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**Funding Challenges at the University of California: Balancing
Quantity with Quality and the Prospect of a
Significantly Revised Social Contract**

John Aubrey Douglass¹
UC Berkeley

After three decades of state disinvestment and “doing more with less,” the University of California (UC) is attempting to forge a new funding model that no longer includes substantial funding by taxpayers and support by politicians in Sacramento. The pattern of disinvestment began well before the Great Recession, but accelerated significantly with the dramatic downturn in the economy. Through this period, UC enrolled more and more Californians without any additional funding from the state. Once the bulwark of funding for public higher education in California, the state has become an important yet minor and unreliable partner, often altering an initial commitment with budget cuts in mid-year. More importantly, reduced funding has essentially severed the historic link between state funding and enrollment workload, ending the incentive and ability for UC to expand academic programs and enrollment to keep pace with California’s growing population and its labor needs—an important component of its historic social contract. If there is any one theme that describes California’s history, it has been constant population growth.

“To grow or not to grow,” is now a major challenge facing the University of California. With a high level of institutional autonomy guaranteed in the state constitution, the university community has the ability to make choices regarding who and how many it enrolls.² Without an adequate new funding model UC may now seek to maintain the quality of its academic programs and no longer or only modestly increase enrollment.

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² See John Aubrey Douglass, “How the University of California Got Its Autonomy,” CSHE.4.15 (April 2015). Even the California Master Plan, a statutory provision, makes no legal restriction on the university’s constitutional authority to control who it admits and enrolls. Further, and despite popular belief, the Master Plan that makes no mention of the 12.5 percent pool of California high school graduates that has framed UC admissions pool since 1960.

With an improved economy, a less divided state legislature, and the attention of the current governor, California had an opportunity to significantly alter years of declining state investment in public higher education. After lengthy negotiations, however, state lawmakers and the University of California crafted a 2015–2016 budget deal that provided only a marginal improvement in university finances. UC asked for a \$459 million increase in state funding to partially restore past cuts. The funds would help reverse the long-term erosion in student-faculty ratios, provide salary increases for faculty and staff who previously accepted substantial pay reductions, and increase student financial aid. Most importantly, the budget proposal would fund enrollment growth for Californians.

In the end, however, and under a state budget plan insisted on by Governor Jerry Brown, UC gained only an additional \$119.5 million in fiscal year 2015–2016 and a promise of annual increase of four percent through 2018–2019. In return, UC President Janet Napolitano, former governor of Arizona and head of the Department Homeland Security in the Obama administration, agreed to continue a previous agreement with the governor not to increase undergraduate tuition for state residents. The result would be a six-year freeze on tuition—a politically popular achievement for the governor, but as discussed later, a restrictive covenant that may actually reduce access to the university.³

Beginning in 2017–2018, and also as part of the deal, tuition may increase gradually at the rate of inflation. UC’s president and board of regents also agreed to reduce pension benefits for future faculty and staff hires and to limit the enrollment of international and out-of-state undergraduate students, including a cap at Berkeley and UCLA. These students pay significantly more than domestic Californians in tuition, helping to reduce the impact of state disinvestment. Most importantly, the state budget agreement provided no funds for actually increasing enrollment of Californians. A subsequent proposal by legislators to provide a marginal increase in the budget for enrollment growth asked the financially strained university to enroll the students first and receive state funding in the 2016–2017 budget cycle—a highly unattractive proposal.⁴ As a result, there is no increase in the number of California residents at the undergraduate level for the 2015–2016 academic year.

At best, the budget deal is like treading water—it keeps UC operating and provides a semblance of stability after years of budget cuts, but for how long? There is no significant progress toward a sustainable funding model that preserves UC’s social contract. California’s land-grant research university now seems locked into a two-year or more budget agreement with no options for significantly increasing revenue, and no prospect of a sizable restoration of state funding for either operating or capital costs of the 10-campus university system.⁵ One result: per an earlier proposal to the state, individual UC campuses had planned to raise tuition up to five percent a

³ “UC reaches long-term agreement with governor for more funding, tuition predictability,” University of California Office of the President, Press Release, May 14, 2015: <http://www.universityofcalifornia.edu/press-room/uc-press-release-governors-revised-budget>.

⁴ *Ibid.*

⁵ Many aspects of this budget deal will have long-term implications for UC. It was struck under time constraints between Governor Brown and President Napolitano, causing consternation among some UC campus leaders. Consensus building in universities, particularly one as large as UC, is always difficult, with always a significant number of detractors when dealing with resource decisions; yet, there are indicators that campus academic leaders are often not provided opportunities to consider and discuss key aspects of the budget deal and their implications.

year at the undergraduate level *and* hoped to gain a larger state investment for the cash starved UC system.

Campuses then began scrambling to find additional revenue streams and to further cut costs, with limited choices. This includes a rush to boost fundraising from alumni and the private sector, and increase the number of federal research grants that also generate operating funds. At the same time, each year provides an opportunity to re-negotiate state funding. But with the governor pursuing a larger, politically prudent agenda of fiscal constraint, a major change seems unlikely.

Any effort to revitalize the state role in supporting UC will require a deeper public understanding of UC activities, costs, and the choices it faces if it is to remain the world's most renowned public university system. UC needs to pursue a long-term model that supports quality and access and links workload related to enrollment with funding. On the expense side, there is always room to lower operating costs, though with diminishing returns following more than a decade of cuts in faculty and staff and other cost-savings measures. Under the budget deal, Governor Brown sought and continues to seek greater efficiencies and further operating cost reductions such as higher student to faculty ratios and faster graduation rates. He is hoping this will lead to lower state costs, but he does not seem to give much consideration to maintaining access in a growing state. There is strong symbolism in insisting that tuition for Californians does not go up, but it likely means less access than pursuing a *moderate fee and high financial aid model* that, thus far, seems to be working.

In the following, I discuss the choices facing UC and address some common misperceptions about the university's operating budget, its evolving funding model, workload and activities of faculty, and, more generally, its teaching, research, and public service missions. While UC may be entering a period of significant redefinition of its social contract and role in the life and economy of Californians, there is reason for hope if Californians become more cognizant of what they have in the University of California, and what they could lose.

Revenues and Expenditures

Does the University of California represent a huge financial burden to the state of California and its taxpayers? The short answer is no. For every dollar from Sacramento, UC generates nearly 10 dollars from other sources, all of which feeds into California's economy. UC generates and contributes more tax revenue to state coffers than the state provides to UC in direct funding—as long as it has a workable funding model.⁶

At the same time, and despite the pattern of disinvestment, state dollars remain extremely important for UC's operating budget. The state funds most faculty salaries, but it is no longer the university's chief source of income. Over the past 10 years, state educational appropriations have fallen more than \$1 billion in inflation-adjusted dollars despite significant enrollment growth.

The University of California is a huge enterprise with 10 campuses, some 240,000 students, five medical centers, five law schools, and the state's only veterinary school. It generates around \$25 billion in revenues—more than the GDP of many countries. Reflecting in some measure the

⁶ According to a 2011 report on UC's economic impact, "Every \$1 that the California taxpayer invests in UC and its students results in \$9.80 in gross state product and \$13.80 in overall economic output." See: Final Report The University of California's Economic Contribution to the State of California, Prepared for: The University of California Office of the President, Prepared by Economic & Planning Systems, Inc. September 12, 2011 <http://regents.universityofcalifornia.edu/regmeet/sept11/f7attach.pdf>.

expense of medical research and training and the high cost of operating hospitals, some \$7 billion of revenues and expenditures are related to UC's medical centers and represent the largest single revenue source in a diversified portfolio. That is followed in order of magnitude by grants and contracts largely for research and mostly from federal agencies like the NSF and the NIH. UC faculty and researchers receive nearly nine percent of all academic research and development grants coming from Washington. The grants provide a significant source of support for the overall operating expenses of the university—“overhead” is charged to each grant at a rate of approximately 55 percent. (See Figures 1 and 2 for summaries of revenues and expenditures.)

The next largest funding source is student tuition and fees, then various “educational activities” including income from life-long learning courses and extension programs (for industries ranging from agriculture to professional groups like law). State funding accounts for about \$2.4 billion, including appropriations for educational costs and state financing for capital projects related to instruction and research (or I&R)—although investment in capital costs by the state has declined to a trickle of funds. In light of the limited prospect for a significant reinvestment by the state in UC's operating and capital expenses, private giving (from alumni, individuals, and the private sector) has gained in importance. But UC's ability to substantially grow private giving is limited and some 99 percent of giving is restricted to specific uses and does not supplement general operating funds.

The core activities of instruction, research, and public service remain the largest single expenditure, followed by costs for medical centers, support activities such as student services, capital construction, and auxiliary enterprises (like housing and food services).

There are various ways to look at the expenditure and operational side of the equation. The most important points are not only the well-known declines in state funding, but the magnitude *and* seemingly irreversible nature of what appears to be a new paradigm over the past three decades where state funding, once the primary source of income for UC, has become a minority stakeholder.

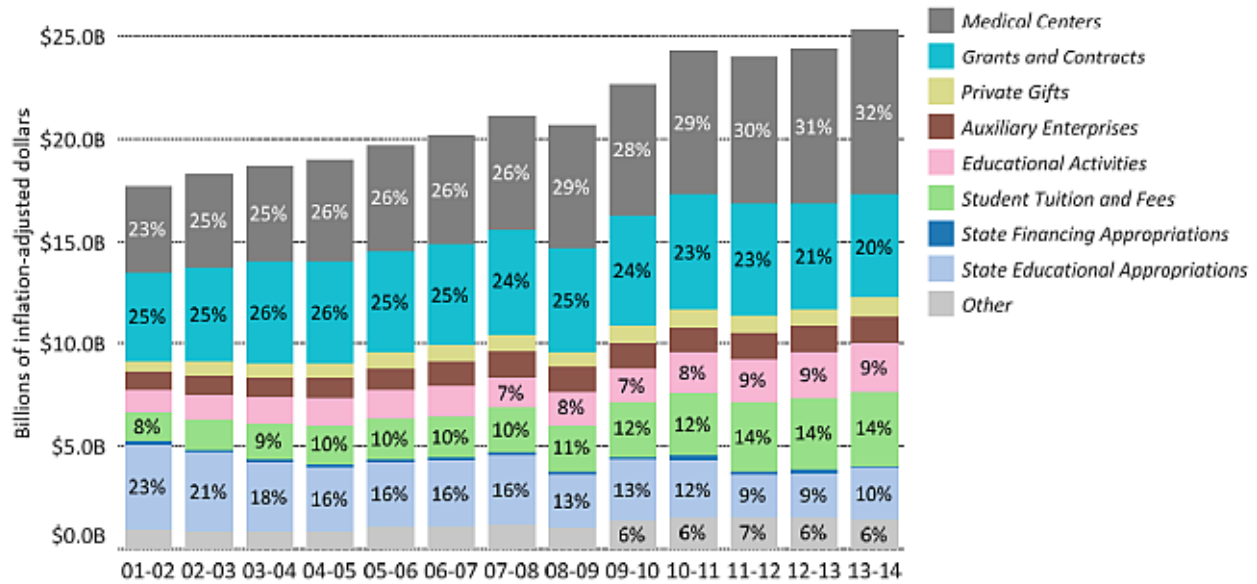
A number of additional current and future expenditures are not detailed in these data: rising pension and medical costs as UC faculty age and retire, and capital costs for seismic safety, modernization of existing facilities, and enrollment and program growth if UC is to grow with the state's population.

