The Ebbing Tide: How Will Higher Education Adapt to Demographic Change?

Jacob L. Vigdor*
University of Washington and NBER

First Conference Draft: March 25, 2024

Abstract

Since 2010, postsecondary enrollment in the United States has fallen by 12.5%, the first sustained decrease in the postwar era. The decline coincides with a modest decline in the number of U.S. residents of traditional college-going age. This paper presents evidence linking cross-sectional variation in state-level demographic variables to enrollment trends at a sample of public baccalaureate institutions. The link between demography and enrollment is more pronounced at less research-intensive institutions. Current demographic conditions forecast accelerated enrollment declines through the mid-2030s. Given evidence that states respond to declining enrollment by increasing per-student subsidies, these conditions may force difficult decisions in the coming decade.

1. Introduction

In the Fall of 2010, American institutions of higher education enrolled just under 22 million students. As figure 1 shows, this tally reflected a period of incredible growth over the prior few decades. While the period between the mid-1950s and mid-1970s witnessed the fastest growth, attributable largely to the baby boom generation, a second enrollment boom occurred just after the turn of the 21st century. Between 1999 and 2010, a period when the size of the traditional college-age population increased by about a tenth, American colleges and universities increased enrollment by over 40%.

The past decade has seen this trend reverse. By fall 2022 enrollment had dropped 2.7 million from its 2010 peak, or roughly 12%. Figure 1 shows that the majority of this decline occurred before the onset of the COVID-19 pandemic, though trends have clearly continued from 2020 onwards (Harris et al., 2024). As we will see below, this decline has been uneven across institutions. Prestigious, research-intensive universities categorized as Carnegie "R1" institutions counted 13% more students in fall 2022 than they enrolled in fall 2010. Less research-intensive colleges awarding bachelors and master's degrees enrolled 7.5% fewer students over the same time period. Associates degree-granting institutions including community colleges witnessed a precipitous 28% drop. The drop in enrollment has been most severe at those institutions most dependent on tuition revenue relative to research grants and endowment income, as well as the institutions most commonly associated with providing opportunity to first-generation students and other under-represented groups. For many public institutions, increased state subsidies have filled revenue gaps, raising questions of long-term sustainability.

To some extent, the drop in enrollment can be associated with demographic trends. According to the Current Population Survey, the number of 18-year-olds in spring 2022 was about 5% smaller than the tally in spring 2010. If shrinking enrollments are a function of declining cohort sizes, the future appears bleak. Figure 2, which tracks the number of 18-year-olds in the March CPS from 1962 to 2022, and then projects forward with the size of each age cohort as of 2022, augurs sustained declines in birth cohort size, with a noticeable turning point around 2027 and pronounced declines to come in the mid-2030s.

Demography is certainly not perfectly correlated with demographic destiny. Figure 2 shows that the number of 18-year-olds in March 1991 was some 20% lower than it had been a decade earlier, reflecting the so-called "baby bust." Figure 1 shows that this translated to no more than a 3% enrollment drop in the mid-1990s.

In light of this observation, it's fair to ask: to what extent can the recent decline in enrollment be attributed to demographic trends? If so, what might we forecast regarding the fortunes of academic institutions over the coming 10-15 years, particularly those most dependent on tuition revenue? How might institutions respond, particularly in light of evidence that enrollments withstood demographic challenges a generation ago?

This paper assesses these questions using data from the Integrated Postsecondary Education Data System (IPEDS) spanning the years 1984 to 2022. Analysis of cross-sectional variation in enrollment trends between 2010 and 2022 confirm that simple state-level demographic projections, namely the ratio of the 5-9 year old population to the 18-22 year old population in 2010, strongly predict enrollment changes. Point estimates suggest that masters-granting regional colleges and universities are approximately three times more responsive, and colleges awarding only bachelor's degrees five times more responsive, to demographic change than "R1" flagship institutions. The period of enrollment decline coincides with a "flip" in short-run growth dynamics. Before 2010, the smallest institutions at all Carnegie classifications tended to post the fastest year-over-year growth. Afterward, smaller institutions shrank the fastest.

The model of dynamics in the 2010-2022 time period can be used to forecast enrollment trends over the next decade. Forecasts indicate continued divergence in enrollment trends across institutions, with research-intensive flagship "R1" universities predicted to continue growth, with a few exceptions concentrated in rust-belt states, and masters- and baccalaureate-level institutions facing decline, with exceptions concentrated in a few sun-belt states.

Universities and colleges exhibit economies of scale, with large fixed personnel and physical plant costs along with modest marginal costs. When institutions with limited endowment funds and little in the way of grant and contract revenue shrink, they can attempt to cover costs by raising tuition or relying more heavily on government subsidies. Data point clearly to the latter strategy, which is sensible as raising tuition revenue per student might further exacerbate enrollment declines. But increased per-student subsidies to operate smaller institutions might not be sustainable in the long-run.

This paper concludes by considering the options available to institutions in the face of the coming "demographic cliff." If anything, the demographic trends of the 1980s and early 1990s appear more severe than those projected to occur in the next two decades, and institutions managed to avoid severe enrollment losses. In that era, higher education benefited from increased matriculation rates among high school graduates, new programs for part-time students, and the expansion of postgraduate education. There is still room for improvement in matriculation rates, as well as degree completion rates – although improvements taking the form of reducing time-to-degree might have the perverse effect of reducing enrollment. In theory, shortfalls of domestic students could be offset by recruiting more from abroad, however the less-selective institutions experiencing the most severe enrollment declines have seldom been magnets for international enrollment. Likewise, the strategy of expanding postgraduate programming faces the challenge that many masters-level programs have themselves faced enrollment declines in recent years. Appealing to part-time or non-traditional students might work well for those institutions in large urban areas with a large pool of potential working students, but not as well for colleges in smaller college towns.

There have been isolated cases of college closing or consolidating over the past decade, and absent significant departures from trend more will arrive in the next 15 years. Closing institutions entails difficult trade-offs between access and efficiency, and the elimination of what may be the largest employer in many communities will face significant political opposition. Fortunately, the demographic projections for the immediate future are favorable, with a small "baby blip" about to enter the college-going years. Planning undertaken over the next few years may spell the difference between survival and closure for many institutions.

2. Long-run trends in postsecondary enrollment

Between 1947 and 2010, the trajectory of postsecondary enrollment in the United States can be characterized as alternating between periods of statis and growth. The start date for this time series obscures the impact of the G.I. Bill, which substantially increased enrollment and attainment for eligible cohorts (Bound and Turner, 2002). The initial years depicted in Figure 1 show little to no trend in enrollment, with the period of the Korean War (1950-1953) coinciding with a modest decline at a time when roughly two-thirds of postsecondary students were male.

The decade following the conclusion of the Korean War, a period when the earliest members of the baby boom generation were not yet college-going age, saw postsecondary enrollment double. Enrollment doubled again in the ten years between 1963 and 1973. While the arrival of the baby boom cohort on college campuses helps explain this period of unprecedented growth, the expansion of enrollment goes well beyond what might be explained by demographics alone. The size of the 18-year-old cohort, depicted in Figure 2, rose about 50% between 1963 and 1973.

The twenty-year boom in enrollment was accommodated disproportionately by the establishment and expansion of public institutions. As late as 1951, there were more students enrolled in private than public institutions in the United States. By 1973, there were 3.4 public postsecondary enrollees for every private college student. Private college enrollment doubled between 1953 and 1973; public college enrollment sextupled. Most of this expansion was accommodated by increasing the size of existing institutions rather than creating new ones; as late as 1985, the median postsecondary student attended an institution founded in 1919. Only a third attended an institution founded later than 1953. The divergence of growth trajectories between private and public institutions coincides with divergence in selectivity; between the early 1960s and the early 1970s elite 4-year colleges institutions became more selective, the median institution became somewhat less selective, and the least selective institutions witnessed a marked decrease in mean student standardized test percentiles (Hoxby, 2009).

Enrollment growth slowed considerably after 1973, a deceleration that can be at least partially explained by demographic trends. As Figure 2 shows, 18-year-old cohort sizes continued to grow through the early 1980s, but at a much slower rate. The 1981 cohort attained a local maximum that would not be eclipsed for another 27 years; over the following decade the number of 18-year-olds in the United States fell by nearly a quarter.

It is remarkable, in this context, that postsecondary enrollment continued to grow during the 1980s. Institutions reacted to declining undergraduate enrollments by expanding other types of degree offerings. Between 1984 and 1994, the number of 4-year institutions offering post-baccalaureate programming expanded by 155 (18%). In fall 1984, there were 468,189 full-time graduate students in the United States. A dozen years later there were 1,016,395. The number of part-time graduate students expanded by roughly 400,000 over the same time period. American institutions expanded international student enrollments as well, by roughly 140,000 between 1984 and 1996. Altogether, these sources of growth can account for roughly a million extra students. But the undergraduate student headcount expanded by about 1.5 million during the same time period. The story of product and customer base expansion is thus secondary in this era: American universities continued expanding by attracting a greater share of traditional college-age youth and exhibiting greater success in shepherding them to degree completion.

Between 1965 and 1982, the percentage of high school graduates enrolling in college fluctuated in a narrow range around 50%, never falling below 46% and exceeding 55% once. After 1982, this ratio steadily rose to a local maximum of 67% in 1997.[1] While modern longitudinal data on 6-year degree completion rates did not exist prior to the late 1990s, available evidence points to maintained or improved degree completion rates over this time period. The number of bachelor's degrees awarded in the 1980/81 academic year equaled 7.7% of fall 1980 enrollment. The number of degrees awarded in the 1995/96 academic year, following a period of expanded matriculation rates and outsize growth of postbaccalaureate enrollment, was 7.6% of fall 1995 enrollment.[2]

During the two decades of more modest growth, public institutions continued to expand more rapidly than private ones. By 1992, there were 3.67 public students for every private enrollee. Enrollment gains were also concentrated among less-selective 2- and 4-year institutions. As Table 1 shows, Private R1 institutions saw enrollments increase 5% between 1984 and 1992. Public R1 flagships expanded enrollment just 8%. Masters-granting regional public institutions

---

[1] Source: National Center for Education Statistics, *Digest of Education Statistics*. See https://nces.ed.gov/programs/digest/d99/d99t187.asp.
[2] Source: National Center for Education Statistics, *Digest of Education Statistics*. See https://nces.ed.gov/programs/digest/d23/tables/dt23_322.10.asp.

increased enrollment by 17%, and associates-granting public community and technical colleges by 35%.

Cohort size reached a local minimum in 1992, the 3.2 million 18-year olds that year being both the lowest number recorded since 1964 and a low the United States is not projected to reach again through at least 2040. It is certainly not a coincidence that the period between 1993 and 1996 represents the first sustained loss in postsecondary enrollment in the postwar era. These enrollment losses were modest, less than 3% overall, and spread broadly across institutions, with declines recorded in sectors ranging from private R1 institutions to community colleges.

Both cohort size and enrollment rebounded over the next 15 years, to the high points recorded around 2010. The rates of increase for the two time series were closely linked; enrollment grew 42% between 1992 and 2010 while the size of the 18-year-old cohort grew 39%. While research-intensive institutions showed higher growth rates in this time period, on the order of 20%, masters-level institutions and community colleges continued to grow faster. Notably, the for-profit college sector expanded significantly, with fall 2010 enrollment more than 4 times the level recorded in 1996.

It is important to note the increasingly strong tie between demography and enrollment. The latter grew at twice the rate of the former as the baby boom cohort reached college-age through the 1960s. Stagnation in cohort size in the 1980s coincided with continued, albeit modest, growth in enrollment. The tie between population and enrollment appears strong in the 1990s.

This historical context places more recent trends in stark perspective. Over 62 years between 1947 and 2010, postsecondary enrollment endured a year-over-year decline just six times, and no more than three consecutive years. Since 2010, enrollment has declined for 12 consecutive years. In the longest episode of decline prior to 2010, enrollment declines applied broadly across higher education institutions. Since 2010, the most prestigious research-intensive institutions have bucked the trend while the least-selective, most tuition-dependent sectors have borne the brunt of decline. And importantly, while the decline in enrollment coincides with a drop in college-going cohort size, demographics alone appear insufficient to explain the trend. The number of 18-year-olds in the United States fell by about 5% between 2010 and 2022. Postsecondary enrollment fell by 12.5%.

