (see Figure 1).[3] Since 2004, Asia has been by far the largest, and still increasing, source of immigration to the U.S. According to the Census Bureau, the largest amount of immigration through 2060 will continue to come from Asia,[4] followed by Mexico, Latin America/the Caribbean, and Europe. From 1990 to 2004, Mexico was the largest source of U.S. immigrants, but those rates plummeted after 2004.

For the base case population projection, the Census Bureau estimates an emigration rate by dividing the number of immigrants by the estimated population in that region for the years 1980 to 2014. The emigration rate is projected into the future using a linear model. Projected immigrants to the U.S. are calculated by multiplying the projected emigration rate from the sending region by the Census Bureau's projected population for that year. Net international migration rates were calculated by subtracting the U.S.-born population emigrating out of the

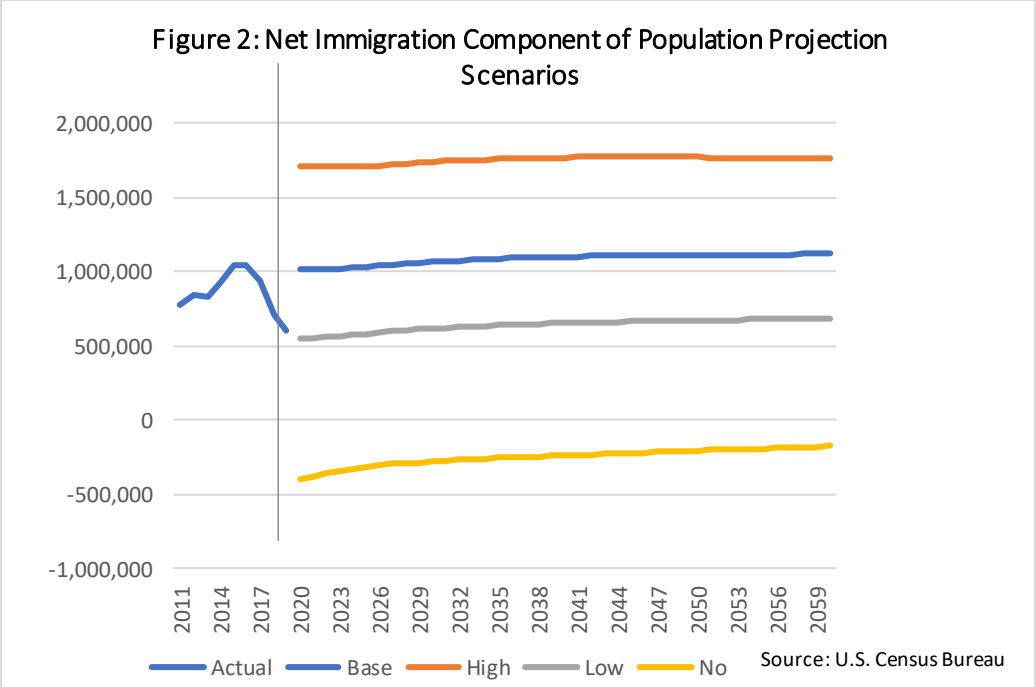
United States (using the Census Bureau 2014 projections by age, sex, race and Hispanic origin) from the above immigrants.

In terms of growth rates, sub-Saharan Africa is projected to be the fastest growing region, eventually surpassing Europe as a top-sending region after 2055.[5] The immigrant population projection is further allocated by race and Hispanic origin. Nearly 40% of foreign-born immigrants are Hispanic, followed by Non-Hispanic Asian at nearly 30%.[6] Non-Hispanic Black are projected to increase from 10% of the foreign-born immigrants in 2016 to over 15% by 2060.[7]

The Census Bureau then creates three alternative scenarios based on changing immigration assumptions.[8] The "high-immigration scenario" increases the base immigration scenario by 50%. A "low-immigration series" was calculated using log symmetry of the high series.[9] Finally, a "no-immigration scenario" was calculated by setting all foreign-born immigration values to zero. In the base projection, the U.S. population is expected to increase by an average annual rate of 0.7% from 2019 to 2031. That increases to 0.9% in the high scenario; it falls to 0.5% in the low scenario and 0.2% in the no-immigration scenario.



Actual net immigration from 2011 to 2019 has been volatile and ranges between the "base" and "low" Census Bureau forecasts (see Figure 2). We thus use an average of the Census Bureau Base and low population projection for this analysis, assuming a general population increase of 0.6% per year on average from 2019 to 2031.

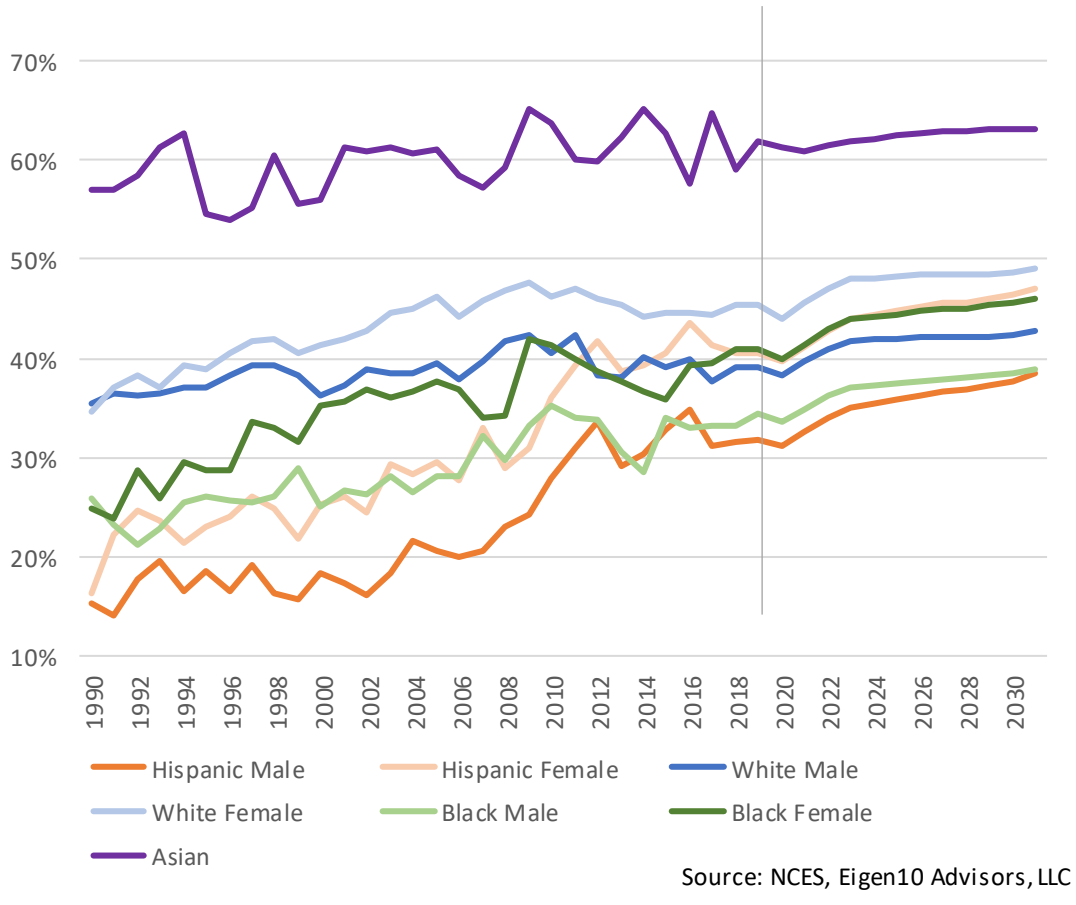


We began by calculating the average of the Census Bureau "base" and "low" scenarios for single year of age population estimates for male and female Hispanic, Non-Hispanic white and Non-Hispanic Black sectors for each year from 2019 to 2031, as well as for AIAN (American Indian/Alaska Native), Asian, NHPI (Native Hawaiian and Other Pacific Islander) and 2+ Races categories. We then sum the single-year age estimates from ages 18 through 24 for each category to produce an estimated total population of 18- to 24-year-olds for each category for each year from 2019 to 2031.

As discussed in a separate paper,[10] the millennials, now 24- to 40-years-old, are the largest population cohort in the U.S. Comprising 71.2 million people, they were a driving force in university enrollments from 2000 to 2010. As the Millennials are now generally past college age, they are followed by a smaller age cohort (Gen Z) and growth in overall school enrollment rates are slowing. Absent new in-migration, the U.S. college-aged population will shrink over the next 15 years. In fact, the college-aged population already began shrinking about 10 years ago.

