

Overview of Access and Affordability at UC Davis

Three Papers by the
UC Davis Study Group on Access and Affordability

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UC Davis Study Group on Access and Affordability

Professor Ann Huff Stevens (Chair), Department of Economics

Ms. Beatriz Anguiano, ASUCD Representative

Ms. Chloe East, Study Group GSR

Mr. Sean Gilmore, GSA Representative

Ms. Joyce Han, ASUCD Representative

Professor Bruce Haynes, Department of Sociology (Academic Senate Representative)

Associate Professor Michal Kurlaender, School of Education

Director Kathryn Maloney, Financial Aid

Professor Joseph Sorenson, East Asian Language and Cultures (Academic Senate Representative)

Librarian Juri Stratford, Library of Government Information (Academic Federation Representative)

Professor Heather Rose, School of Education

Professor Andrew Waterhouse, Department of Viticulture and Enology

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I. Introduction

In recent years, the 10 UC campuses have faced unprecedented budgetary challenges, due primarily to a dramatic drop in funding from the state. One way that the campuses have addressed these challenges, besides other measures including increasing organizational efficiency, has been increasing the amount students pay in tuition. Increasing tuition at UC to a level closer to that of many of UC's peer institutions across the nation has been deemed necessary to help fill the current budgetary shortfall in funding for teaching, research, and public service programs. At the same time, however, increasing the financial burden on students may threaten to make a UC education less accessible and affordable to many students. Those who find the cost too steep may choose not to attend a UC campus, and perhaps even forego earning a college degree altogether; and many of those who do choose to attend a UC despite the higher cost may feel burdened by daunting loan debt and/or work responsibilities that take significant time and energy from studying. All of these results must be of great concern to an institution, like UC, whose primary mission is to serve the public.

Mindful of the imperative to keep a UC Davis education accessible and affordable to students from all economic backgrounds, in 2013 Provost and Executive Vice Chancellor Ralph J. Hexter established the UC Davis Study Group on Accessibility and Affordability. The Study Group, charged with "help[ing] Chancellor Katehi and Provost Hexter identify and evaluate strategies for addressing the issues of accessibility and affordability for UC Davis students," includes faculty, staff, and student representatives from across the campus.

The Study Group recognizes that the conversation on how to keep UC Davis accessible and affordable must be pursued by the campus community as a whole, and include the consideration of diverse perspectives with respect to what UC Davis should and can be in the 21st century. This conversation will doubtless continue for some time—as it should, given the complexity of the issues it must address and the importance of finding optimal solutions for current challenges. There is much at stake for all members of our community, and the larger public, in the course that the university charts for the future.

We in the Study Group believe that our community can chart a wise course only through good communication and strong collaboration among all stakeholders, on our campus and beyond. But we believe also that this process, if it is truly to serve our needs, must be informed by a clear and accurate understanding of access and affordability realities at our university. It is in the service of this latter goal that the Study Group offers the three papers that follow: "Earnings Gains from a College Education in California," "UC Davis Student Costs," and "Student Borrowing in the United States and at UC Davis."

We express our deep gratitude to the many staff members from the Offices of the Provost, Financial Aid, Admissions, and Institutional Research for assisting with data, logistics, and information supporting this report.

II. Context for the Papers: the Crisis in Public Higher Education

The following is an excerpt from a 2012 campus announcement of the establishment of the Study Group.

Historical Background

This year [i.e., 2012] as we commemorate the 150th anniversary of the Morrill Act, the federal legislation that created the Land Grant universities, we are all acutely aware that the great public research university that evolved from this and other far-sighted measures is under siege as never before. Financial support from the State of California continues to decline precipitously. Ongoing tuition increases have placed undue hardships on our students and their families and sparked growing unrest and turmoil on our campuses. Indeed, increased dependence on student tuition and private funding to meet our education and research missions puts in question the very nature of the university and its relationship with the state and public.

There has been no better, and certainly no bigger and more transformative, example of public higher education than the system the State of California articulated in 1960 as its Master Plan for Higher Education. The Master Plan offered unparalleled access to graduates of California high schools via three coordinated systems of public colleges and universities: over a hundred community colleges, many comprehensive university campuses (the 23-campus CSU system), and the world's greatest public research university, the University of California, now 10 campuses in number.

As California grew and flourished, and especially in the thirty years of 1960–1990, the state was able to fund continued growth in this three-tiered system as it had envisioned. Great public higher education was accessible to virtually all qualified California high-school graduates, although, as we know well, even this system fell far short of the ideal of universal access, since the capacity of K–12 educational systems to prepare students for college itself varied widely, still too dependent on the economic resources of each community, and minorities often faced additional barriers.