3. Understanding the decline in enrollment

Standard human capital theory posits that individual educational decisions are based on the expected rate of return (Becker, 1964). The expected rate of return is in turn a function of several factors, including the up-front cost of attendance, the expected labor market returns to knowledge gained and credentials earned, and the probability that attendance results in that attainment. Whereas canonical economic models assume rationality of expectation formation, the adolescents making key human capital investments may be myopic or poorly-informed. Expectations may be influenced by social or political arguments as much as economic data.

This basic economic framework, augmented to consider cognitive or political influences on expectations formation, could help explain why college enrollment has posted a steady decline over the past decade or more. This section will review the data and evidence on a series of factors implicated in this framework.

3.1 Does rising cost of attendance explain declining enrollment?

A variety of evidence links college costs, and rising costs, to lower enrollment. Panel data analyses suggest an elasticity of public college enrollment with respect to tuition of roughly -0.1 (Hemelt and Marcotte 2011). Quasi-experimental methods exploiting financial aid eligibility and the introduction of tuition at previously tuition-free institutions yield more mixed evidence (Hansen 1983; Dynarski 2000; Seftor and Turner 2002; Dynarski 2003; Abraham and Clark 2006; Cornwell, Mustard, and Sridhar 2006; Kane 2007; Goodman 2008; Hübner 2012). The effectiveness of financial aid assistance interventions also point to a strong role for financial barriers in determining enrollment outcomes (Bettinger et al., 2012; Dynarski et al. 2021).

List tuition prices at both private and public institutions have risen faster than inflation for decades. Actual trends in the cost of attending college are also influenced by financial aid, which has also tended to expand over time (Gordon and Hedlund 2022). Figure 3 tracks the inflation-adjusted amount of tuition revenue per student at a set of about 500 public four-year institutions between 1987 and 2022.[3] Tuition payments per student reached an inflation-adjusted maximum in 2020, at just over $10,500 2022 dollars per year. This represents a 27% increase in real costs per student over the preceding decade. If we accept a tuition-enrollment elasticity of -0.1, these increased real costs of attendance would explain roughly one-fifth of the observed decline in enrollment since 2010.

Extending the time series complicates inference. Inflation-adjusted tuition per student also increased 27% in the decade between 2000 and 2010, a period that saw the highest enrollment growth since the 1970s. While the net price of college clearly increased in the period of declining enrollment, there's no evidence to indicate that 2010 represents an inflection point in that time series. Attendance costs alone would appear to explain at most a fraction, and perhaps none, of the decline in enrollment.

3.2 Have returns to college education declined?

[3] Dollar values are converted to September 2022 dollars using the Consumer Price Index. Statistics are weighted by total enrollment.

A 2020 review of returns to college education concluded that they are generally increasing over time (Gunderson and Oreopoulos, 2020). Evidence also points to a widening gradient between college graduates with varying majors, suggesting the returns to specific skills imparted by some types of college education, but not others, are increasing (Altonji et al., 2016). There is some evidence of a declining skill gradient in post-pandemic labor market data (Autor, Dube, and McGrew 2023), but the period of declining enrollment precedes the arrival of COVID by a decade.

While it is conceivable that increased earnings in jobs requiring lower education levels may explain some portion of the decline in enrollment in the most recent data, there have been no studies identifying an inflection point in the returns to college education around 2010.

3.3 Has the risk of non-completion increased?

The literature on returns to education has long recognized "sheepskin effects," the notion that most of the benefit from attending college accrues upon earning a degree rather than gradually over the course of attendance (Hungerford and Solon 1987; Jaeger and Page 1996). Were the probability of completion to exogenously decline over time, a rational agent would become less likely to invest in higher education even if the returns to a degree remained constant.

Figure 4, based on IPEDS data, confirms that 6-year completion rates for first-time full-time students at 4-year institutions trended steadily upward between the entering cohorts of 2000 and 2014 (see Denning et al. 2022).[4] If anything, completion rates have accelerated, rising 3.8 percentage points between the cohorts of 2010 and 2014 after increasing just 2.4 percentage points over the prior decade. Available data on completion stops almost exactly when the

---

[4] Denning et al (2022) attribute rising completion rates to grade inflation and the general tendency for higher completion rates among students with higher GPA.

COVID-19 pandemic sets in, so post-2020 declines in completion or matriculation rates could help explain some of the most recent enrollment data points, but the completion rate data point to greater enrollment in the period after 2010, not less.

3.4 Have prospective students become more short-sighted?

The decision to attend college brings short-term costs, in the term of tuition and the opportunity cost of attendance, paired with longer-term benefits. Adolescents may be ill-equipped to make this decision given the nature of brain development and a tendency to over-discount the future. In theory, increasing myopia among prospective students could drive a trend toward lower enrollment.

While there is some evidence to suggest an increase in the prevalence of youth anxiety coincident with the enrollment decline (Parodi et al., 2021), there has not been a broad analysis of measures of future orientation. In general, had myopic decision making become more prevalent over time we might expect a variety of risk behaviors, for which short-term rewards are offset by potential longer-term costs, to increase. In fact, most developed countries have exhibited long-run declines in adolescent youth behaviors, a trend attributed to the decline in "unstructured face-to-face time with friends," an antecedent to the peer influence thought to drive many such behaviors (Ball et al., 2023).

It is conceivable that the effect of declining peer interaction time on negative behaviors could also exert a similar, though opposite-signed, impact on positive behaviors such as college-going. The evidence base on this question is scant.

3.5 Political polarization and higher education

In the United States, political conservatism has recently become associated with skepticism toward higher education. An October 2022 Pew Research Center poll found just one-third of respondents identifying as Republican or leaning Republican held a positive view of colleges and universities, against 72 percent of Democrats or individuals leaning Democrat. Evidence indicates that this partisan gap has widened over time (Houston, 2024). Republican-controlled state legislatures have introduced measures to weaken tenure protections, roll back diversity, equity, and inclusion initiatives, and more directly intervene in matters of curriculum and institutional leadership.

Increased skepticism toward higher education could influence matriculation decisions. While there have been a number of studies seeking to study whether college attendance affects political orientation (e.g., Campbell and Horowitz 2016), the reverse association has not been a topic of analysis. Political variables will enter into the analysis below.

3.6 Returning to demographics

Figure 2 shows a peak in the 18-year-old population occurring around 2010, with a second peak projected to occur within the next two years, followed by an extended decline through 2040. The number of 18-year-olds in the United States is a function of the number of live births, infant and child mortality, and migration.

Generally speaking, the number of 18-year olds as estimated by the March CPS tracks the number of births 19 calendar years prior closely (r=0.86 in data from 1962 through 2022). Cohorts born prior to the 1960s generally show net out-migration, consistent with that era's restrictions on immigration. Among cohorts born after the mid-1960s, the number of 18-year-olds consistently exceeds the number of lagged births, reflecting a combination of more lenient immigration policy and the entry of hundreds of thousands of youth now participating in the DACA program.

The drop in the number of 18-year-olds between 2010 and the most recent cohorts coincides with a decline and rise in number of births between 1990 and 2007. Cohort sizes have also been impacted by relatively slow migration rates. The birth cohorts of 1978 through 1982 saw their numbers increased by over 300,000 each by the time they reached age 18. A similar phenomenon occurred in the cohorts of 1991 and 1992. Since that time, however, the estimated augmentation-by-immigration has only exceeded 300,000 once. This is consistent with other data pointing to a general slowdown in immigration after the Great Recession.

To the extent that demographics have played a significant role in driving college enrollment trends, the future appears bleak. There were just under 3.8 million births in the United States in 2018, half a million fewer than in 2007 and the lowest tally since 1986. The trend has only continued further downward. Even if changes in migration policy bring an additional 300,000 youth into these cohorts, as occurred in the 1978-1982 cohorts, the projected number of 18-year-olds in 2040 will be lower than any figure observed since the mid-1990s.

Shrinking cohort size may have both a direct and indirect effect on enrollment. The direct effect occurs because there are fewer students of typical college-going age. The indirect effect may occur through the effect of demographics on the labor market (Vigdor, 2023). As the share of young adults in the labor market increase, the wages of occupations that rely on physical fortitude more than education and experience may increase, reducing the returns to education. The possibility of an indirect effect is consistent with the observation that the ratio of first-time first-year college students to persons age 18 has declined in recent years, from an estimated 76% in 2010 to 68% in 2022.

The data analysis below studies the connection between demographics and enrollment more directly, while also shedding some light on other mechanisms discussed above.

4. Data and Methods

This descriptive analysis uses information on enrollment and other institutional characteristics drawn from the IPEDS data, which cover all postsecondary institutions, public and private, for-profit and non-profit. Attention will be restricted to public institutions offering 4-year degrees, which provide more detailed financial information to IPEDS.

The dependent variable of interest is based on the institution's report of the total number of degree-seeking students enrolled as of an official fall reporting date, commonly October 15th. This is a headcount enrollment measure, weighting full- and part-time students equivalently, and including both undergraduate and post-baccalaureate enrollment. Most analyses below examine the change in log enrollment between fall 2010 and fall 2022. These analyses necessarily exclude those institutions that ceased to exist over the intervening period. The raw count of 4-year institutions in the IPEDS data dropped by 69 between 2010 and 2022, on a base of just under 1,400.

Explanatory variables include basic institutional characteristics: whether the institution operates a medical school, is considered a Morrill land grant institution, whether it is coded as a Historically Black College or University (HBCU), and whether it offers on-campus housing. Institutions are further divided into seven categories on the basis of their Carnegie classification in 2010. Three expenditure variables capture the essential characteristics of finance: the percent of revenues from tuition, Federal grants and contracts, and state or local appropriations. The log of initial enrollment is included in some specifications to examine whether growth trajectories varied by initial institution size. A series of variables captures potentially relevant demographic characteristics: the log of 2010 population in the county, core-based statistical area (CBSA), and state where the institution is located, as well as the ratio of 5-9 year olds to 18-21 year olds at the same three geographic levels, also as captured in the 2010 Census.[5]

Table 2 presents unweighted summary statistics for the just under 500 institutions in the analysis sample. The typical institution saw enrollment decline between 2010 and 2022, consistent with the broad patterns documented above. The sample includes several historically black colleges and universities, land grant institutions, and 66 institutions that operate medical schools, indicating a financial model more reliant on patient revenues. Institutions are quite heterogeneous with respect to size and sources of revenue. Perhaps importantly, they tend to be located in counties and core-based statistical areas with less favorable demographic trends than the surrounding state. This may reflect higher housing costs in college towns, or lower fertility among more-educated adults. Institutions also tend to be located in counties that were more favorably inclined toward Barack Obama than their surrounding states as of the 2008 election.

In addition to models examining "long changes" in enrollment between 2010 and 2022, a series of models examines short-term dynamics in enrollment, segmenting institutions by Carnegie classification and time period. These models will help explore the extent to which decline has tended to affect larger or smaller institutions, and either equilibrium or fulcrum points at which enrollment trends diverge.

5. Results

Table 3 shows the results of specifications analyzing variation in enrollment growth across institutions between Fall 2010 and Fall 2022. The first specification includes only a set of binary indicators for Carnegie classification, with R1 institutions the omitted category. The constant

[5] As the numerator of this ratio includes 5 distinct ages and the denominator 4, a ratio of 1.2 would indicate a uniform age distribution within this range. The population-weighted average county-level ratio is 1.215.

term shows that R1 institutions saw an average log enrollment increase of 0.08 over this time period. Every other category saw significant declines. The greatest declines pertained to institutions categorized as "Masters Institutions II" and "Baccalaureate/Associates." Carnegie classification alone explains about 10% of the institutional variation in enrollment growth.

The second specification adds a basic set of institutional characteristics, including indicator variables for whether is an HBCU, a land grant institution, offers on-campus housing, or has a medical school; as well as measures of the share of revenue derived from tuition, direct transfers from state or local government, and Federal grants. A lagged enrollment measure rounds out the controls.

These controls contribute modestly to the model's explanatory power ($R^2 = 0.15$), but help to explain much of the variation across Carnegie classifications. Coefficients on the Carnegie indicators are no more than half the magnitude of the first specification. Only two institutional characteristic controls yield statistically significant coefficients. Colleges that offer housing posted more positive enrollment trends, as did colleges of larger initial size. This pattern of divergence will be explored at greater depth in Table 5 below.

A number of additional controls linger around the margins of statistical significance; HBCUs, institutions with medical schools, and institutions more dependent on tuition revenue all saw more negative trends, while institutions with more grant revenue grew at higher rates. Each of these coefficients posts a p-value of 0.2 or less.

