

The Future of Undergraduate Education: Will Differences across Sectors Exacerbate Inequality?

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This essay looks at how different sectors of U.S. higher education are funded, the students they serve, and the outcomes they deliver for those students. It raises serious policy questions about whether the distribution of public funds across this highly segmented industry both reflects and contributes to growing inequality in this country. It also asks whether recent trends in educational innovation and the impact of technology innovation in higher education will exacerbate or ameliorate that inequality. While the evidence is disturbing, the essay concludes optimistically. The past, it suggests, need not be prologue in higher education. The path forward for our industry, while highly constrained, can as yet be shaped through thoughtful, conscious, and analytically driven choices at individual, institutional, and state and federal policy levels.

The U.S. postsecondary education system, which serves an increasingly diverse student population, is sharply segmented. Public research, comprehensive, and two-year institutions have very different missions, resource levels, student bodies, and outcomes. Adding the private non-profit and for-profit sectors creates an even more complicated picture. Students come to the door with very different levels of preparation, goals, expectations, and conflicting responsibilities such as family and work; the same programs and institutions are unlikely to serve all of them well. However, the current stratification patterns reinforce and may amplify the inequalities with which students come to higher education. Although we know quite a bit about how to improve outcomes for students, there is a real danger that well-resourced institutions, which generally enroll relatively privileged student bodies, will outpace underresourced institutions, which generally enroll relatively disadvantaged student bodies, in implementing promising innovations. This possibility reinforces the need for thoughtful and constructive changes in our systems of financing and managing colleges and universities.

After a brief review of the importance of a conversation about the future of undergraduate education in the context of these sectoral differences, this essay reviews key structural characteristics of the higher education industry. It focuses on the different needs of the student groups that flow through the sectors, based on age, race and ethnicity, family income, and other characteristics. It raises questions about how, whether, and to what extent there is a single future for undergraduate education, or if we are looking instead at a variety of futures for institutions offering very different educational “products” to many different “consumer” or student groups.

Focusing on how different sectors are funded, the students they serve, and the outcomes they deliver for those students, this essay also raises serious policy questions about whether the distribution of public funds across this highly segmented industry both reflects and contributes to growing inequality in this country. A second section looks at recent trends in educational innovation: in particular, those growing out of the student completion movement that took shape beginning in the 1980s. To date, these efforts have reached only a fraction of today’s students. It is too soon to know their impacts on the industry going forward. It is not too soon, however, to wonder whether they will be adopted by institutions in all segments and used with all student groups or will instead amplify the distinctions that already exist across sectors, exacerbating inequalities rather than ameliorating them. A third section asks a similar question with reference to the impacts of technology innovation, particularly online learning, and results in a similarly tentative and disturbing prognosis. This essay concludes by reflecting on the extent to which our past is prologue in higher education, and suggests that the path forward for our industry, while highly constrained, can as yet be shaped through thoughtful, conscious, and analytically driven choices.

College enrollment has increased dramatically over time among all demographic groups. As both young people and older adults have realized that it is difficult to find jobs that will support a middle-class lifestyle without some college education, students who would not have continued their education beyond high school a generation ago now pursue a range of postsecondary paths. The available paths have expanded, and half of all undergraduate credentials are now short-term certificates or associate’s degrees, as opposed to bachelor’s degrees. New institutions and programs are serving a student body that is more diverse in terms of socioeconomic background, race and ethnicity, and age than the college population fifty years ago.

With the expansion of higher education, the differences across sectors have been amplified. Public research universities are more selective, spend more per

student, and have higher completion rates than public comprehensive universities and community colleges. Private nonprofit colleges and universities enroll a very different population from for-profit institutions – and have very different student outcomes. The inequality across institutions exacerbates inequality among the students who enroll in those institutions. The challenge that lies ahead is providing the range of opportunities and supports that best serves the needs and goals of a diverse student body, while narrowing the gaps in both resources and outcomes across the sectors of postsecondary education.

Earnings are highly correlated with educational attainment. In 2017, median earnings for thirty-five-to-forty-four-year-olds whose highest degree was a bachelor's degree were 71 percent higher than the median for high school graduates. The annual earnings premium for an associate's degree was 17 percent, or about \$6,000.¹ But perhaps as important as wages are the changing demands made by U.S. employers with respect to the educational attainment of the people they hire. A study by the Georgetown Center for Education and the Workforce showed that of the 11.6 million jobs added between January 2010 and January 2016 (during the recovery from the Great Recession), 11.5 million required some college education, which might range from short courses in welding and advanced manufacture to bachelor's degrees in physics, economics, or English literature.² And if labor economists are to be believed, demand among employers for some higher education will continue to grow, and will require workers to return to school to boost skills and capabilities throughout the course of their careers.³

College was not always the primary bridge to opportunity. When I graduated from a large public high school in Rochester, New York, in 1978, I was part of the minority of all graduates that enrolled in college. In those days, it was entirely reasonable for a high school graduate to assume he could cross the stage, receive his diploma, and secure a job with reasonable long-term opportunities with a local manufacturer such as Kodak. Those jobs are not gone for today's graduates – Pennsylvania, for example, predicts that as many as 46 percent of all jobs in 2026 will not require any form of postsecondary credential owing to continuing strength in manufacturing and agriculture – but the number of these jobs is declining dramatically and, once gone, they are not likely to return.⁴

Unemployment rates are about twice as high for high school graduates as for those with a bachelor's degree or higher. In April 2018, 4.3 percent of high school graduates ages twenty-five and older and 2.1 percent of those with a bachelor's degree or higher were unemployed, down from 7.5 percent and 3.9 percent, respectively, five years earlier.⁵ Of course, going to college is not just about improving one's employability and financial security. Education levels are associated with a range of desirable lifetime outcomes including relatively

