# PUBLIC RESEARCH UNIVERSITIES' FUTURES PROJECT

## *FINANCING THE MISSION*

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# Financing the Missions at Public Research Universities: Questions for Contending with New Realties

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In higher education finance is about more than generating revenue and managing assets – it is about securing and managing resources to fulfill the mission (Barr & McClellan, 2018). Public research universities are multi-mission organizations that engage in teaching, research, and public service (Leslie, et al., 2012). Fulfilling these missions is expensive and public research universities have complex financial arrangements.

The complexity of public universities' budgeting and finance is the result of what they do, and how they generate income. Research, teaching, and public service activities are entangled and are often pursued simultaneously. Organizational structures and academics reflect this complexity. Academic departments and regular faculty are charged with accomplishing all three missions, while specialized offices and administrative units may focus on one or more of them. Since units are often focused in more than one aspect of the mission, precise cost accounting is difficult.

To fund their missions, public research universities draw revenue from multiple sources. Some lines of income – including donor gifts and research grants – are restricted to specific activities. For most public research universities, the largest sources of income are tuition payments and state appropriations (Kunkle & Burns, 2025), and these are not typically earmarked for specific activities. That means that most public research universities have some discretion over how they spend most of their income. Even when income is unrestricted, however, it comes with political and market expectations. Tuition payers expect that their contributions are used primarily to cover educational expenses. Policymakers tend to be most interested in using public dollars to support undergraduate education and labor-market relevant programs. Each state funds public higher education somewhat differently, sometimes through incremental block grants, sometimes through enrollment formulas, sometimes using outcomes-based metrics, and sometimes through a combination of these mechanisms. States typically do not provide unrestricted income with the intent that it will be used directly for research and scholarly activities (Education Commission of the States, 2025).

In part because public research universities are multi-mission organizations, their costs tend to increase, and they are not especially good at realizing economies of scale or replacing labor with technology (Archibald & Feldman, 2011). As a result, costs tend to go only in one direction: up. The public and policymakers express serious concern that the costs of higher education are too high and that colleges and universities are not meeting their expectations around relevant

education and student outcomes (NORC at the University of Chicago, 2022). In other words, institutions' interests in the broad range of public research university missions may not be fully shared by its primary funders, who are increasingly frustrated with growing costs and what some perceive as misaligned values.

Furthermore, under the current presidential administration, the federal government has injected tremendous uncertainty into the sector (Cantwell, 2026). The federal government is the largest research sponsor but has cancelled many grants and promises to seek to reduce its role in research funding by, among other things, covering fewer of the indirect costs necessary to perform research, limiting the topics that academic researchers can study with federal funding, and changing the way that grants are allocated. Federal regulations that may restrict international student enrollment, and recent legislation that restricts federal financial aid availability, especially for graduate and professional education, present further challenges.

In short, public research universities pursue multiple missions that are financially entangled in complex organizations, and the stakeholders who provide most income – tuition payers, state governments, and the federal government – do not always share university values and their continued support is uncertain. Against this context of challenge and uncertainty, we gathered a panel of experts to discuss urgent questions that university leaders, faculty, and staff might consider for how to best finance the public university missions into the future. Each of the panelists also prepared short white papers on the topic based on their webinar remarks.

The papers, which follow this introduction, present questions that focus our attention on specific, often interlocking challenges facing public research universities. Dan Bauman, an independent journalist who was previously a data and business reporter for *The Chronicle of Higher Education*, describes the socioeconomic landscape to which public research universities must adapt in the coming decade. An aging population, increasing healthcare and other demands on state budgets, and fixed legacy costs may limit the degrees of freedom that public universities have in setting their own agendas, and may force them to adapt to the emerging environment. The second paper is by J. Michael Gower, the Chief Financial Officer and University Treasurer at Rutgers, The State University of New Jersey. Gower explains that the research enterprise is expensive, often requiring additional funds to supplement external grants to support specific costs of grant-funded projects and the full complement of research activities. Gower urges public research universities to consider how to calibrate research relative to its other missions, especially in a context where the federal government may reimburse fewer of the indirect costs that are necessary to support the research enterprise. States often want public universities to focus on in-demand fields like nursing. Robert Kelchen, Professor and Chair in the Department of Educational Leadership and Policy Studies at the University of Tennessee Knoxville, however, points out that these professional fields are often very expensive to operate. Programs in the arts, humanities, and social sciences, by contrast, are more likely to operate at a financial

surplus, creating a tension between legislators' stated aims of cost control and programmatic emphasis. Lisa Frace, Senior Vice President, Chief Financial Officer and Treasurer at Michigan State University, is the author of our final white paper on this topic. Frace reminds us of the longevity of American universities and their demonstrated ability to adapt to new challenges. Frace argues that public research universities should ask themselves how their budget models may be able to lead them into adaptive processes that effectively respond to current and future challenges.

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# Public Research Universities and the Next Quarter-Century (2026-2050)

**Dan Bauman**

*What are the major environmental forces that are disrupting public research universities and their financial models, and how might universities adapt and reckon with such profound changes?*

Modern public research universities (PRUs) are a product of more than a century of expansion (Goldin & Katz, 1999; Labaree, 2013). As one report from the American Academy of Arts & Sciences characterized them, PRUs function as "engines of innovation, growth, and opportunity for Americans of all backgrounds" (Lincoln Project, 2015). However, the demographic, societal, and technological forces that propelled many institutions to global preeminence now portend a leaner and less assured future for America's PRUs. Research-intensive public four-year universities find themselves squeezed by declining fertility rates, aging workforces, and shrinking tax bases. At the same time, questions linger about how these institutions might mitigate and respond to recent and future technological and regulatory upheavals.

This paper examines how those stressors might affect those multifaceted business models of PRUs to address the following question: What are the major environmental forces that are disrupting public research universities and their financial models, and how might universities adapt and reckon with such profound changes?