The third model adds a series of demographic controls. The sample size is reduced slightly, as institutions not located in a core-based statistical area are excluded. The six demographic controls boast more than twice the marginal impact on explanatory power of the eight institutional characteristics added to the second model, and in several cases further reduce the magnitude of the Carnegie classification coefficients – none of which remain statistically significant at the 5% level. Institutions in more populous counties and states posted significantly higher enrollment trends, with effects of comparable magnitudes at the two geographic levels. And a basic measure of the state-level age distribution, the ratio of 5-9 year olds to 18-21 year olds in the 2010 census, shows the strongest relationship with enrollment trends of any variable in the model (t=3.81, p<0.001). The magnitude of the effect indicates that a 10% increase in the number of 5-9 year olds relative to 18-21 year olds, equivalent to a one standard deviation change, predicts a 0.054 more positive trend in log enrollment.

It is interesting to note that state-level age distribution trends are more salient than more localized measures. If anything, institutions with a surplus of 5-9 year olds in their county population witnessed more negative enrollment trends, holding state ratios constant. Among other things, a burgeoning local population may make it more difficult for institutions to expand.

The final model in Table 3 adds election return information from the 2008 Presidential race. Although only county-level election returns significantly predict enrollment trends, both county and state-level data discount the theory that enrollment trends reflect growing conservative disdain for higher education. Other things equal, enrollment trends were lower in counties that exhibited greater support for Barack Obama in the 2008 election. To be clear, this is not a direct test of the hypothesis, as the decline in enrollment in "blue" counties might well reflect a decreased willingness of more conservative families to send their children to school in those counties. But a disdain for exposing children to liberal college towns is somewhat distinct from a disdain for higher education in general. Although the county-level vote share variable is strongly significant, its addition has a relatively modest impact on model fit. Demographic variables continue to exert strong predictive power.

As noted above, less-research-intensive institutions have showed more negative enrollment trends in the period since 2010. Table 4 investigates whether these differential trends can be explain by differential sensitivity to demographics. The coefficients presented are derived from a single OLS regression model, employing the same control variables as the final model presented in Table 3. The specification here adds a series of interaction terms between county population, the county ratio of 5-9 year olds to 18-21 year olds, and the state level age ratio, and Carnegie classification indicators. The Carnegie classifications are collapsed here, with one indicator for what in 2010 were termed "masters-level" institutions, and a second for baccalaureate institutions.

While these interaction terms are generally not statistically significant, the magnitudes are noteworthy. Point estimates suggest that the state-level age ratio, a strong predictor of enrollment trends in Table 3, has a relatively modest impact among the most research-intensive institutions. The coefficient is less than half the magnitude here. Interaction terms point to a much stronger effect among less research-intensive institutions. Among masters-granting institutions, point estimates suggest a sensitivity to age trends nearly three times that of doctorate-granting institutions. Baccalaureate institutions are more than four times more sensitive to age trends, with an interaction term statistically significant at the 10% level.

To summarize the evidence to this point, the declines in enrollment after 2010 were concentrated in less research-intensive institutions, a phenomenon partially explained by their differential characteristics. Commuter campuses without housing, HBCUs, and institutions receiving less grant revenue all consistently show more negative trends. Demographic patterns, most significantly state-level forecasts of relative cohort size as well as local population, have significant explanatory value. Less research-intensive institutions, particularly those without graduate programs, show some evidence of greater sensitivity to trends in cohort size.

While initial enrollment appears as a significant predictor in some of the long difference specifications, in more complete models estimated impacts fall closer to zero. Nonetheless, there are particular concerns that institutions might enter a form of "death spiral," where enrollment losses lead to reductions in tuition revenue, which in turn lead to expenditure cuts, which may then spur additional enrollment losses as academic programs are eliminated. From another perspective, modern institutions of higher education enjoy some degree of scale economy, with larger enrollments permitting a wider array of specialized course and program offerings. Below some critical value, those economies of scale might rapidly erode placing an institution at risk of consolidation or closure.

Table 5 explores this subject by providing results from a series of short-term regression analyses, where the change in log enrollment from one year to the next is modeled as a function of lagged enrollment. If enrollment is a mean reverting process, where smaller institutions trend upwards and larger ones downward, we might expect a positive intercept and negative slope in these regressions. If enrollment is instead a divergent process, where smaller institutions lose economies of scale while larger ones gain, we might expect the opposite pattern.

Table 5 divides the period since 2000 into five periods, including three in the critical period of enrollment losses since 2010. The final period tracks enrollment from fall 2020 forward, the pandemic- and post-pandemic-eras. It further stratifies the analysis by Carnegie classification, using the same simplified three-tier distinctions utilized in Table 4.

Across all tiers of institutions, there is a significant shift from the earliest time period analyzed here to the post-2010 era. Among the most research-intensive institutions, for example, dynamics in the period between 2000 and 2005 show a form of mean reversion, with the smallest institutions tending to exhibit higher growth rates. After 2010, the pattern has flipped, growth now positively associated with initial size. In the 2015-2019 time period, the model implies negative predicted growth at institutions with an initial size below 10,470 students. Several R1 institutions fell below this threshold as of 2015.[6] The pattern continues to hold in the most recent data.

A similar phenomenon is evident among Masters-level institutions. These show a pattern of mean reversion through 2009, no statistically significant relationship between lagged enrollment and growth between 2010 and 2014, and then strong evidence of divergence between 2015 and 2019. The fulcrum point dividing institutions predicted to decline from those predicted to grow rests around an initial enrollment of 9,720. In the post-pandemic period, these institutions exhibited negative growth more uniformly.[7]

Baccalaureate institutions similarly show evidence of mean-reverting growth patterns in the 2000-2004 period, transitioning to a divergence pattern after 2015. Point estimates imply negative growth at essentially all institutions in the tier between 2015 and 2019, followed by some degree of stabilization after 2020.

The final set of estimates in Table 5 examine associates-granting institutions such as community colleges. These institutions, too, show a shift in dynamics over time. Growth relates negatively to initial size between 2000 and 2009, then flips to the opposite pattern after 2010. Point estimates for the 2015-2019 period indicate a fulcrum point at enrollment around 16,600.

In general, then, these results point to a pattern of smaller institutions bearing the brunt of short-run enrollment declines, most notably in the period between 2015 and 2019. Universities offering graduate degrees were at the greatest risk of enrollment declines during this period if their initial enrollment fell below roughly 10,000 students; community colleges tended to shrink even with enrollments somewhat greater than this level. Should these patterns re-emerge in the

[6] Specifically, Cal Tech, Claremont Graduate University, Catholic University, Howard, Brandeis, Princeton, CUNY Graduate Center, RPI, Teacher's College, Yeshiva, Lehigh, Brown, and Rice.

[7] Point estimates suggest that predicted enrollment growth in the 2020-2022 period would be negative except at institutions with initial enrollment above 1.2 billion.

post-pandemic era, they intimate significant concerns regarding loss of scale economies at relatively small institutions.

6. Implications

The broad declines in college enrollment since 2010 exhibit a significant cross-sectional relationship with state and local baseline demographic conditions, and have disproportionately affected less research-intensive public institutions. There are two important implications to discuss, one regarding finance and the other regarding the prognosis for the future.

From a financial perspective, the most-affected institutions typically do not manage large extramural grant portfolios, and do not have significant endowments. They rely significantly on tuition revenue and direct allocations from state and local government. To the extent these institutions exhibit economies of scale, declining enrollment should increase their per-student expenditures. Were these increased expenditures to be covered by raising tuition, the higher costs might exacerbate enrollment declines. Covering higher per-student costs with government transfers avoids this potential vicious cycle, but raises questions about long-term viability.

Figures 5 and 6 show that enrollment changes between 2010 and 2022, for public institutions offering 4-year degrees, are much more highly correlated with per-student government transfers (r=-0.40) than per-student tuition revenue (r=0.07). States have, in general, stepped in to shore up the finances of institutions experiencing enrollment declines, while exhibiting a tendency to reduce per-student subsidies to institutions with stable or increasing enrollment. Given the substantial fixed costs of shutting down an institution, and the option value of retaining one should enrollment trends reverse, this may be a sensible short-run reaction. In the longer run, states may face difficult decisions regarding whether it is worthwhile to fund higher per-student operating subsidies with a system of institutions below their intended capacity.

And projections point to continued declines in enrollment below 2010 capacity. The regression model represented in Table 4 can be used to make out-of-sample predictions. Every variable controlled for in that regression can be replicated as late as Fall 2021, with demographic data updated from the 2020 Census. The resulting predicted values indicate forecasted changes in enrollment over a 12-year period to roughly 2033, based in part on the number of 5-9 year olds in 2020 who would be expected to be of college-going age at that later time.

This exercise should be taken with a grain of salt. Predictions will hold if the model determining enrollments between 2010 and 2022 continues to accurately describe patterns in the future. Evidence in Table 5 above indicates that enrollment dynamics are not necessarily stable, and past performance may not guarantee future results. Nonetheless, the estimates provide a sense of how changing demographics may impact institutions in the coming years.

Table 6 presents summary information regarding these predictions, stratified by Carnegie classification and presented alongside information on actual changes in enrollment observed over the 2010-2022 time period. Overall, in this sample of 450 institutions, log enrollment dropped by an unweighted mean of 0.089 between 2010 and 2022. Predictions based on the 2010-2022 model suggest accelerated decline through 2033, with a mean decline of 0.126.

The R1 institutions, which were largely immune from enrollment declines over the past decade, will continue to exhibit such immunity as a group – although Appendix Table A1, which provides a comprehensive list of predicted enrollment changes for these 450 institutions, suggests that several are at risk of shrinking enrollment. Where log enrollment averaged an increase of 0.08 in the recent past, the model forecasts a slightly more modest 0.06 increase going forward.

For the next tier of less-research-intensive doctorate-granting institutions, the future is projected to closely resemble the recent past, with a -0.086 realized decline in log enrollment followed by a -0.093 predicted decline. More significant acceleration is forecast for masters-level institutions. The set of 220 Masters-1 institutions, nearly half the public universities in the sample, collectively averaged a -0.116 decline in log enrollment between 2010 and 2022; the projected trend is -0.163. The small set of Masters-2 institutions, which fared much worse in the recent interval, is projected to experience a steeper decline as well. And finally, the set of 62 public baccalaureate institutions is projected to experience the most severe trend worsening in trend, with average log enrollment predicted to decline by -0.263. The worsening trends are driven in large part by changing demographics, with the ratio of 5-9 year olds in 2020 falling well below the equivalent value in 2010.

How will American higher education adapt to the changes wrought by declining birthrates? As a baseline, consider the evidence in Figure 6. Absent other intervention, shrinking institutions will require increasing per-student subsidies to operate, unless they impose tuition increases that would threaten to further erode headcount. There are four categories of intervention that might offset or reverse demography-driven trends, and a fifth intervention that would reduce operational subsidies by ceasing to operate some institutions.

6.1 Intervention Type 1: Improving matriculation

As noted above, postsecondary institutions overcame the "baby bust" in part by moving matriculation rates from the 50% range in the early 1980s to as high as 67% in 1997. Since that high water mark, matriculation rates have fluctuated, reaching an all-time high of 70% in 2009. The period of declining enrollment has also been a period of declining matriculation rates. In fall 2021 and 2022, the matriculation rate stood at 61.8% and 62% respectively, the first incidence of two consecutive years below 62% since 1994 and 1995, in the midst of the baby-bust ramp-up. With roughly 3 million high school graduates each year, improving the matriculation rate back to its high point could yield an additional 240,000 college students per cohort.

There are strong evidence-based strategies for improving matriculation rates. Helping families navigate the financial aid system and the uncertainties of college admissions has been shown to have an impact (Bettinger et al., 2012; Dynarski et al., 2021). Offering access to college-level coursework in high school has also been shown to raise matriculation rates—as well as credential attainment rates (Edmunds et al., 2017). Nationwide, numerous states have undertaken policy interventions to smooth the transition to college, such as eliminating tuition at community colleges, requiring students to complete the FAFSA as a condition of high school graduation, and expanding opportunities for taking college courses in high school.

It is somewhat disheartening to understand that this evidence, and these implemented interventions, have taken place in an environment of declining matriculation rates. These rates dropped discretely with the onset of the pandemic, from 66.2% in 2019 to 62.7% in 2022. They may recover. The 70% high water mark was nearly equaled in 2018, when the rate hit 69.1%. With continued efforts to implement evidence-based strategies, some portion of the projected enrollment decline could be reasonably offset.