The state withdrew from providing subsidies for pensions and health benefits during the early 1990s recession. Today, the retirement system has a deficit in unfunded liabilities of approximately \$7.6 billion. In light of this deficit, partially exacerbated by the state's failure to contribute to the pension fund, UC faculty and staff are increasingly contributing to their own pensions. UC employees currently contribute around 12 percent of their salaries to the pension program, up from 10 percent in previous years.⁷

As noted previously, the most recent 2015–2016 state budget deal with Governor Brown provides a one-time allocation of \$420 million over four years, a small contribution relative to the deficit. Before this agreement, Berkeley's Vice Chancellor for Administration and Finance, John Wilton, estimated that by 2018, UC employees may need to increase their contribution to approximately 20 percent to keep the UC pension plan solvent. Berkeley alone estimates it will incur an additional \$120 million in retirement costs. The governor proposed, and UC's Office of the President accepted, a significant reduction in benefits for future UC faculty and staff hires

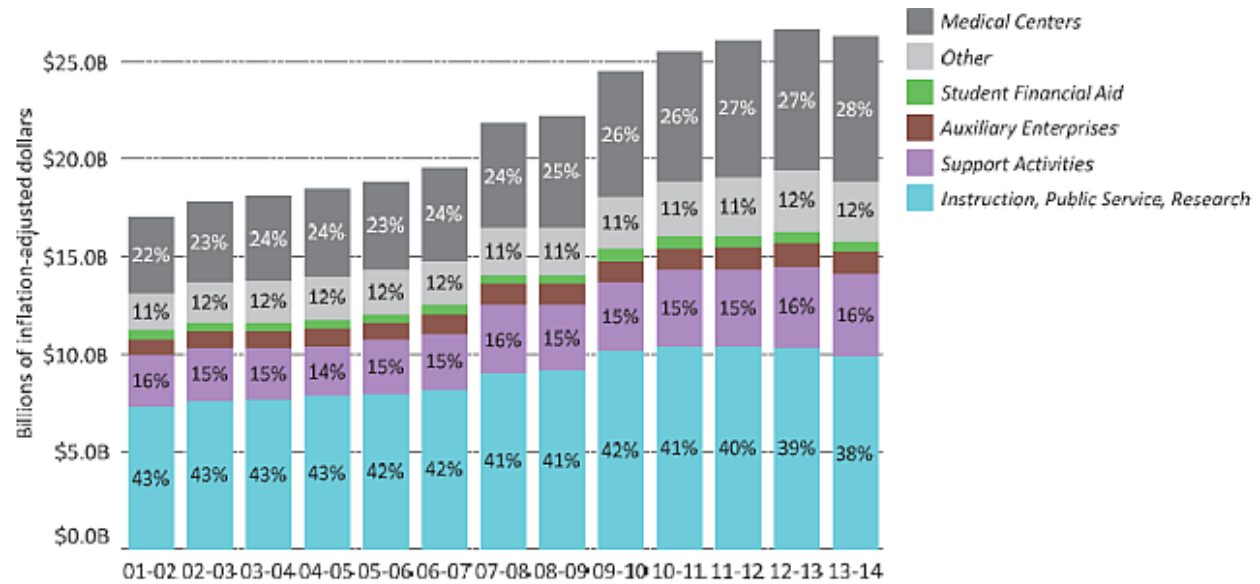
⁷ This estimate is from John Wilton's two-part analysis of UC and UC Berkeley's finances, “Time is Not On Our Side—Part 2,” Office of Administration and Finance, UC Berkeley, September 27, 2013, pp. 5–6: <http://vcaf.berkeley.edu/who-we-are/vc-wilton/blog>.

Figure 1: UC Revenues by Function 2001–2014



Source: 2015 UC Accountability Report

Figure 2: UC Expenditures by Function 2001–2014



Source: 2015 UC Accountability Report

beginning on July 1 2016—a cap consistent with the state’s 2012 pension reform law. Wilton’s estimate will probably need to be at least marginally revised. Perhaps more importantly, the pension agreement will result in the establishment of two classes of UC employees. Benefit packages have long helped UC compete to attract and retain top faculty, particularly as salaries continue to decline relative to those offered by other top-tier research universities.

Increasing employee pension contributions is the new model, yet the absence of a meaningful long-term contribution and commitment from the state creates an unusual burden for UC, even with the prospect of lower benefits for new hires. Likewise, state funding for capital costs has shrunk significantly, meaning most costs for maintenance, never mind enrollment growth, have new significance. Campuses must now integrate capital costs into campus and academic department budgets.⁸

State Disinvestment = Higher Tuition

There is a widespread perception that higher education institutions keep increasing operating costs—what some have called the “cost disease.”⁹ Even after massive funding cuts, lawmakers, critics and pundits want further changes in both revenues and expenditures that would force the university to do even more with less. Their goal is to lower state costs and tuition rates through increased teaching loads for faculty and the magic of technology. There is a general perception that UC operating costs keep going up as faculty teach less.

The perceptions do not reflect reality. Looking at operating costs nationally on a per student basis, one needs to disaggregate institutional types. The fundamental divisions are between public, private, and for-profit institutions, and within the first two categories between the extremes of community college and research-intensive universities. Averages, the primary focus of the media and outside observers, within a nation of some 4,700-degree granting higher education institutions in 50 different states, simply do not tell the story. On the public side, there is a growing trend toward part-time faculty and increased faculty workloads.¹⁰

The big story is not growing operating costs, but public disinvestment on a national scale, particularly in California. Public disinvestment is one cause for rising student debt levels and the increasing number of part-time students in the US, a huge problem that relates directly to the nation’s low degree production rates compared to international economic competitors. (Approximately 45 percent of all students in degree-granting institutions in the US are part-time students. None of the major economic competitors have such a high rate of part-time students).¹¹

Focusing on UC, California’s budget woes extend over several decades and accelerated mightily during the Great Recession. Higher education is a discretionary spending item in California’s state budget. There is no mandate in statute or the state constitution to fund it. The squeeze of other funding priorities as tax dollars decline—most notably out-of-control mandated medical costs that afflict the US economy, overpromised public pensions, and huge expenditures

⁸ *Ibid.*, 6.

⁹ For a discussion of long-term trends in higher education costs in the US, see William G. Bowen, “The ‘Cost Disease’ in Higher Education: Is Technology the Answer?” Tanner Lectures, Stanford University, October 2012.

¹⁰ For the number of colleges and universities in the US, see: http://nces.ed.gov/programs/digest/d12/tables/dt12_306.asp and http://nces.ed.gov/programs/digest/d12/tables/dt12_275.asp.

¹¹ See *The Condition of Education 2013*, Figure 3: http://nces.ed.gov/programs/coe/indicator_chb.asp.

on prisons—has resulted in a 30 percent decrease in state funding to UC over the last decade or so. The predictable result: UC has raised tuition fees to *partially* make up for this huge loss in state funding (see Figure 3).

Even though a third of all tuition income goes to lower and some middle class families as financial aid, the rise in tuition has caused legitimate concern for California families accustomed to relatively low tuition fees, and alarm among legislators. UC tuition and fees are now about \$13,200 per year for in-state students. Room and board is a big cost driver, exceeding tuition and fees for in-state students. Any analysis on affordability needs to include living costs that are generally higher in California, particularly in urban areas, and include a mix of on-campus and private housing.

After redirecting some 33 percent of each tuition dollar to financial aid, UC nets a little more than \$8,000 per student via tuition and fees. This means greater access for lower- and some middle-income students. Berkeley introduced a “middle-class action plan” that provides a 15 percent discount on tuition for students whose family income is \$80,000 to \$140,000.¹² Redirected tuition income largely funds this program. The result? At Berkeley, 40 percent of undergraduates pay no tuition, and 65 percent receive some form of financial aid. Similar programs are now in place across all UC campuses.

UC is moving toward what I call a *progressive tuition model* that charges higher-income Californians more to help reduce the cost and debt for lower-income students and their families. The state used to do this via tax and spending policies, but now UC (and CSU) are relying on it. UC is backing into what can only be called an experiment, not a deliberate, well-articulated path. And no one is sure of the consequences if the price tag for students continues to go up.

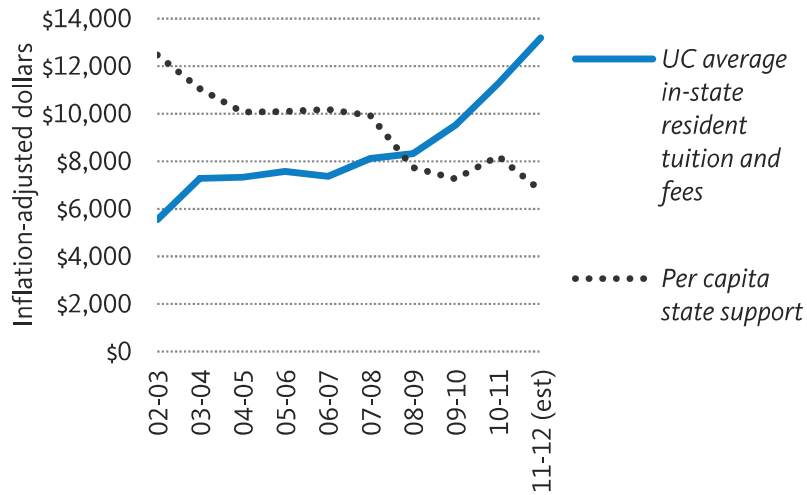
Thus far, however, it seems to be working. UC enrolls more lower-income students than just about any other major research university in the US. UC Berkeley alone has nearly as many low-income students as the entire Ivy League; UCLA, Davis, and Irvine also each enroll as many or more low-income students than all the east coast elite private universities combined. Forty-two percent of all undergraduates in the UC multicampus system receive Pell Grants, the federal grant program for students whose families make \$44,000 a year or less. The average of public institutions that are members of the prestigious Association of American Universities (62 campuses, with both public and private, not-for-profit universities) is 22 percent (see Figure 4).