## Competition Will Grow as the Number of High School Graduates Dwindles

Over the next 25 years, the United States Census Bureau projects two periods of significant multiyear declines in the U.S. population of 18-year-olds — first, from 2024-2032, when demographers anticipate a 6.5 percent decline, followed by an 8.8 percent drop from 2033-2039 (Census Bureau, 2012; 2021; 2023; 2025). By 2040, the Census Bureau expects the number of new adults to have shrunk by 660,000 persons from the country's 2024 baseline. Moreover, while the Bureau expects demographics to stabilize over the last decade of the current half-century, the count of 18-year-olds is not forecast to surpass 4 million during that period — down from the 4.5 million young adults estimated to reside in the U.S. in 2024 (Census Bureau, 2012; 2021; 2023; 2025).

According to a recent federal survey, at least nine out of every 10 undergraduate students at public doctoral universities enrolled before their 20th birthdays (U.S. Department of Education, National Center for Education Statistics, 2020). Furthermore, family tax returns listed three-quarters of those students as dependents (NCES, 2020). According to government estimates from the prior decade, between 65.9 and 69.7 percent of all high school graduates enrolled in college (sector agnostic) immediately (U.S. Bureau of Labor Statistics, 2024).

Furthermore, undergraduate PRU matriculants underpin the foundations of the sector's domestic post-baccalaureate consumer base. The combined net tuition dollars collected from the two student cohorts represented 18.1 percent of all revenues generated by public doctoral universities in the 2023 fiscal year (NCES, 2025). While selective admissions policies, class-size limits, and popular reputations will likely insulate PRUs from more severe demographic-driven disruption, the sector's heavy reliance on recruiting high school graduates still exposes PRUs somewhat to financial and reputational headwinds.

## Fewer Students and More Competition Likely Limit PRUs' Ability to Raise Prices

During the 2003-2004 academic year, academia's pricing power arguably reached its zenith when net tuition costs rose by around 10 percent in just 12 months (BLS, 2025). Rather than curtail demand, however, the rate of high school graduates immediately enrolling as first-year college students swelled, uninterrupted, from 63.9 percent in October 2003 to 70.1 percent by October 2009 (BLS, 2024). Economic uncertainty around that time likely contributed somewhat to the outsized interest in post-secondary education. Job openings fell by 50 percent during the 2008 financial crisis and hovered near that level across the protracted recovery that followed, while the unemployment rate reached as high as 10 percent (BLS, 2025; BLS, 2025).

As the economy recovered after the 2008 financial crisis, the college-going population trended downward (BLS, 2024). At the same time, scrutiny of high tuition costs and student debt levels intensified (Busteed & Marken, 2015; Dynarski, 2014). These factors ramped up pressure on PRUs and all universities to freeze or reduce tuition costs. Accordingly, the rate of college tuition inflation decreased with each passing year (BLS, 2025). Beyond spending controls and cost-cutting, this downward push on net tuition costs, coupled with shallower enrollment markets across the country, in turn motivated lawmakers and administrators to merge several public institutions of higher education, particularly in the southern United States (Cason, 2015; Ragusea, 2013; University of Texas System, 2012; University System of Georgia, 2015).

More recently, the U.S. economy after 2020 endured historic year-over-year price increases exceeding five percent for an extended period. However, despite such spikes in cost, academia's observed net tuition inflation rate never exceeded three percent at any point between 2020 and the present day (BLS, 2025; Hajdini et al., 2025). This intense and persistent downward pressure on tuition prices likely stems from the dogged competition among all colleges and universities, including PRUs, to recruit from a shallower pool of now much more cost-conscious students than the sector reckoned with two decades ago (National Association of College and University Business Officers, 2025). At the same time, more labor market opportunities, as reflected by the more than 7.5 million current U.S. job openings and a relatively low unemployment rate, presumably also suppress tuition prices (BLS, 2025; BLS, 2025).

How might PRUs respond to the current tuition-cost-sensitive environment — one that provides PRUs with much less flexibility to backstop costly and current operations or finance future investments through tuition increases? In the last decade, several PRUs (some working in tandem with state government bodies) acquired or financed large-scale online education operations to

better appeal to adult learners and other consumer bases. Examples include University of Arizona's Global Campus (formerly Zovio, Inc.), the University of Massachusetts's UMass Global (formerly Brandman University), and the University of North Carolina's Project Kitty Hawk (Bauman, 2022; University of Massachusetts Global, 2021; University of North Carolina System, 2024). Other PRUs turned their attention to more populous states outside their parent jurisdiction — most notably, Arizona State University, which, over the last 25 years, has steadily expanded its footprint in California (Bauman, 2024). Alternatively, administrators at the University of Connecticut just this year presented a plan to grow out-of-state and international enrollments on UConn's campus by 3,000 students (Otte, 2025).

## How An Aging Population Might Affect PRUs

Today, adults aged 65 and older comprise 16.8 percent of all U.S. residents — a larger share of the general population than at any point in the last century (Caplan, 2023). In 2020, seventeen states clocked populations with a median age above 40, with Maine (median age: 44.8) and New Hampshire (43.3) leading that cohort (Census Bureau, 2023). Demographers expect that the age cohort's size will continue to grow, encompassing 23 percent of the U.S. population by 2050 (Mather & Scommegna, 2024). Already, in anticipation of the outsized needs of the age-65-and-older set, many PRUs plan to continue investing heavily in expanding and improving healthcare facilities and disciplines to meet current and future market demand among older Americans and U.S. residents (Taylor, 2024; Uppal & Zirui, 2025).