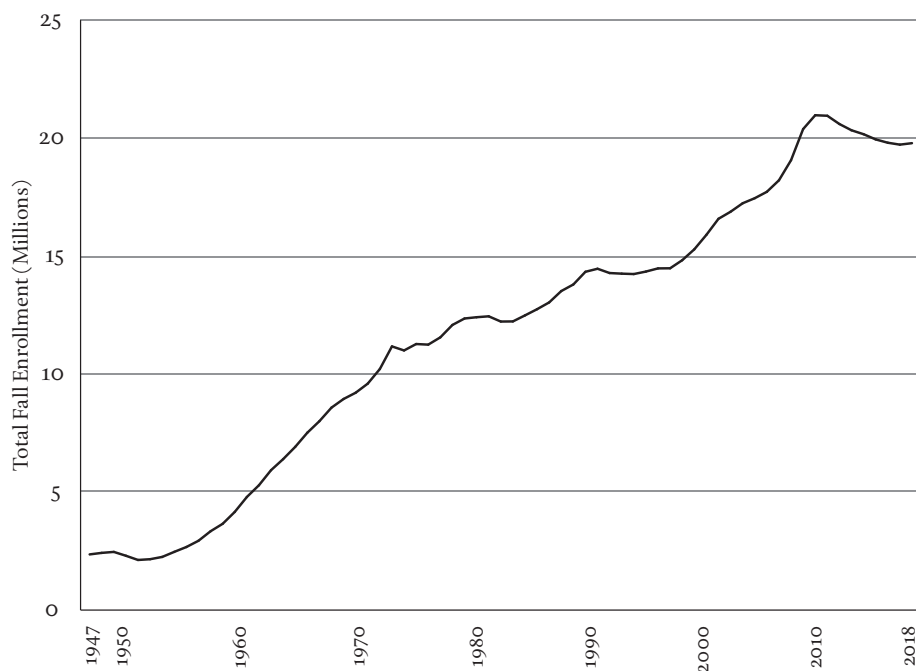
low rates of divorce, obesity, and smoking, and higher levels of voting.⁶ It is in part for this reason that in survey after survey, the vast majority of parents from all backgrounds want a college education for their children.

The opportunity to attend college is greater now than at any time in our past, thanks in large part to sustained public investments since the late 1940s. Public investments have provided funding both directly to students and to institutions, increasing the number of students able to enroll as well as the capacity of public higher education. The GI Bill of 1944 allowed returning service men and women to attend college; the Higher Education Acts of 1965 and 1972 created federal grants (now Pell Grants) and low-interest loans to remove financial barriers for low-income students. The mobilization of public funding that grew out of the Truman Commission underscored the importance of low-cost on-ramps to a college degree and stimulated massive growth in two-year (once “junior,” now “community”) colleges. And states make major investments in individual students through financial aid programs such as Cal Grants in California and Pennsylvania Higher Education Assistance grants, as well as in the form of appropriations to public two- and four-year colleges.⁷

The net result has been transformational. The nation expanded its higher education infrastructure, growing the number of degree-granting institutions from 1,851 in 1949–1950 to 3,152 in 1979–1980 and to 4,360 in 2016–2017.⁸ The number of postsecondary students grew from 2.4 million to 11.6 million to 19.8 million over these years, respectively.⁹ The share of high school graduates enrolling immediately in college rose from 45 percent in 1960 to 58 percent in 1985 and to 70 percent in 2016.¹⁰ The trend line for enrollment growth was particularly steep in the 1950s and 1960s as the nation expanded its higher education capacity to accommodate the baby boomers and their children (so-called Tidal Waves 1 and 2).

The dramatic expansion in higher education did not just swell overall student numbers, it democratized the face of the student body. Once largely the preserve of the sons and later daughters of White and relatively affluent families who attended residential colleges directly after completing high school, higher education became accessible to low-income students, students of color, and adult students entering college from the workplace. The Civil Rights Act of 1964 and the resurgence of feminism in the early 1960s (coupled with slower overall wage growth, which fueled women’s growing participation in the labor market) contributed to the diversification of the student body. Diversification happened in other ways as well, with increases in the proportion of students attending part time, working while attending college, or who are parents raising children of their own. The democratization of U.S. higher education proceeded so far that today the typical student as conceived of in the popular imagination

Figure 1
Total Fall Enrollment in Degree-Granting Postsecondary Institutions,
1947 to 2018



Source: National Center for Education Statistics, “Table 303.10. Total Fall Enrollment in Degree-Granting Postsecondary Institutions, by Attendance Status, Sex of Student, and Control of Institution: Selected Years, 1947 through 2023,” https://nces.ed.gov/programs/digest/d13/tables/dt13_303.10.asp.

(relatively affluent high school graduate attending a residential college full-time for a few years after high school) represents at best perhaps one-quarter of the student body. Students once labeled as nontraditional are now in the majority (and will henceforth be referred to as new-majority students).

The enrollment growth in the postwar years had a dramatic impact on the landscape of institutions offering education after high school and amplified the institutional diversity (industry segmentation) that was already apparent in the first half of the twentieth century. The greatest growth occurred among public two-year colleges. Initially established as on-ramps to four-year colleges, the two-year sector evolved from the 1930s to take on a career

orientation and, from the 1970s, various types of adult education.¹¹ The boom years (from the 1950s to the 1980s) swelled enrollments in public two-year colleges from 585,240 in 1958 to 4,826,000 in the fall of 1980, and saw the introduction of state support for two-year colleges that had hitherto relied on a combination of local funding and very modest student tuition and fees. The share of all postsecondary students enrolled in public two-year colleges rose from 26 percent in 1970 to 38 percent in 1991, but between 2002 and 2016, declined from 38 percent to 29 – 37 percent of all undergraduate enrollments.¹²

Both public research universities, which teach to the doctoral level and offer professional degrees, and public comprehensive universities, which teach to the master's level and in which typically half or more of all students major in areas such as education, business, and health sciences that track directly with specific careers, have also grown over time. Public research universities grew out of the Morrill Land Grant Acts of 1862 and 1890, intended “to teach such branches of learning as are related to agriculture and the mechanic arts” and, in effect, to fuel directly the nation's economic development. After World War II, they prospered from public investments in students as well as in research, the latter driven by federal agencies like the National Science Foundation and the National Institutes of Health. The comprehensive universities had diverse origins: technically focused land grant institutions established under one of the Morrill Land Grant Acts; teachers' colleges established to meet demand for a rapidly growing public education sector; and sectarian and other community-specific institutions (such as historically Black colleges and universities) that evolved with an emphasis on education tracking directly to specific occupations. They, too, prospered from public funding and provided robust pathways into high demand occupations required in Main Street America and in education, social services, and health care.¹³