A look at the parental income level of undergraduate students at UC over time also shows an actual increase in lower-income students in the midst of rising tuition fees (see Figure 5). There is a marginal squeeze on middle-class students—a concern that is prompting new financial aid efforts—and a marginal increase in the percentage of students from upper-income families. There is a need to continuously evaluate the effectiveness of the progressive tuition model. Yet it is hard to claim that rising tuition levels have reduced access to disadvantaged groups. In various rankings of universities and socioeconomic mobility, the UC system consistently places among the most economically diverse in its undergraduate population.¹³ This is one indicator of the importance of UC as a path for socioeconomic mobility in California.

¹² See http://students.berkeley.edu/finaid/undergraduates/types_mcap.htm.

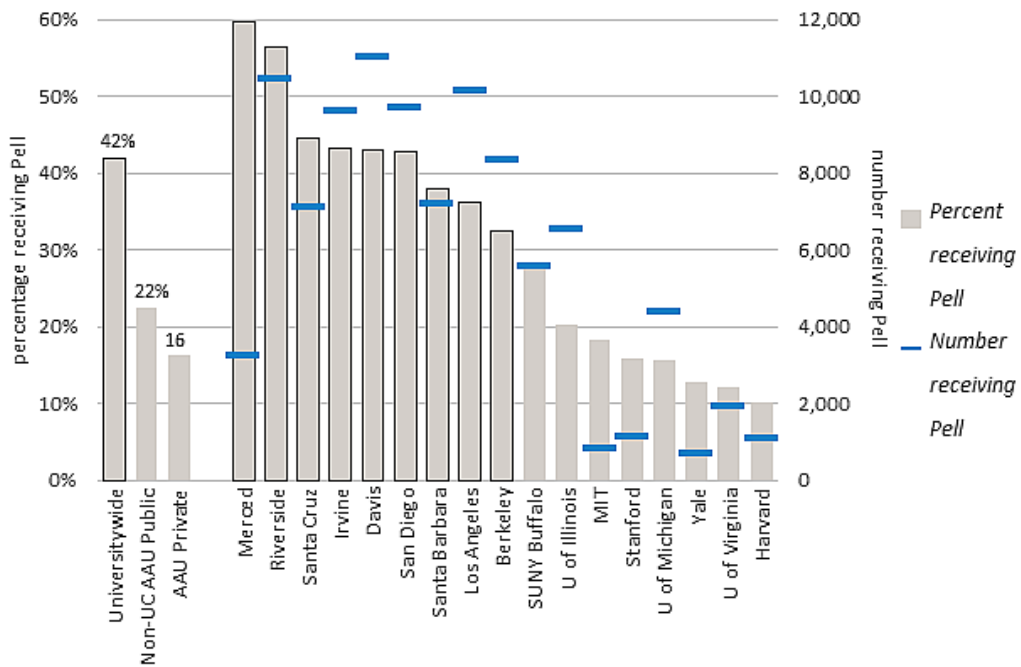
¹³ For example, six UC campuses are ranked among the top 10 “Colleges Doing the Most for Low-Income Students in the New York Times’ College Access Index: see <http://www.nytimes.com/interactive/2015/09/17/upshot/top-colleges-doing-the-most-for-low-income-students.html>. College NET’s Socioeconomic Mobility Index also places UC campuses among the best in the nation when considering the costs of tuition, the number of low-income students, their graduation rate and median early career salary: see <http://www.socialmobilityindex.org>.

Figure 3: UC Rising In-State Fees and Declining State Funding Support



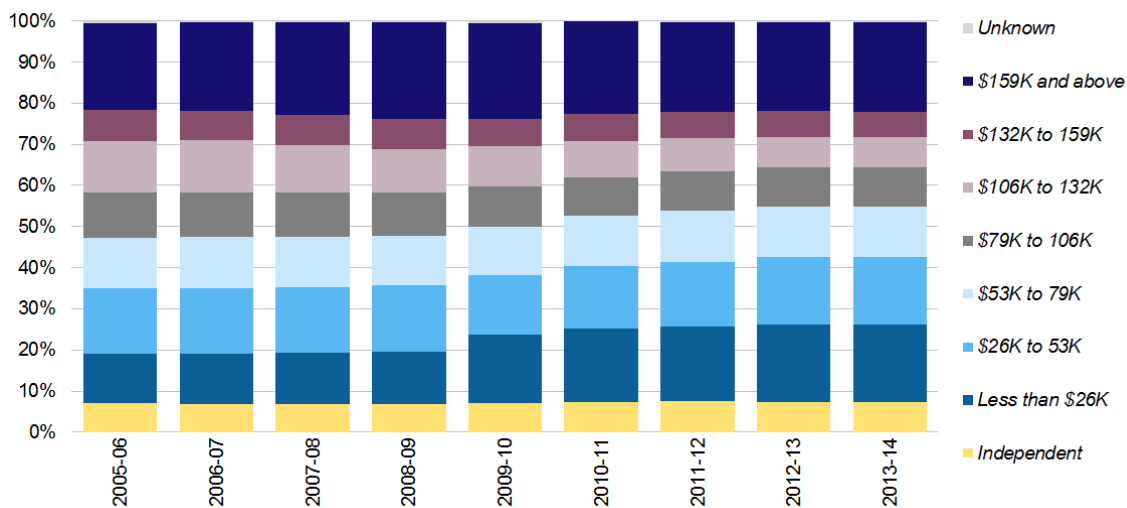
Source: 2014 UC Accountability Report

Figure 4: UC Undergraduate Pell Grant recipients and AAU Comparison Institutions 2012–13



Source: 2015 UC Accountability Report

Figure 5: Trends in the Parent Income of UC undergraduates, 2013 Constant Dollars, University-wide, 2005–2006 to 2013–2014



Source: 2015 UC Accountability Report

UC also has undergraduate degree completion rates that are unmatched by any other research-intensive public university and student debt levels are relatively low. Approximately half of its students graduate with no debt burden. Those who do borrow have an average debt of \$19,800¹⁴—a significant, but generally manageable, burden well below the national average of over \$27,000, which is now largely driven by the high cost of private colleges and universities, graduate professional education such as medicine, law, and business, and growing enrollment in for-profits. Nearly a third of all student debt is owed by past students who enrolled in the for-profit sector—the vast majority whom never earned a degree.¹⁵

Tuition alone is not the key variable for maintaining access. Rather, it is a robust financial aid system that includes both institutional aid (via tuition and fundraising at the institutional level) and sustaining and increasing the amount of federal and state financial aid through programs such as Pell Grants and Cal Grants (California’s program of financial aid for low-income students), and includes the cost of housing and related expenses. The combination of Cal Grants and Pell Grants provides significant support for the enrollment of many low-income UC students. Cal Grant funding has remained relatively robust in the face of budget cuts. As an indirect support of UC financing, they will play an important role in supporting future access to UC.

Thus far, it appears that rising tuition has not had a significant effect on applications and enrollment at UC, which is driven in part by population growth and the fact that UC remains a low-

¹⁴ See University of California, *Annual Accountability Report 2013*. Page 37” [http:// accountabil-ity.universityofcalifornia.edu/](http://accountability.universityofcalifornia.edu/).

¹⁵ See “Obama Administration Takes Action to Protect Americans from Predatory, Poor-Performing Career Colleges,” US Department of Education, March 14, 2015: <http://www.ed.gov/news/press-releases/obama-administration-takes-action-protect-americans-predatory-poor-performing-career-colleges>.

er cost alternative to comparable institutions (see Figure 6). California’s biggest challenges are on the supply side.

The budget deal with Governor Brown that freezes and then restricts tuition increases in out-years casts doubt on the sustainability of this *progressive tuition model*, with tuition payments by upper-income students paying for financial aid based on need. The university will need to assess whether it can afford to allocate so much of its tuition income to financial aid. The result would be that restrictions on undergraduate tuition rates, while politically popular, might reduce access to the disadvantaged and lower-income students.

Reducing Costs = Technology?

Governor Brown’s push for online education is focused, in large part, on how to make UC cheaper for the state and for California students and their families. Without much regard for the significant body of experience and research on online education—for example, that different age cohorts interact and perform differently in fully online environments, and that “traditional age” students (18-24 year olds) typically show extremely low completion rates—many politicians and academic leaders hope the Holy Grail of internet-based courses will create dramatic economic efficiencies and boost degree completion rates.

The reality is that online education, as currently conceived, is a needed supplement, but not a transformative tool for the UC system—or for large public research universities in general. It is hard to beat the inexpensive model of having a significant number of large classroom courses (using technology as an additive). A teaching model that requires undergraduates to take most freshman and sophomore courses via MOOCS would likely result in greater course attrition rates, a longer time-to-degree, and a higher percentage of dropouts.