The National Center for Education Statistics (NCES) calculates post-secondary enrollment rates by race and Hispanic origin for 18- to 24-year-olds from 1970 to 2018,[11] as shown in Figure 3. The Asian[12] sector consistently has the highest enrollment rates, hovering near 60% enrollment. White females have the next highest rate, averaging 45% in 2018, which is down from a peak of nearly 48% in 2009. Hispanic and Black enrollment for both sexes has been historically lower than the white and Asian sectors. However, both Black and Asian enrollment rates have increased significantly over the past two decades, particularly for women. In fact, Black and Hispanic females now have slightly higher enrollment rates than white males, but lower rates than white females.

Figure 3: Post-Secondary Enrollment Rates by Race and Hispanic Origin



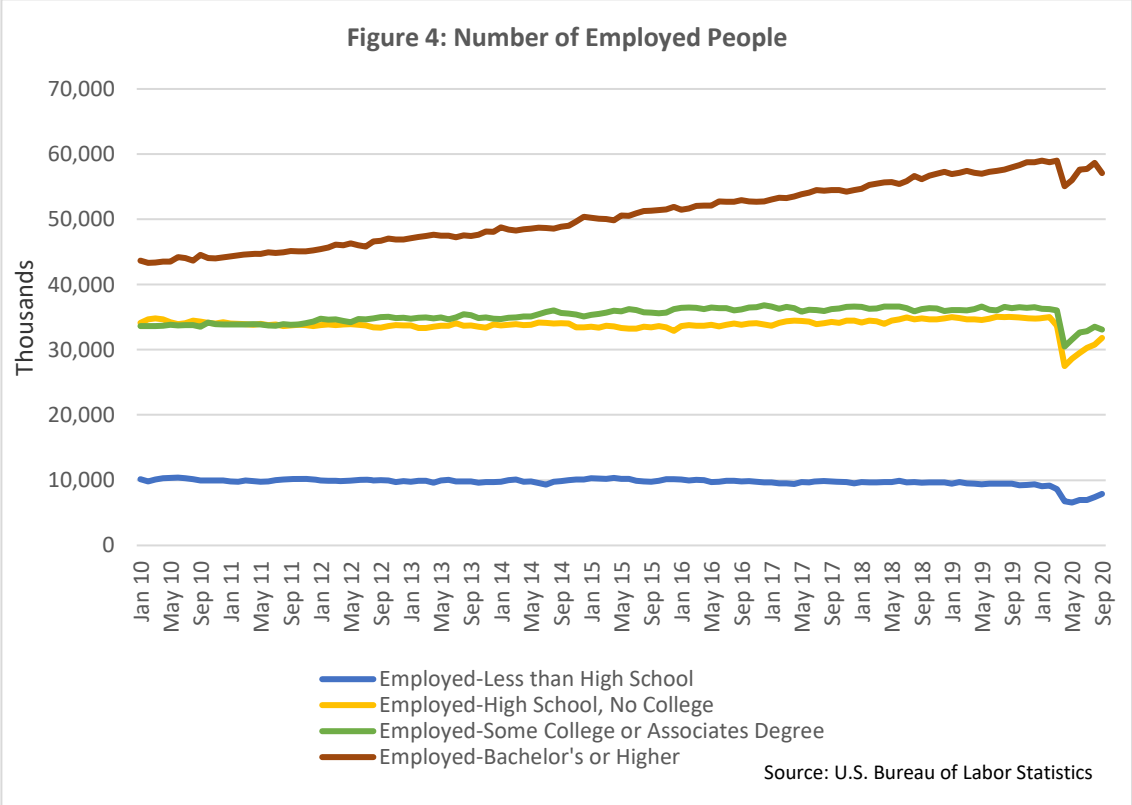
Source: NCES, Eigen10 Advisors, LLC

We assume that post-secondary enrollment rates will continue to increase slightly over the forecast horizon to a rate that is near the 2009 peak. Under our forecast, white female enrollment increases to 49% by 2031, slightly higher than the 48% historic peak in 2009, and Asian enrollment increases to 63%.[13] We assume that the gap between Hispanic and Black enrollment rates and white enrollment rates continue to narrow at a similar pace as has occurred during the past economic cycle since 2010.

Our forecast shows, however, that an educational gap will remain through 2031 because of income disparities in the Hispanic and Black population base as discussed in a previous paper.[14] We also assume a slight decline in enrollment in 2020 due to deferments caused by the 2020 COVID-19 pandemic. Data from the National Student Clearinghouse Research Center shows undergraduate enrollment is down 4.4% for fall 2020 compared to 2019, and overall post-secondary enrollment is down 3.3%.[15] Similar enrollment rates were projected for the other race segments, although they are not shown in the above graph because of the small size of those

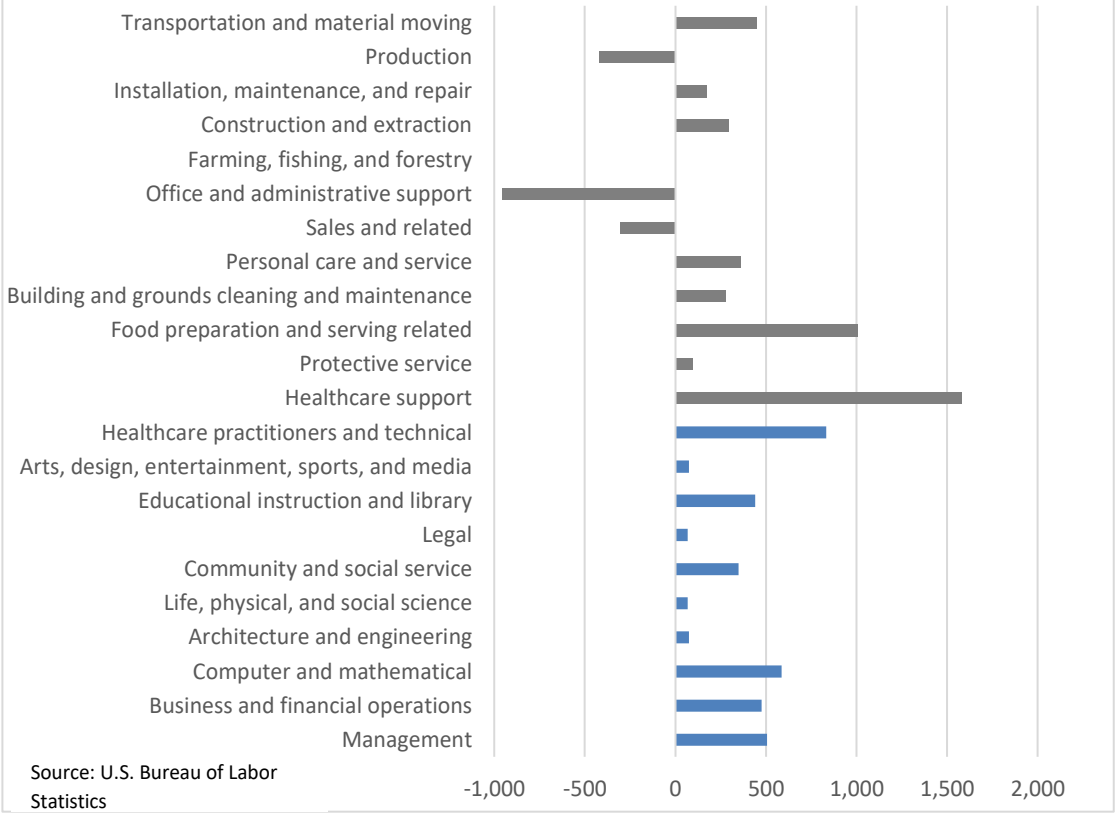
sectors. Note that enrollment rates for AIAN and NHPI sectors are low, averaging 27.6% and 33.3% respectively from 2009 to 2018 as compared to 39.9% for the 2+ races segment.