Private nonprofit colleges and universities enrolled 21 percent of all postsecondary students in fall 2016, a share that has remained fairly steady over time.¹⁴ The institutions in this sector are diverse, with 18 percent enrolling fewer than two hundred students and 11 percent enrolling five thousand or more.¹⁵ Tuition prices also vary over a wide range: 10 percent of full-time students in the sector are enrolled in institutions charging less than \$15,000 per academic year and 20 percent are at institutions charging \$51,000 or more per academic year.¹⁶ One-quarter of all private nonprofit four-year institutions accept 90 percent or more of the students who apply; 5 percent accept less than one-quarter of applicants.¹⁷ They also vary in the kind of education offered and the types of students served, including the most selective research universities (such as the University of Pennsylvania) and liberal arts colleges (such as Williams College), small sectarian schools, and niche-oriented institutions

(such as women's colleges like Mills College and historically Black universities like Johnson C. Smith University). And this sector is the home of the 240 or so independent "classical liberal arts colleges" that typically teach to the bachelor's level and promote an education that, while enabling students to concentrate in a specific major area, emphasizes a general education curriculum with exposure across broad discipline areas, including the humanities, social sciences, and hard and life sciences.¹⁸

Private for-profit institutions initially focused on career and technical education for people seeking middle-skill workforce roles. Their numbers (measured both in terms of institutions and enrollments) swelled to a high-watermark in 2010 when they enrolled 10 percent of all students.¹⁹ Growth resulted from a number of factors including easily available student financial aid (including loans), tuition assistance for in-service military personnel, and education funding for veterans – a very large and continuously self-replenishing group of potential students – and growing demand for an educated workforce, which outstripped the supply of students who went to college directly after high school. For-profit institutions also proved more nimble than their not-for-profit counterparts, leveraging available capital and relatively weak shared governance structures to integrate instructional approaches catering to their "nontraditional" adult students who were typically integrating education into lives that were already crowded with obligations to work, family, and/or military service. These multiple factors account for the sector's tremendous growth, largely through online distance learning, which began in the 1990s.

All sectors experienced the tidal waves of new students and new dollars in the postwar years, but they did so differently, emerging with distinguishing characteristics measurable by the kinds of students they served (see Table 1). In 2015 – 2016, when 39 percent of undergraduate students enrolled in public two-year colleges, 46 percent of independent students (those who are older, are parents, are veterans, or have other characteristics that eliminate their parents from affecting their financial aid eligibility), and 46 percent of Hispanic students were enrolled in this sector. The share of students enrolling in public four-year institutions increased with family income and among those students, those from more affluent families were most likely to enroll in doctoral institutions, which are the most selective and have the most funding. Notably, 15 percent of Black undergraduates – compared with 8 percent overall – attended for-profit institutions. In other words, students from different backgrounds attend different types of institutions.

These sectors of higher education vary in a number of visible ways. For example, in 2015 – 2016, public doctoral universities devoted \$19,270 per student to education and related expenditures, compared with \$14,530 at public

Table 1

Sectors of Postsecondary Enrollment by Dependency Status, Family Income, and Race and Ethnicity, 2015 to 2016

| | Public Two-Year | Public Four-Year | Private Nonprofit Four-Year | For-Profit | Other |
|--|-----------------|------------------|-----------------------------|------------|-------|
| All | 39% | 35% | 15% | 8% | 3% |
| Dependent | 33% | 45% | 18% | 3% | 2% |
| Independent | 46% | 24% | 12% | 13% | 4% |
| Dependent Students' Parent Income | | | | | |
| Less than \$27,900 | 40% | 38% | 13% | 6% | 3% |
| \$27,900 – \$62,999 | 37% | 43% | 15% | 4% | 2% |
| \$63,000 – \$113,499 | 33% | 47% | 17% | 2% | 1% |
| \$113,500 or more | 20% | 51% | 27% | 1% | 1% |
| Race/Ethnicity | | | | | |
| White | 37% | 37% | 17% | 6% | 2% |
| Black or African American | 38% | 30% | 13% | 15% | 4% |
| Hispanic or Latino | 46% | 31% | 11% | 9% | 4% |
| Asian | 41% | 39% | 14% | 5% | 1% |
| Other | 41% | 36% | 12% | 8% | 2% |

Source: National Center for Education Statistics, National Postsecondary Student Aid Study 2016, <https://nces.ed.gov/datalab/index.aspx>.

master's universities and \$10,080 at public two-year colleges.²⁰ Graduation rates also vary dramatically across sectors. The segments' characteristics shaped the overall educational experience available to students within them.

Additionally, faculty teaching loads and composition are different across sectors in a variety of ways that affect the experiences of the students they educate. Typically, faculty in two-year, four-year comprehensive, and for-profit institutions have higher teaching loads than those in independent colleges and research universities.²¹ And while the use of adjunct faculty – faculty who

neither have nor are on a track to gain tenure – is at an all-time high (about 70 percent industry-wide), it is distributed differentially across sectors. Yes, tenured faculty with high course loads are typically found in institutions where they are not expected to do research, explaining some of the variance in workload. And yes, it is difficult if not impossible to compare teaching quality of adjunct and tenured (and tenure-track) faculty. Still, it is impossible to ignore the impacts that teaching load and employment status have on faculty-student engagement and thus on student outcomes.²²

The point here is not to advocate for one or another educational experience, to engage in a conversation about how public funding is distributed across various sectors, or even to address issues having to do with faculty support and composition (however important these subjects are to the future of undergraduate education). It is simply to illustrate how the undergraduate experience will be – must be – very different in different sectors in ways that reflect the characteristics of the student body, the level of financial support that is available, and the composition, workload, and support of the faculty.

Democratization did more than amplify differences between segments of U.S. higher education. It also reduced the substantial educational access gaps that had existed between rich and poor, White and non-White. In 1970, high school graduates from families in the top income quartile were nearly three times as likely as high school graduates from families in the lowest quartile (78 percent compared with 28 percent) to enroll directly in college. In 2016, they were 1.5 times as likely (78 percent versus 46 percent, respectively), and the gap between high- and middle-income high school leavers has also narrowed. Access gaps by race and ethnicity have shrunk as well, as evident in the college participation rates of recent high school graduates in 1976 and 2016 shown in Table 2. There is evidence as well that attainment gaps by race and ethnicity have been reduced somewhat, as shown in Table 3.