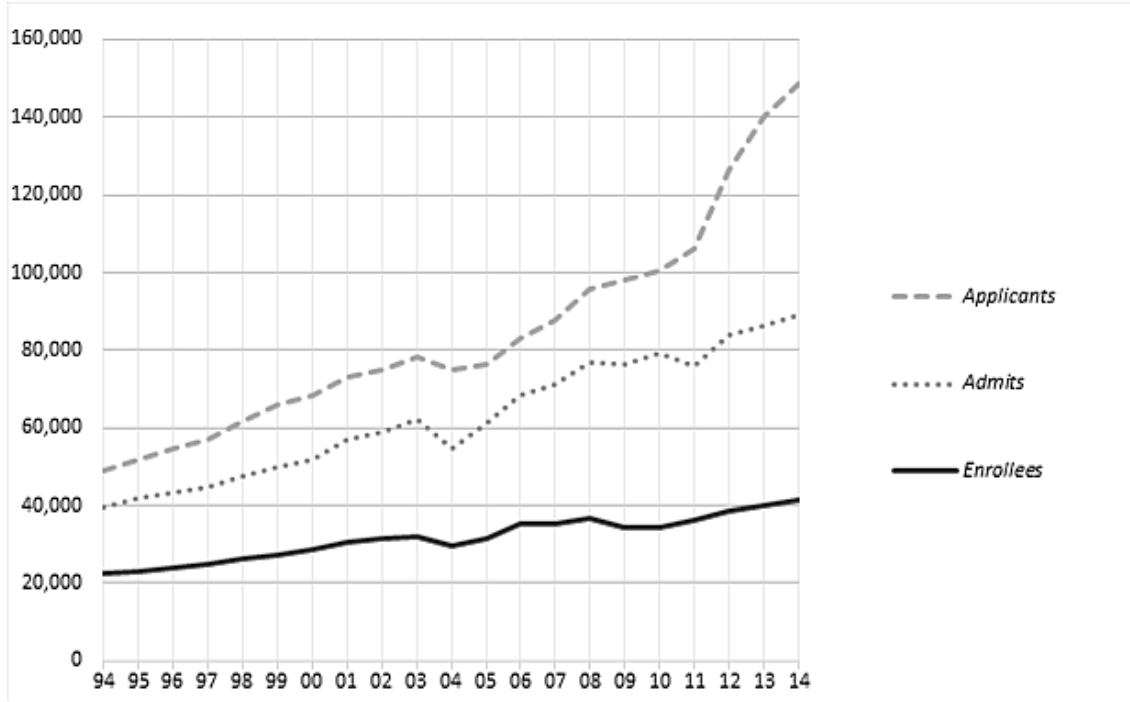
As for an analysis of operating budgets, one needs to disaggregate the market to assess the relevancy of online forms of education. Despite the media frenzy, MOOCs and their brethren have not proven to be a significant way to reduce operating costs, in part because of these extremely high attrition rates. The future at UC includes greater integration of technology in what we think of now as traditional courses (hybrid courses), complemented by fully online courses in selected introductory subjects, particularly “impacted courses” with high demand and limited lecture seat space. This would help with throughput, but perhaps at the expense of the quality of the learning experience.

Many of the most aggressive promoters of fully online courses essentially argue that there is little to no need for personal, real-time human interaction. But that appears not to be the view of students, particularly younger students at universities like UC and CSU, who crave interaction with academic staff and properly view their undergraduate experience as more holistic with opportunities for in-person mentoring. Preliminary studies indicate that students at UC, and other research-intensive universities, do not prefer or particularly like purely online courses.¹⁶

So how to make UC cheaper for the state and for students and their families?

¹⁶ This is an area of study that I and fellow researchers are pursuing related to the Student Experience in the Research University (SERU) Consortium, which includes an online, census survey of students at some 24 top ranked research universities in the US.

Figure 6: UC Freshman Applicants, Admits, and Enrollment 1994–2014



Source: 2015 UC Accountability Report

Reducing Costs = Increase Student to Faculty Ratios?

President Obama recently proposed a series of federal reforms related to higher education and named the rising cost of higher education as the most significant problem facing current and future students and educational attainment rates in the US.

But one needs to unpack this statement by disaggregating institutional types: the highest prices are at the privates, nonprofits, and for-profits, with the for-profits most significantly driving up student debt and with, by far, the highest student default rates on their loans. Indeed, the Obama administration’s proposal to use productivity measures, like campus degree completion rates is, to a large degree, an effort to reduce the flow of federal financial aid to the high-cost, low-productivity for-profit sector. Hence, Obama will likely see significant opposition from House Republicans who typically show strong support for the for-profit sector in general. Public institution operating costs are generally not rising. What is increasing is the cost to families of tuition and fees largely due to state government disinvestment.

At UC, the educational cost-per-student adjusted for inflation has declined nearly 13 percent over the last decade and is today about \$19,500 according to a formula agreed to by the state. This is the combined cost of undergraduate and graduate students. It is important to note that calculating the average cost for educating students in a complex organization like UC is difficult and contested. One reason is that universities rely on revenue sharing. For example, research revenues help support teaching and vice versa. Time allocation of faculty is also a complex issue.

For example, faculty time spent mentoring and advising advanced undergraduate and graduate students does not lend itself easily to a time punch card. Different methodologies produce different results. Figure 7 provides costs over-time based on an agreed-upon formula with state government agencies. Whatever its merits, it is a consistent accounting of costs. Are they going up or down? In this analysis, the state contribution for educational costs, including undergraduate and graduate students, dropped from approximately \$18,000 to just \$7,000 per student since 1990.

Relying on these numbers, how might we put them into perspective? The state of New York spends some \$19,000 a year to educate a student in its public elementary and secondary schools (kindergarten to twelfth grade, or K-12). Some of the highest performing K-12 systems in urban areas, such as the Boston Metropolitan School District, spend a similar amount per student. The same cost in California is close to \$10,000. But California ranks among the bottom five states in investment per public school student.¹⁷ So educating a student at one of the world's top universities, like UC Berkeley, is only marginally more expensive than what New York or other top-performing school systems spend on a per-student basis for K-12 education.

Whether you think that UC's education costs are too high for California taxpayers, how is it that UC has reduced per student costs to such a significant degree? This has been accomplished largely by increasing student-faculty ratios, albeit reluctantly. The ratio keeps going up as the state cuts funding.

Higher education is a labor-intensive activity that depends on highly educated and trained professionals—much like the high-tech sector, which, ironically, has modeled itself in many ways on the knowledge-generating world of academia. So when making significant cuts in operating budgets, labor costs are the obvious place to make adjustments.

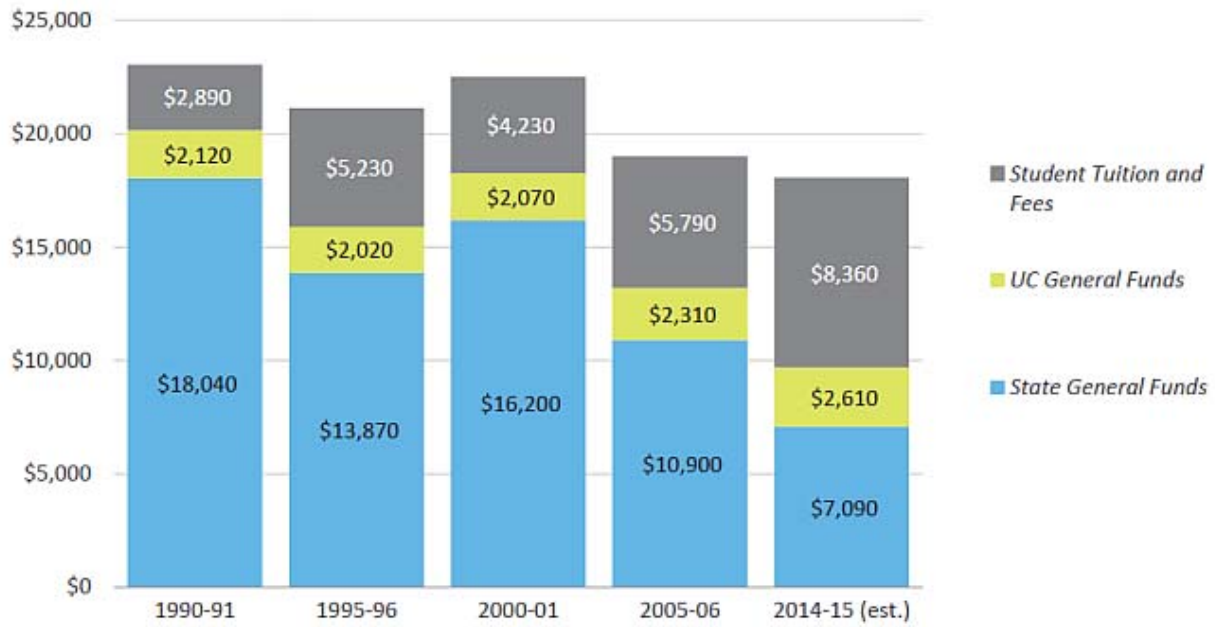
In the 1980s, the student-to-faculty ratio was about 15:1. After the cuts in the early part of this new century, ratios had risen to around 19:1. In the aftermath of the Great Recession, they are now 21:1.¹⁸ As a point of reference, at a Harvard or a Stanford, the ratios are about 10:1 or lower. Faculty contact with students and a decent dose of small classroom experiences is still valued by upper-income parents who send their offspring to these elite private schools, but has been devalued as “too expensive” for the vast majority of Americans who attend public institutions.

UC faculty members have an average teaching load of about five courses a year under a quarter system, up a bit from a decade ago. They are teaching more students in larger and larger classes at both the undergraduate and graduate level with most courses in a “hybrid” format that incorporates online technologies. In 2010–2011, only 21 percent of lower-division (first two years in an undergraduate program) student credit hours (or SCH, the number of students in a course multiplied by the number of credits awarded in the course) were in classes of 50 or less; at the upper-division level, where students take more advanced courses often related to their major, only 30 percent of the SCH were in courses with 50 or fewer students (see Figures 8 and 9). Small class experiences for undergraduates are becoming more and more rare.

¹⁷ US Census Bureau, “Per Student Public Education Spending Decreases in 2011 for the First Time in Nearly Four Decades,” News Release, May 21, 2013: <http://www.census.gov/newsroom/releases/archives/governments/cb13-92.html>; see also Source: <http://www.edsource.org/today/2013/california-drops-to-49th-in-school-spending-in-annual-ed-week-report/25379>.