One factor correlated to higher post-secondary educational enrollment rates is an increasing need for educated employees. For example, job growth since 2010 has been created almost entirely through jobs that require a bachelor's degree or higher, as shown in Figure 4. In addition to improved earnings,[16] these jobs were also more resilient to economic stress created by the 2020 COVID-19 pandemic, as unemployment rates for people with a bachelor's degree or higher peaked at only 8.4% in April 2020, as compared to 21.2% for those with less than a high school diploma.[17]



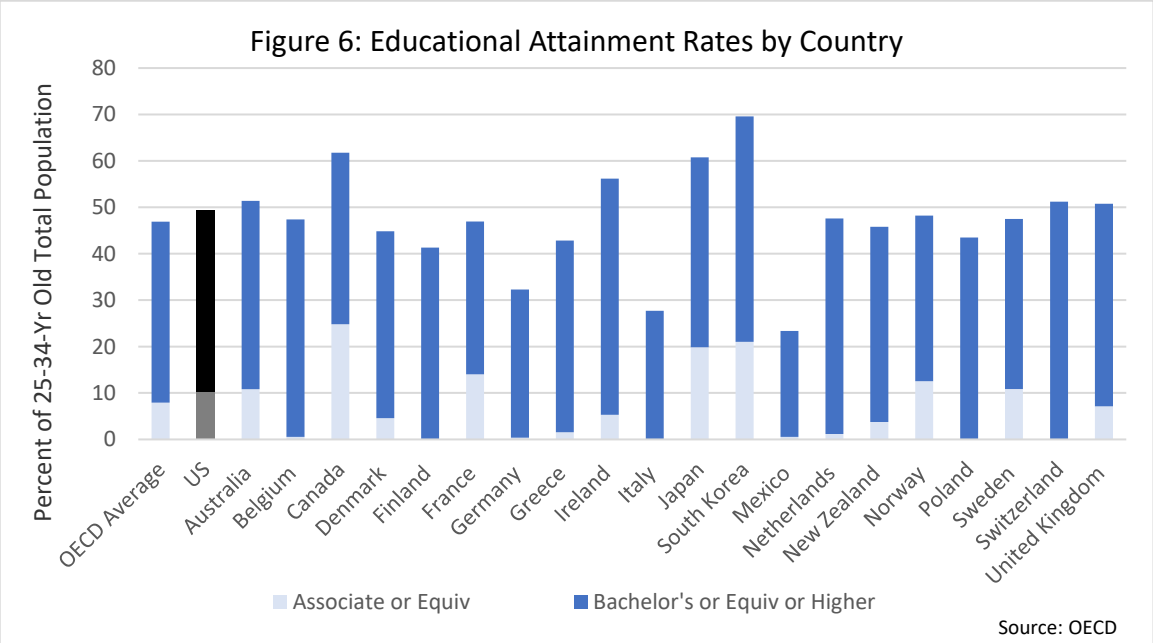
The U.S. Bureau of Labor Statistics (BLS) Occupational data also indicates further need for jobs that require a college degree going forward as the structure of the U.S. labor force continues to change. BLS projections indicate net job losses through 2029 only in areas that have a higher proportion of non-college-educated occupations (as indicated in the gray bars in Figure 5). This includes areas such as production, sales, and office and administrative support. Conversely, positive net job growth is forecast across all sectors that have higher proportions of college-educated occupations (as indicated in the blue bars in the graph). However, note that the two largest projected growth sectors are expected to be in healthcare support and food preparation, both generally low-paying sectors that do not require four-year college degrees.

Figure 5: Employment Change 2019-2029 (000)



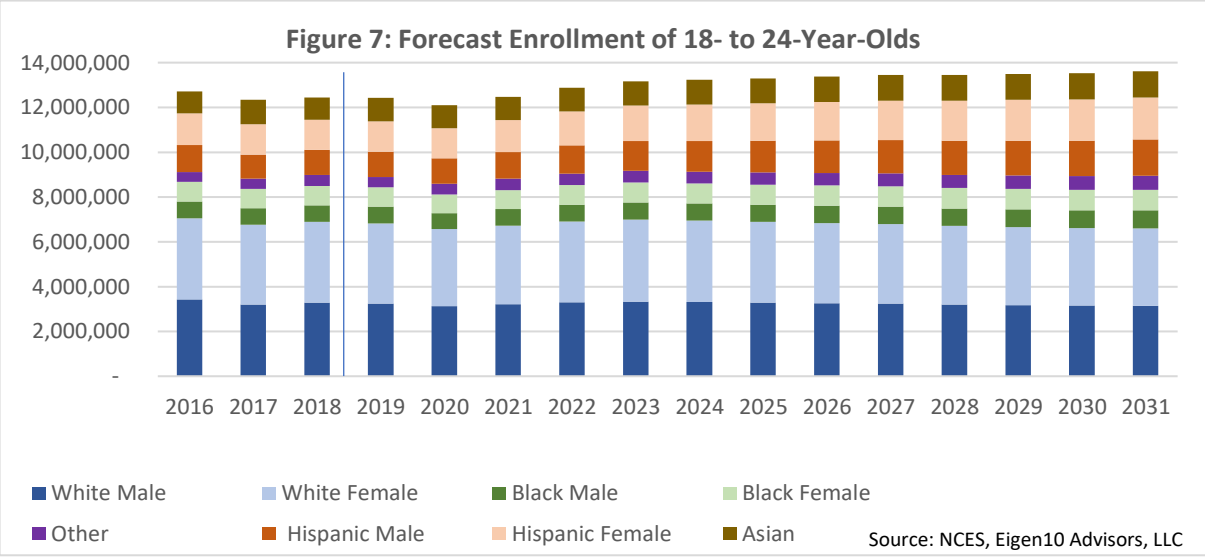
Source: U.S. Bureau of Labor Statistics

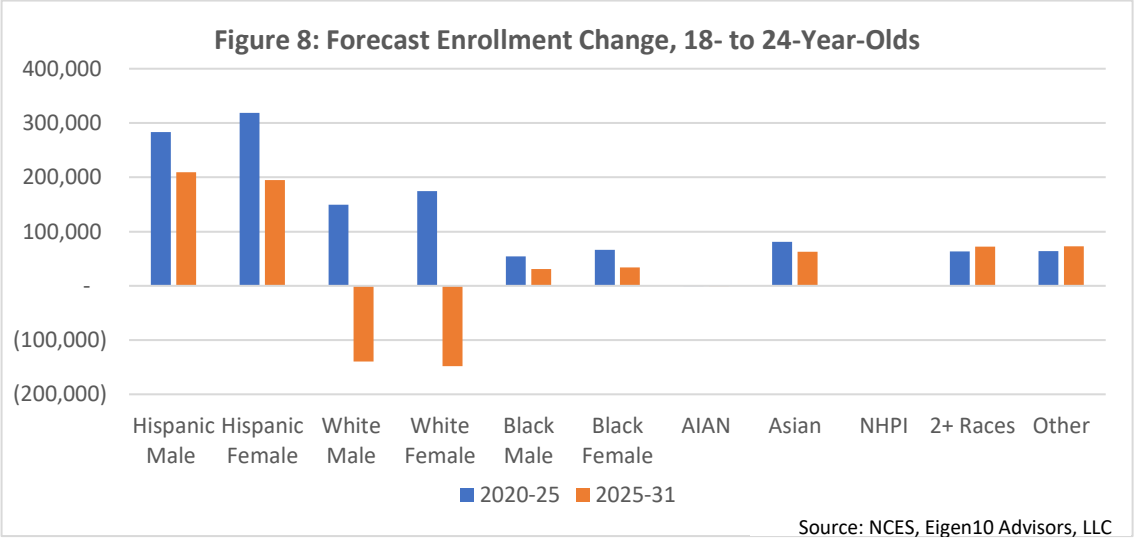
In addition, although U.S. educational attainment rates have been rising, the U.S. does not currently have the highest educational attainment rates globally.[18] As shown in Figure 6, 49% of 25- to 34-year-olds in the U.S. have attained an associate degree equivalent or higher, compared to over 60% in Canada, Japan and South Korea.[19] Meanwhile 39% of U.S. 25- to 34-year-olds have a bachelor's degree or higher, similar to the Organisation for Economic Co-operation and Development (OECD) overall average, but lower than Australia, Belgium, Denmark, Finland, Greece, Ireland, the Netherlands, New Zealand, Poland, Switzerland and the U.K. Thus, there is certainly precedent in other countries for higher educational attainment rates.



Enrollment Projections

To estimate demand for post-secondary education enrollment, we first applied the forecast enrollment rate for each sector to the 18- to 24-year-old population forecasted for that sector for each year from 2019 to 2031. As shown in Figure 7, enrollment of 18- to 24-year-olds is expected to decline slightly in 2020, then increase by an average annual rate of 1.1% from 2020 to 2031, resulting in an increase of 1.445 million students.