6.2 Intervention Type 2: Improve persistence

Among students who began study at a 4-year institution in the fall of 2015, 64.6% had earned a bachelor's degree from that institution within six years.[8] This ratio is the highest recorded since the necessary longitudinal data began being reported in the late 1990s. Nonetheless, there are at least in theory enrollment gains to be made by reducing the rate at which students who begin a degree withdraw. And many of the interventions proven effective at

[8] Data from the National Student Clearinghouse, which allows the tracking of students who transfer across instutions, show an overall 6-year degree completion rate of 69% for students in the 2015 entry cohort who begin at public 4-year institutions, and 78.3% for those who begin at private non-profit 4-year institutions. The National Student Clearinghouse has made data available for the entering cohorts of 2016 and 2017, which exhibit slight declines from these levels. See https://nscresearchcenter.org/completing-college/.

increasing matriculation—financial aid navigation, access to college-level material in high school—have also shown promise in improving completion rates.

For several reasons, improved completion statistics may not necessarily yield benefits to institutions or society. Achieving higher completion rates by imposing lower standards for degree completion may help institutions keep students enrolled, but may not yield much benefit in the form of human capital accumulation (Denning et al., 2022). And interventions that succeed in reducing the time it takes students to complete a degree – roughly one-third of four-year degree completers take more than four years to do so – may be helpful to students while on net reducing headcount at postsecondary institutions.

6.3 Intervention Type 3: Increase international enrollment

Foreign student enrollment expanded during the "baby bust" years. By fall 2015, over one million non-immigrant student visa holders were enrolled at American institutions, an increase of more than 300,000 over the number recorded five years earlier. Clearly, in the early years of the enrollment decline institutions turned to foreign students to keep their numbers up. The number of foreign students declined after 2015, reaching a low of 914,095 in the pandemic-affected fall of 2020 and since picking back up to 948,519.

In theory, admitting more foreign students to study in the United States could help institutions make up for the decline in U.S.-born students. Relatedly, a broader relaxation of immigration policy could bring more future college students into the country. These could be thought of as distinct interventions.

Raising the number of foreign student visas may accomplish little for the less-research-intensive institutions likely to face the greatest risk of enrollment decline. In the 2022-23 academic year, over 5,000 students of Chinese nationality enrolled at the University of

Washington, a public flagship R1 institution in a large cosmopolitan city. Washington State University, itself an R1 institution, but a land grant institution located in a smaller town, enrolled just 246. The state's four public masters- and baccalaureate-level institutions enrolled a grand total of zero. The nation's most research-intensive institutions offer educational opportunities that may be difficult to replicate elsewhere in the world. The case for matriculating at a less-research-intensive institution in a foreign country may be more difficult.

Additionally, the strategy of attracting more foreign nationals is complicated by the fact that birth rates in most other nations are falling just as fast, if not faster, than in the United States. With fewer students competing for scarce admission slots to elite domestic institutions, the number of students expressing interest in going abroad for study might well decline.

The potential impact of family-based migration on college enrollment is quite different. To continue considering the experience of Washington state, immigration has significantly increased the proportion of Evergreen state residents reporting Hispanic or Latino ethnicity, from 2.9% in 1980 to 14.5% in 2022. Students reporting this ethnicity are distributed much more evenly across the state relative to foreign nationals on student visas, reflecting in part their distribution in more agricultural regions of the state and the effect of their socioeconomic disadvantage on the likelihood of admission to more-selective campuses. Where the University of Washington accounts for over 95% of the public 4-year enrollment of Chinese nationals in the United States, two-thirds of the state's Hispanic or Latino public college students are enrolled at other institutions.

This said, the prospects for reforms to immigration policy that bring more lower-income families with young children to the United States within the next few years seem dim to say the least. An alternate strategy would be to raise the caps many states impose on out-of-state enrollment at their flagship institutions, which are most likely to attract foreign applications, redirecting in-state students to the less research-intensive institutions with spare capacity.

6.4 Intervention Type 4: Increasing offerings for "non-traditional" students

Universities navigated the "baby bust" in part by creating new opportunities for students other than 18-year-old high school graduates pursuing full-time study. Between 1984 and 1996, part-time undergraduate enrollment rose 58%, more than twice the rate of growth in full-time enrollment. Graduate enrollment rose 84%. Creating more opportunities for non-traditional students to return to school, whether for conventional degree programs or other types of skill acquisition or even pure consumption value, might help some institutions offset enrollment declines.

The strategy of expanding alternate degree or program offerings faces some of the some challenges as increasing traditional student enrollment. Some common postbaccalaureate degree programs have themselves been experiencing enrollment declines. In fall 2023, just under 38,000 college graduates enrolled as first-year law students, falling below 40,000 for the 10^{th} out of the past 11 years. Law school first-year enrollment had exceeded 40,000 every year from 1978 to 2012. While the number of doctorates awarded has trended upward over the past decade, fields including education, the humanities, and arts are on downward trends. Graduate business enrollments have trended downward in recent years.

A more general concern about product innovation strategies once again pertains to the nature of the institutions at greatest risk for significant enrollment declines. These institutions have traditionally focused on undergraduate instruction, and would need to make significant infrastructure investments to begin offering, for example, graduate business degrees. Part-time non-traditional students will, by default, be more common in more populated metropolitan areas. Local community colleges without residential facilities may be more adaptable to their needs than institutions in less-populated counties that have historically offered full-time instruction to students in residence.

6.5 Intervention Type 5: Closure

Edinboro Unversity of Pennsylvania was founded as a school for training teachers, a normal school, in 1857. It is one of hundreds of institutions nationwide that can claim similar origins. Like many, it was not originally a public institution but was purchased by the State of Pennsylvania in 1914. It was located in the small town of Edinboro, which claimed fewer than 1,000 residents at the time the state purchased the school, just south of Erie in the northwestern corner of the state. Edinboro University reached an all-time peak enrollment of 8,642 in fall 2010. Over the next decade that student headcount would steadily decline, to the point where just 4,043 students arrived for class in the fall of 2021. State appropriations to support operations increased, from $4,054 per student to $7,646 in inflation-adjusted 2023 dollars.

That would be the last class of students to attend Edinboro University. Before the 2022/23 school year began, the State of Pennsylvania consolidated the institution, along with two other public universities, into Pennsylvania Western University. By consolidating rather than closing the institution, the state preserves access to education for those students in the northwestern corner of the state, as well as jobs for those employed there.

Closing a campus is politically difficult, and rare. Given broad enrollment trends there are likely few buyers for the physical plant of an aging multi-building campus. State legislators may not be warm to the notion of eliminating jobs in their districts. Proximity to college has been associated with higher rates of enrollment and earnings (Card 1993). Consolidation may permit institutions to economize on certain inputs into educational production, but when the consolidated institutions are beyond a simple commuting distance it may be difficult to reap significant benefits without requiring some students to, for example, take remote biology classes from a satellite campus because the biology department at their location was shut down.

The potential downside of maintaining a fixed number of public colleges in the face of persistent enrollment declines is either rising public subsidy or declining college quality. The returns to proximity for some students may be more than offset if the nearby college ceases to offer programs, or reduces course availability. And many campuses at risk of closure are in sparsely populated areas, where the cost of reduced proximity would be borne by a relative few.

It is conceivable that states with particularly negative enrollment trends, including those where the overall population is declining due to outmigration, might address the political difficulty of shuttering campuses by appointing special commissions to study and propose closures that could not be legislatively amended, similar to the procedure of base realignment and closure implemented by the U.S. military to reduce the number of installations between 1988 and 2005.

7. Conclusion

Demography is not necessarily destiny. American higher education has withstood declines in cohort size much greater than that projected to occur over the next 15 years, increasing enrollment in the process. This was accomplished primarily by converting a greater share of high school graduates to undergraduate students, easing the path for part-time enrollees, and expanding graduate program offerings. Each of these possible interventions remains available to colleges and universities today. But each of them has been available since 2010, and they have not been sufficient to offset what appears by standards of either the past or future to be a modest decline in cohort size.

The cross-sectional evidence presented in this paper links institutional fates over the post-2010 period to patterns of state and local demographics. Generally speaking, the colleges that saw the greatest enrollment declines were in states where the raw number of youth available to educate was forecast to decline the most as of 2010. And projections based on this measure indicate that enrollment trends may well worsen over the next decade. The institutions at greatest risk of decline are those least well positioned to expand graduate enrollment or attract foreign students.

The pattern apparent in recent data, whereby public flagship institutions have expanded enrollment even as their sibling regional universities have declined, is a political choice. Legislatures could, in theory, impose stricter limits on growth and reserve fewer flagship seats for in-state students. While such measures could help bolster enrollments at regional universities, preserving access in what might become underserved corners of states, they would likely face public backlash.

To some extent, the decline in enrollment may reflect improved wages in jobs available to inexperienced workers, which in turn may be a function of changing demographics (Vigdor, 2023). Future technological change may play a significant role in determining whether a higher share of high school graduates continue on to college. If that change is skill-biased, as many have argued it was for much of the latter half of the 20th century, matriculation rates may resume the upward trend they exhibited at that time. If, on the other, artificial intelligence reduces demand for occupations that have traditionally required college-acquired intelligence, the projections developed here might understate future enrollment losses.

References

Abraham, K. and M. Clark (2006) "Financial aid and students' college decisions: Evidence from the District of Columbia Tuition Assistance Grant Program." *Journal of Human Resources* v.41 pp.578-610.

Altonji, J., L. Kahn, and J. Speer (2016) "Cashier or consultant? Entry labor market conditions, field of study, and career success." *Journal of Labor Economics* v.34 pp.S361-S401.

Autor, D., A. Dube, and A. McGrew (2023) "The Unexpected Compression: Competition at Work in the Labor Market." National Bureau of Economic Research Working Paper #31010.

Ball, J., R. Grucza, M. Livingston, T. ter Bogt, C. Currie, and M. de Looze (2023) "The great decline in adolescent risk behaviours: Unitary trend, separate trends, or cascade?" *Social Science & Medicine* v.317

Bettinger, E., B. Long, P. Oreopoulos, and L. Sanbonmatsu (2012) "The Role of Application Assistance and Information in College Decisions: Results f rom the H&R Block FAFSA Experiment." *Quarterly Journal of Economics* v.127 pp.1205-1242.

Bound, J. and S. Turner (2002) "Going to War and Going to College: Did World War II and the G.I. Bill Increase Educational Attainment for Returning Veterans?" *Journal of Labor Economics* v.20 pp.784-815.

Campbell, C., and J. Horowitz (2016) "Does College Influence Sociopolitical Attitudes?" *Sociology of Education* v.89 pp.40-58.

Card, D. (1993) "Using Geographic Variation in College Proximity to Estimate the Return to Schooling." NBER Working Paper #4483.

Cornwell, C., D. Mustard, and D. Sridhar (2006) "The enrollment effects of merit-based financial aid: Evidence from Georgia's HOPE Scholarship." *Journal of Labor Economics* v.24 pp.761-786.

Denning, J., E. Eide, K. Mumford, R. Patterson, and M. Warnick (2022) "Why Have College Completion Rates Increased?" *American Economic Journal: Applied Economics* v.14 pp.1-29.

Dynarski, S. (2000) "Hope for whom? Financial aid for the middle class and its impact on college attendance." *National Tax Journal* v.53 pp.629-661.

Dynarski, S. (2003) "Does aid matter? Measuring the effect of student aid on college attendance and completion." *American Economic Review* v.93 pp.279-288.

Dynarski, S., C. Libassi, K. Michelmore, and S. Owen (2021) "Closing the Gap: The Effect of Reducing Complexity and Uncertainty in College Pricing on the Choices of Low-Income Students." *American Economic Review* v.111 pp.1721-1756.

Edmunds,J., F. Unlu, E. Glennie, L. Bernstein, L. Fesler, J. Furey & N. Arshavsky (2017) "Smoothing the Transition to Postsecondary Education: The Impact of the Early College Model," *Journal of Research on Educational Effectiveness* v.10 pp.297-325.

Goodman, J. (2008) "Who merits financial aid? Massachusetts' Adams Scholarship." *Journal of Public Economics* v.92 pp.2121-2131.

Gordon, G. and A. Hedlund (2022) "Accounting for Tuition Increases across U.S. Colleges." Unpublished manuscript.

Gunderson, M. and P. Oreopoulos (2020) "Chapter 3 – Returns to education in developed countries." In S. Bradley and C. Green, eds., *The Economics of Education: A Comprehensive Overview*. Academic Press.

Hansen, W.L. (1983) "The impact of student financial aid on access." In Froomkin, J., ed., *The Crisis in Higher Education*. New York: Academy of Political Science.