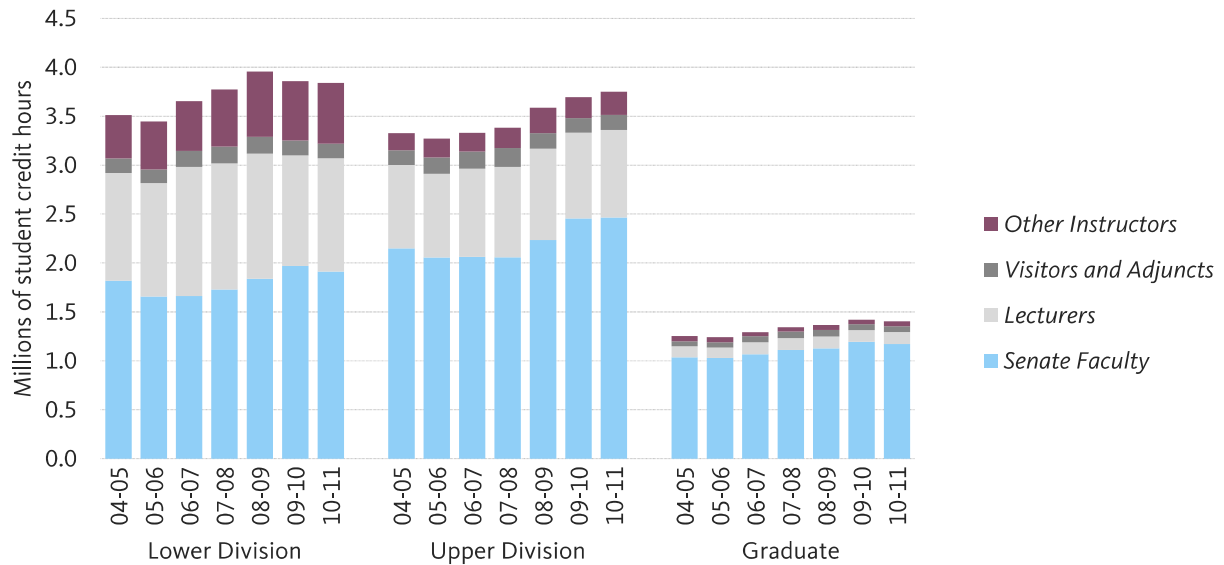
¹⁸ See section 9.4 in the UC Accountability Report 2013: <http://accountability.universityofcalifornia.edu/documents/accountabilityreport13.pdf>.

Figure 7: UC Per-Student Average Expenditures for Education, 1990–1991 to 2014–2015 Selected Years



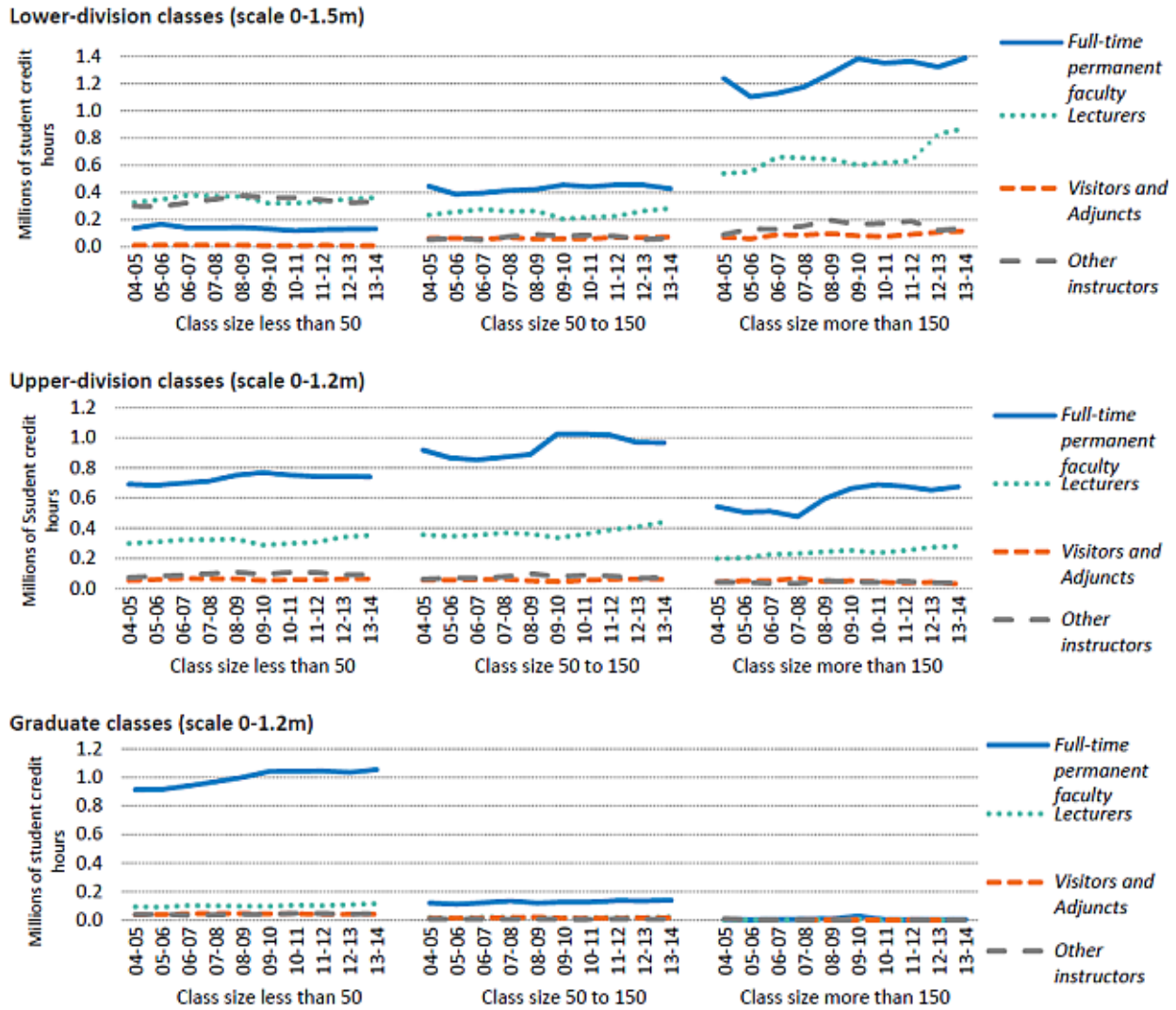
Source: 2015 UC Accountability Report

Figure 8: UC Student Credit Hours by Faculty Appointment and Class Type University-wide



Source: 2014 UC Accountability Report

Figure 9: UC Student Credit Hours by Faculty Appointment, Class Type, and Class Size University-wide



Source: 2015 UC Accountability Report

Increasingly, and at the undergraduate level, faculty are now managers of what might be called Massive In-Classroom Courses (or MICCs). It may not be conclusive, but the recent experiment with an online course at San Jose State University funded by the Gates Foundation found that MICCs have better outcomes and are possibly cheaper on a per-student completion basis than MOOCs.

Faculty teaching and mentoring responsibilities do not begin and end in the classroom. They initiate and supervise group research projects with significant participation by both graduate and undergraduates and mentor students. UC has a very high percentage of undergraduates engaged

in faculty research activity; some 58 percent of seniors assist faculty in research or creative projects (see Figure 10).¹⁹

UC faculty have an equal responsibility to generate new knowledge and perform public service within and outside the university—per their job description under UC’s state charter—with dramatic benefits for California’s economy. Faculty are very busy and their peers evaluate them regularly on their teaching, research, and public service responsibilities and achievements. The long-standing post-tenure review process at UC forms a key accountability mechanism.

Are there other ways to reduce operating costs? Increasing the number of part-time faculty (nontenured) is one option, but with consequences for the culture of UC and research productivity. UC has always had “lecturers” whose sole role is to teach, usually part-time. Yet a significant reduction in permanent faculty would place UC outside the norm of research-intensive institutions and reduce the beneficial aspects of attending a research university. There are always opportunities to increase efficiencies and reduce administrative overhead. But much of that has already occurred over the past five or more years with staff layoffs and reduced salaries, as well as reductions in faculty positions.

The jury is out regarding the potential impact these reductions in staff numbers will have on the quality and productivity of the university. Most administrative staff positions support teaching and research functions. There are probably only marginal opportunities for big savings via further cuts in administration or, the favorite of consulting firms, centralizing everything imaginable, like purchasing, human resource personnel, and support staff for generating extramural grants. Some view the “shared services” push as the Kremlinization of an organization that is, inherently, decentralized—but that is another story.

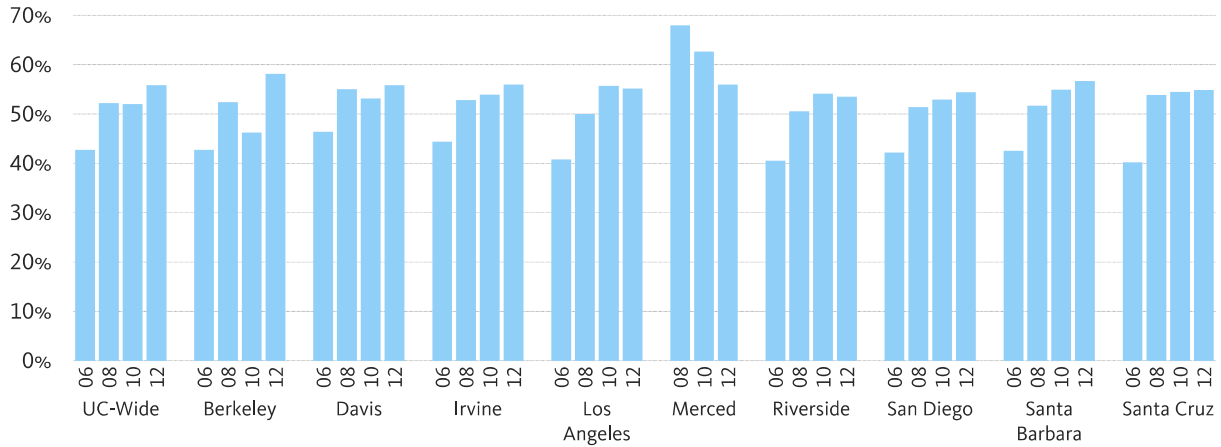
Faculty salaries, which were cut by some five percent and partially re-funded recently, could be reduced; but UC is already, on average, behind its state-approved competitor public and private universities. They could increase faculty course workload, already at the high end for research-intensive universities, particularly those that generate more research income than state income. Both of these options would make it more difficult to recruit and retain top faculty and would also reduce the revenue from research.