Still, as America ages, the balance sheets of PRUs will need to contend with both shifting societal priorities and rising operational challenges. Collectively, public doctoral universities derive around 20 percent of their total revenues from state appropriations, grants, and contracts, with some PRUs financed by larger shares of state tax dollars, like New Mexico State University (47.8 percent) or the University of Massachusetts at Boston (39.8 percent) (Census Bureau, 2012; 2021; 2023; 2025). However, an aging population presents at least two significant threats to the flow of state appropriations to PRUs. As more adults enter retirement, the vast majority will transition from wealth-generating employment to fixed-income retirement. For most taxpayers, retirement marks the end of cash flow from earnings (Liu & Quinby, 2025). In 2022, RAND analysts estimated that, on an annual basis, inflation-adjusted spending after age 65 narrowed by 1.7 percent for single households and 2.4 percent for coupled households (Hurd, 2022).

Put simply, fewer working adults drawing paychecks means less income tax revenue for states, while less spending translates into fewer sales tax dollars collected. One model, prepared by researchers for the Federal Reserve Bank of Kansas City in 2013, examined how American state tax revenues collected in 2011 might fluctuate if collected, theoretically, from an older U.S. tax base in 2030. Combined with a 0.5 percent per capita contraction in sales tax collections, Kansas City Fed researchers also predicted a 2.4 percent per capita decline in revenues from taxed income, ultimately resulting in an $8.1 billion decline in tax dollars collected in their scenario (Felix & Watkins, 2013).

How might government spending priorities change as the share of older Americans grows and tax bases shrink? Once again, history offers some perspective.

In 1990, 14.6 percent of all state government 'general fund' spending financed expenditures associated with public higher education, compared to a 9.6 percent share allocated for Medicaid (Lincoln Project, 2015). Across the next 25 years, however, spending patterns flipped. By 2014, state allocations for Medicaid outpaced higher education expenditures by a ratio of two-to-one, partially confirming somber predictions and analysis proffered by economists in 2003 (Kane & Orszag, 2003; Lincoln Project, 2015). Furthermore, persons aged 50 and older comprised 23 percent of all Medicaid enrollees in 2020, while the associated Medicaid subsidy for this age cohort accounted for 42 percent of all state and federal spending on the entitlement program (Wolk & Burns, 2025). Should trendlines hold, PRUs will likely see an increasing proportion of government funding allocated away from higher education and towards Medicaid as the population ages, putting further pressure on PRUs to either cut spending or cultivate alternative non-tuition revenues.

Beyond Medicaid, state lawmakers and campus administrators are also routinely forced to contend with pension obligations. Though levels of asset-backed support for these obligations vary by jurisdiction, state-managed pension and retirement plans for government workers, which include current and future PRU employees and retirees, collectively hold $1.29 trillion in unfunded liabilities. In fact, two post-secondary-exclusive public pension plans control at least three percent of those public pension obligations: the University of California Retirement System (unfunded liabilities estimate: $12 billion; funded ratio: 90.3 percent) and the Illinois State University Retirement System ($27 billion; 48.8 percent funded) (Frost et al., 2025).

Because the debt associated with such pension plans matures on different actuarial schedules, policymakers have some flexibility in how to handle these liabilities in each budget cycle (American Academy of Actuaries, 2012). Still, even pension liabilities with staggered maturity dates eventually demand state funding or debt financing, forcing policymakers to reckon with a state government’s responsibilities to workers, as well as to the students, families, and organizations that rely on PRUs. In addition to state-financed retirement compensation, rising labor costs borne from an aging workforce represent another significant stress point for public doctoral universities. Of the $352 billion spent collectively by public doctoral institutions across the 2025 fiscal year, more than half of those dollars compensated wages, salaries, and fringe benefits (Census Bureau, 2012; 2021; 2023; 2025).

With all that said, in America, structural deficits eventually claim bounties and victims, no matter what historic, cultural, institutional, or legal safeguards might exist. Ultimately, the responsibility for reckoning with the aforementioned shifting revenue, spending priorities, and other fiduciary expectations falls to the university presidents and chief financial officers who oversee America’s PRUs.

## Known Unknowns

While demographic trendlines might offer a glimpse into the future to better direct investment and attention, other societal factors only inspire an ever-growing chorus of difficult or (for now) unanswerable questions. Anecdotal evidence suggests that elevated unemployment rates among recent college graduates may correlate with the deployment of artificial intelligence (AI) across broader society (Dickler, 2025). Likewise, speculation abounds about which jobs and industries might follow telegram companies and switchboard operators into economic oblivion as society further embraces AI and robotization (Chamberlain, 2025). All of which places faculty members in the impossible position of properly educating students not only for tomorrow's workforce needs but also for society's needs within the next decade or two, and for an economy that might look vastly different from the current one (Ibarguen, 2025).

The federal government, particularly concerning research funding, healthcare subsidies, post-baccalaureate financial aid, and immigration policy, compounds the uncertainty borne from technologization. For instance, recent proposals and counterproposals made this year to cap indirect cost recovery on federally funded projects have raised concerns about how America will (or will not) finance tomorrow's fundamental research (Wosen, 2025). Congressional-backed changes to Medicaid's funding regime, as well as limits and caps on specific student loan programs, created additional short-term and medium-term challenges for PRUs to deal with when signed into law this summer (Association of American Medical Colleges, 2025). Finally, any PRU enrollment strategies predicated on international recruitment must grapple with ongoing skepticism at the state and federal levels of both immigration generally and certain matters specific to non-resident students (Bridges, 2025; Villarreal, 2025; West & Tauberer, 2025).

## Reason For Optimism

For better and for worse, U.S.-based PRUs (and many other colleges and universities) endure as slow-moving yet self-improving temples committed to America's homegrown philosophical tradition: pragmatism (Crow & Dabars, 2025). First, consider how, at the turn of the century, rather than simply replicating the modern research university emerging in Germany at the time, American academics retooled the model to serve American interests (Labaree, 2017).