Still, there is a great deal of room for improvement in narrowing college completion gaps. On average, White and Asian students who first entered college in 2010 earned a college-level credential at a rate about 20 percentage points higher than Hispanic and Black students.²³ And significant gaps in college completion remain by income. While the gap between students in the wealthiest two quartiles has closed between 1970 and 2016 (from 25 to 17 percentage points), that between the top two quartiles and the bottom two quartiles has widened.

There is enormous variation in the characteristic of the students enrolled in different higher education sectors. Bluntly, new-majority students – low-income, adult students, and students of color – attend in great disproportion those colleges that have the lowest average per-student investment in

Table 2
Percent of Recent High School Graduates Enrolling in College,
by Race/Ethnicity, 1976 and 2016

| | 1976 | 2016 |
|-------------------------------|------|------|
| White | 41 | 66 |
| Black/African American | 33 | 51 |
| Hispanic/Latino | 34 | 59 |

Source: The Pell Institute for the Study of Opportunity in Higher Education, “Equity Indicator 1c(i): Cohort College Participation Rates of Recent High School Leavers by Race/Ethnicity: 1976 to 2016,” in *Indicators of Higher Education Equity in the United States: 2018 Historical Trend Report* (Washington, D.C.: The Pell Institute for the Study of Opportunity in Higher Education, 2018).

Table 3
Percent of Population with Some Postsecondary Education,
by Race/Ethnicity, 1992 and 2016

| | 1992 | 2016 |
|-------------------------------|------|------|
| White | 58 | 74 |
| Black/African American | 45 | 66 |
| Hispanic/Latino | 35 | 45 |

Source: Anthony P. Carnevale and Megan L. Fasules, *Latino Education and Economic Progress: Running Faster but Still Behind* (Washington, D.C.: The Georgetown University Center on Education and the Workforce, 2017), Figure 4.1, <https://1gyhoq479ufd3yna29x7ubjn-wpengine.netdna-ssl.com/wp-content/uploads/Latinos-FR.pdf>.

instruction and student support, the largest (most unfavorable) student-faculty ratios, and the lowest graduation rates for first-time full-time students.

Research by economists Caroline Hoxby and Sarah Turner has shown that students in more-challenging academic environments are likely to succeed at higher rates than similar students in less-challenging environments. The so-called undermatching phenomenon – in which academically high-achieving students enroll in colleges with a majority of lower-achieving students – is particularly acute for low-income and first-generation students and students of color.²⁴

Additionally, no one institutional structure, pedagogical approach, or set of support services delivers the same level of success for all students. Intuitively,

this makes sense. A first-generation high school graduate who enters college needing two levels of remediation in math and/or English requires a very different kind of pedagogy and a more intrusive approach to advising than say a high-achieving, fourth-generation high school graduate entering into an honors program at a selective college. Arguably, the adult student enrolling in an online degree program while working full-time in order to complete a bachelor's degree that they began but did not complete ten or fifteen years ago is likely to require something different yet again from these other two groups in the way of instructional approach and student supports. For undergraduate education, context matters: the kind of college, the level of support available, the kinds of students that are present. So, the research suggests, do students' backgrounds, needs, and preparedness. This forces us to think hard about the future of undergraduate education: to adopt an approach that ensures higher education is relevant to the needs of the very different student groups that we serve and to ensure the approaches that are adopted are both effective in terms of student outcomes and financially viable in what are very different industry segments.

Finally, it is worth noting that the increasing differentiation of the higher education landscape and the distribution of different student groups across it has implications that extend far beyond how we think about delivering a student's educational experience. These are represented most starkly in work by economist Raj Chetty and colleagues at the Equality of Opportunity Project. A working paper published in 2017 showed that at the highly selective Ivy-Plus colleges (colleges that typically accept fewer than 10 percent of all undergraduate applicants, comprising the eight Ivy Leagues – Brown, Columbia, Cornell, Dartmouth, Harvard, Penn, Princeton, and Yale – plus the University of Chicago, Stanford, MIT, and Duke), more students come from families in the top 1 percent of the income distribution than the bottom half of the income distribution. Indeed, they find that children with parents in the top 1 percent are seventy-seven times more likely to attend an Ivy-Plus college than children with parents in the bottom 20 percent.²⁵ Table 1 makes the point more generally, showing the degree of stratification that exists across the industry.²⁶

The relative segregation of new-majority students matters in at least two ways. First, it deprives all students of exposure to multicultural experiences – critical in reversing disturbing tendencies apparent in our civil and political society toward growing isolation of and intolerance across social groups defined at the intersections of race, class, and gender. Second, it matters because higher education sectors perform very differently with respect to student outcomes. Again, according to Chetty and his colleagues, graduates from highly selective colleges do not just graduate at much higher rates, they also significantly out-earn graduates of less selective institutions. According to journalist

Thomas Edsall, “instead of serving as a springboard to social mobility as it did for the first decades after World War II, college education today is reinforcing class stratification.” In an opinion piece published in *The New York Times* in 2012, Edsall argued that this is not meritocracy at work. The trends cannot be explained by test scores alone. “When high-scoring students from low-income families are compared to similarly high-scoring students from upper-income families,” he wrote, “80 percent of those in the top quarter of the income distribution go on to get college degrees, compared to just 44 percent of those in the bottom quarter.”²⁷ Even if Edsall is confusing cause and effect – the distribution of students across higher education sectors may reflect existing social inequalities – there is little doubt that the distribution of students across the industry coupled with public policy choices that are reflected in levels of funding made available to those sectors reinforce and amplify those inequalities.

Despite their reputation for being stubborn, legacy-centric, and slothful with respect to change, colleges and universities in all sectors have been remarkably agile in evolving educational approaches in response to the changing demands of their students, funders, and employers, and in reflection of their constantly changing financial circumstances. This is particularly evident in the college completion movement that has emerged since the 1980s in response to probing questions about the growing cost and perceived value of higher education. While the movement has registered some gains in terms of student outcomes, it also raises questions about whether it will only reify the inequalities that result from and reflect the industry’s segmentation.