Unfortunately, in the past twenty years, the commitment to the Master Plan has eroded to the point where some doubt its continued viability or even relevance. Funding to the UC has dropped precipitously. The State's contribution to students on UC campuses has been reduced from \$16,700 per student in 1990–1991 to less than \$6,500 per student in 2011–2012. UC Davis has lost more than \$130 million in state support over the last four years and, for the first time in the history of the University of California, student fees have surpassed the state contribution to the University's budget. In addition to steep tuition increases, which ask more of our students and their families, these cuts have led to furloughs, layoffs and reductions, putting tremendous pressure on educational and other support programs.

The Current Situation

The university has long promised excellence, affordability and access, and over the long run the university has been able to deliver on this promise. Certainly we have diversified our sources of revenues as state support began its slow decline, with increased support of research activities and growing philanthropy. We continue on these paths to preserve excellence even in the face of the most recent reductions in state contributions, noting that federal research dollars are now also decreasing and may become even scarcer in the coming years. But the recent sharp drop in state funding has had its most dramatic impact on costs for our students. In the past four years, our campus alone has lost 40% of its state budget, while tuition has increased by 84%. Many of our current students and their families are struggling to meet the cost of education, and some of the means available to meet these costs—increasing hours students work or accumulating a greater burden of debt—constitute significant negative impacts on our students. Many other students must choose another institution, and yet others do not even apply. It is not inappropriate to speak of a crisis in affordability and access.

To meet these challenges, our campus is working very hard to add to the substantive student financial aid we already provide our students. Sometimes the scale of current support is not fully appreciated. As a matter of fact, we already have one of the most robust financial aid programs in the county due to the large return-to-aid of tuition dollars mandated by the Regents and the state-supported Cal Grant program. Building on these funds and adding monies already raised or allocated by our campus specifically for scholarships and fellowships, UC Davis administers \$324 million annually in financial aid. This figure is exclusive of loans.

Yet even this sizable amount of aid is not enough to alleviate the stresses that are felt by a large number of our students and their families, particularly as they, too, are hard hit by the bad economy of the state. We must find ways to do more . . .

III. Paper One: *Earnings Gains from a College Education in California*

Tuition increases at UC Davis have certainly prompted some prospective students and their parents to question whether a UC Davis education remains a good investment. Although the short-term expenses to attend college are substantial, college graduates have higher wages after graduation, faster wage growth, and higher employment rates. While college may also result in other, less tangible or measurable benefits, in this paper we focus on the likely financial gains from completing an undergraduate degree at UC Davis.

Earnings Gap between College Graduates and High School Graduates

In 2009, recent college graduates in California earned an average \$45,045 per year, about twice as much as those with only a high school diploma and 57% more than those with just some college (see Figure 1).¹ Part of that difference reflects the higher employment rates of college graduates. In California, 86% of recent college graduates were employed but only 68% of those with only a high school degree were. Employed college graduates in California earned about \$47,721 per year, which is over \$22,400 higher than the average earnings of the employed high school graduates (\$25,345).² Not only do college graduates have higher earnings, but those earnings grow at a faster rate than for those with only a high school degree. Nationally, the wages of college graduates increase by 2.7% per year in real terms, whereas wages of those with only a high school degree increase by only 1.8% per year.³ Finally, college graduates are more likely to be employed in occupations with better health and retirement benefits, benefits that don't show up in earnings comparisons.⁴

¹ These data are based on the American Community Survey data, using the individual sample weights, and include those with no earnings. Considering only those employed shows similarly large earnings gaps.

² National studies including all workers over the age of 25 yield similar gaps. For example, see Baum, Mao, and Payea (2013). Their report, *Education Pays*, for the College Board, shows a \$21,100 gap in 2011 between those with a college degree and those with only a high school diploma. After taking the differential tax burdens into account, that gap drops to about \$16,100, a drop of about 24%.

³ See Connolly and Gottschalk (2006).

⁴ See Baum, Mao, and Payea (2013).