Next, as states reduced subsidies to PRUs later in the 20th century, these institutions countered the loss of appropriations by identifying other revenue sources and diversifying the services each offered (Herrine, 2025). At the same time, PRUs narrowed their admissions policies and leveraged their nationally respected brands to generate scarcity in admissions and, in turn, harvest tuition premiums (Crow & Dabars, 2020). Then, as cheap, reliable, and distributed broadband came to remake the world, PRUs faced such changes on the front lines, experimenting with and advancing adaptive courseware, online course learning, and university-employer partnerships to meet the needs of various constituencies in a rapidly changing world (Faller, 2019; McPherson & Bacow, 2015; Vignare, 2017).

According to Johns Hopkins University President Ronald J. Daniels and then-Vice President for Strategic Initiatives Philip Spector, complementing this readiness to adapt, PRUs at the same

time have demonstrated remarkable durability despite recurring upheaval begot by these institutions' structural deference to state lawmakers and political forces (Daniels & Spector, 2016). At the same time, many PRUs command extraordinary popularity not only close to home but across state and international borders. Of the 13.9 million applications for fall 2023 admission submitted by prospective college freshmen to all federally funded, non-open admissions institutions of higher education, 255 public, doctoral-granting universities garnered more than 40 percent of that volume, up from a 31-percent share in 2015. Meanwhile, across 269 private, not-for-profit doctoral-granting universities, the next-largest haul of applications (2.8 million) represented just 20 percent of higher ed's aggregate haul (NCES, 2025).

In conclusion, despite the disruption that demographic, societal, and technological change might spur over the next 25 years, no group of post-secondary institutions in America is better equipped to answer the call, adapt, survive, and even thrive than PRUs.

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# The Implications of Changes in Support for Research Infrastructure

**J. Michael Gower**

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*How can universities manage the ever-widening gap between the costs of conducting research and the revenues provided for sponsors for that research?*

From my perspective as the Chief Financial Officer of Rutgers University, the question I raise pertains to how current contextual factors are impacting the ability of the research university to carry out its mission to produce and advance knowledge without undermining its equally important mission to enable student learning. Specifically, how can universities manage the ever-widening gap between the costs of conducting research and the revenues provided for sponsors for that research? Rutgers University (formally Rutgers, The State University of New Jersey) is one of the original colonial colleges and one of only four land-grant universities founded as private institutions that still exist today. Although private until 1956, Rutgers has grown through a series of mergers and expansions into a comprehensive statewide public research university serving approximately 70,000 students. In the most recent fiscal year, the institution surpassed $1 billion in research expenditures (Rutgers Institute for Translational Medicine and Science, 2025), concentrated primarily on the New Brunswick land-grant campus and across the medical and other health sciences schools added through a merger more than a decade ago.

Over my career at three different land-grant universities, I have repeatedly encountered the same fundamental challenge: the persistent underfunding of research at public universities**,** even at large, sophisticated institutions like Rutgers. This challenge is not new. In the 1990s, when I served as CFO of a medical school, my colleagues and I collaborated across peer institutions to study the unreimbursed cost of research - that is, the portion of research expenses not covered by sponsors, particularly the federal government. Even then, the most efficient institutions subsidized an additional 20 to 25 cents on every Federal dollar spent. More recent studies by the Association of American Medical Colleges and the Council on Governmental Relations place the unreimbursed share closer to 50 cents per dollar, if not higher (Association of American Medical Colleges [AAMC], n.d.).

Put simply, for every dollar Rutgers receives in sponsored research revenue, the university must spend an additional fifty cents from its own resources to support that work—either through explicit cost sharing or through indirect costs that are absorbed by the institution. Rutgers is not alone in using institutional funds to support sponsored research. The reality of institutional support for even sponsored research means that expanding the research mission creates additional obligations for the university budget. These obligations are exactly why federal and other grants typically provide funding for facilities and administrative (F&A) rates. From a cost-accounting perspective, the system for F&A rates is fundamentally sound: institutions

follow federal rules, calculate their legitimate costs, and negotiate a reimbursement rate with a federal cognizant agency. Over time, however, several policy developments have prevented federal sponsors—and others—from covering the true cost of research.

What explains this situation? First, in 1991, the federal government imposed a 26 percent cap on the administrative component of F&A (AAMC, n.d.). That cap remains in place today. As a result, even if an institution negotiates a total F&A rate of, for example, 57 percent, the administrative share cannot exceed the 26 percent cap—regardless of actual costs. Meanwhile, the compliance and administrative burdens required to support research have expanded dramatically over the past three decades. Accounting, reporting, regulatory oversight, cybersecurity, and audit requirements have all increased, while federal research dollars continue to be reimbursement-based rather than provided upfront, adding further administrative complexity. These growing costs must be absorbed by the institution.

Second, the portion of F&A associated with facilities—the "F" in F&A—remains one of the few areas where institutions can approach full cost recovery. Space-related costs are relatively straightforward to calculate, based on square footage, depreciation, utilities, and maintenance. Even here, however, rate negotiations often devolve into efforts by the federal government to push rates lower and by institutions to defend them higher, rather than a neutral assessment of true costs.

Third, and increasingly consequential, is the issue of partial payment and statutory caps**.** Institutions frequently do not receive the full amount of F&A reimbursement to which they are entitled. Last fiscal year, for example, Rutgers was eligible to receive approximately $75 million in NIH F&A reimbursement, yet it received only $65 million—a shortfall of $10 million from the most reliable federal payer. While NIH typically pays a higher share of F&A than other sponsors, cost sharing and limits on individual grants mean that working even with this sponsor can result in unrecovered costs. Other agencies impose statutory caps that limit F&A, such as those at the Department of Agriculture, that further suppress recovery.

Together, these factors have compelled universities—including Rutgers—to provide ever-larger subsidies for sponsored research, including federally-funded research. This challenge is not limited to federal research support. State-sponsored research, for example, often requires even greater institutional support, yet these costs are not offset by state appropriations, which have remained essentially flat for more than a decade in New Jersey. Universities have long tolerated this imbalance because research is central to their mission. As a public land-grant institution, Rutgers is deeply committed to advancing knowledge and improving the well-being of New Jersey, the nation, and the world. The faculty believe profoundly in that mission, as do those entrusted with stewarding the institution. It bears emphasizing that *no other industry* working with the federal government is expected to subsidize funded work by absorbing both direct *and* indirect costs.