The birth of the completion movement reflected the phenomenal success of public policies that dramatically expanded participation in higher education, placing enormous pressure on scarce public funds and raising natural questions about what taxpayers were getting for their money. One thinks of:

- *A Nation at Risk* (1983), which concluded that “the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people”;²⁸
- the 2006 report of the Commission on the Future of Higher Education, convened by then-Secretary of Education Margaret Spellings, which urged a higher level of accountability with respect to student outcomes in return for public investments;²⁹ and
- state-level initiatives that tie state funding to institutional performance.³⁰

Employers, too, added voice in questioning the value of higher education. That voice rises and falls in waves and has reached almost deafening levels

today in concerns being expressed about graduates not having the skills they need to participate effectively in the twenty-first-century economy.³¹

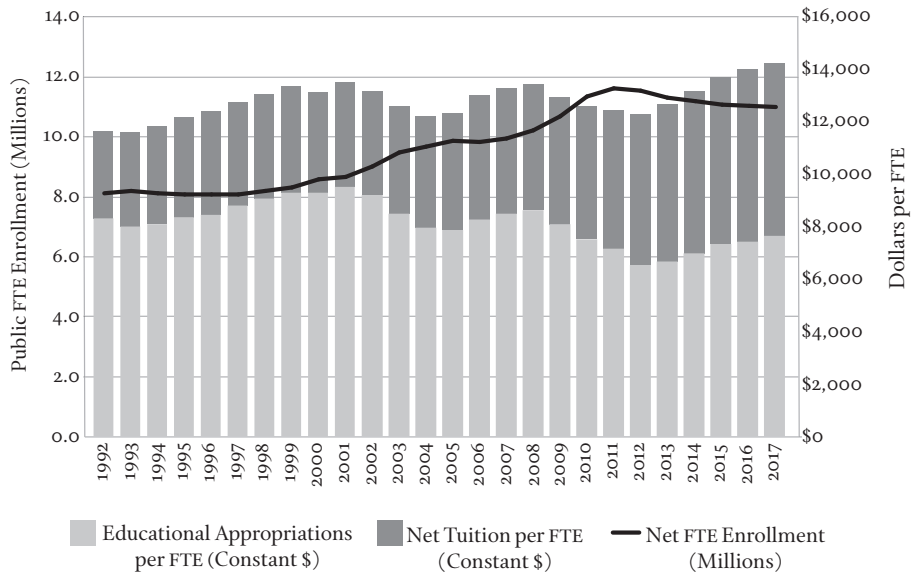
Another force driving educators to think hard about improving student outcomes is of more recent origin. It is driven by the growing need that colleges feel to demonstrate the value of their increasingly high-priced product; to demonstrate the price is worth paying and will pay off by opening access to sustaining careers.

The need to measure outcomes was not always felt so acutely. One factor feeding this need is Baumol's cost disease, which describes the challenges certain "professional services" face when controlling costs because they rely on high-priced labor (such as faculty in the higher education sector), which is not easily replaced or augmented with automation. In higher education, the impacts show up in tuition increases that routinely surpass the overall rate of inflation.³² The trend is compounded by the long-range decline in public funding represented by the secular decline in state appropriations per student in public higher education.³³ Demographic trends are also a factor as demonstrated by economist Nathan Grawe, who looks at changes in the size of high school leaving populations and their impacts now and, very soberingly, into the future, where populations are projected to flatten or decline in most states from around 2025.³⁴ In states or regions where that contraction is already apparent – Pennsylvania, Connecticut, Massachusetts, rural parts of Georgia and Texas – there are already signs of the cutthroat competition that is yet to come for most higher education institutions in this country. In Pennsylvania, which is experiencing the competition acutely, institutions are struggling to generate necessary revenues, balancing the declining pool of students with tuition price sensitivity. According to Grawe's analysis, the viability of institutions in all sectors that are outside the top 150 (ranked in terms of selectivity at admissions) is seriously at risk.

The completion movement took shape in the last two decades of the twentieth century, growing out of concerns arising from the public cost of growing enrollments and uneven student outcomes, and gained force in the early twenty-first century in response to both student and employer concerns about the value and price of higher education. The movement is less a coordinated campaign and more a series of loosely connected skirmishes, several of which are worth touching on because they demonstrate the tools that are currently available to practitioners as they think about the future of undergraduate education, as well as the limits to scaling those tools effectively.

Concern with students' learning outcomes emerged forcefully in response to a 1989 federal regulation that directed accreditors (responsible among other things for evaluating colleges and universities with respect to their fitness

Figure 2
Public Full-Time Equivalent (FTE) Enrollment and Educational Appropriations per FTE, United States, FY 1992 to FY 2017



Source: State Higher Education Executive Officers Association, *State Higher Education Finance: FY 2017* (Boulder, Colo.: State Higher Education Executive Officers, 2017).

to receive Title IV student financial aid funding) to examine them. The regulation itself reflected growing concern with the nation’s economic competitiveness and the cost and value of higher education. According to Peter Ewell, president emeritus of the National Center for Higher Education Management Systems, it also reflected a newly activist regulatory stance within the Department of Education.³⁵ Notable within the cottage industry that sprung up in response are the American Association of Colleges and Universities’ LEAP program (Liberal Education and America’s Promise) and the College Learning Assessment. The former, launched in 2005, identified workforce-aligned learning outcomes, providing practitioners with guidelines for integrating them into liberal arts course rubrics for assessing student mastery of these outcomes. The latter was one of several instruments designed to look beyond graduation rates and salary outcomes to determine what students actually learn in college.

Shining a light on learning outcomes revealed some disturbing patterns about student workload (low) and learning (low) in higher education, and raised questions about whether and to what extent colleges really add value to a student's human capital through learning.³⁶ The patterns that emerged were similar across higher education sectors and student groups, but with the graduation rate and earnings problems concentrated in sectors that disproportionately serve new-majority students. The findings at once stimulated and reinforced debate and discussion about the role higher education plays in reifying and potentially expanding class and racial inequalities. In particular, it fueled debate about whether the higher salary outcomes apparent for students from selective schools were primarily a reflection of socioeconomic background, a consequence of the networking effects they experienced in college, and the signaling effect that degrees from selective colleges had in the marketplace, or whether these students actually learned more in college than others.³⁷ Ethnographic research fueled the discussion, focusing on the challenges new-majority students face succeeding in selective institutions where the student culture and academic pathways are created for the predominantly White and more affluent plurality.³⁸ The literature speaks to imposter syndrome – the feeling that one is not worthy to belong in the academic community – and cultural isolation, both of which can lead directly to students stopping out. In *Paying for the Party*, sociologists Elizabeth Armstrong and Laura Hamilton also demonstrate how low-income women students, lacking the social capital and the network of their higher-income peers, cannot risk achieving a middling academic performance, and thus are put at greater risk by engaging fully in the social life of the institution. Still, it appears that the new-majority students who are able to navigate the environmental and cultural challenges they face in more selective and better-resourced institutions will have better outcomes.³⁹