As of 2018, the last year of data provided by NCES, the 18- to 24-year-old post-secondary student population was 55% white, 20% Hispanic, 13% Black, 8% Asian and 4% Other. **Between now and 2031, two-thirds of enrollment growth through 2031 will be Hispanic, accounting for almost one million new students** (see Figure 8)**.** The large increase is due to expected increases in both population overall and enrollment rates as the Hispanic population continues to increase educational attainment closer to the white population.

Another 10% (144,000 of the new students) will be Asian, followed by 9% (137,000) in Other, which includes NHPI, AIAN[20] and 2+ Races. The white sector is projected to grow through 2025, but then decline by an almost equal amount through 2031, resulting in net growth of only 36,000 or 3% of total growth by 2031. Thus, the largest changes by race will occur in the white sector which drops to 48% of 18- to 24-year-old enrollment by 2031 and the Hispanic sector which increases to 26% of enrollment.

The 18- to 24-year-old sector accounts for 66% of undergraduate students and 59% of total student enrollment in degree-granting post-secondary schools.[21] Thus, we next aggregated population estimates from the Census Bureau's race and Hispanic origin data for 14- to 17-year-olds, 25- to 29-year-olds, 30- to 34-year-olds, and 35- to 44-year-olds[22] for each single year from 2009 to 2018, in the male and female categories. We divided the number of students in the age category by sex from NCES for each year from 2009 to 2018 by the male and female population for each category based on our population estimates, in order to impute an enrollment rate for each category from 2009 to 2018. We applied a rolling five-year average enrollment rate for each age category to the one-year forward estimates of population for each age category to estimate the post-secondary enrollment for the other age categories. The enrollment estimates for each age category were then summed to estimate total post-secondary enrollment for each year from 2019 to 2031.

As of 2018, NCES estimates 7.863 million students aged 25 years or older are enrolled in post-secondary degree-granting organizations, as well as 206,000 students under 18 years old. We estimate that this sector will increase by an annual average pace of 0.3% per year from 2020 to 2031, or a total increase of approximately 241,000 students.

In total, NCES estimates that 19.646 million students are enrolled in degree-granting post-secondary schools as of 2018, the most current year that data is available.[23] Applying our growth rate forecast to the NCES 2018 data, we estimate that enrollment increased in 2019 then declined slightly in 2020 to 19.6 million students, a similar level to 2018. **Enrollment then increases by an annual average rate of 0.8% per year from 2020 through 2031, a total increase of 1.684 million students from 2020 to 2031**.

Note that growth is significantly higher in the 2021 to 2023 time period, averaging 1.8% per year, but then it slows significantly, averaging 0.4% thereafter, reflecting the smaller population cohort discussed earlier. NCES provides forecast enrollment data annually through 2029.[24] Our 2020 estimate is 0.5% lower than NCES, then 1.1% higher than the NCES 2021 estimate and 5.3% higher than the NCES 2029 forecast. Total enrollment forecasts are provided in Table 1.

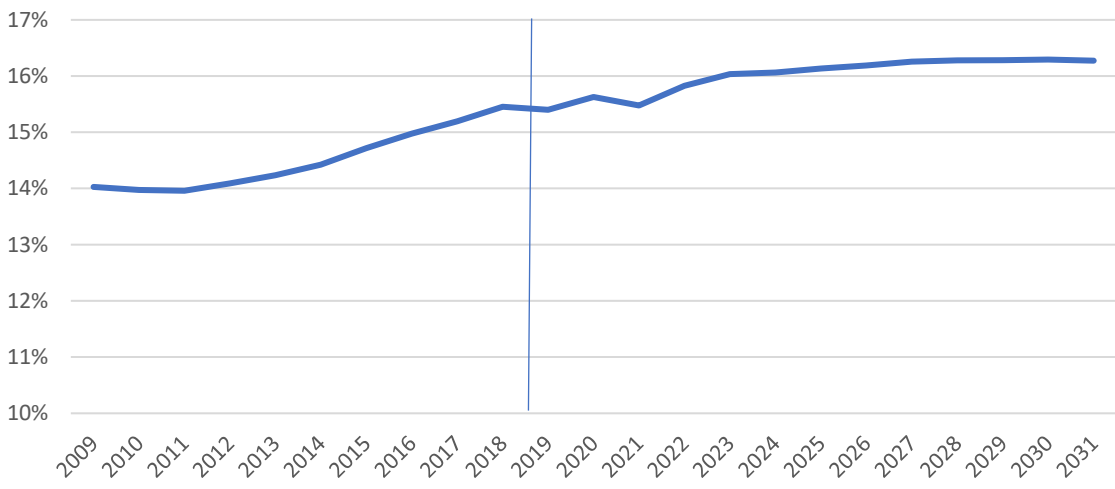
Table 1: Total Enrollment in Degree-Granting Post-Secondary Schools

	14-17 years	18-24 years	25+ years	Total
2009	215,423	11,495,620	8,602,551	20,313,594
2010	202,212	11,918,294	8,898,932	21,019,438
2011	220,682	12,017,624	8,772,284	21,010,590
2012	242,008	11,967,300	8,435,170	20,644,478
2013	256,128	11,866,789	8,253,760	20,376,677
2014	238,541	11,793,068	8,177,483	20,209,092
2015	213,665	11,665,133	8,109,406	19,988,204
2016	213,827	11,677,842	7,955,236	19,846,904
2017	210,069	11,632,617	7,935,465	19,778,151
2018	206,236	11,576,489	7,863,193	19,645,918
2019	204,012	11,901,716	7,866,653	19,972,381
2020	201,654	11,593,439	7,849,923	19,645,016
2021	203,341	11,948,113	7,843,448	19,994,903
2022	203,612	12,335,511	7,856,785	20,395,908
2023	202,993	12,603,989	7,892,274	20,699,255
2024	202,784	12,671,585	7,957,472	20,831,841
2025	200,927	12,734,522	7,969,569	20,905,018
2026	199,321	12,813,824	7,993,772	21,006,917
2027	199,114	12,877,585	8,010,393	21,087,093
2028	199,112	12,880,809	8,032,527	21,112,448
2029	199,166	12,923,847	8,063,211	21,186,225
2030	199,334	12,955,391	8,071,923	21,226,648
2031	200,597	13,038,108	8,090,671	21,329,376
Growth 2020 to 2031				
Total	(1,057)	1,444,669	240,748	1,684,360
Avg rate per annum	0.0%	1.1%	0.3%	0.8%

Source: NCES, Eigen 10 Advisors, LLC

NCES provides historic trends and forecasts of total enrollment in degree-granting post-secondary institutions, broken down by the type of institution.[25] **Baccalaureate enrollment in public four-year institutions has exhibited the steadiest growth of all institution types, increasing by an average of 2.4% per year over both 10-year and 20-year periods ending in 2018.** Private four-year university baccalaureate enrollment declined by an average of 2.3% in the past five years, resulting in flat enrollment over the past 10 years. Both public and private two-year universities lost enrollment over the past 10 years, with significant losses particularly in private two-year universities over the past five years. Graduate student enrollment has continued to increase for both public and private schools, up by an average of 1.1% and 0.7% respectively annually over the past five years.