But there are limits to what universities can manage.

Some suggest that endowments can fill the gap between what it costs to perform research and what sponsors are willing to pay. That may be true for a small number of wealthy private

institutions, but it is not true for public research universities. Rutgers' endowment is modest relative to its scale and highly restricted; it is not a flexible source of operating support. That leaves only two primary funding sources to operate the university: tuition and fees, and state appropriations. New Jersey provides meaningful operational support, but state funding has remained flat overall for approximately twelve years, eroding significantly in real terms after inflation. As a result, when Rutgers subsidizes sponsored research, those funds ultimately come from tuition, fees, or the limited discretionary resources that support the educational mission.

This balance is becoming increasingly untenable. If indirect cost recovery were further reduced—for example, through proposals to cap F&A at 15 percent—we estimate that Rutgers could lose up to $120 million annually**.** F&A recoveries are unrestricted dollars that keep the university functioning: utilities, security, information systems, payroll, compliance, and other essential infrastructure. This situation begs a compelling and basic question: Where would that $120 million come from?

If state support cannot increase, clinical revenues have already been maximized, and endowment resources are unavailable, the remaining burden would fall squarely on students and the educational mission. That presents a genuine moral dilemma. Under such circumstances, Rutgers could not sustain a $1 billion research enterprise. The institution would be forced to scale research activity to match the level of subsidy available—a profound shift that would diminish both its research impact and the quality of students' educational experience. This moral dilemma and its likely practical consequences are why proposed changes to F&A and reimbursement policy are so pressing. Collecting reimbursement after costs have been incurred is already difficult. Receiving even less—while compliance demands continue to grow—poses a serious risk to the operating core of the university.

Some argue that universities are administratively "fat" and can simply cut their way out of this problem. That argument does not withstand scrutiny. No amount of administrative trimming can offset a $120 million annual loss. Rutgers operates efficiently, and the negotiated 57 percent F&A rate reflects real, carefully documented costs.

Colleagues across the Big Ten share these concerns. Since February 2025, CFOs across the Big Ten have met weekly, with F&A consistently among the most urgent topics. What happens to F&A policy will shape the future of the compact established after World War II between the federal government and America's research universities. That compact built the research infrastructure that drives innovation in medicine, engineering, computing, and countless other fields. It has delivered extraordinary advances in cancer treatment, public health, and economic growth, and it has made the U.S. research enterprise the envy of the world.

Undermining that foundation risks far more than budget shortfalls. What is at stake is the possibility of weakening the research enterprise that underpins the country's economy, health, and global leadership. That is a risk that research universities should not be willing, nor forced, to take.

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# Managing Enrollment in High-Cost Fields

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*How can public research universities manage increased enrollment in high-cost-to-deliver fields, such as nursing and engineering, at a time when overall revenue is constrained?*

Much has been written about enrollment pressures facing public universities, although research universities—and flagship institutions in particular—have fared better than most other publics due to stronger market positions, changing student preferences, and increased recruitment efforts (Gardner, 2025; Kelchen, 2023). But one key financial aspect of public universities that has received little attention is a steady shift of students from fields with lower educational costs to those with higher educational costs, pressuring budgets and possibly even changing the fundamental missions of our institutions. In this essay, I unpack shifts in students' programs of study, cost differences in providing an education by major, and state-level and institutional factors that affect universities' budgets.

There are substantial differences in the cost of providing a college education across different fields of study. Research using Delaware Cost Project data by Hemelt et al. (2021) found that per-credit undergraduate instructional costs ranged from less than $200 (in 2016 dollars) in mathematics to more than $400 in electrical engineering, driven by a combination of faculty salaries, workload levels, and class sizes; similar trends are also likely present at the graduate level. Facilities-related costs must also be factored into the equation, as fields that require laboratories or expensive supplies can further widen cost disparities. In general, programs in engineering, fine arts, health, and education tend to have higher educational costs, while the humanities and social sciences have lower instructional costs.

Universities have long relied on a complicated and delicate array of cross-subsidies to sustain a mix of programs with different operating costs (e.g., Winston, 1999). Given state funding challenges that public higher education faced throughout the 2000s and the first half of the 2010s (Kunkle & Burns, 2025), one might expect that institutions would be encouraging students to major in lower-cost fields in order to help balance budgets. Instead, as Figure 1 shows, public research universities awarded a larger share of bachelor's degrees in high-cost STEM and health fields over the last two decades. The share of degrees awarded in these two fields rose from 25% in 2003 to nearly 40% in 2022, while the share of liberal arts degrees declined from 24% to 17% (author's calculations using Integrated Postsecondary Education Data System data).