The completion movement has also generated interest in innovations in teaching practices and institutional structures that promise to improve student outcomes. There is growing evidence about the effectiveness of active learning to replace the lecture model, new approaches to developmental education, and curriculum redesign that adds structure to students' degree pathways: so-called guided pathways that steer and support students through their college careers. These strategies are particularly important for at-risk and new-majority students, but implementing them requires institutional resources. There is a real danger that the colleges at which most low-income students enroll will be unable to match the improvements adopted by better-resourced institutions.

With respect to teaching practices, an evidence base is growing under "high-impact practices" that appear to generate better student outcomes as measured in performance on course exams and in course completion rates.

A meta-analysis conducted by biologist Scott Freeman and others showed the positive impact of a single high-impact practice: the use of active learning techniques that enable students to construct their own understanding of a subject as opposed to sitting passively and listening to lectures.⁴⁰ And biologists David Haak, Sarah Eddy, and Kelly Hogan have demonstrated that active learning had disproportionately large positive effects on students from educationally or economically disadvantaged backgrounds, reducing educational attainment gaps.⁴¹ While the evidence base is still thin, it is nonetheless promising and shows that high-impact practices – others of which are referenced throughout this issue of *Dædalus* – may be a very effective means of addressing persistent educational attainment gaps. The question is whether sectors in which historically underserved students are concentrated are able, given their limited funding and high teaching loads, to support faculty in learning and reproducing those practices faithfully and at a sufficient scale across the institution to have significant overall effect on student outcomes. One wonders, in other words, whether innovation that promises improved student learning outcomes is equally accessible across sectors.

A similar concern emerges for practices that are proving themselves effective in improving outcomes for students who begin their college careers in developmental education. Developmental education – efforts to prepare students to enter and succeed in college – dates back at least into the 1600s.⁴² In the United States, waves of interest in improving and reforming developmental education have typically been associated with surges in the size of the college-going population, such as after the Morrill Land Grant Acts in the nineteenth century or with the introduction of federal student aid funding in the twentieth. Such efforts intensified in the 2000s as the accountability movement gained steam and shined a harsh light on the appalling low rates at which students beginning in remedial education were completing their degrees, and the disproportionate impacts on low-income students and students of color.⁴³

From around that date, research conducted by the Community College Research Center (CCRC), Complete College America, and others demonstrated the efficacy of a multifaceted, whole-student approach that includes better student advising; multiple math pathways (the removal of Algebra 2 as the only pathway through which one could demonstrate competency for college); corequisite instructional models whereby students were able to meet remedial requirements while taking credit-bearing college courses; and the use of multiple measures including high school GPA as well as placement testing in order to evaluate remedial need.⁴⁴ Recent research, however, questions whether the approach can be adopted by institutions housing the students that need it most. Implementing a corequisite instructional model reduces

the footprint of developmental education departments on campus without eliminating the need for supplemental instruction: that is, for supporting students' remedial needs while they are enrolled in credit-bearing courses. The economic impacts are doubly difficult. Developmental education departments are revenue-generating cost centers and while the marginal costs of instructing a remedial student are actually higher than those for a student in credit-bearing courses, it is not clear that the difference is enough to sustain the additional cost of supplemental instruction. In a nutshell, significant reduction of a developmental education department results in a potentially very significant hit on a college's revenues – a hit that may or may not be wholly recoverable in a way that results from improved student retention.⁴⁵

Similar concerns arise from recent enthusiasm gathering around guided pathways: a wholesale approach to the construction of narrowly focused, closely advised course sequences that result in a degree. Here, energy is found initially in the elite four-year sectors in which reform warrior and University of Pennsylvania professor Robert Zemsky has advocated for curricula carefully designed to expose students in a structured and sequenced way to the competencies they need in pursuit of a particular degree or major.⁴⁶ For him, the common “cafeteria”-style approach in which students constructed majors from course catalogs that included a random assembly of courses that individual faculty cared to teach was not only ineffective with respect to learning outcomes, it was also costly. Researchers from the CCRC reached similar conclusions for two-year colleges where they found that the cafeteria-style approach contributed to relatively higher stop-out rates of historically underserved students: notably, first-generation, low-income students, and students of color.⁴⁷ For them, the antidote was the guided pathway. Initially observed by CCRC researchers in the nine community colleges affiliated with Completion by Design, the approach integrates three practices areas:⁴⁸

- helping students choose and enter a well-defined pathway to a credential that meets their end goals;
- keeping students on their chosen path by integrating intrusive advising and high-impact instructional practices; and
- ensuring that students are learning along the path, again with reference to high-impact practices and continuous assessments with feedback loops.

Canonized by economist and CCRC founder Thomas Bailey and colleagues in 2015, guided pathways took off in a flash across the two-year sector initially through an institute launched by the American Association of Community Colleges (AACC) in 2016 and then amplified through multiple copycat

initiatives.⁴⁹ Downward enrollment pressures resulting from a strong economy may have had a role as colleges turned to retention as a means of maintaining student numbers. And the pathways movement offered college leaders a means to integrate a distracting array of piece-part reforms, all of them promising improved student success, but each of them advocated and implemented separately.

Early evidence suggests that a pathways approach can improve students' success and contain costs.⁵⁰ But here, too, one wonders about the potential for widespread adoption. Organizing curricula, instructional practices, and advising around a student's journey requires nothing less than a fundamental overhaul to the educational and business models that are baked into the culture, practice, and business systems of most colleges and universities. It requires significant support for professional development of both faculty and staff who engage directly with students. And it relies upon significant change leadership and change management capabilities, two characteristics that are typically weak in universities and colleges.⁵¹ Some third-party supports are available from professional (such as the AACCC) and membership (such as Achieving the Dream) associations and from the commercial marketplace, notably through consultants and institutes. But these are weak levers. Seeking to reach the broadest number of institutions at the lowest possible per institution price, professional associations and membership organizations are not able to provide the hands-on supports and capability development required. Consultants can go deeper, but at a cost that may be prohibitive for many institutions. As a result, one wonders how and to what extent the capability to implement proven completion-oriented reforms will track closely with an institution's resources and financial flexibility. If it does, it will advantage the very large enrollment institutions (because they benefit in all things from economies of scale) and the elite private and public not-for-profits. In this regard, the fruits of the completion movement could very well exacerbate divides that already exist across the higher education industry.