Figure 9: Post-Baccalaureate Enrollment as a Percentage of Total Students

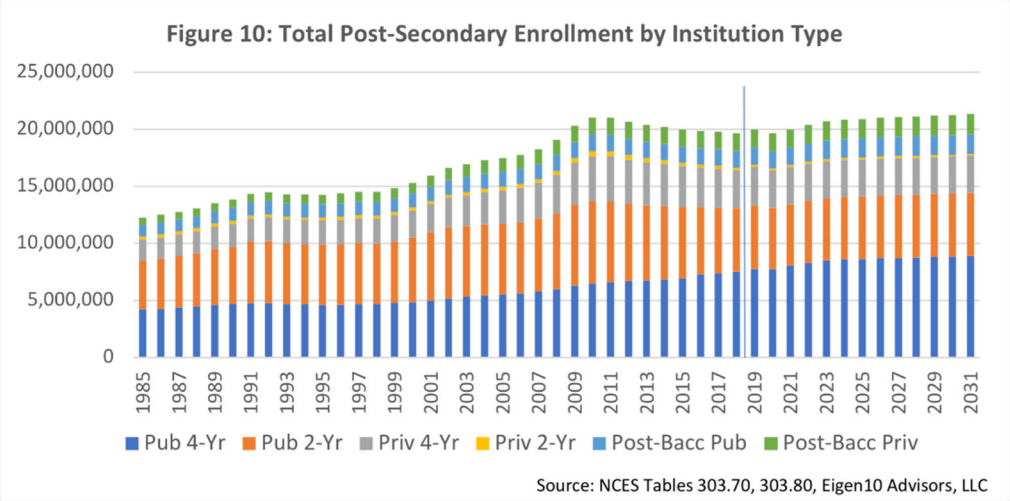


Source: NCES Tables 303.70, 303.80, Eigen10 Advisors, LLC

Post-baccalaureate enrollment as a percentage of total enrollment has risen from 13.5% in 1985 to 15.5% in 2018, with a particularly fast pace of growth since 2011 (see Figure 9). Given job growth trends that increasingly require more highly educated job applicants and the large millennial population that is now typically in the graduate student age range, we predict a continued increase in post-baccalaureate enrollment as a percentage of total enrollment to 16.3% by 2031.

Of total post-secondary enrollment in degree-granting institutions, 38% of students are undergraduates enrolled in public four-year schools. Another 28% are in two-year public schools, 17% are in private four-year schools and 16% are in graduate programs, evenly split between private and public schools. After a slight dip in 2020, total enrollment growth based on population estimates is expected to increase by an average of 0.8% per year through 2031, about half the pace of the past 20 years, primarily due to slower population growth.

Enrollment in four-year public baccalaureate programs is expected to increase by an average annual pace of 1.2% from 2020 to 2031, like the pace of public post-baccalaureate enrollment and slightly higher than post-baccalaureate enrollment in private universities. Enrollment in two-year programs and private four-year programs is expected to remain fairly flat over this time period, an improvement over trends of the past five years that have been highlighted by significant school closures and/or enrollment declines in private for-profit universities as well as some two-year schools. The total enrollment forecast by type of institution is shown in Figure 10.



Enrollment in undergraduate (baccalaureate) public four-year universities, the largest source of institutional student housing demand, is expected to increase by a total of 1.1 million new students by 2031, accounting for two-thirds of enrollment growth. Another 24% of growth, or 400,000 students, is expected to be generated through graduate programs. In total, baccalaureate public four-year enrollment increases from 31% of students in 2010 to 38% in 2018 and 42% in 2031. Total enrollment projections by institution type are shown in Table 2.

Table 2: Total Enrollment Projections by Institution Type							
	Pub 4-Yr	Pub 2-Yr	Priv 4-Yr	Priv 2-Yr	Post-Bacc Pub	Post-Bacc Priv	Total
2009	6,284,806	7,101,569	3,656,792	421,012	1,424,393	1,425,022	20,313,594
2010	6,484,937	7,218,063	3,913,893	465,534	1,439,171	1,497,840	21,019,438
2011	6,626,741	7,068,158	3,939,412	442,992	1,421,404	1,511,883	21,010,590
2012	6,686,035	6,792,065	3,881,763	375,775	1,406,567	1,502,273	20,644,478
2013	6,721,881	6,626,411	3,783,779	344,233	1,398,556	1,501,817	20,376,677
2014	6,846,981	6,397,552	3,732,477	317,126	1,410,127	1,504,829	20,209,092
2015	6,926,519	6,224,304	3,620,693	275,157	1,422,020	1,519,511	19,988,204
2016	7,301,070	5,842,909	3,481,161	249,509	1,441,861	1,530,394	19,846,904
2017	7,395,134	5,717,460	3,425,131	235,311	1,459,145	1,545,970	19,778,151
2018	7,502,622	5,546,704	3,362,405	198,504	1,479,938	1,555,745	19,645,918
2019	7,765,344	5,565,778	3,367,250	198,504	1,500,959	1,574,546	19,972,380
2020	7,752,919	5,362,287	3,262,579	197,511	1,499,763	1,569,956	19,645,016
2021	8,063,907	5,370,002	3,269,824	196,523	1,513,567	1,581,080	19,994,902
2022	8,306,070	5,414,393	3,259,674	187,680	1,580,472	1,647,619	20,395,908
2023	8,503,316	5,433,012	3,257,314	186,741	1,626,628	1,692,245	20,699,255
2024	8,594,105	5,451,695	3,254,401	185,807	1,641,599	1,704,235	20,831,842
2025	8,624,583	5,470,443	3,252,098	184,878	1,656,707	1,716,309	20,905,018
2026	8,683,451	5,489,255	3,249,833	183,954	1,671,955	1,728,469	21,006,917
2027	8,720,261	5,508,131	3,247,608	183,034	1,687,343	1,740,715	21,087,092
2028	8,749,920	5,516,056	3,228,174	181,203	1,692,749	1,744,345	21,112,448
2029	8,824,065	5,523,993	3,209,184	179,391	1,699,865	1,749,726	21,186,225
2030	8,833,000	5,531,941	3,225,425	177,597	1,705,311	1,753,374	21,226,648
2031	8,873,637	5,539,900	3,268,851	175,821	1,715,890	1,755,277	21,329,376

Source: NCES, Tables 303.70 and 303.80, Eigen10 Advisors, LLC

Total Enrollment Forecast Scenarios

We next ran two downside forecast scenarios and one upside scenario. In the first downside scenario, we used the same assumptions as the above base case but used a five-year rolling average enrollment rate for each sector beginning with the 2014 to 2018 average rate in 2019. This resulted in very little change in enrollment rates. Total enrollment increased by 0.1% per year (or a total of 202,000) from 2020 to 2031 (Figure 11).

The second downside scenario is a severe downside scenario which uses the same rolling five-year average enrollment rates as the above "Low: no change in enrollment" scenario layered over the Census Bureau severe downside "no immigration" scenario. Under this scenario, total enrollment declines by an average of 0.4% per year from 2020 to 2031, a loss of 794,000 students. While we think the probability of this scenario occurring is extremely low, it does

provide an indication of the important role of net immigration in population forecasts given the aging U.S. population and smaller age cohort following the millennials.