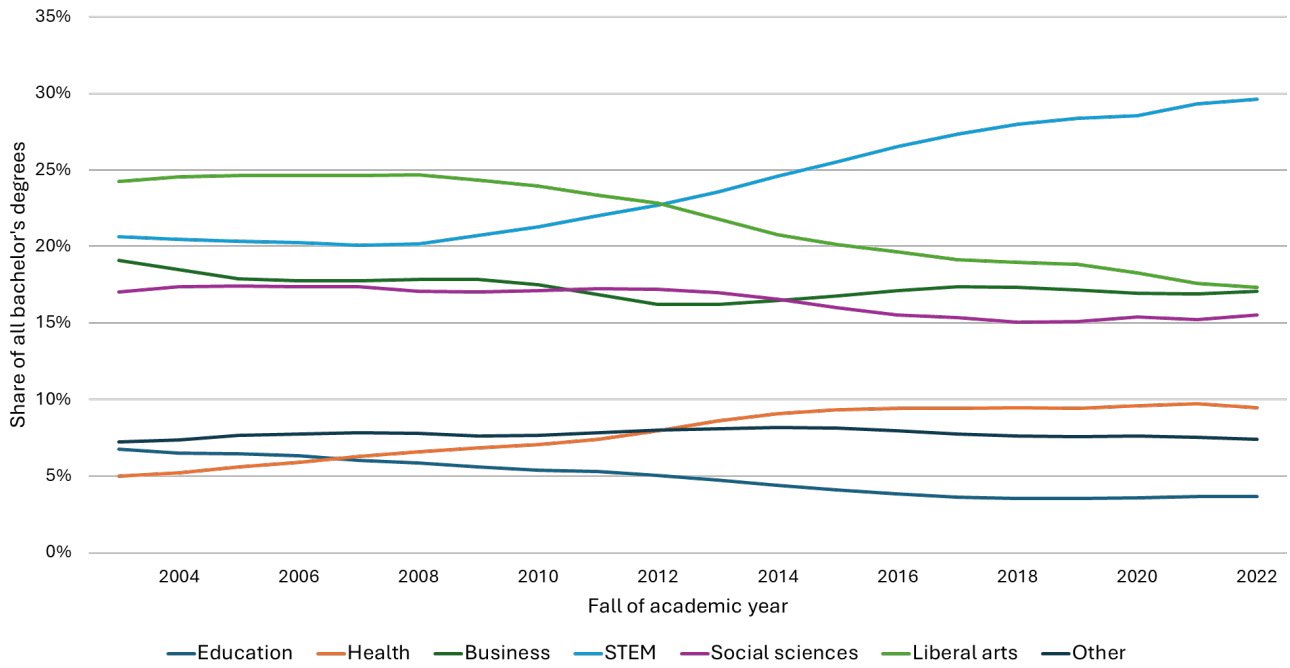


**Figure 1:** Trends in bachelor's degrees at public research universities

Many state governments have expressed strong interest in increasing the number of individuals with workforce-oriented credentials, especially in STEM and health fields. To at least partially account for cost concerns, states have adopted two types of funding models that direct more resources to universities based on their credential mix. The first is enrollment-based funding models that adjust funding by the number of credit hours in a given field of study and/or level of credential. These models are present in approximately 13 states (Kelchen, et al., 2024), and many of the underlying formulas have been consistent for decades.

The weights given to various fields of study vary and the reasons given for those weights vary considerably across states, creating varied incentives to support programs. Louisiana, for example, weighs upper-division nursing courses 4.32 times more and lower-division engineering courses 1.42 times more than lower-division liberal arts courses, based on data from the Texas Higher Education Coordinating Board (Texas Higher Education Coordinating Board, n.d., cited by Louisiana Board of Regents, 2020). North Carolina, on the other hand, weighs nursing courses 2.21 times more and engineering courses 1.65 times more than liberal arts courses (without making upper-division/lower-division distinctions), using Delaware Cost Study data (University of North Carolina System, 2023).

States also use performance-based funding (PBF) models to allocate funds to universities based on outcomes such as progression toward credentials and the number of credentials awarded. Approximately 22 states currently use PBF in the four-year sector (Rosinger, et al., 2025). Most of these states have provisions that allocate additional funds for degrees in high-value fields, which are most commonly framed as STEM and health. Florida has 95 bachelor's degrees of strategic emphasis that are reviewed every 3-5 years, which are predominantly in STEM, but also include fields such as education and linguistics; this strategic emphasis component is one of the ten funding metrics (State University System of Florida, 2023). Arkansas weighs STEM and

"high-demand" bachelor's degrees (again STEM-heavy, but also including fields such as education and psychology) at 1.5 times other degrees (Arkansas Department of Higher Education, 2025). Notably, fine arts—another high-cost field—are excluded from the bonuses under both PBF systems. While research has found that PBF generally does little to improve the number of credentials awarded (Ortagus, et al., 2020; Ortagus, et al., 2023), there is some evidence that STEM incentives may modestly increase the number of STEM degrees awarded (Li, 2020).

Differentials in state funding by field of study are designed to both help cover the costs of more expensive fields and to encourage institutions to shift their mix of credentials offered. Some public universities also have the flexibility to charge differential tuition by field of study to either help cover higher operating costs or to create additional revenue to provide a profit margin to subsidize other programs. The three most common fields of study with differential tuition at public research universities are business, engineering, and nursing, all of which have approximately half of all programs charging differentials (Kelchen, 2025). Figure 2 provides information about the prevalence of differential tuition in these fields. Engineering and nursing are clearly high-cost fields, while business appears to be a field in which subsidizing other units or attempting to limit student demand through high prices may be the driving factors.