Heralded frequently as a great leveler of educational access and attainment, the history of technology integration through online learning also raises questions about whether innovations will reduce or reinforce inequalities.⁵²

Online learning has its origins in correspondence courses mounted to reach working adults, in-service military personnel, and professionals in practices requiring continuing education. Initially conducted on paper and through the mail, it evolved with successive generations of technology. The United Kingdom's Open University is perhaps the most famous instantiation.

Popularized by the film *Educating Rita* (1983), the Open University at one time combined television lectures, occasional meetings between students and their local tutors, and in some cases, short-duration in-residence instruction that used sparsely populated university facilities out of term time (such as during summer). From the 1990s, course delivery in distance education moved from the airwaves to the Internet, eventually, as we have seen, propelling growth in the for-profit sector. Capitalizing on virtually unregulated access to federal student aid, rising demand from working adults and other student groups who were underserved by nonprofits that concentrate on recent high school graduates, and by excess demand in allied health and other industries for vocationally trained workers in fields amenable to online education, the for-profit sector grew to represent about 10 percent of all student enrollments by 2010, with particular strength among adult and low-income students.⁵³

Not-for-profits in all segments were slower to engage in online learning than for-profits. Where they did engage, movement was responsive to the same kinds of demand growth that propelled the for-profits, notably in the adult learning sector. It was initially apparent in extension programs that were affiliated with four-year, mostly public institutions that had historically been set up to serve adult and professional students and continuing education. With weaker forms of faculty-shared governance and greater reliance on nontenured instructors, extension programs were often more nimble with respect to educational innovation and a natural place for four-year universities in particular to experiment with online learning. From the early 2000s, initiatives spread onto the main campuses in both two- and four-year public institutions in which student course demand was outstripping supply, and in which per-student funding cuts energized the search for lower-cost instructional models. Different motivations were apparent among the early adopters. Some used online delivery to expand course-level access for enrolled students who, owing to funding cuts, the pressure of student numbers, and the scheduling challenges faced by working students and parents, struggled to find the courses they needed to graduate. Others, typically in the four-year universities and at the postbaccalaureate level, sought to break into new markets to meet the growing workforce demand for master's degrees in specific fields such as business, education, and various areas of computer science and engineering.

Engagement by private not-for-profits was even more restricted at the undergraduate level. Highly selective institutions were by definition elite and, as a consequence, not interested in expanding their undergraduate numbers in a way that would drive toward greater use of online modalities. As a result, engagement by elite nonprofits – engagement that attracted the lion's share of media attention – involved boutique, brand-building offerings designed to

show off research prowess and attract research and venture dollars (examples include Carnegie Mellon's Online Initiative or Stanford's early engagement with MOOCs) or, in the case of MIT's Open Courseware initiative, establish credibility in international markets. In the much larger nonelite part of the private not-for-profit sector, online never emerged as much of an option. The expense associated with an effective move online was prohibitive given small endowments and the revenues associated with low enrollments.

Unsurprisingly, by 2009, online instruction outside the for-profit sector was highly concentrated in a relatively small number of outlier institutions. In that year, Western Governor's University (WGU), established in 1997 by the governors of nineteen states and with a significant grant from the Bill and Melinda Gates Foundation, offered fully online courses to over fifty thousand students, Penn State's World Campus served twenty-five thousand (9,500 full-time equivalent) students, University of Maryland's University College had twelve thousand online students, and there were one or two others operating outside the for-profit sector at something bigger than fledgling scale.⁵⁴ There were also a number of headlining failures in the not-for-profit sector to point to, failures that reflected outright resistance to the genre, notably at the University of Illinois, where the Global Campus effort announced with great fanfare and with an investment of \$10 million collapsed after only three years.⁵⁵ By comparison, in the very same year – 2009 – the for-profit University of Phoenix was nearing its high watermark enrollment of nearly four hundred thousand online students.⁵⁶

Within a decade, the tables had turned. For-profits, under enormous pressure resulting from the Great Recession and a hostile regulatory environment, collapsed, losing as much as a half of all enrollments. Several of the biggest for-profits went out of business (Corinthian Colleges), were bought out by private equity firms (University of Phoenix), merged with not-for-profit institutions looking to accelerate their own online learning initiatives (Kaplan and Purdue Universities), or transitioned from for- to not-for-profit status. Large public universities and community colleges, meanwhile, moved in to pick up some of the slack. WGU grew to one hundred thousand enrollments and continues achieving 10 percent year-on-year growth. Arizona State University serves nearly the same number annually, and the University of Central Florida has grown to nearly sixty thousand students with almost one-third of all student credit hours taken online. Other evidence collected annually since 2002 has demonstrated how online learning has become part of the mainstream in higher education. Large public universities and colleges are particularly likely to offer a large share of student credit hours online. At these institutions, the faculty who teach in online courses have a significantly more favorable

view of their quality than faculty from institutions that offer few courses online. There, too, administrators see online courses playing strategically more significant roles in their institution's future than do administrators at institutions with a smaller online footprint.⁵⁷

Acceleration of online learning in two- and four-year public institutions is perhaps best understood with reference to developments on the supply-and-demand sides of the market for online courseware products. On the supply side, large publishing houses and venture capital groups were, from the late 2000s and for different reasons, using technology to drive effective, lower-cost, and interactive forms of education. Publisher engagement reflected their long-running transition away from printed textbooks and the highly competitive and low-margin nature of their online markets. Venture capitalists, on the other hand, were expanding into higher education, an industry they saw as on the verge of "disruption" given the demand from historically underserved consumers.⁵⁸ Federal agencies, notably the National Science Foundation, played a role, too, as online learning acted as a focal point for emerging learning sciences, and so did philanthropies interested in online as a means of driving the completion agenda while at the same time lowering the overall cost structure of education.