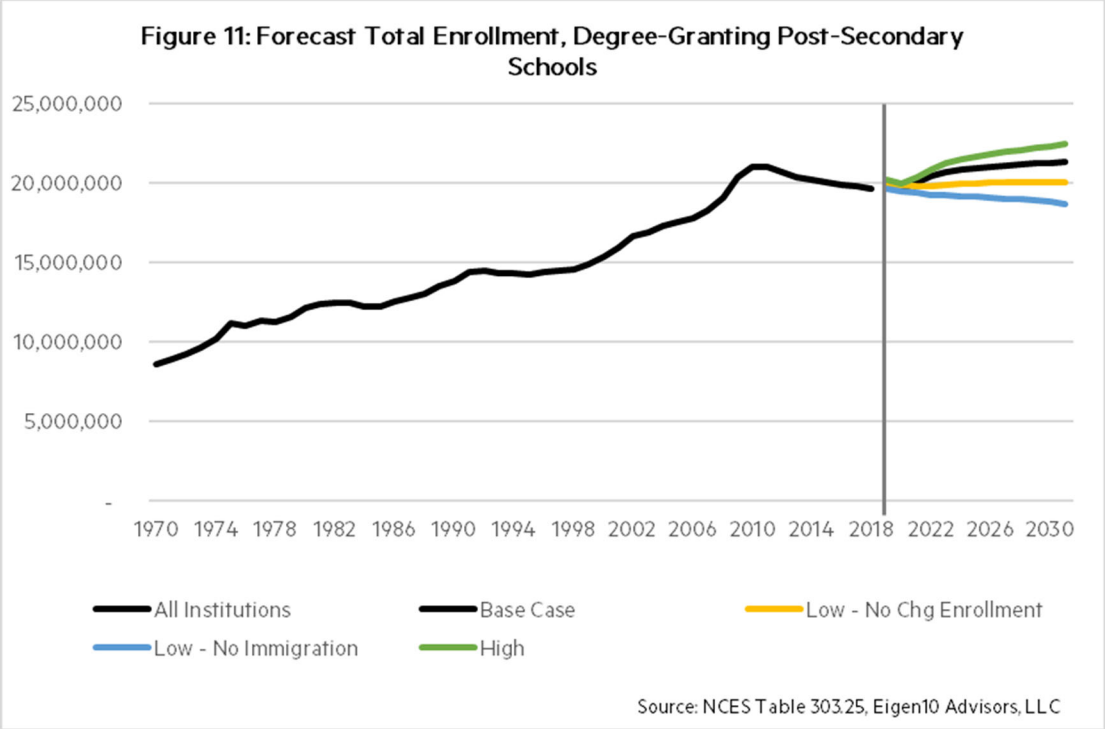


Table 3: Total Enrollment: Post-Secondary Degree-Granting Institutions

	Base Case	Low: No-Change Enrollment	Low: No Immigration	High Immigration
2019	19,972,381	19,857,767	19,644,775	20,138,622
2020	19,645,016	19,819,393	19,479,058	19,908,034
2021	19,994,903	19,815,192	19,360,218	20,351,361
2022	20,395,908	19,808,628	19,250,050	20,841,101
2023	20,699,255	19,867,231	19,207,940	21,231,841
2024	20,831,841	19,937,377	19,171,247	21,451,648
2025	20,905,018	19,954,112	19,100,740	21,597,630
2026	21,006,917	19,993,135	19,056,263	21,769,696
2027	21,087,093	20,012,048	18,992,836	21,918,801
2028	21,112,448	20,033,216	18,932,155	22,011,647
2029	21,186,225	20,048,279	18,866,431	22,153,473
2030	21,226,648	20,031,864	18,772,534	22,259,785
2031	21,329,376	20,021,426	18,685,176	22,429,932
Change 2020 to 2031				
Avg Growth	0.8%	0.1%	-0.4%	1.1%
Total Change	1,684,360	202,033	(793,882)	2,521,898

Source: NCES, Eigen10 Advisors, LLC

The upside scenario uses the same assumptions as the base case but uses the U.S. Census upside population forecast, which assumes a 50% higher immigration rate than their base case. In this case, total enrollment increases by 1.1% per year from 2020 to 2031, adding 2.522 million new students to total enrollment. Results from the scenario analyses are shown in Figure 11 and Table 3.

Student Housing Demand Projections

The enrollment forecasts are next used to estimate student housing demand, broken down by: students living on campus, with parents, and in owned housing and in rented housing. These collectively can be used as a proxy for the full student housing market. NCES occasionally provides estimates of the percentage of undergraduate and graduate students living in each type of housing, by institution type.[26] The most current data is available for the 2015-16 school year.

Table 4 shows the percentage of students living in each type of housing by institution type. Post-baccalaureate figures are not provided by institution type. Thus, we use the same figures for all post-baccalaureate institution types. Off-campus housing was further broken into owned housing and rental housing. For baccalaureate students, 13.3% of off-campus housing is owned, compared to 33.7% owned for post-baccalaureate students.

Table 4: Percent of Students by Living Arrangement

	On Campus	Off Campus	Living with Parents
Baccalaureate			
Public 4-year	24.8	53.0	22.2
Public 2-year	1.4	59.5	39.1
Private non-profit 4-year	40.8	45.4	13.8
Private non-profit 2-year	0.3	76.1	23.6
Private for-profit 4-year	1.9	81.1	17.0
Private for-profit 2-year	0.5	73.2	26.3
Post-Baccalaureate			
Public 4-year	6.2	85.6	8.2
Private non-profit 4-year	6.2	85.6	8.2
Private for-profit 4-year	6.2	85.6	8.2

Source: NCES PowerStats 2015-16 school year

We further adjust the data for homelessness, which is estimated at approximately 0.2% of the student population or 32,000 students.[27] The above figures are then applied to the 2020 and 2031 forecasts as shown in Tables 5-10. The total figures in the tables include housing needed

for the homeless population and thus do not add to the subtotals above. **As of 2020, student housing demand is estimated at 8.5 million beds. Undergraduates at four-year universities account 35% of that demand or 3 million beds**.

We estimate that the student housing market will grow from a total of 8.5 million beds in 2020 to 9.2 million beds by 2031, an increase of 734,000 beds or an average annual increase of 0.8% per year. Public four-year universities will account for most of the student housing demand growth. Undergraduate beds at four-year public universities will increase by 448,000 from 2020 through 2031, with another 112,000 needed for graduate students. New beds at private four-year universities are expected to be primarily needed for graduate programs, where another 96,000 beds will be needed. While public two-year universities account for a large part of overall enrollment, growth has been volatile in this sector in recent years. We estimate that another 79,000 beds will be needed at public two-year universities.

Table 5: Undergraduate Student 2020 Housing Estimates

	On Campus	Parents	Owned	Rented
Public 4-year	1,926,081	1,718,776	992,706	3,107,013
Public 2-year	76,536	2,094,552	769,750	2,409,194
Private 4-year	1,108,752	468,627	406,836	1,273,333
Private 2-year	888	50,717	35,222	110,239
Subtotal	3,112,257	4,332,672	2,204,514	6,899,779
Total				16,575,296

Source: Eigen 10 Advisors, LLC, NCES

Table 6: Graduate Student 2020 Housing Estimates

	On Campus	Parents	Owned	Rented
Public 4-year	92,806	122,743	505,720	775,599
Private 4-year	97,149	128,488	529,389	811,899
Subtotal	189,955	251,231	1,035,109	1,587,498
Total				3,069,720

Source: Eigen 10 Advisors, LLC, NCES

Table 7: Undergraduate Student 2031 Housing Estimates

	On Campus	Parents	Owned	Rented
Public 4-year	2,204,504	1,967,232	1,138,566	3,555,086
Public 2-year	79,071	2,163,929	796,809	2,487,975
Private 4-year	1,110,884	469,528	408,358	1,275,067
Private 2-year	790	45,147	31,410	98,074
Subtotal	3,395,249	4,645,837	2,375,142	7,416,201
Total				17,858,210

Source: Eigen 10 Advisors, NCES

Table 8: Graduate Student 2031 Housing Estimates				
	On Campus	Parents	Owned	Rented
Public 4-year	106,195	140,451	578,598	887,572
Private 4-year	108,632	143,675	591,879	907,945
Subtotal	214,827	284,126	1,170,477	1,795,517
Total				3,471,166

Source: Eigen 10 Advisors, NCES

Table 9: Undergraduate Student Change in Housing Estimates, 2020-2031				
	On Campus	Parents	Owned	Rented
Public 4-year	278,423	248,457	145,859	448,073
Public 2-year	2,535	69,377	27,059	78,780
Private 4-year	2,131	901	1,522	1,734
Private 2-year	(97)	(5,570)	(3,812)	(12,165)
Subtotal	282,992	313,165	170,628	516,422
Total				1,283,207

Source: Eigen 10 Advisors, NCES

Table 10: Graduate Student Change in Housing Estimates, 2020-2031				
	On Campus	Parents	Owned	Rented
Public 4-year	13,389	17,708	72,878	111,973
Private 4-year	11,483	15,187	62,490	96,046
Subtotal	24,871	32,895	135,368	208,019
Total				401,153

Source: Eigen 10 Advisors, NCES

Regional Growth

Regionally, half of the 18- to 24-year-old population resides in the South Atlantic, Pacific and East North Central areas of the U.S. (see Table 12).[28] Additionally, just nine states comprise 50% of the U.S. 18- to 24-year-old population as of 2020, as shown in the Table 11.[29]

Table 11: State Distribution of U.S. Youth

State	Number of 18- to 24-Yr- Olds, 2020	% of Total	Cumulative % of Total
California	3,609,402	12%	12%
Texas	2,810,395	9%	21%
Florida	1,722,604	6%	27%
New York	1,719,506	6%	33%
Illinois	1,149,867	4%	37%
Pennsylvania	1,135,786	4%	41%
Ohio	1,057,111	4%	44%
Georgia	1,013,874	3%	48%
North Carolina	983,305	3%	51%