Harris, D., F. Chen, R. Martin, A. Bernhardt, C. Marsicano, and P. von Hippel (2024) "The Effects of the COVID-19 Pandemic on Educational Attainment." *RSF: The Russell Sage Foundation Journal of the Social Sciences* v.10 pp.152-180.

Hemelt, S. and D. Marcotte (2011) "The impact of tuition increases on enrollment at public colleges and universities." *Educational Evaluation and Policy Analysis* v.33 pp.435-457.

Houston, D. (2024) "Polarization, Partisan Sorting, and the Politics of Education." *American Education Research Journal* preprint.

Hoxby, C. (2009) "The Changing Selectivity of American Colleges." *Journal of Economic Perspectives* v.23 pp.95-118.

Hübner, M. (2012) "Do tuition fees affect enrollment behavior? Evidence from a 'natural experiment' in Germany." *Economics of Education Review* v.31 pp.949-960.

Hungerford, T. and G. Solon (1987) "Sheepskin effects in the returns to education." *The Review of Economics and Statistics* v.69 pp.175-177.

Jaeger, D., and M. Page (1996) "Degrees Matter: New Evidence on Sheepskin Effects in the Returns to Education." *The Review of Economics and Statistics* v.78 pp.733-740.

Kane, T. (2007) "Evaluating the impact of the D.C. Tuition Assistance Grant program." *Journal of Human Resources* v.42 pp.555-582.

Parodi, K., M. Holt, J. Green, M. Porche, B. Koenig and Z. Xuan (2022) "Time trends and disparities in anxiety among adolescents, 2012-2018." *Social Psychiatry and Psychiatric Epidemiology* v.57 pp.127-137.

Seftor, N. and S. Turner (2002) "Back to school: Federal student aid policy and adult college enrollment." *Journal of Human Resources* v.37 pp.336-352.

Vigdor, J. (2023) "Was It Demography All Along? Population Dynamics and Economic Inequality." Unpublished manuscript.

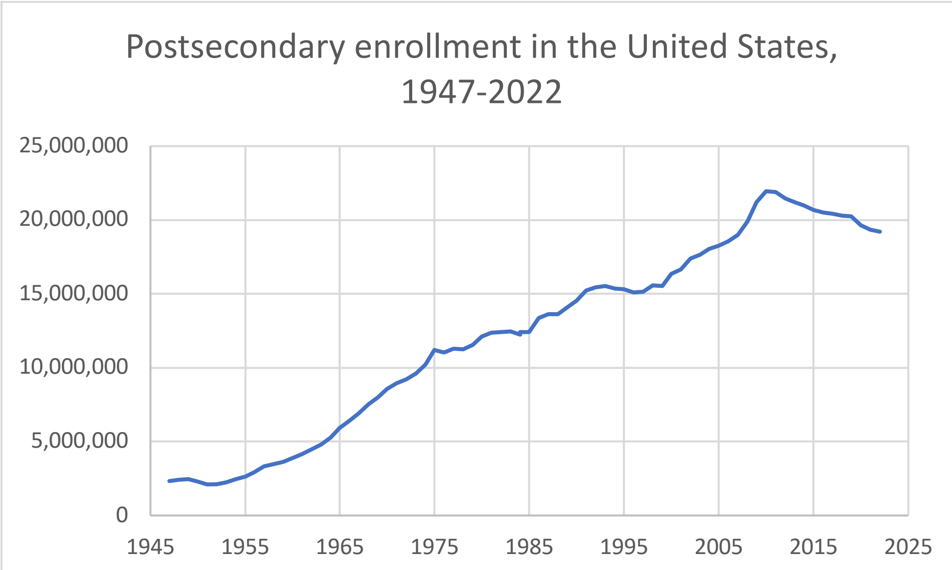

Figure 1. Source: IPEDS, U.S. Department of Education.

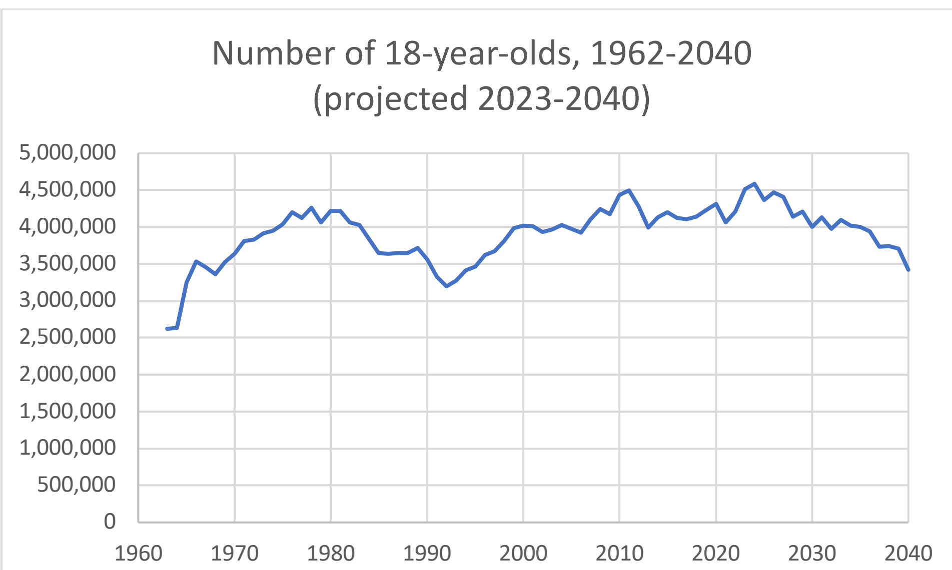

Figure 2. Source: March CPS. Projections 2023-2040 based on age cohorts under 18 in March 2022, and abstract from changes due to net migration or mortality.

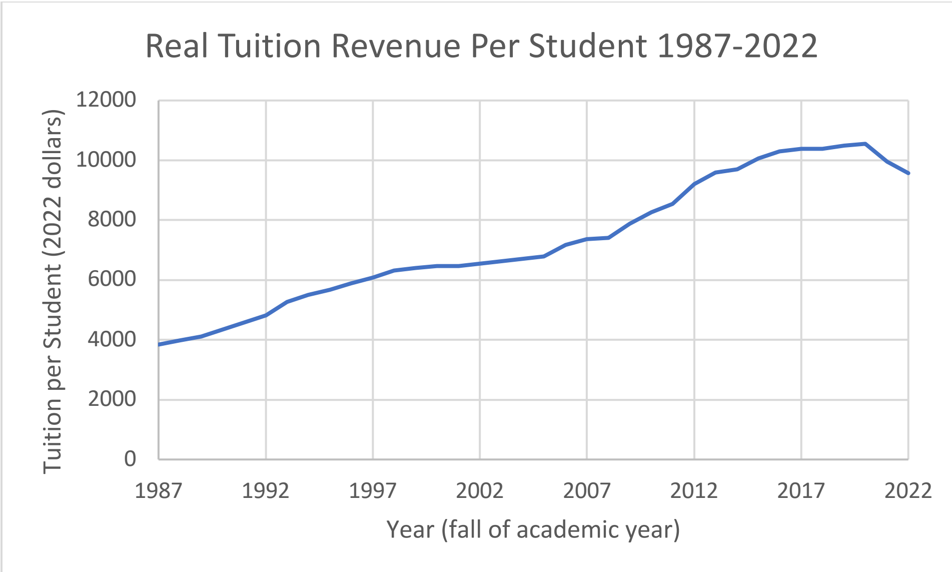

Figure 3. Source: IPEDS. Inflation adjustment uses CPI-U.