So what path is there for further reducing costs as Governor Brown and other critics desire? One answer stands out: continue to increase the student-to-faculty ratios and, perhaps, further reduce the ranks of full-time faculty. Doing more with less means fewer faculty per student. When the governor and others dream of reducing operating costs via online courses, that is what they are talking about. UC is already creeping upwards into unknown territory with a student to faculty (undergraduate and graduate) ratio of 21 to 1—far higher than its public and private competitors, and a factor that plays into college rankings as an identifier of excellence and adequate resources (see Figure 11).

So what ratio would meet the political and budget needs of Sacramento? How about 30:1? These are the kinds of external political challenges facing UC: how to identify and articulate to Californians, and to Sacramento, the implications of disinvesting in UC and, more specifically, what a new financial model might look like, because the one that helped build the best public university system in the world is gone.

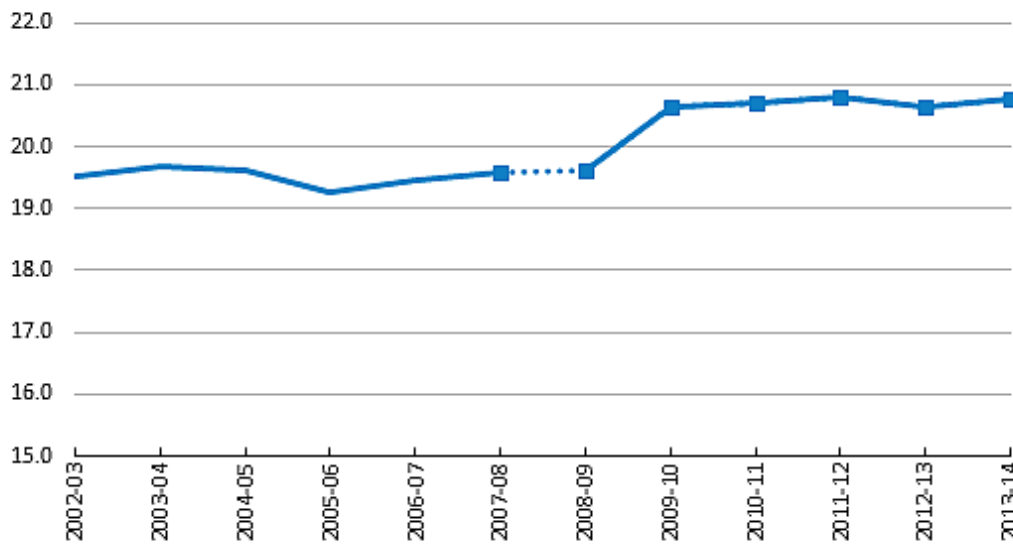
¹⁹ Data from University of California Undergraduate Experience Survey (UCUES) generated by the Student Experience in the Research University Consortium based at the Center for Studies in Higher Education, UC Berkeley.

Figure 10: UC Seniors Who Assisted Faculty in Research or Creative Project University-wide and UC campuses, 2009–2012



Source: 2015 UC Accountability Report; based on Student Experience in the Research University (SERU) Survey Data.

Figure 11: University of California Student-Faculty Ratio: 2002–2003 to 2013–2014²⁰



Source: 2015 UC Accountability Report

²⁰ A revised methodology for calculating the student-faculty ratio is used beginning in 2008–2009. Previously, UC calculated this ratio by including only faculty supported by core funds (comprising state general funds, UC general funds, and tuition and fees). Starting with 2008–2009, the ratio calculation includes faculty paid through all fund sources (other than self-supporting program fees). This change in methodology better reflects recent increased flexibility in use of fund sources to pay faculty.

Internal Challenges = Devolution and Quality

In part accelerated by the lack of stable state funding, UC is in the throes of a decentralization process, or what I have called “devolution,” with campuses like Berkeley wanting more authority to set tuition rates at the undergraduate and graduate levels. Others are pursuing various initiatives that could best be called privatization of academic programs and activities: witness the proposal by UCLA’s Anderson School of Business to be a semi-autonomous branch of UCLA.

Such initiatives reflect national trends, but they have additional meaning at UC, which pioneered the notion of a multicampus university system (which has become the norm in most states), including a unique portfolio of university-wide policies on admissions, tuition, and fees, academic personnel, internal processes for quality assurance (such as the post-tenure review of faculty), and the ideal that all the UC campuses compete on a level playing field for funding. Since the 1930s, this has been called UC’s “One University” model.

It is hard to argue with the results of the “One University” approach: four of the UC campuses rank in the top 20 universities worldwide, with some of the highest graduation rates among America’s public universities, and the UC system generates more patents and business spin-offs than any other university system. As noted, California’s economy gets around 10 dollars for every tax dollar spent on UC, a tremendous direct rate of return that does not take into account the additional economic impact of its talented alumni.

But the coherence of the system is partially unraveling or being redefined (depending on one’s opinion), with a strong desire by Berkeley, Los Angeles, and San Francisco to increasingly go it alone in regard to fees, faculty salaries, and similar fundamentals. UC Berkeley, along with UCSF, has outlined the need for a change in governance to include a campus-based lay board that could tie campuses more directly to local constituents, justified in part because the financing environment has changed so fundamentally.²¹ Under this proposal, entitled “Modernizing Governance at the University of California,” the regents would retain their university-wide policy and fiduciary responsibilities, but the new campus boards would guide campus budgets and set tuition and financial aid policies. This might include the regents setting a range or maximum fee. As explained by one of the co-authors of the proposal, “(L)ocal boards need substantial decision-making authority to feel invested psychologically, which leads them to be more generous in their donations to the institution.”²²

Beyond focusing on UC’s relationships with Sacramento and Washington, UC President Napolitano must evaluate and guide what may be an inevitable process in which the coherence of the UC system is forever altered. While many factors influence the process of “University Devolution” in which campuses, schools, and departments seek greater budget and administrative independence, the long and then rapid decline in a central source of funding, state government, is clearly a major influence.²³ Historically, having a significant portion of UC’s budget funded by the state, based on workload, and funneled first to the Office of the UC President, then to the

²¹ Robert Birgeneau, George Breslauer, Judson King, John Wilton, and Frank Yeary, “Modernizing Governance at the University of California: A Proposal that the Regents Create and Delegate Some Responsibilities to Campus Boards,” Center for Studies in Higher Education, Research and Occasional Paper Series, CSHE.4.12. <http://cshe.berkeley.edu/publications/publications.php?id=399>.

²² George Breslauer, correspondence with author, November 28, 2013.

²³ John Aubrey Douglass, “University Devolution: How and Why American Research Universities are Becoming Even More Tribal,” Hiroshima Research Institute for Higher Education, International Seminar Reports, No 18, 2012. http://en.rihe.hiroshima-u.ac.jp/pl_default_2.php?bid=107768.

campuses on a relatively equal basis, helped to focus the mission of UC. But that is largely a bygone era. Without a dramatic shift in state funding, UC will remain a public institution, but with a different profile.

Beyond dealing with the various opinions and political pressures to navigate what could be a major redefinition of the UC system, there are the practical problems of an institution dealing with the long haul of budget cuts. Faculty salary levels are below competitors—based on agreed-upon criteria with the state. At the same time, budget cuts have slowed the hiring of new faculty, not keeping pace with departures (e.g., retirements or faculty lured away by other institutions usually with higher salaries, those denied tenure, and deceased faculty).

Graduate student financial aid and other sources of support have declined relative to competitors as well—especially to top-tier private institutions like Stanford that are generally well funded through private sources. Enrolling top graduate students, and competing for them, is a key factor in attracting and retaining top faculty and, extending the logic, for continuing to support economic development in the state, as many of these students enter the California workforce or start new businesses.

Then there is the effect of rising student-to-faculty ratios on the experience and learning outcomes of undergraduates. How does UC continue to provide at least some small classroom experiences? How do we expand opportunities for students to have contact with faculty as mentors and engage in faculty-directed research—a big factor influencing the career path of students?

The Final Macro Factor = Enrollment and Program Growth vs. Quality

Beginning in earnest in the 1920s, California built a coherent and pioneering network of community colleges, regional state colleges (what is today the California State University system), and a multicampus UC system that successfully grew in program and enrollment capacity as the state's population grew. As a result, in most of the last century, California led the nation in college-going rates and degree production, in large part because of consistent public investment.

Yet California's success and national leadership may be at an end. Partisan fights, Proposition 13, three-strikes, and recessions large and small—all have led Sacramento to reduce investment in higher education. This has created a short-term neurosis among the leadership of our public universities, including UC: how to deal with yet another round of budget cuts from the state, often coming mid-stream in a fiscal year? It is hard to think how California's public higher education system might remain competitive under these circumstances—and with no significant organizational innovation since 1960, UC needs a larger, more expansive, “what should come next” vision.²⁴ Now is not the time for retrenchment.

After years of taking on additional students without increases in funding, UC senses that the social contract with the state is permanently altered—that they should focus limited funds on quality and productivity of the teaching, research, and public service enterprise at the expense of simply growing in unfunded enrollment. Facing the same question, CSU reduced its enrollment by some 40,000 students over the last few years—students who would have normally attended CSU. Inadequate funding to hire teaching staff, most of who are now employed part-time, led California's community colleges to cut courses that resulted in some 200,000 students not gaining access.

²⁴ John Aubrey Douglass, “Re-imagining California Higher Education,” Center for Studies in Higher Education, Research and Occasional Paper Series, CSHE.14.10 (October 2010).

The for-profit institutions benefit greatly from this scenario as unmet demand in the public sector feeds increased demand in their higher-priced teaching and degree services. I have called this the “Brazilian Effect” as California is now mimicking developing economies that have relied on for-profit sectors to pick up demand that public institutions cannot meet.²⁵ The cascading effect results in growing enrollment at for-profits, where tuition costs are higher and most have extremely high dropout rates. As noted previously, for-profit institutions are one of the biggest drivers of increasing student debt-burdens and loan default rates. Recently, the market position of for-profits has changed, in large part because of pressure from the Obama administration to regulate their access to federally financed student loans. But they remain important players in providing access to higher education, particularly in California where the supply of public higher education (in terms of enrollment) is restricted while demand continues to go up.

The short-term neurosis means that no real effort has been put into the question of how UC can grow programs and enrollment. To keep pace with California’s population, with the understanding that technology has relatively marginal promise to alter the need to house students, provide classrooms, and, even with say 30: 1 student to faculty ratios, hire additional faculty, there is still a need for additional physical space. As noted previously, capital funding from the state—which built the capacity to grow along with California’s population in the last century—is now anemic (see Figure 12).