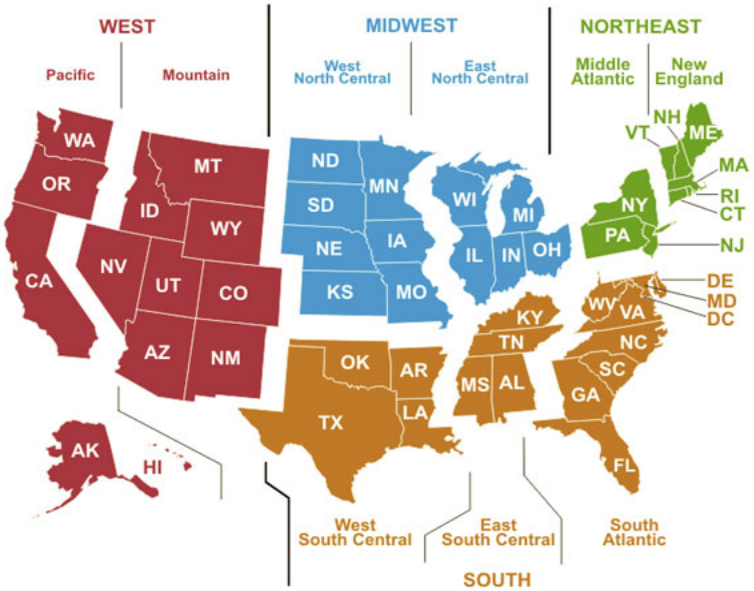
Source: US Census Bureau

Table 12: Regional Distribution of U.S. Youth

	Number of 18- to 24-Year-Olds, 2020	% of Total	Cumulative % of Total
South Atlantic	5,794,568	19%	19%
Pacific	4,790,745	16%	35%
East North Central	4,345,713	15%	50%
West South Central	3,884,245	13%	63%
Middle Atlantic	3,610,180	12%	75%
Mountain	2,315,946	8%	83%
West North Central	2,009,485	7%	89%
East South Central	1,743,415	6%	95%
New England	1,422,816	5%	100%

Source: US Census Bureau

U.S. Census Regions



Source: U.S. Census

Growth going forward will be similarly concentrated. To estimate growth going forward, we used the U.S. Census Bureau population estimates by one-year age group by state.[30] We subtract the number of 17- to 23-year-olds (an estimate of 18- to 24-year-olds in 2020) from the number of 6- to 12-year-olds (an estimate of 18- to 24-year-olds in 2031) for each state. While death rates are extremely low in this age group, one factor that could add additional upside to these figures is in-migration, both from other states and from other countries. California, for example, is highly dependent on international in-migration and ranks low in terms of growth when migration is not taken into consideration.

Table 13 shows the difference in 18- to 24-year-olds in 2020 versus 2031. Texas, by far, has the largest upcoming young population—the population in that age range is expected to increase by 3.6%, or more than 100,000 people. Similarly, Nevada, Washington and Minnesota are expected to experience significant growth. In contrast, several Northeastern states have older, low-growth populations. Absent in-migration, the 18- to 24-year-old population will shrink in New York, Massachusetts and Pennsylvania. Interestingly, these states are home to some of the highest quality post-secondary educational institutions in the world. As we discussed in a separate paper,[31] readers should not assume that enrollment in particular schools will increase or decrease in concert with state trends.

Table 13: Change in 18- to 24-Year-Olds from 2020 to 2031, by State						
State	**Change**	**% Chg**		**State**	**Change**	**% Chg**
Texas	101,196	3.6%		Washington, DC	(15,908)	-24.7%
Nevada	27,996	11.3%		Kentucky	(19,076)	-4.7%
Washington	14,762	2.3%		Colorado	(19,479)	-3.8%
Minnesota	14,724	3.0%		Vermont	(20,445)	-31.5%
Idaho	12,116	7.3%		Missouri	(20,744)	-3.7%
Utah	10,850	3.0%		South Carolina	(21,375)	-4.6%
Louisiana	9,268	2.2%		Alabama	(22,387)	-5.0%
Alaska	4,681	7.1%		New Hampshire	(23,771)	-19.3%
South Dakota	3,315	4.0%		Iowa	(27,650)	-8.8%
Hawaii	2,955	2.6%		Georgia	(28,521)	-2.8%
Wyoming	1,284	2.4%		Rhode Island	(29,819)	-27.7%
New Jersey	455	0.1%		Arizona	(36,874)	-5.4%
Maryland	(245)	0.0%		Indiana	(45,502)	-6.9%
Oklahoma	(1,187)	-0.3%		Wisconsin	(46,034)	-8.5%
Delaware	(2,557)	-3.1%		Illinois	(52,517)	-4.6%
Nebraska	(2,691)	-1.4%		Ohio	(53,930)	-5.1%
Arkansas	(4,441)	-1.6%		Connecticut	(60,524)	-17.6%
New Mexico	(4,480)	-2.3%		Virginia	(60,690)	-7.7%
Mississippi	(5,504)	-2.0%		Florida	(69,494)	-4.0%
Montana	(5,542)	-5.8%		North Carolina	(80,305)	-8.2%
North Dakota	(9,373)	-11.8%		Michigan	(104,523)	-11.2%
Maine	(10,049)	-9.4%		Pennsylvania	(107,248)	-9.4%
West Virginia	(10,823)	-7.1%		California	(107,956)	-3.0%
Oregon	(11,863)	-3.3%		Massachusetts	(153,965)	-22.8%
Tennessee	(13,865)	-2.3%		New York	(168,456)	-9.8%
Kansas	(14,700)	-5.0%		**U.S.**	**(1,290,911)**	**-4.3%**
Source: US Census Bureau, Eigen 10 Advisors, LLC						

However, 50% of high school graduates attend a school in their home state and only 11.7% attend school in another state. While those figures vary widely by state,[32] nearby demographic growth should certainly be considered along with the school's educational program quality and business acumen. Some schools are highly adapted to attracting students from broader trade areas and have high application rates that give them some acceptance leeway without impacting quality if applications do decline for a period of time.

Regionally, the West South Central is expected to experience the most growth, with significant downward pressure in the New England states as shown in Table 14.

Table 14: Change in U.S. Youth Population, by Region		
	Change in 18- to 24-Year-Olds, 2020-2031	% Change
West South Central	104,836	2.7%
Mountain	(14,129)	-0.6%
West North Central	(57,119)	-2.8%
East South Central	(60,832)	-3.5%
Pacific	(97,421)	-2.0%
Middle Atlantic	(275,249)	-7.6%
South Atlantic	(289,918)	-5.0%
New England	(298,573)	-21.0%
East North Central	(302,506)	-7.0%
Source: US Census Bureau, Eigen 10 Advisors, LLC		

Other Factors That May Increase Off-Campus Housing Demand

Increase in Post-Baccalaureate Degrees

We made several assumptions to calculate enrollment projections. Specifically, we assume enrollment rates will continue to rise in response to job demand, particularly for minority populations whose enrollment rates have been increasing, though Asian rates lag behind. However, we did not assume significant increases in the 25+ enrollment rate. **Given an increasing demand for educated jobs and the large millennial population now aged 24 to 40, a reasonable argument could be made for further increasing enrollment in post-baccalaureate programs**. For example, a 10% increase from the base case assumptions could create another 26,000 in post-baccalaureate enrollment.

Real Estate as a Public Health Tool

The 2020 COVID-19 pandemic created a significant disruption to university teaching models and housing programs. While the long-term impact is yet to be seen, real estate in general is likely to be required to play a bigger role in public health policy going forward. **Hundreds of companies are already working on technology to create healthier buildings, including**

touchless elevators and appliances, better air quality systems, remote fitness training (e.g. Peloton) and more.[33] New buildings and national owners may be better positioned to integrate these new systems.

Purpose-built student housing provides several advantages to traditional single-family and student-competitive facilities. **First, bed-bath parity has improved**. Pre-1970, 27% of student housing units were 2 beds/1 bath; only 30% had parity. **Also, pre-1970, 18% of student housing was double occupancy. That fell to less than 2% in the 1990s.** On the other hand, unit size began increasing in the 1980s as the number of 4/4 units began to increase in addition to 4/2 and 3/3. So while bed/bath parity improved, unit sizes increased, putting more students in clusters. In the past decade 4/4 units have dominated student housing, accounting for 37% of the units.

Going forward, particularly in the near-term, private single occupancy student housing units may be more desired. Only 4% of units built in the last decade were double occupancy, despite the cost savings. In addition, we could see smaller units in a 1/1 or 2/2 format that can isolate individuals if necessary. The ability to relocate and quarantine students will become increasingly important as the role of buildings in public health policy gains renewed emphasis and is supported by new technologies.