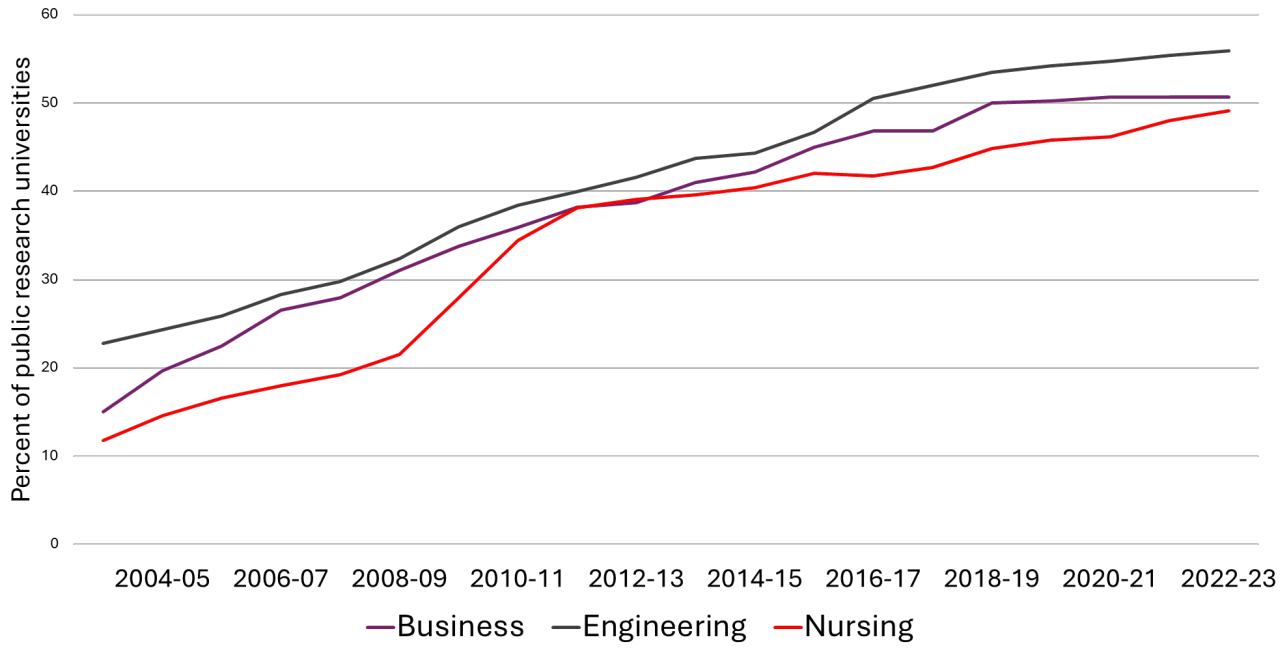


**Figure 2:** Differential tuition prevalence by field and year

In order to charge differential tuition, universities must receive permission from their governing boards, state higher education agencies, and/or the legislatures, depending on the state. Forty-four states allow at least some level of differential tuition, with California, Georgia, Kentucky, New York, Mississippi, and Washington being the exceptions. Differentials also vary considerably, with the University of Iowa charging a $2,625 annual differential for nursing and $4,162 differential for upper-division business compared to the liberal arts (Iowa Board of Regents, 2025) and Auburn University charging a $1,352 annual differential for upper-division

business, $1,696 for upper-division engineering, and $350 more per clinical credit hour in nursing (Auburn University, 2025). These variations, which are not well justified in governing board minutes and institutional financial documents, do not appear to clearly match differences in operating costs.

My research found little evidence that differential tuition policies significantly increased bachelor's degree production in business or nursing, with small increases in engineering (Kelchen, 2025). Although I was unable to conduct analyses by the size of the differential due to a high share of missing data, these findings suggest that institutions do not use additional revenue to expand access to these popular programs in any meaningful way. However, the extent to which differential tuition serves to cover additional operating costs relative to generating excess revenue is less clear.

In an era of tight budgets, public university leaders must think carefully about the profit and loss statements for each academic program and how these programs fit both their institutional missions and the needs of the state. A growing number of public research universities (approximately 70) use responsibility center management budget models (Kelchen, 2024), which forces academic units to wrestle with expenses relative to revenues for their program offerings. But even when centralized budget models are in effect, institutional leaders need to have difficult conversations about the extent to which they are able to offer high-cost programs while still meeting their revenue needs. Otherwise, universities have a strong incentive to encourage students to major in lower-cost fields (or for STEM/health majors to take more liberal arts courses) in order to reduce the cost structure.

Although states are encouraging public universities to offer certain programs of study through a combination of program-level appropriations and allowing for differential tuition to be charged, these efforts appear to be haphazard at worst and imperfect at best. State higher education agencies need to support the development of cost studies and then fully fund identified high-cost programs that are in high need within the state. This also includes capital funding, which is a one-time expense but crucial for scaling up a program. Discussions on operating costs need to include realistic expectations on items such as teaching loads, class sizes, and the quality of facilities in order to capture the full spectrum of costs and who should pay for them. This also gets into uncomfortable conversations about the trade-off between quality and cost that everyone would like to avoid but are crucial, given limited resources.

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# The Finance of Organizational Transformation Among Public Research Universities

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*What is the relationship between finance models and organizational transformation at public research universities?*

Public research universities face pressure to adapt in response to societal expectations, scientific and technological developments, and student needs. Organizational transformation is sometimes needed to adequately adapt to the prevailing environment. Yet, organizational transformation is not easy and holds implications for many aspects of institutional functioning. University finance is a key element in successful transformation because change requires resources, and budget models and organizational structures are entwined. In this essay I ask: *What is the relationship between finance models and organizational transformation at public research universities?* In addressing this question, I observe how public research universities have weathered challenging times and have adapted to meet those challenges. I consider the ways that finance models can help to lead and support public research universities to realize opportunities and deliver on their missions.

## Capacity for Transformation

Although it is difficult to remember in the current moment, organizational transformation is nothing new to higher education. In fact, we have learned to reinvent ourselves to adapt to the needs of the nation, deploy newly acquired knowledge derived through research, and support our students many times over the course of our collective histories. Although our institutions are not structured for rapid change, we do adapt. In fact, public research universities in the US have a long tradition of reforming themselves to meet contemporary demands and to prepare for the future (Crow & Dabars, 2020).

We expect that our students are prepared for the future not only by what they learn while they are with us, but also by learning to learn – and using those skills to learn throughout the rest of their lifetimes. We similarly should realize that our institutions have applied those same skills to adapt and thrive. That does not mean that change is easy; in fact, it is not. But as living and learning institutions (Tinto, 1997), we must always look forward, recognizing that we are only here for a short time in the history of the institution, and we have a duty to care for, preserve, and advance our universities for future generations.

For example, our institution, Michigan State University, was founded in 1855. In February 2025 we celebrated our 170th birthday. During the university's history, we have lived through a number of armed conflicts, including a Civil War, a Spanish American War, two World Wars, the Korean and Vietnam wars, Desert Storm and Desert Shield, two global pandemics, a great depression and great recession and many economic cycles in between, and many numerous changes of political administrations with accompanying policy change. These were times of great external stressors for all universities.