On the demand side, larger two- and four-year public institutions were responding to market pressures: most notably, the downward pressure on public funding. They turned to online products (stoking demand that fueled developments on the supply side) for various reasons: breaking into new student markets including the adult markets, the grip over which was being relinquished by the for-profits; enhancing course access for existing (enrolled) students where access was threatened by budget cuts; lowering overall instructional costs in response to revenue pressures; and in select cases, improving outcomes for existing students. Work conducted by Arizona State University with the Boston Consulting Group demonstrated that these very different objectives required different strategies and had vastly different costs and outcomes. Breaking into new student markets was certainly possible as demonstrated by Arizona State, Southern New Hampshire, Western Governors University, and a handful of others. Where fully online modalities were used, instructional costs could be significantly reduced by comparison with fully face-to-face modalities. Marketing costs were high, but not high enough to counteract the savings on the instructional side. However, success as measured by student outcomes was typically lower than was available through face-to-face modalities, except in very focused and highly specialized postbaccalaureate programs that enrolled motivated and already very well-educated students.

Gains were also made using online modalities to improve undergraduate students' course access. Results were mixed, though. Online instruction proved less expensive than face-to-face, but in a study of California Community Colleges, economists Hans Johnson and Marisol Mejia found that students taking online courses performed less well as measured in their letter grades and course completion rates, but had higher graduation rates.⁵⁹ The study may help explain why, using IPEDS (Integrated Postsecondary Education Data System) data and comparing institutions within (and not across) sectors, we see that institutions teaching a disproportionately high number of student credit hours online have lower per-student instructional costs and higher graduation rates than those teaching fewer student credit hours online. It is as important to note that research also shows that outcomes for students in fully online courses vary significantly. First-generation, low-income, and academically at-risk students attending college directly out of high school, for example, perform markedly less well than students in other demographics. Implementation, too, appears to matter a great deal. A recent study published by Arizona State University and the Boston Consultant Group has demonstrated that at exemplar institutions, online undergraduate courses produce better student retention, higher graduation rates, and lower costs.⁶⁰ At the same time, there is ample evidence of implementations that depress student outcomes and add cost.

Of course, the industry is hardly static. Experience with online learning aggressively shapes implementation approaches as well as demand for better products, driving initiative on the supply side. Two potentially very promising trajectories are beginning to take shape. The first is the use of hybrid modalities: modalities that mix face-to-face and online instruction. Where implemented well, they appear to lower costs and improve student outcomes. This at least is the experience at the University of Central Florida (UCF). With undergraduates taking nearly one-third of their credits online, UCF shows the best course outcomes for students in hybrid courses (with outcomes for face-to-face and fully online falling behind in that order).⁶¹ A second very promising development is seen in adaptive technology platforms and courseware that integrate data science to make machine-assisted learning directly responsive to individual students' needs and their progress and pace in mastering explicitly specified course competencies. By the mid-2010s, results were more rather than less promising for the technology demonstrating improved student outcomes for students from all demographic groups.⁶²

Interestingly, while one would expect the technology to improve, thereby introducing even greater affordances with respect to student outcomes and cost, there are signs that implementation costs, requisite expertise, and scale economies are beyond the reach of all but large enrollment and/or highly

endowed institutions, at least with respect to implementations that are locally grown and managed. While there are other avenues for entering online education that rely on third-party partnerships (such as with online course providers like Straighterline and online program management companies like 2U and Academic Partnerships), they are relatively expensive (because they rely on a revenue share with the third party) and require an institution to outsource core academic functions, which is hard to accomplish politically. Thus, it is not wholly inconceivable that effective implementation of online learning may be a further differentiating factor that begins to define our higher education landscape, not necessarily in ways that advantage relatively wealthier and more selective institutions, but in ways that favor those able to operate at tremendous scale and as such are able to develop their own operational services that drive enrollment, control cost, and manage quality with respect to student outcomes.

Other implications of this trend are profound and unsettling. We are already seeing evidence that fully online providers acting at enormous scale are competing directly in regional markets for low- and middle-income students with the majority attending college directly out of high school. These are students who have historically been served by less- and nonselective four- and even two-year institutions using traditional face-to-face modalities. As the net average price of traditional experiences escalates, the fully online providers (which can cost the students between one-third and one-half as much over four years) will look increasingly attractive. Given data that question the efficacy of fully online education with this student segment, these market mechanics could result in further stratifying our educational ecosystem. Potentially, personalized, face-to-face experiences could be concentrated in more selective institutions for those able to afford their relatively high net average price, and less effective, more impersonal, fully online experiences would be available for the rest who cannot.

As a historian, I cannot bring myself to believe that the past is prologue; that the future is determined and entirely beyond our ability to shape. The observations I have made as an industry spectator, one-time investor, and sometimes institutional leader also point in a more optimistic direction. Essays in this issue of *Dædalus* show how the choices made by individual faculty members about how to engage in teaching and learning have a profound and significant impact on their students' outcomes.⁶³ At the institutional level, too, we all know of colleges and universities that have bent predicted outcomes for their historically underserved student populations, in some cases even eliminating pervasive attainment gaps between Brown, Black, and White and between rich and poor. These institutions are aligning

countless individual choices behind deliberately chosen strategic goals pursued by leaders who are competent in change management approaches that work in their sectors.⁶⁴ Finally, we can point to education public policies that show promise in altering the course of our future. In Tennessee and Ohio, for example, we see state governments that have designed and implemented policy regimes that lessen the degree of difficulty entailed for universities and colleges in their pursuit of more equitable outcomes. And while it is too soon to know the impact of various “promise” initiatives that tilt toward access to higher education that carries low or even no tuition cost for students (such as the Tennessee Promise Program), it is reasonable to claim that they reflect intentional policy choices designed to alter the path we are on and blend interest in greater social equity with workforce development goals.⁶⁵

While none of this constitutes a solid evidence base, it does at least suggest that the future of higher education may be ours to shape; that the choices we make for ourselves, our institutions, and our public policies will determine the trajectory of higher education and its social impacts. Given the direction we appear to be headed, now is a good time for us to review those choices and think carefully about where they will lead our industry and with what impacts on our society. Now is a good time to engage deliberately (and with a view ultimately to aligned action) in a conversation about the future of undergraduate education.

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