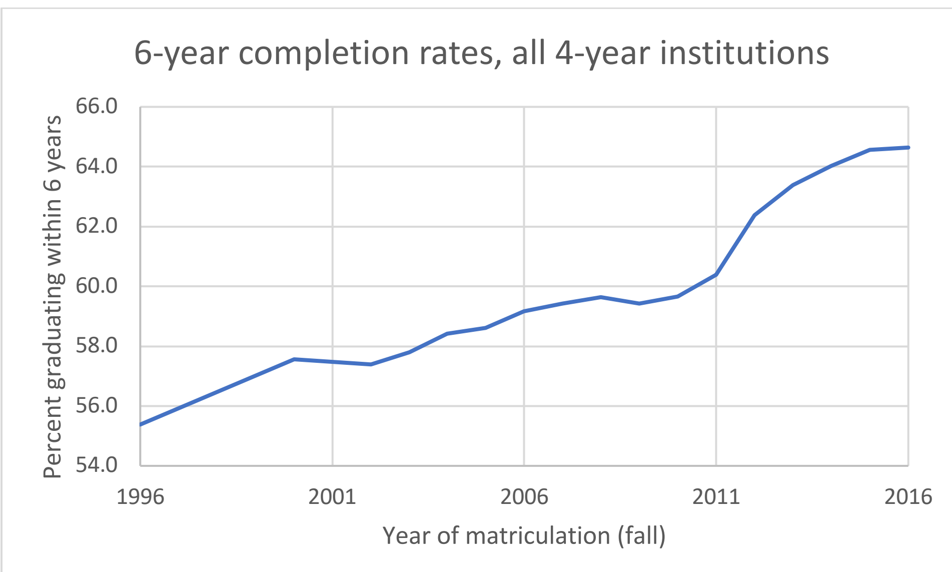

Figure 4. Source: IPEDS

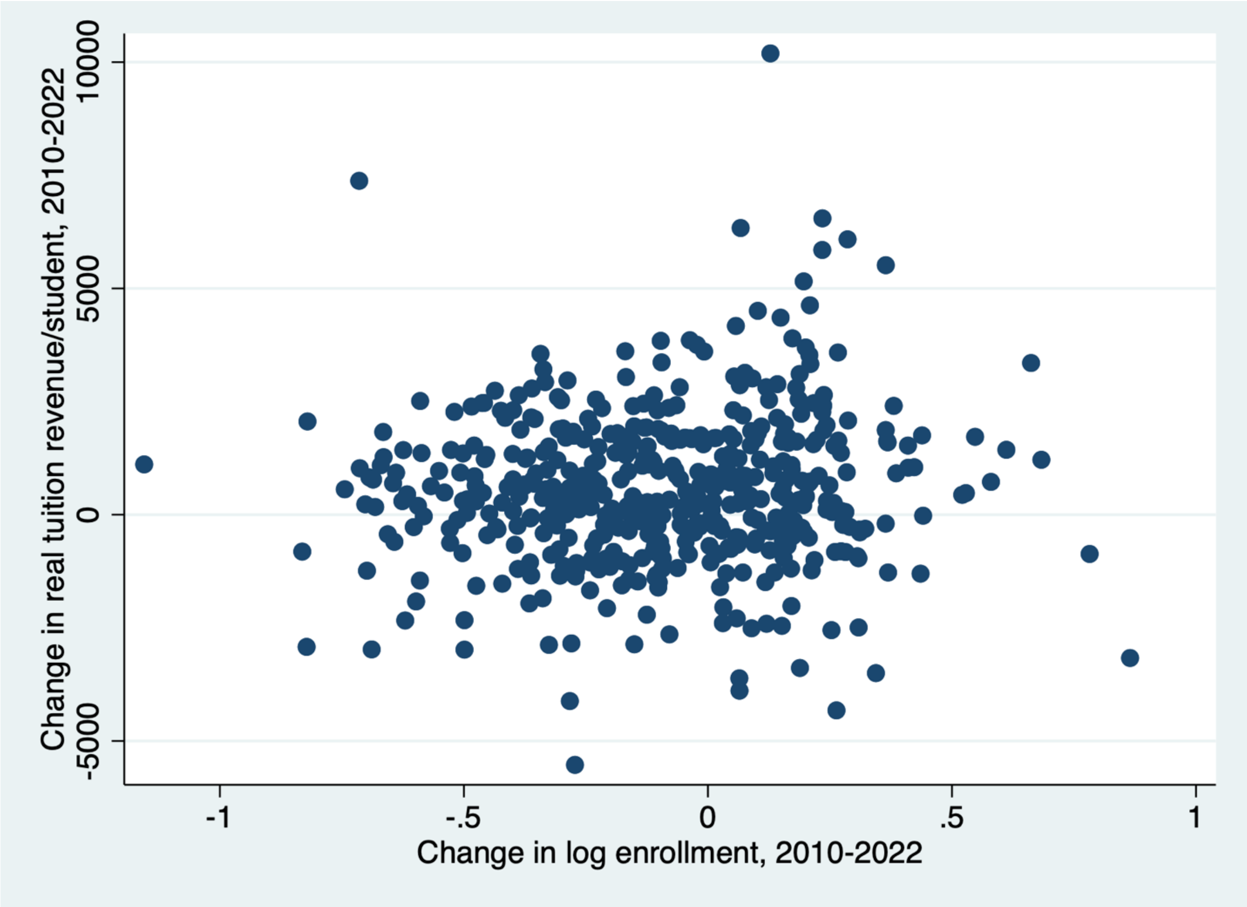

Figure 5. Source: IPEDS

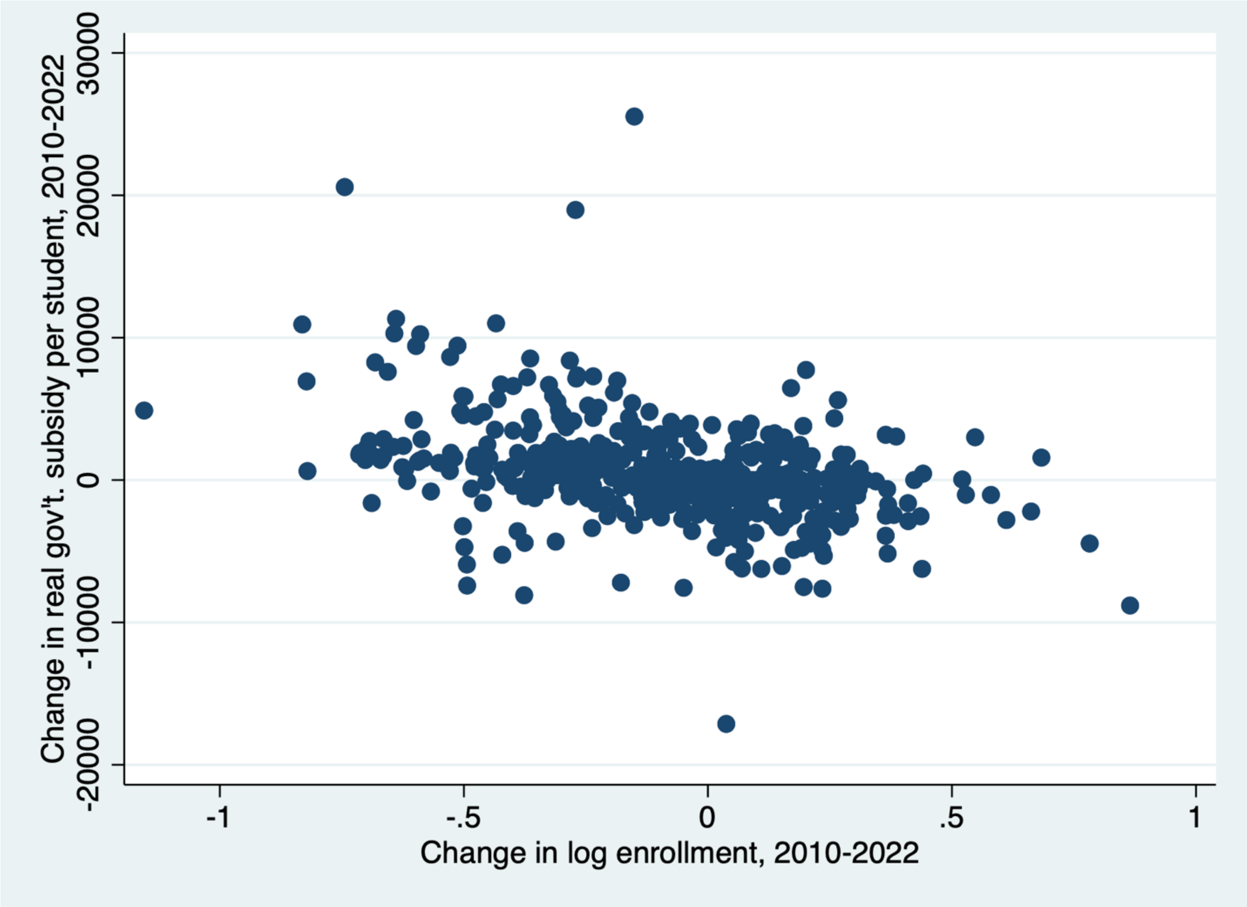

Figure 6. Source: IPEDS

Table 1: enrollment by sector at five points in time

Institution type	1984	1992	1996	2010	2022
Private R1	603,933	633,938	630,508	759,187	870,039
Public R1	2,311,009	2,497,761	2,451,059	2,972,467	3,286,311
Doctoral	991,936	1,097,082	1,097,383	1,446,532	1,379,991
Masters I	2,478,156	2,902,290	2,888,556	3,753,501	3,517,312
Masters II	209,131	262,676	260,341	404,205	328,024
Baccalaureate	824,691	965,916	993,259	1,388,226	1,140,716
Associates	4,071,452	5,549,637	5,408,278	8,923,255	5,948,058

Table 2: summary statistics for analysis sample

Variable	Mean (Standard Deviation)
Δln(enrollment) 2010-2022 (*n*=485)	-0.096 (0.289)
Historically Black College or University	0.076
Medical School	0.132
Land Grant Institution	0.134
On-campus housing	0.886
Tuition share of revenue	0.256 (0.106)
State/local allocation share of revenue	0.277 (0.103)
Federal grant/contract share of revenue	0.066 (0.065)
ln(2010 enrollment)	9.161 (0.876)
ln(county population)	12.15 (1.419)
ln(CBSA population) (*n*=468)	13.07 (1.799)
ln(state population)	15.69 (0.938)
County ratio of 5-9 to 18-21 year olds	0.878 (0.342)
CBSA ratio of 5-9 to 18-21 year olds (*n*=468)	0.968 (0.329)
State ratio of 5-9 to 18-21 year olds	1.133 (0.102)
Percent of county voters supporting Obama in 2008	0.535 (0.141)
Percent of state voters supporting Obama in 2008	0.509 (0.087)
Note: n=499 except as noted.	

Table 3: Correlates of enrollment trends, public 4-year institutions

Independent variable	Dependent variable: Δln(enrollment) 2010-2022			
Carnegie classification (R1 omitted)				
Doctoral	-0.175 (0.045)	-0.130 (0.053)	-0.113 (0.051)	-0.109 (0.051)
Masters I	-0.198 (0.034)	-0.121 (0.051)	-0.113 (0.050)	-0.110 (0.050)
Masters II	-0.317 (0.067)	-0.191 (0.081)	-0.163 (0.081)	-0.150 (0.081)
Liberal Arts College	-0.207 (0.065)	-0.049 (0.086)	-0.107 (0.089)	-0.066 (0.091)
Baccalaureate	-0.277 (0.050)	-0.109 (0.074)	-0.112 (0.075)	-0.136 (0.075)
Baccalaureate/Assoc.	-0.369 (0.082)	-0.190 (0.098)	-0.189 (0.096)	-0.204 (0.097)
HBCU	---	-0.035 (0.053)	-0.080 (0.055)	-0.061 (0.057)
Has medical school	---	-0.033 (0.048)	-0.018 (0.047)	-0.0002 (0.05)
Land-grant institution	---	0.024 (0.045)	0.101 (0.046)	0.084 (0.047)
Has on-campus housing	---	0.119 (0.042)	0.129 (0.043)	0.085 (0.046)
ln(2010 enrollment)	---	0.066 (0.022)	0.013 (0.028)	0.002 (0.028)
ln(2010 county pop.)	---	---	0.050 (0.021)	0.073 (0.023)
ln(2010 CBSA pop.)	---	---	-0.011 (0.014)	0.004 (0.015)
ln(2010 state pop.)	---	---	0.035 (0.017)	0.025 (0.017)
Ratio of 5-9 year olds to 18-21 year olds				
County	---	---	-0.122 (0.088)	-0.192 (0.090)
CBSA	---	---	0.121 (0.091)	0.099 (0.092)
State	---	---	0.569 (0.141)	0.476 (0.148)
Share of 2008 Presidential vote to Obama				
County	---	---	---	-0.430 (0.129)
State	---	---	---	-0.232 (0.210)
Intercept term	0.080 (0.029)	0.198 (0.148)	-1.94 (0.304)	-1.56 (0.313)
N	485	485	458	447
R^2	0.106	0.138	0.225	0.245

Note: standard errors in parentheses. Institutions not located in Core-Based Statistical Areas excluded from the third and fourth specifications. Institutions not linked to jurisdictions reporting 2008 voting results excluded from the final specification.

Table 4: Heterogeneous effects of demographic variables

Variable	Main effect	Carnegie Masters Interaction	Carnegie Baccalaureate Interaction
ln(2010 county pop.)	0.103	-0.045	0.013
	(0.037)	(0.036)	(0.043)
Ratio of 5-9 year olds to 18-21 year olds			
County	-0.314	0.199	-0.076
	(0.137)	(0.130)	(0.220)
State	0.168	0.378	0.722
	(0.240)	(0.285)	(0.414)

Note: Standard errors in parentheses. All coefficients derived from a single specification, with controls as shown in the rightmost column in Table 3. Dependent variable is Δln(enrollment) 2010-2022.
n=447
r^2=0.285

Table 5: Short-run dynamics by Carnegie classification and time period

DV: Δln(enrollment)	R1/Doctoral	Masters	Baccalaureate	Associates
2000-2005				
Intercept	0.100	0.074	0.132	0.188
	(0.020)	(0.017)	(0.025)	(0.016)
Lagged	-0.008	-0.006	-0.015	-0.020
ln(enrollment)	(0.002)	(0.002)	(0.003)	(0.002)
2005-2010				
Intercept	0.003	0.093	0.047	0.124
	(0.016)	(0.028)	(0.020)	(0.012)
Lagged	0.001	-0.009	-0.004	-0.011
ln(enrollment)	(0.002)	(0.003)	(0.003)	(0.002)
2010-2015				
Intercept	-0.032	-0.027	0.026	-0.163
	(0.015)	(0.017)	(0.019)	(0.013)
Lagged	0.004	0.003	-0.004	0.016
ln(enrollment)	(0.002)	(0.002)	(0.003)	(0.002)
2015-2020				
Intercept	-0.077	-0.190	-0.031	-0.202
	(0.013)	(0.026)	(0.019)	(0.014)
Lagged	0.008	0.021	0.002	0.021
ln(enrollment)	(0.001)	(0.003)	(0.003)	(0.002)
2020-				
Intercept	-0.061	-0.050	0.011	-0.056
	(0.021)	(0.020)	(0.029)	(0.018)
Lagged	0.006	0.002	-0.005	0.002
ln(enrollment)	(0.002)	(0.002)	(0.004)	(0.002)

Note: Standard errors in parentheses.

Table 6: summary of projections

Institution category	Mean Δln(enrollment) 2010-2022	Mean projected Δln(enrollment) 2021-2033
Overall (n=450)	-0.089	-0.126
R1 Research-intensive (n=90)	0.080	0.065
Doctoral (n=60)	-0.086	-0.093
Masters I (n=220)	-0.116	-0.163
Masters II (n=18)	-0.223	-0.254
Baccalaureate (n=62)	-0.202	-0.263

Appendix Table A1: Enrollment projections for Public 4-year institutions, 2021-2033

PANEL A: Carnegie R1 (Research Intensive Doctoral)

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Arizona State University Campus Immersion	77,881	0.128	0.274
Auburn University	31,526	0.236	0.070
Binghamton University	18,055	0.207	-0.003
CUNY Graduate School and University Center	9,017	0.282	-0.011
Clemson University	27,341	0.381	0.241
Colorado State University-Fort Collins	32,586	0.102	0.130
Florida International University	56,664	0.276	0.208
Florida State University	45,130	0.089	0.092
Georgia Institute of Technology-Main Campus	43,859	0.782	0.384
Georgia State University	36,973	0.147	0.108
Indiana University-Bloomington	45,328	0.102	-0.050
Iowa State University	30,708	0.044	0.024
Kansas State University	20,229	-0.179	0.075
Kent State University at Kent	26,597	-0.028	0.021
Louisiana State University and Agricultural & Mechanical College	35,912	0.238	0.129
Michigan State University	49,659	0.063	0.062
Mississippi State University	23,086	0.142	0.014
New Mexico State University-Main Campus	13,904	-0.265	0.014
North Carolina State University at Raleigh	36,831	0.065	0.115
Northern Illinois University	16,234	-0.421	-0.038
Ohio State University-Main Campus	61,677	0.077	0.134
Ohio University-Main Campus	24,797	-0.039	-0.187
Oklahoma State University-Main Campus	24,577	0.070	0.083
Old Dominion University	23,494	-0.057	-0.021