And yet, during those same years, we experienced the Industrial Revolution with its inventive marvels and post-World War II investment in research, with stunning gains in understanding in all aspects of science. We have visited the moon, and sent exploratory vehicles to the far reaches of space, always seeking new information with an eye toward practical application of the knowledge acquired. How many practical inventions do we take for granted today that came about because we set our sights on achievements that at the time seemed impossible and impractical? The basic research conducted at public universities like Michigan State University helped to drive much of the progress and change realized over the 20th century (Woodruff, 2025). Our capacity to conduct leading education and research is rooted in our ability to adapt. We have adapted to challenges and have found opportunities in those challenges. We expect our students to learn resilience – and we need to expect the same of our higher education institutions.

## Finance and Change

That is not to say that change has been easy. Higher education is structured to ensure stability, for our students, faculty and staff, for our research, and for our partners. Rapid change is destabilizing, and yet public research universities continue to identify options and opportunities in grappling with some of the very stressors requiring that change. As institutional leaders consider financial and organizational models, it is important to consider how to be nimble while also remaining true to our unique missions. Decisions that must be made in times of rapid financial change are difficult. But academic leaders are entrusted to be stewards for the institution not only for today, but for generations yet to come. Not making difficult decisions is as antithetical to stewardship as abandoning the mission at the heart of our institutions. It is therefore critical that leaders make academic, research, financial, and organizational decisions through the lens of institutional mission, keeping the mission centered as the North Star.

The financial models that institutions employ can be both a catalyst for, and a response to, change. Almost twenty years ago, the US suffered through the Great Recession, which proved to be a pivotal time for higher education as universities adapted to the prevailing reality. Public disinvestment in higher education became commonplace, with most states significantly reducing support for public institutions. State universities adapted by finding new organizational structures, identifying new revenue streams, and revisiting academic offerings to provide exciting and new fields of study that would appeal to the next generation of students. Delivery modalities changed, with shifts to online courses. Massive open online courses became ways to deliver content for nominal fees that were ancillary to degree-based tuition. For example, EdX (now operating as 2U) was founded as a joint company between two MIT and Harvard professors, and Coursera is a company founded by two Stanford professors. Both companies sought to offer open online courses from leading universities. This learning modality has shifted

from offering courses for credit to a platform for providing skills-based updates. Harvard and MIT sold EdX to a for-profit company for $800 million (2U, Inc., 2021).

In addition to new revenue generation, public research universities often also made structural changes in administrative support delivery following the Great Recession. These changes included various approaches to centralizing, streamlining, or arranging collaboration to deliver services. Most often, these changes occurred across the information technology, finance, and human resources support structures, but could often be seen in support for and management of large research grant programs where regulatory compliance is complex.

In short, effective financial stewardship sparked new and creative business development as well as a focus on finding efficiencies to advance institutional missions and strategies. In addition to the internal structural activities, many institutions engaged with external constituencies to build more robust cross-institutional networks, find opportunities for broader engagement, and develop partnerships to further build upon strategic advancement. For example, the University Innovation Alliance was founded in 2014 by eleven universities to share and advance student success strategies. Now with fourteen members, the UIA actively engages nationally on the topic of student success, convenes a national conference, and demonstrates success in initiatives (University Innovation Alliance [UIA], n.d.).

Effective financial transformation depends on leadership with a clear vision, engaged governance structures, cross-functional collaboration, and institutional investment in infrastructure. In short, effective financial transformation requires cultural change so that we do not always fall back on the familiar habits and ways of doing things. One way to support, or spur, cultural change is to modify the expectations and incentives embedded in budget models. This is frequently evaluated through a redesign of the budget model for the institution.

A budget model is a framework that determines how certain revenue streams will be distributed, but not the way in which those revenue streams will be deployed at the unit level. Redesigning a budget model should consider what is to be accomplished through the redesign. Done well, it considers the desired outcomes and designs a model that provides incentives for those outcomes. For example, many public institutions adopted a responsibility-centered management approach to budget models following the Great Recession. The intent of adopting this model was to drive revenue to the units that generated it, encourage entrepreneurialism and development of new revenue streams, increase fiscal accountability, and ensure that student demand was supported (Kelchen, 2024). In some cases, this approach worked well. In others, additional conditions had to be developed to ensure that mission-critical, existing core programs were not undermined. More recently, many institutions have been moving to a hybrid approach between an incremental allocation that is centrally determined to a distributed model. The intent is to ensure that investments that benefit the whole of the institution continue, but to also align the resource distribution with strategic outcomes.

At the unit level, changing the budget model can support both the financial transformation and cultural change, or work at cross odds. An institution's budget model can both spur the change and be adapted based on lessons learned to improve on the change. Models alter faculty and staff motivation and behaviors, triggering structural adjustments and allowing for a feedback loop to

inform continuous improvement. It is critically important to have a regular feedback loop, identify unintended consequences, and develop correcting strategies. These corrections should be modest tweaks, rather than wholesale changes. Changes that alter a focus on mission delivery are not only difficult; they introduce unnecessary lack of clarity, confusion and will likely result in poor outcomes. Therefore, having feedback loops that provide input from a variety of constituencies is critical for success.

The financial model of an institution, regardless of how described, tends to be unique to that organization. It should be a critical element in achieving organizational success. In the case of MSU, we've just begun to consider a change in our budget model and are engaging in broad dialog with various constituents to both understand how a change might impact units, but also to gather input on changes to consider. As we move through the process, we always keep our land-grant mission, with a focus on instruction, research, and public outreach, as core to our identity. The change in a budget model will strive to align our resources with the strategic aspirations stated in our strategic plan.

These changes are happening at a time of great uncertainty around federal research funding, and it is likely that we will need to consider ways to quickly adapt and stay true to our research mission. While all steps forward are not yet clear, we do intend to remain nimble.

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