Opportunity to Increase Market Share in a Fragmented Industry

While institutional properties may be better able to serve the market in a more health-conscious environment, the student housing market remains highly fragmented. In a study of 70 student housing markets, 55% of the properties in the market had less than 10 units and 80% had less than 50 units.[34] More than one million student-competitive properties were constructed this decade, but that accounts for only 23% of the student-competitive beds added since the 1970s.[35] In addition, almost 65% of the new beds in these units are over a mile from campus.[36] **Thus, the market has a large proportion of non-institutional student housing properties that may have difficulty in meeting new demand for healthy buildings, further bolstering the ability of institutional owners to gain market share**.

Recession Impact

Recessions can have significant impacts on university revenues as student tuition and fees only account for 30% of revenues for four-year private non-profit universities and 21% at public universities. In the 2008 recession, state funding of public four-year universities dropped from 27% of revenues in 2007-08 to 21% in 2010-11.[37] State funding did not return to 2007-08 levels until 2015-16, and in some states, it has never returned to pre-crisis levels.

Although the impact of COVID-19 is still being calculated, many schools have already seen a decline in revenues as state and local budgets are pressured. **While the long-term impact of the COVID-19 pandemic on on-campus housing occupancy and density is yet to be seen, a reduction in revenue from the current recession will make it difficult for schools to implement spending programs for housing which may be needed to improve the health quality of**

buildings and to attract new students. This may increase the need for universities to implement public-private programs to improve building quality.

Potential Consolidation Among Universities

Universities are expected to feel the impact of two downward pressures over the next decade—potentially reduced revenues in some areas due to the 2020 recession in the near-term and in some areas potentially reduced applications in the long run as a result of shrinking demographics. School closings are not unusual. Most years 10 to 30 will close, but that number has accelerated since the 2014-15 school year. Fifty-four schools closed that academic year. Of those, 47 were two-year schools, the highest closings total of that sector since 1969. Notably, of the 54 closed schools in 2014-2015, 49 were for-profit institutions. The number of closings rose to 66 the following year and then peaked in 2016-17 at 112. The number of closings fell to 86 in 2017-18, the second-highest total in the series.[38]

However, simultaneously, many universities flourished and significantly increased enrollment over the past decade.[39] Going forward, school closings are likely to be higher than the long-term average as funding becomes tight, fewer students are available to enroll and the cost of operating continues to rise. As a result, **investors should evaluate school business models as well as market demographics to identify winners and losers in the upcoming years. Institutional investors with quality research capabilities are likely to be rewarded in this environment. Additionally, quality housing may serve as a competitive advantage for some universities to attract new students in a period of heightened competition.**

The Unknown: International Students

The number of international students enrolled in U.S. institutions is now nearly one million (5%) of enrollment in degree-granting institutions, up from 782,891 (3.8%) in 2012 and 528,692 (3.5%) during the 2000-01 school year. Forecasting near-term international enrollment without knowing how long the pandemic will last or what future immigration policy will be is challenging. This paper assumes enrollment does rebound post-pandemic, but how long that will take is unknown, and this adds to the uncertainty of the forecast.

However, a partial offset to the declining enrollment of international students may be a decrease in the number of U.S. students studying abroad because of the pandemic. As an indication of the possible impact this might have on U.S student housing demand, the number of U.S. students overseas increased 37.6% over the past decade. In 2006-07, 242,000 students studied abroad. A decade later that number had risen to 333,000. Looking at the distribution of the students' academic standing, one-third are juniors and 27% are seniors.[40] If fewer upperclassmen go abroad due to Covid or cost, this may slightly increase demand for off-campus student housing in the near-term, at least partially offsetting any decline in international student enrollment.

Conclusion

Overall, the U.S. student housing market, which is highly concentrated at four-year public universities, has shown consistent enrollment trends even as demographic trends supporting enrollment growth began slowing 10 years ago. Four-year public universities are likely to continue to pick up market share since demographic growth will be dominated by lower-income segments of the population. However, the market is changing, and competition among universities will continue to increase, first reflecting near-term revenue reductions due to the 2020 recession and over a longer period resulting from downward pressure as a smaller population segment moves through college age.

Astute investors will need to identify growing demographic regions and high-performing university business models, both of which will be more complex issues going forward. Despite the risks and challenges ahead, total enrollment growth at four-year public universities is expected to remain steady, exceeding 1% per year, well above general population growth estimates. A number of other factors may further increase student housing demand, including the demand for jobs that require higher education levels, increased need for healthy buildings and potential private-public partnerships.

Citations

[1] https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/methodstatement17.pdf. Figures 1 and 2.
[2] https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/methodstatement17.pdf. Figures 3 to 6.
[3] https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/P2017%20Alternative%20Series%20Methodology.pdf.
[4] Sub Saharan Africa, Europe/Canada/Oceania, Mexico, Asia, Latin America and Caribbean, Near East/North Africa.
[5] https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/methodstatement17.pdf. Figures 10 and 11.
[6] Ibid.
[7] https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/methodstatement17.pdf. Figures 10 and 11.
[8] https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/P2017%20Alternative%20Series%20Methodology.pdf.
[9] The low series was calculated by subtracting the log of the base series from the log of the high scenario then subtracting that difference from the base series and reversing the log transformation. That allows the high series to approach infinity while keeping the low series between zero and the base series.
[10] Mueller, Paige and Jeffrey Havsy. 2021. "Structural Changes in Student Housing Demand," National Multifamily Housing Council.
[11] https://nces.ed.gov/programs/digest/d19/tables/dt19_302.60.asp?current=yes.
[12] All references to race in this paper are non-Hispanic unless otherwise specified.
[13] The Asian dataset is a smaller data series with more historic volatility; the forecast peak remains within the 2008 to 2018 bounds.
[14] Mueller, Paige and Jeffrey Havsy. 2021. "Structural Changes in Student Housing Demand," National Multifamily Housing Council.
[15] National Student Clearinghouse Research Center's Monthly Update on Higher Education Enrollment, November 12, 2020. .
[16] Brundage, Jr., V. 2017. "BLS Spotlight on Statistics: Profile of the Labor Force by Educational Attainment." Washington, D.C.: U.S. Department of Labor, Bureau of Labor Statistics.
[17] U.S. Bureau of Labor Statistics, Unemployment Rate, retrieved from FRED, Federal Reserve Bank of St. Louis: https://fred.stlouisfed.org/series/LNS14027662 and https://fred.stlouisfed.org/series/LNS14027659.
[18] https://nces.ed.gov/programs/digest/d18/tables/dt18_603.20.asp?referrer=report.
[19] OECD
[20] AIAN (American Indian / Alaska Native), NHPI (Native Hawaiian and Other Pacific Islander)
[21] NCES Digest of Education Statistics, Table 303.45, 2017 provided data for undergraduates. Table 303.40 provided 2018 data for total enrollment.
[22] 14-17 age group was used as a proxy for the NCES under-18 category; the 35 to 44 age group was used as a proxy for the NCES 35 years and older category.
[23] NCES, Digest of Education Statistics 2019, Table 303.40.
[24] NCES, Digest of Education Statistics 2019, Table 303.40.
[25] NCES, Digest of Education Statistics 2019, Tables 303.70 and 303.80.
[26] NCES PowerStats
[27] "Higher Education, Actions Needed to Improve Access to Federal Financial Assistance for Homeless and Foster Youth," United States Government Accountability Office, May 2016.
"Barriers to Success: Housing Insecurity for U.S. College Students," U.S. Department of Housing and Urban Development, February 2015.
[28] https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html.
[29] Ibid.
[30] July 2019 estimates, which were last updated in June 2020.

[31] Mueller, Paige and Jeffrey Havsy. 2021. "Structural Changes in Student Housing Demand," National Multifamily Housing Council.
[32] NCES 2018 Digest Table 302.50. Estimated rate of 2011-12 high school graduates attending degree-granting post-secondary institutions, by state, 2012.
[33] "Re-opening: The Tech-Enabled Office in A Post-COVID-19 World," CB Insights, 2020.
[34] Mueller, Paige and Jeffrey Havsy. 2019. "The U.S. Student Housing Market: On-Campus, Student Housing and Student Competitive," National Multifamily Housing Council.
[35] Ibid.
[36] Ibid.
[37] Section 333, Digest of Education Statistics 2018, Institute of Education Sciences: National Center for Education Statistics.
[38] Mueller, Paige and Jeffrey Havsy. 2021. "Structural Changes in Student Housing Demand," National Multifamily Housing Council.
[39] Ibid.
[40] Tables 310.10, 310.20 and 306.10, Digest of Education Statistics 2018, Institute of Education Sciences: National Center for Education Statistics.