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Oregon State University	33,193	0.367	0.003
Purdue University-Main Campus	50,344	0.227	0.065
Rutgers University-New Brunswick	50,804	0.263	0.163
SUNY at Albany	17,075	-0.056	0.043
Southern Illinois University-Carbondale	11,266	-0.590	-0.194
Stony Brook University	26,608	0.054	0.182
Texas A & M University-College Station	72,530	0.410	0.320
Texas Tech University	40,542	0.244	0.190
The University of Alabama	38,316	0.249	0.097
The University of Tennessee-Knoxville	31,701	0.109	0.177
The University of Texas at Arlington	45,949	0.287	0.247
The University of Texas at Austin	51,991	0.023	0.170
University at Buffalo	32,332	0.098	0.068
University of Alabama at Birmingham	22,289	0.210	0.074
University of Arizona	48,274	0.234	0.209
University of Arkansas	29,068	0.368	0.167
University of Cincinnati-Main Campus	40,329	0.243	0.071
University of Colorado Boulder	39,000	0.191	0.113
University of Connecticut	26,876	0.057	0.016
University of Florida	55,781	0.103	0.176
University of Georgia	40,118	0.158	0.039
University of Hawaii at Manoa	19,098	-0.064	0.040
University of Houston	47,031	0.187	0.335
University of Idaho	11,303	-0.067	-0.066
University of Illinois Chicago	34,199	0.192	0.141
University of Illinois Urbana-Champaign	56,607	0.261	0.112
University of Iowa	29,909	0.017	-0.109

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
University of Kansas	26,780	-0.072	-0.049
University of Kentucky	30,390	0.152	0.113
University of Louisville	22,140	0.036	0.008
University of Maine	12,657	0.062	-0.033
University of Maryland-Baltimore County	13,638	0.082	0.088
University of Maryland-College Park	41,272	0.080	0.016
University of Massachusetts-Amherst	32,045	0.156	-0.001
University of Memphis	21,622	-0.023	-0.014
University of Michigan-Ann Arbor	50,278	0.200	0.016
University of Minnesota-Twin Cities	52,376	0.061	0.131
University of Mississippi	21,203	0.266	-0.068
University of Missouri-Columbia	31,401	-0.033	0.040
University of Nebraska-Lincoln	24,431	-0.033	0.132
University of Nevada-Reno	21,034	0.169	0.102
University of New Hampshire-Main Campus	14,001	-0.079	-0.023
University of New Mexico-Main Campus	22,139	-0.268	0.010
University of North Carolina at Chapel Hill	31,641	0.076	0.042
University of North Texas	42,441	0.210	0.183
University of Oklahoma-Norman Campus	28,042	0.067	0.209
University of Oregon	22,257	-0.008	0.011
University of Rhode Island	17,511	0.070	-0.003
University of South Carolina-Columbia	35,471	0.186	0.007
University of South Florida	49,708	0.204	0.191
University of Southern Mississippi	14,146	-0.154	0.022
University of Toledo	16,979	-0.395	-0.126
University of Utah	34,464	0.120	0.123
University of Vermont	13,826	0.039	-0.178

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
University of Virginia-Main Campus	26,005	0.067	-0.120
University of Washington-Seattle Campus	52,434	0.209	0.114
University of Wisconsin-Madison	47,016	0.149	0.075
University of Wisconsin-Milwaukee	23,829	-0.295	-0.031
University of Wyoming	11,479	-0.151	-0.011
Utah State University	27,426	0.529	0.288
Virginia Commonwealth University	28,594	-0.131	-0.072
Virginia Polytechnic Institute and State University	37,279	0.208	0.063
Washington State University	29,843	0.046	0.000
Wayne State University	24,919	-0.288	-0.027
West Virginia University	25,474	-0.169	-0.027
Western Michigan University	18,266	-0.387	-0.110

PANEL B: Carnegie R2 (Doctoral)

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Alabama A & M University	5,969	0.033	0.079
Ball State University	20,319	-0.110	-0.168
Bowling Green State University-Main Campus	17,645	-0.045	-0.115
Central Michigan University	15,424	-0.665	-0.292
Cleveland State University	15,308	-0.189	-0.113
East Carolina University	28,021	-0.023	-0.168
East Tennessee State University	13,303	-0.103	-0.067
Florida Atlantic University	30,155	0.046	-0.014
George Mason University	38,628	0.182	-0.056
Idaho State University	12,135	-0.019	-0.263
Illinois State University	20,233	-0.022	-0.097

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Indiana State University	9,459	-0.283	-0.189
Indiana University of Pennsylvania-Main Campus	9,298	-0.540	-0.183
Indiana University-Purdue University-Indianapolis	27,690	-0.163	-0.026
Jackson State University	7,080	-0.229	-0.238
Louisiana Tech University	11,037	-0.080	-0.140
Miami University-Oxford	19,264	0.089	0.031
Michigan Technological University	7,008	0.013	-0.180
Middle Tennessee State University	21,568	-0.274	-0.036
Missouri University of Science and Technology	7,241	-0.018	-0.146
Montana State University	16,788	0.243	0.000
New Jersey Institute of Technology	11,901	0.322	-0.047
North Dakota State University-Main Campus	12,461	-0.163	-0.123
Northern Arizona University	28,711	0.109	-0.094
Oakland University	17,170	-0.168	-0.160
Portland State University	22,858	-0.260	-0.241
Rutgers University-Newark	12,168	-0.068	-0.169
SUNY College of Environmental Science and Forestry	2,012	-0.305	-0.060
San Diego State University	36,484	0.248	0.135
South Carolina State University	2,374	-0.499	-0.248
South Dakota State University	11,465	-0.124	-0.194
Tennessee State University	8,077	0.032	-0.002
Texas A & M University-Commerce	11,504	0.047	-0.025
Texas A & M University-Kingsville	6,405	-0.462	-0.219
Texas Southern University	7,524	-0.102	0.118
Texas Woman's University	16,338	0.118	0.101
The University of Montana	10,106	-0.452	-0.162
The University of Texas at Dallas	29,696	0.611	0.127

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
The University of Texas at El Paso	24,003	0.077	0.025
University of Akron Main Campus	14,498	-0.699	-0.156
University of Alabama in Huntsville	9,636	0.193	0.231
University of Arkansas at Little Rock	8,295	-0.475	-0.115
University of Central Florida	70,310	0.197	0.101
University of Colorado Denver/Anschutz Medical Campus	24,267	-0.015	-0.154
University of Louisiana at Lafayette	16,225	-0.097	-0.066
University of Maryland, Baltimore	7,244	0.088	-0.085
University of Massachusetts-Boston	15,637	0.009	-0.156
University of Massachusetts-Lowell	17,597	0.154	-0.051
University of Missouri-Kansas City	16,003	0.029	-0.096
University of Missouri-St Louis	15,189	-0.101	-0.074
University of Nevada-Las Vegas	30,679	0.084	-0.037
University of New Orleans	7,953	-0.461	-0.198
University of North Carolina at Greensboro	19,038	-0.043	-0.005
University of North Dakota	13,772	-0.023	-0.203
University of Northern Colorado	10,348	-0.329	-0.183
University of South Alabama	13,992	-0.095	-0.117
University of South Dakota	9,464	-0.029	-0.368
Wichita State University	15,394	0.107	0.067
William & Mary	9,517	0.188	-0.218
Wright State University-Main Campus	10,295	-0.645	-0.072

PANEL C: Carnegie Masters I

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Alabama State University	3,964	-0.399	-0.200
Albany State University	6,297	0.308	-0.314
Angelo State University	10,826	0.436	0.004
Appalachian State University	20,641	0.171	-0.234
Arkansas State University	12,863	-0.017	-0.053
Arkansas Tech University	9,640	-0.038	-0.062
Auburn University at Montgomery	5,068	-0.130	-0.243
Austin Peay State University	9,609	-0.140	-0.114
Boise State University	25,794	0.267	0.021
Bowie State University	6,308	0.118	-0.248
Bridgewater State University	9,942	-0.154	-0.264
CUNY Bernard M Baruch College	19,969	0.151	-0.269
CUNY Brooklyn College	15,938	-0.175	-0.233
CUNY City College	15,031	-0.062	-0.245
CUNY Hunter College	24,099	0.025	-0.143
CUNY Lehman College	14,392	0.072	-0.277
CUNY Queens College	18,772	-0.207	-0.181
California Polytechnic State University-San Luis Obispo	22,231	0.181	-0.140
California State Polytechnic University-Humboldt	5,908	-0.271	-0.221
California State Polytechnic University-Pomona	29,456	0.282	0.033
California State University-Bakersfield	10,972	0.195	0.009
California State University-Chico	15,702	-0.120	-0.125
California State University-Dominguez Hills	17,837	0.170	0.036
California State University-East Bay	15,189	0.059	-0.140
California State University-Fresno	25,047	0.137	-0.021

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
California State University-Fullerton	40,738	0.126	0.079
California State University-Long Beach	40,190	0.154	0.034
California State University-Los Angeles	27,513	0.273	0.050
California State University-Northridge	40,108	0.063	0.040
California State University-Sacramento	32,498	0.163	-0.058
California State University-San Bernardino	19,514	0.189	0.025
California State University-San Marcos	16,255	0.441	0.014
California State University-Stanislaus	10,481	0.201	-0.050
Cameron University	3,470	-0.616	-0.106
Central Connecticut State University	9,653	-0.276	-0.280
Central Washington University	10,176	-0.227	-0.144
Cheyney University of Pennsylvania	642	-0.822	-0.151
Chicago State University	2,366	-1.155	-0.041
Citadel Military College of South Carolina	3,693	0.090	-0.165
College of Charleston	10,941	-0.058	-0.201
College of Staten Island CUNY	11,793	-0.304	-0.153
Colorado State University Pueblo	6,110	-0.109	-0.110
Columbus State University	7,898	-0.104	-0.231
Coppin State University	2,101	-0.639	-0.310
Delaware State University	5,200	0.439	-0.279
Delta State University	2,727	-0.526	-0.356
East Central University	3,350	-0.374	-0.119
East Stroudsburg University of Pennsylvania	5,129	-0.362	-0.290
Eastern Connecticut State University	4,319	-0.317	-0.351
Eastern Illinois University	8,608	-0.272	-0.198
Eastern Kentucky University	13,984	-0.145	-0.050
Eastern Michigan University	15,340	-0.519	-0.258

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Eastern New Mexico University-Main Campus	4,991	0.006	-0.251
Eastern Washington University	10,892	-0.056	0.020
Emporia State University	5,615	-0.162	-0.262
Fayetteville State University	6,748	0.160	-0.267
Fitchburg State University	6,674	-0.033	-0.244
Florida Agricultural and Mechanical University	9,000	-0.366	-0.131
Florida Gulf Coast University	15,909	0.284	-0.014
Fort Hays State University	14,102	0.086	-0.202
Fort Valley State University	2,923	-0.358	-0.289
Framingham State University	4,495	-0.370	-0.195
Francis Marion University	3,923	0.003	-0.215
Frostburg State University	4,452	-0.296	-0.145
Georgia College & State University	6,763	-0.065	-0.285
Georgia Southern University	27,076	0.258	-0.144
Georgia Southwestern State University	3,157	0.011	-0.305
Governors State University	4,395	-0.246	-0.160
Grambling State University	5,270	0.013	-0.221
Grand Valley State University	22,406	-0.125	-0.069
Henderson State University	2,919	-0.387	-0.225
Indiana University-Northwest	3,460	-0.624	-0.273
Indiana University-South Bend	4,449	-0.686	-0.263
Indiana University-Southeast	4,051	-0.670	-0.277
Jacksonville State University	9,540	0.013	-0.141
James Madison University	22,166	0.134	-0.263
Kean University	12,759	-0.213	-0.164
Kutztown University of Pennsylvania	7,673	-0.362	-0.177
Lamar University	16,320	0.155	-0.090

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Lincoln University	1,794	-0.603	-0.193
Louisiana State University-Shreveport	8,881	0.662	-0.287
Marshall University	11,023	-0.283	-0.162
McNeese State University	6,454	-0.361	-0.034
Midwestern State University	5,797	-0.105	0.008
Millersville University of Pennsylvania	7,191	-0.253	-0.131
Minnesota State University Moorhead	5,088	-0.476	-0.224
Minnesota State University-Mankato	14,576	-0.056	-0.217
Minot State University	2,836	-0.331	-0.208
Missouri State University-Springfield	22,925	0.096	-0.025
Montana State University Billings	4,114	0.064	-0.164
Montclair State University	20,744	0.169	-0.111
Morgan State University	8,469	0.154	-0.276
Murray State University	9,414	-0.094	-0.157
New Jersey City University	6,918	-0.264	-0.200
New Mexico Highlands University	2,645	-0.337	-0.437
Nicholls State University	6,225	-0.185	-0.052
Norfolk State University	5,458	-0.186	-0.274
North Carolina A & T State University	13,322	0.223	-0.128
North Carolina Central University	7,953	-0.135	-0.364
Northeastern Illinois University	6,440	-0.713	-0.104
Northeastern State University	7,025	-0.355	-0.202
Northern Kentucky University	15,979	0.005	-0.126
Northern Michigan University	7,214	-0.301	-0.328
Northern State University	3,340	0.044	-0.220
Northwest Missouri State University	7,870	0.175	-0.263
Northwestern State University of Louisiana	10,735	0.016	-0.234