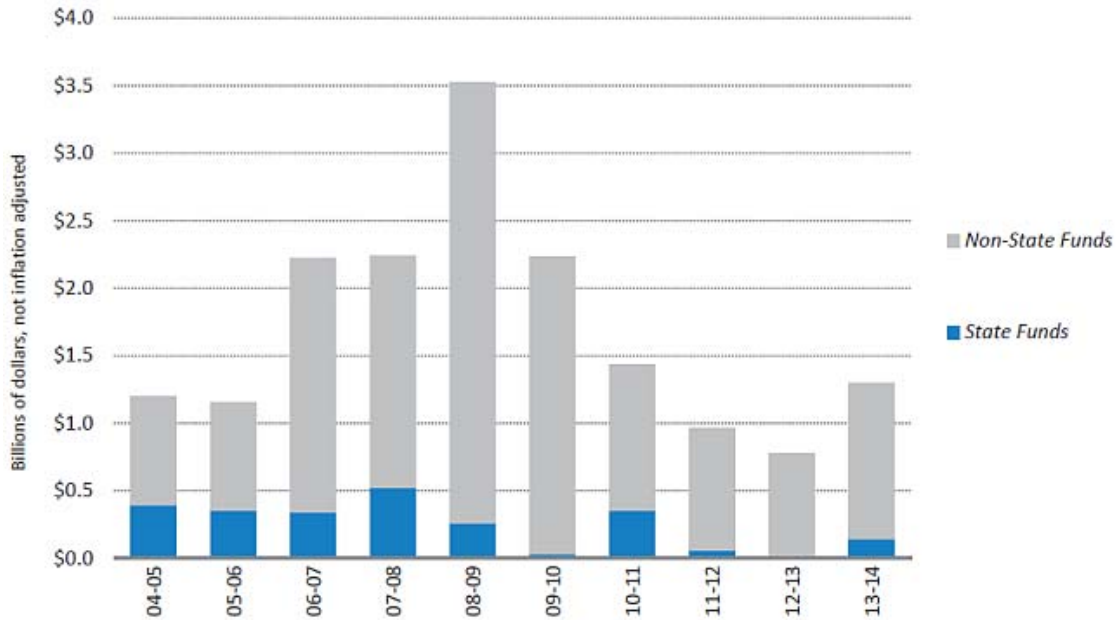
Today, UC relies on infrastructure largely built in the 1950s and 1960s to help expand enrollment (see Figure 13 showing enrollment growth since the university’s establishment in 1868). Even if UC Merced receives funding for continued and significant enrollment growth, UC will run out of physical space, as well as the funds to expand the ranks of top faculty. And there is no doubt that if UC cannot, or will not, maintain its commitment to accept students that rank among the top 12.5 percentage of high school graduates and keep the doors open for transfer students (now about 25 percentage of all undergraduates), already disadvantaged groups will see the most detrimental effects.

At the same time, the recent rush for international and out-of-state students is about generating revenue, and though this can have positive effects on the bottom line, it has implications for the enrollment of native Californians. Reflecting the “not to grow” theme, UC campuses have been admitting more and more out-of-state and international undergraduate students while keeping enrollments overall relatively stable. This means an actual reduction in enrollment of Californians under the rubric that the state is not providing funding for these students, creating a rationale to bring in higher paying students—most paying tuition of around \$32,000 in 2014–2015 that will rise to \$36,000 in 2015–2016. The financial incentives are high.

Before the budget deal with lawmakers that placed limits on Berkeley and UCLA’s enrollment of non-California undergraduates, Berkeley Chancellor Nicholas B. Dirks announced that his campus would enroll more out-of-state and international students, from 20 percent to 23 percent of the campus’ undergraduates over three years. For each 100 out-of-state and international freshman, Berkeley would gain \$2.2 million to be used, in part, to fund enrollment of 50 additional California students. The decision was “driven primarily by our commitments to maintain

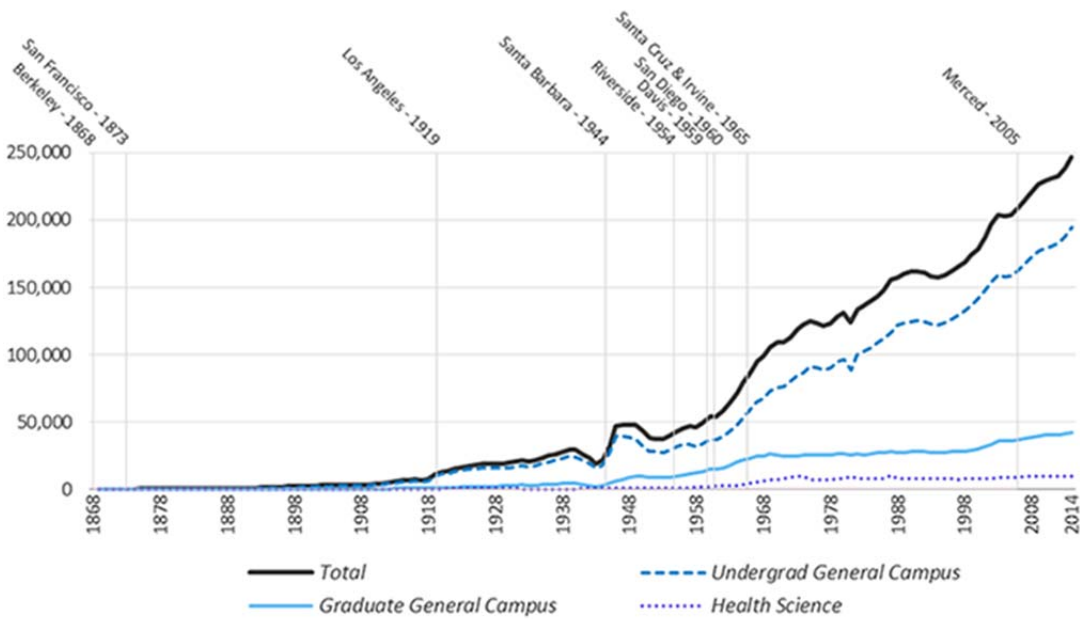
²⁵ John Aubrey Douglass, “The Rise of the For-Profit Sector in US Higher Education and the Brazilian Effect,” *European Journal of Education*, Vol. 47, No. 2, 2012. <http://onlinelibrary.wiley.com/doi/10.1111/j.1465-3435.2012.01521.x/full>; edited version “The Rise of For-Profit Universities and Colleges,” *University World News*, July 15, 2012: <http://www.universityworldnews.com/article.php?story=20120710160228719&query=Rise+of+For-Profit>.

Figure 12: Sources of Capital Spending, Universitywide, Based on Budgets Approved Each Year, 2003–2004 to 2013–2014



Source: 2015 UC Accountability Report

Figure 13: Living off the Past? UC Enrollment Growth and New Campuses, 1868–2014



Source: 2015 UC Accountability Report

Berkeley's academic excellence, access, and robust financial aid programs," Dirks noted in a letter to the Berkeley campus. "In order to sustain the excellence of our programs and the student experience, tuition from out-of-state and international students is crucial." The enrollment growth of out-of-state and international undergraduate students needs to fit into a larger funding model that helps UC build enrollment and program capacity while also serving regional economies, a model that exists in other parts of the world.²⁶

UC's graduate programs also need to grow to meet California's future economic needs and to maintain UC's role as a source of research and innovation. Indeed, UC enrolls a remarkably low percentage of its students at the graduate level—about 20 percent, down from 30 percent in the 1960s. In comparison, the average percentage of graduate student to all enrollments in the AAU public institutions is about 30 percent, and graduate enrollment at private AAU institutions is closer to 50 percent (see Figure 14). In short, UC has used scarce and declining public dollars to grow undergraduate enrollment in order to meet its social contract at the undergraduate level.

UC should grow in its graduate programs, largely to meet the professional and skill needs of California, the nation, and the world. In all developed economies, the labor market is demanding larger numbers of workers with some form of graduate education. The proof is in lower unemployment rates and salaries. The salary premium between those with a BA and those with an advanced degree is growing, not to mention the large premium over the average lifespan of an employee over those with only a high school degree. There is another reason why graduate enrollments need to grow: these students help create a more financially viable academic ecosystem that integrates graduate students into the teaching program and facilitates mentorship and research opportunities for undergraduates.

California is making a big mistake if does not provide additional incentives and support for UC to grow its undergraduate enrollment *and* its graduate programs. President Napolitano, UC academic leadership and faculty, the regents—all espouse the desire to keep UC's doors open as the state grows from about 38 million people today to some 50 million people in 2050.²⁷ Before the Great Recession, UC planned to grow by some 48,000 additional students to a total of 265,000 by 2020–2021—or about 1.1 percent a year, and with greater growth in graduate education.²⁸ Again, UC enrolled around 246,000 students in fall 2014.

Among some in the academic community, there is a perception that UC, and California, will have time to deal with long-term enrollment demand as projections indicate a slowdown in the total number of California high school graduates in the near term and only moderate growth after

²⁶ For a strategy to recruit and enroll international students, see John Aubrey Douglass, Richard Edelman, and Cecil Haoreau, "Seeking Smart Growth: The Idea of a California Global Higher Education Hub," *California Journal of Politics and Policy*, January 2013 5(1): 1–29: <http://www.degruyter.com/view/j/cjpp.2013.5.issue-1/cjpp-2012-0019/cjpp-2012-0019.xml?format=INT>.