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Pittsburg State University	6,017	-0.197	-0.248
Plymouth State University	4,224	-0.410	-0.417
Prairie View A & M University	9,400	0.031	-0.032
Purdue University Fort Wayne	8,298	-0.448	-0.118
Radford University	8,998	-0.154	-0.303
Rhode Island College	6,331	-0.459	-0.362
Rowan University	19,052	0.547	-0.146
Rutgers University-Camden	6,569	-0.032	-0.188
SUNY Brockport	6,991	-0.290	-0.133
SUNY Buffalo State	7,173	-0.656	-0.108
SUNY College at Geneseo	4,535	-0.303	-0.178
SUNY College at Oswego	7,058	-0.184	-0.212
SUNY College at Plattsburgh	4,738	-0.364	-0.297
SUNY College at Potsdam	2,607	-0.598	-0.252
SUNY Cortland	6,658	-0.095	-0.305
SUNY Empire State College	9,462	-0.242	-0.316
SUNY Oneonta	5,918	-0.098	-0.256
SUNY Polytechnic Institute	2,850	0.008	-0.082
SUNY at Fredonia	3,764	-0.503	-0.217
Saginaw Valley State University	7,523	-0.399	-0.263
Saint Cloud State University	10,774	-0.582	-0.100
Salem State University	7,131	-0.424	-0.267
Salisbury University	7,570	-0.165	-0.158
Sam Houston State University	21,612	0.217	-0.109
San Francisco State University	26,899	-0.162	-0.177
San Jose State University	37,133	0.207	-0.107
Shippensburg University of Pennsylvania	5,667	-0.478	-0.100

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Slippery Rock University of Pennsylvania	8,405	-0.074	-0.152
Sonoma State University	7,371	-0.235	-0.181
Southeast Missouri State University	9,851	-0.106	-0.118
Southeastern Louisiana University	13,456	-0.130	-0.043
Southeastern Oklahoma State University	5,420	0.273	-0.133
Southern Arkansas University Main Campus	4,434	0.410	-0.167
Southern Connecticut State University	8,788	-0.297	-0.244
Southern Illinois University-Edwardsville	13,010	-0.121	-0.145
Southern Oregon University	5,179	-0.213	-0.191
Southern University and A & M College	8,317	0.176	-0.009
Southwestern Oklahoma State University	4,648	-0.096	-0.137
State University of New York at New Paltz	7,075	-0.107	-0.256
Stephen F Austin State University	12,000	-0.134	-0.065
Tarleton State University	13,995	0.237	-0.005
Tennessee Technological University	9,840	-0.153	-0.059
Texas A & M International University	8,455	0.216	-0.144
Texas A & M University-Corpus Christi	10,762	0.072	0.016
Texas A&M University-Texarkana	2,112	0.052	-0.116
Texas Southmost College	7,527	-0.689	0.048
Texas State University	37,864	0.159	0.036
The College of New Jersey	7,589	0.070	-0.236
The University of Tennessee-Chattanooga	11,457	0.046	-0.042
The University of Tennessee-Martin	6,712	-0.209	-0.148
The University of Texas Permian Basin	5,534	0.364	0.041
The University of Texas Rio Grande Valley	31,940	0.521	-0.066
The University of Texas at San Antonio	34,734	0.128	0.122
The University of Texas at Tyler	9,687	0.364	0.094

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
The University of West Florida	13,288	0.153	-0.002
Towson University	20,856	-0.098	-0.084
Troy University	14,901	-0.694	-0.168
Truman State University	4,225	-0.421	-0.240
University of Alaska Anchorage	10,845	-0.551	0.012
University of Baltimore	3,710	-0.682	-0.315
University of Central Arkansas	10,105	-0.144	-0.032
University of Central Missouri	10,530	0.025	-0.205
University of Central Oklahoma	13,250	-0.334	-0.006
University of Colorado Colorado Springs	12,031	0.160	-0.022
University of Houston-Clear Lake	9,279	0.056	0.088
University of Houston-Victoria	4,189	-0.009	-0.091
University of Illinois Springfield	3,944	-0.209	-0.159
University of Louisiana at Monroe	8,718	-0.047	-0.081
University of Maryland Eastern Shore	2,384	-0.589	-0.225
University of Maryland Global Campus	55,323	0.344	-0.381
University of Massachusetts-Dartmouth	7,717	-0.235	-0.288
University of Michigan-Dearborn	8,331	-0.045	-0.277
University of Michigan-Flint	6,418	-0.307	-0.326
University of Minnesota-Duluth	9,884	-0.193	-0.227
University of Montevallo	2,625	-0.163	0.071
University of Nebraska at Kearney	6,275	-0.111	-0.094
University of Nebraska at Omaha	15,328	0.026	-0.029
University of North Alabama	8,526	0.310	-0.049
University of North Carolina Wilmington	18,030	0.311	-0.132
University of North Carolina at Charlotte	30,448	0.165	-0.083
University of North Carolina at Pembroke	8,318	0.099	-0.234

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
University of North Florida	16,594	0.016	0.030
University of Northern Iowa	9,217	-0.389	-0.236
University of Southern Indiana	9,756	-0.154	-0.160
University of Southern Maine	7,996	-0.241	-0.272
University of West Georgia	12,687	0.053	-0.067
University of Wisconsin-Eau Claire	10,569	-0.122	-0.257
University of Wisconsin-La Crosse	10,337	0.014	-0.207
University of Wisconsin-Oshkosh	14,142	0.006	-0.195
University of Wisconsin-Platteville	6,773	-0.201	-0.325
University of Wisconsin-River Falls	5,394	-0.285	-0.200
University of Wisconsin-Stevens Point	8,129	-0.176	-0.309
University of Wisconsin-Stout	7,695	-0.255	-0.302
University of Wisconsin-Superior	2,613	-0.052	-0.340
University of Wisconsin-Whitewater	11,446	-0.042	-0.217
University of the District of Columbia	3,476	-0.434	-0.546
Valdosta State University	11,557	-0.234	-0.171
Virginia State University	4,300	-0.192	-0.126
Washburn University	5,657	-0.281	-0.180
West Chester University of Pennsylvania	17,614	0.176	-0.183
West Texas A & M University	9,602	0.165	0.082
Western Carolina University	11,877	0.213	-0.229
Western Connecticut State University	4,802	-0.399	-0.251
Western Illinois University	7,455	-0.499	-0.241
Western Kentucky University	16,750	-0.237	-0.097
Western New Mexico University	3,013	-0.037	-0.328
Western Oregon University	4,029	-0.507	-0.174
Western Washington University	15,125	-0.016	-0.133

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Westfield State University	5,013	-0.224	-0.344
William Paterson University of New Jersey	9,369	-0.223	-0.127
Winona State University	6,545	-0.338	-0.249
Winthrop University	5,174	-0.241	-0.117
Worcester State University	5,417	-0.072	-0.261
Youngstown State University	11,298	-0.309	-0.210

PANEL D: Carnegie Masters II

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Bemidji State University	4,279	-0.286	-0.286
Eastern Oregon University	2,825	-0.436	-0.285
Ferris State University	10,361	-0.356	-0.345
Keene State College	3,100	-0.620	-0.483
Kentucky State University	2,279	-0.502	-0.110
Lake Superior State University	1,812	-0.475	-0.349
Lander University	3,825	0.309	-0.251
Metropolitan State University	6,914	-0.213	-0.229
Mississippi University for Women	2,477	-0.101	-0.335
SUNY at Purchase College	3,522	-0.270	-0.182
Savannah State University	3,385	-0.326	-0.183
Southern University at New Orleans	2,106	-0.484	-0.275
Southern Utah University	13,611	0.580	-0.080
Thomas Edison State University	9,721	-0.820	-0.383
University of Mary Washington	3,956	-0.326	-0.313
University of Wisconsin-Green Bay	9,780	0.369	-0.233

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
University of Wisconsin-Parkside	4,132	-0.268	-0.232
Weber State University	29,774	0.218	-0.020

PANEL E: Carnegie Baccalaureate Institutions

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Athens State University	2,794	-0.224	-0.259
Black Hills State University	3,539	-0.321	-0.166
Bluefield State College	1,358	-0.457	-0.452
California State University-Monterey Bay	7,503	0.386	-0.140
Central State University	6,044	0.865	0.039
Charter Oak State College	1,618	-0.352	-0.342
Christopher Newport University	4,584	-0.075	-0.176
Clayton State University	6,817	-0.122	-0.486
Coastal Carolina University	10,473	0.172	-0.027
Colorado Mesa University	8,907	0.091	-0.046
Concord University	1,749	-0.479	-0.293
CUNY Medgar Evers College	4,134	-0.642	-0.213
CUNY New York City College of Technology	14,277	-0.161	-0.271
CUNY York College	7,027	-0.193	-0.131
Dickinson State University	1,415	-0.594	-0.555
Elizabeth City State University	2,054	-0.431	-0.500
Fairmont State University	3,562	-0.297	-0.373
Farmingdale State College	9,348	0.306	-0.017
Fashion Institute of Technology	8,150	-0.246	-0.149
Fort Lewis College	3,567	-0.125	-0.189

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
Granite State College	1,692	-0.234	-0.477
Indiana University-East	3,111	-0.102	-0.428
Indiana University-Kokomo	2,995	-0.088	-0.459
Langston University	1,960	-0.384	-0.170
Lewis-Clark State College	3,710	-0.193	-0.271
Massachusetts College of Liberal Arts	994	-0.744	-0.456
Metropolitan State University of Denver	17,678	-0.343	-0.279
Mississippi Valley State University	2,064	-0.339	-0.644
Missouri Southern State University	4,352	-0.337	-0.138
Missouri Western State University	4,395	-0.415	-0.301
New College of Florida	659	-0.151	-0.012
Ohio State University-Lima Campus	874	-0.626	-0.429
Ohio State University-Mansfield Campus	954	-0.529	-0.385
Ohio State University-Marion Campus	1,047	-0.702	-0.568
Ohio State University-Newark Campus	2,730	-0.124	-0.275
Oklahoma Panhandle State University	1,294	-0.110	-0.309
Ramapo College of New Jersey	5,732	-0.092	-0.031
Shawnee State University	3,216	-0.328	-0.215
Shepherd University	3,015	-0.269	-0.365
Southwest Minnesota State University	6,986	0.047	-0.429
St. Mary's College of Maryland	1,544	-0.283	-0.193
Stockton University	9,352	0.142	-0.043
SUNY College at Old Westbury	4,381	-0.020	-0.014
SUNY College of Agriculture and Technology at Cobleskill	1,820	-0.364	-0.398
The Evergreen State College	2,116	-0.831	-0.095
University of Arkansas at Pine Bluff	2,670	-0.362	-0.221
University of Hawaii at Hilo	3,243	-0.315	-0.244

Institution Name	Fall 2021 enrollment	Δln(enrollment) 2010-2022	Projected Δln(enrollment) 2021-2033
University of Hawaii-West Oahu	3,008	0.683	-0.069
University of Houston-Downtown	15,077	0.097	0.246
University of Maine at Augusta	4,422	-0.240	-0.536
University of Minnesota-Crookston	2,304	-0.093	-0.478
University of New Hampshire at Manchester	664	-0.714	-0.543
University of North Carolina at Asheville	3,233	-0.308	-0.149
University of Science and Arts of Oklahoma	849	-0.237	-0.188
University of South Carolina Aiken	3,869	0.166	-0.226
University of South Carolina-Upstate	5,438	-0.111	-0.160
University of Virginia's College at Wise	1,814	-0.155	-0.237
Utah Valley University	41,262	0.277	0.058
West Liberty University	2,291	-0.168	-0.339
West Virginia State University	3,415	0.171	-0.323
West Virginia University at Parkersburg	2,346	-0.665	-0.559
Winston-Salem State University	5,226	-0.236	-0.238