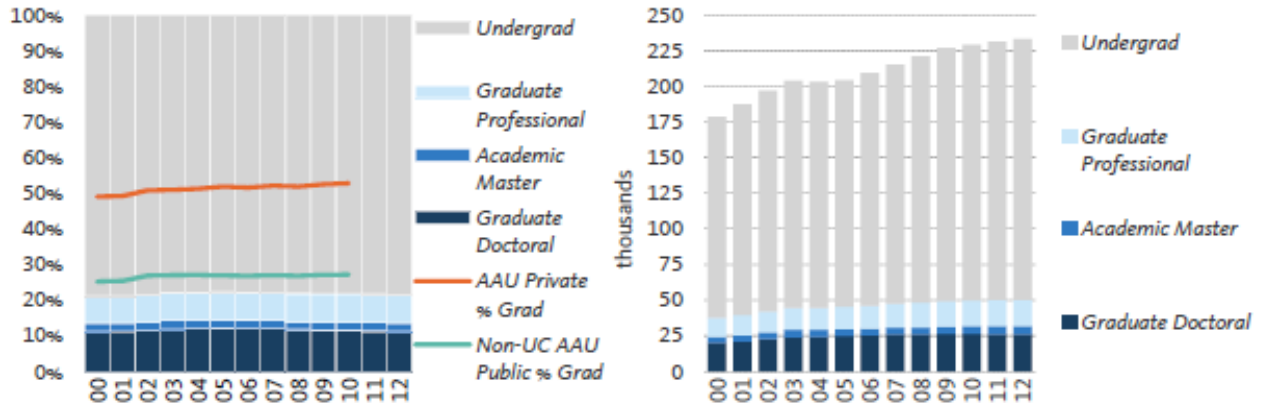
²⁷ See California Department of Finance, "New Population Projections: California to Surpass 50 Million in 2049, Press Release, January 2013:

http://www.dof.ca.gov/research/demographic/reports/projections/P-1/documents/Projections_Press_Release_2010-2060.pdf; See also US Census Data:

<http://quickfacts.census.gov/qfd/states/06000.html>.

²⁸ UC Office of the President, Long Range Enrollment Planning – University of California, Phase 1 Report, March 2008: http://www.ucop.edu/academic-planning-programs-coordination/_files/LREP080401_2.pdf.

Figure 14: UC Graduate and Undergraduate Enrollment, Comparison AAUs 2000 -2012



Source: 2013 UC Accountability Report

that.²⁹ But it is a matter of magnitude. Moderate growth would still mean significant numbers in the largest state in the Union. California once ranked among the bottom 10 states in high school graduation rates.³⁰ Recent improvements in these graduation rates, particularly among disadvantaged groups, means an additional increase in demand for a UC education that is already resulting in increasing and historic numbers of undergraduate applications for admission.

UC, and the state, should be ambitious. They should plan on California getting better in secondary degree completion rates *and* preparation for college. Policymakers should even consider an increase in the 12.5 top high school admissions pool with the goal of getting more Californians into four-year institutions as one means to increase B.A./B.S. production rates (California ranks among the bottom five states in the percentage of students who enroll in higher education and then receive a bachelor’s degree).

In a more perfect world, the state would provide funding support to expand enrollment capacity that also allows the addition of more international and out-of-state students, both to enhance California’s labor pool and as part of the new funding model that reduces the cost for Californians. In the past and the probable future, California needs to import talent in areas such as engineering and key science fields. The state does not produce anywhere enough engineers from among its residents to meet local labor market needs. UC should expand graduate education.

²⁹ According to California’s Department of Finance, “Secondary enrollment is projected to decrease in the short term through 2014–2015 followed by almost no change for two years and then moderate increases in the outer years of the projections series resulting in an overall increase of 26,331 by 2021–2022.” See California Public K–12 Graded Enrollment and High School Graduate Projections by County—2012 Series, November, 2012: <http://www.dof.ca.gov/research/demographic/reports/projections/k-12/>.

³⁰ See America’s Health Rankings: <http://www.americashealthrankings.org/all/graduation>.

When more students attend and graduate from UC, it will help California's economy. Current graduates find employment usually related to their field of study and most stay in California (see Figure 15 for undergraduates), pay taxes, start businesses, and add immeasurably to a growing high technology sector. At the same time, the Public Policy Institute of California projects that, in about 10 years, California will require about one million baccalaureate degrees to meet labor needs in the state. When certificate and associate degree earners are included, the number grows to 2.3 million.³¹

But UC is already approaching limits in physical enrollment capacity. There is only room for moderate annual growth at a few campuses such as Merced, and even that requires an ambitious capital plan for building that apparently will need to come from the private sector. Barring the alternative thought of huge numbers of students taking never on-campus, fully online courses or branch campuses—a route to a caste system, and perhaps a second class UC education—it will take significant time, planning, and resources to grow enrollment capacity in a meaningful way. With ever more complicated environmental laws, local ordinances, and competing political interests, it took some 17 years to propose, plan, and build UC Merced, which is now growing rapidly in enrollment and programs. In the grand scheme of things, the cost of a new campus is not that great (much less than an urban span of a new freeway), but the planning and path to building and opening is the bigger challenge.

At the time of this writing, Democratic contenders for the presidency are offering proposals for federal funding for public higher education, focused on reducing student financial aid debt by providing new federal subsidies to states—a recognition that increased tuition is primarily the result of severe state disinvestment in their public colleges and universities. In an attempt to get states to recommit to their historic responsibility, the scheme would require them to provide some form of matching funding and promises to eliminate or limit future tuition costs for many students. Yet the prospect of a large new funding entitlement to states being passed by a Congress controlled for the immediate term by conservative Republicans seems highly unlikely.

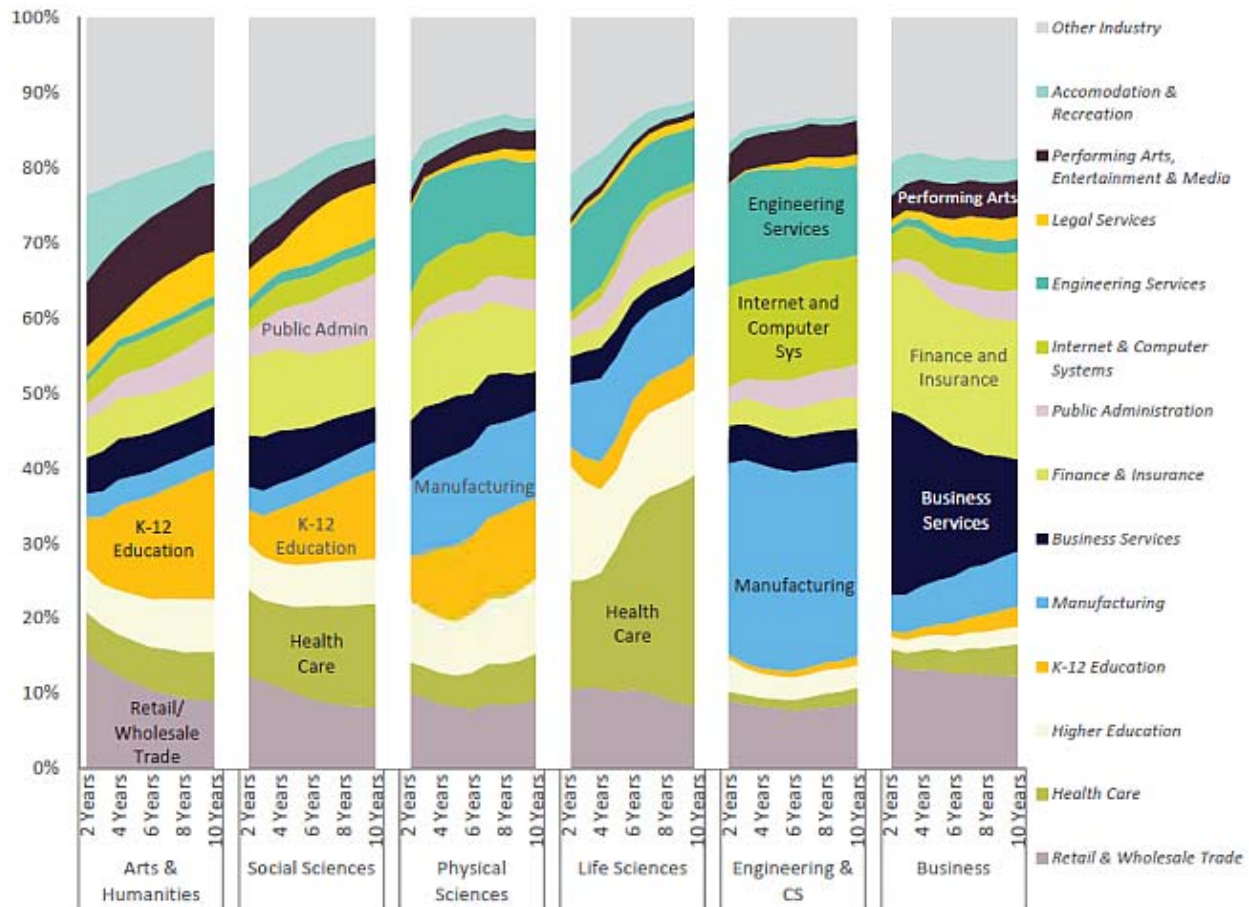
Even if a federal subsidy scheme transpires, the reality is that without a significant investment by the state of California, the resources for enrollment growth will not be there. The demand is there, in students, in the needs of the labor market, and because UC provides high quality programs at a reasonable price for rich and poor alike. But there is no funding model for growth, let alone for maintaining quality.

As noted, UC and specifically the board of regents, have a high level of autonomy under California's constitution—it has the authority to make all decisions regarding enrollment and program growth, although not without political repercussions. So the university community now confronts a conundrum. As one faculty member put it, “The decades long, gradual withdrawal of support from the state has now finally reached a stage where the conditions that facilitate faculty activity undergirding its world class reputation [is] seriously at risk.”³² Increasingly the internal discussion is about “right sizing”—adjusting enrollment costs with revenue streams in a manner that preserves the academic quality that took more than a century to build. “To grow or not to grow,” that is the internal question as UC approaches its 150th anniversary in 2018. The final

³¹ Hans Johnson and Ria Sengupta, *Closing the Gap: Meeting California's Need for College Graduates*, California Public Policy Institute of California, April 2009: http://californiacompetes.org/wp-content/uploads/2012/06/CaCompetes_Report_Final-2.pdf.

³² Personal communication with UC Berkeley Professor of Political Science Todd LaPorte, November 27, 2013.

Figure 15: UC Undergraduates Degree Employment Ten Years After Graduation



Source: 2015 UC Accountability Report

choice will have a significant influence on California’s future, not just that of the University of California.

Perhaps in a more progressive time, the question would be very different: in the decades to come, what should California’s public higher education system look like, including the role of the University of California, to meet the burgeoning social and economic needs of a state that has one of the largest economies in the world?³³

³³ John Aubrey Douglass, “Can We Save the College Dream?: The Death and Life of California’s Public Universities” *Boom: A Journal of California*, Summer 2011, vol. 1, No. 2, pp. 25–42: <http://www.boomcalifornia.com/2011/06/summer-2011/>.