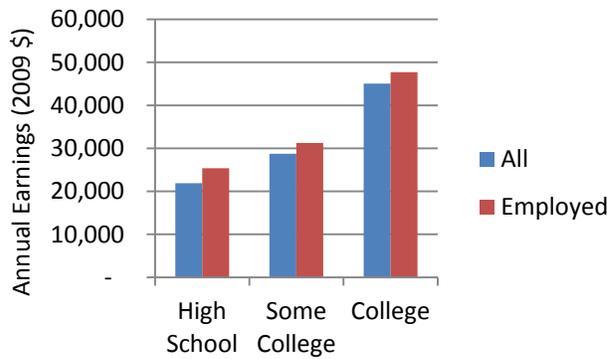


Figure 1. Average Earnings of 25 to 28-year-olds in California

Cumulative Earnings Gap over a Lifetime

Over a lifetime, these earnings differences lead to a cumulative earnings gap between college- and high school-educated workers that can amount to over a million dollars. Initially, students pay a high price to attend college in terms of tuition and forgone earnings. The earnings data and growth rates above suggest that after five years of college, college graduates could actually be \$189,000 behind (in terms of cumulative lifetime earnings) high school graduates who immediately entered the labor market in terms of their total lifetime earnings to date. This is illustrated in Figure 2 and takes account of both tuition payments made and foregone earnings while enrolled in college. However, that short-term deficit begins to erode immediately after graduation, when the higher earnings of college graduates (compared to non-graduates) begin to accrue. By age 35 the accumulation of higher earnings means that this deficit is completely erased, and by age 65 the extra earnings associated with college attendance exceed \$1.1 million (Figure 2).⁵ These back-of-the-envelope calculations of lifetime benefits are within the range of those found in national studies.⁶

⁵ These calculations assume that the higher earnings from college are taxed at a marginal rate of 25%.

⁶ For example, see Baum, Mao, and Payea (2013) and Carnevale, Rose, and Cheah (2011).

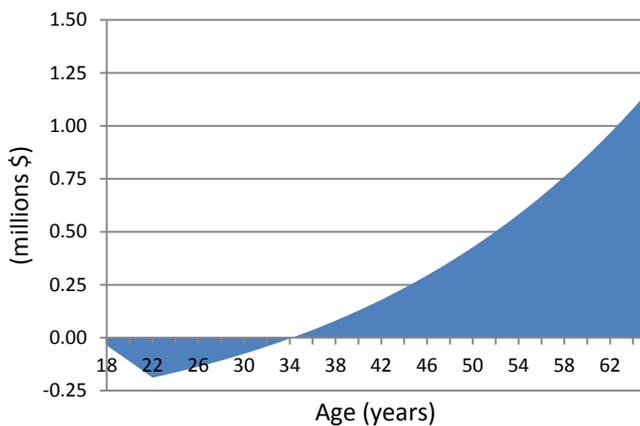


Figure 2. Cumulative gains from a college degree

The Potential Variation in College Benefits

The differences in average earnings between college graduates and non-graduates do not necessarily mean that attending college *leads* to higher earnings. A great deal of academic research has been devoted to determining just how much of this relationship is causal, i.e., how much of this is the actual result of attending college versus a reflection of higher earnings ability among those most likely to attend college. It could be the case that the underlying talent and ability of the high-achieving students who attend UC Davis would have resulted in higher earnings even without the benefit of college education. The general consensus in the scholarly literature on this issue, however, is that attending college does actually lead to large gains in earnings, or that much of the observed earnings differences reflect a true causal effect of college education on earnings. In addition, several important themes emerge from these studies that are important to keep in mind when considering how education will impact future wages.

First, there are some concerns that the average difference in earnings between graduates and non-graduates may not be the same benefit that would accrue to a marginal student with relatively low academic ability.⁷ This concern is less of an issue at UC Davis, because the students admitted to UC Davis have strong academic credentials and are among the top 12.5% of students in the state.

A related concern is that focusing on the average benefit masks the variation in potential benefits. This concern is valid, given that earnings differ depending on a student's major and ultimate line of work. UC Davis does collect data that can be useful to more accurately determine the earnings of recent graduates. On average, full-time employed UCD graduates earned \$39,400 (2011 graduates) per year immediately after graduating. (These earnings are

⁷ See Carneiro, Heckman, and Vytlačil (2010).

lower than the statewide results reported in Figure 1 in large part because the UC Davis survey includes students who are younger than those in the 25 to 28-year-old age bracket.) Figure 3 shows these earnings and how they vary based on the student's field of work or study. Those employed as engineer/architects earn the most at \$58,370 and those in customer service earn the least at \$26,820. Yet all employment fields average higher earnings for UC Davis graduates than for those in California with only a high school degree.

Unfortunately, the survey results may not paint an entirely accurate picture of our graduates' earnings. Typically, fewer than half of recent graduates responded to the survey. This leaves open the possibility that the more successful graduates are more likely to respond to the survey, and so these earnings levels could overstate true earnings among all graduates. In addition, the reported averages do not account for students who are unemployed or employed part time. On the other hand, statistics on earnings among recent California college graduates, summarized in Figure 1 (and in the green bars in Figure 3), taken from an independent source that does not depend on selective reporting, suggest similar earnings levels.

To measure the financial success of UC Davis students in the future, it is possible to more systematically track the earnings of our graduates. As surveys often suffer from low response rates, a better mechanism for gathering earnings data could be to use data from the State's Unemployment Insurance records. These data include earnings of all workers in the state who are covered by the State's unemployment insurance program (the vast majority of the state's workers). These earnings data could be matched to student records, with appropriate masking and safeguards to preserve confidentiality. This could provide a valuable system for monitoring earnings levels of graduates and potential changes in the value of a UC Davis degree well into the future.

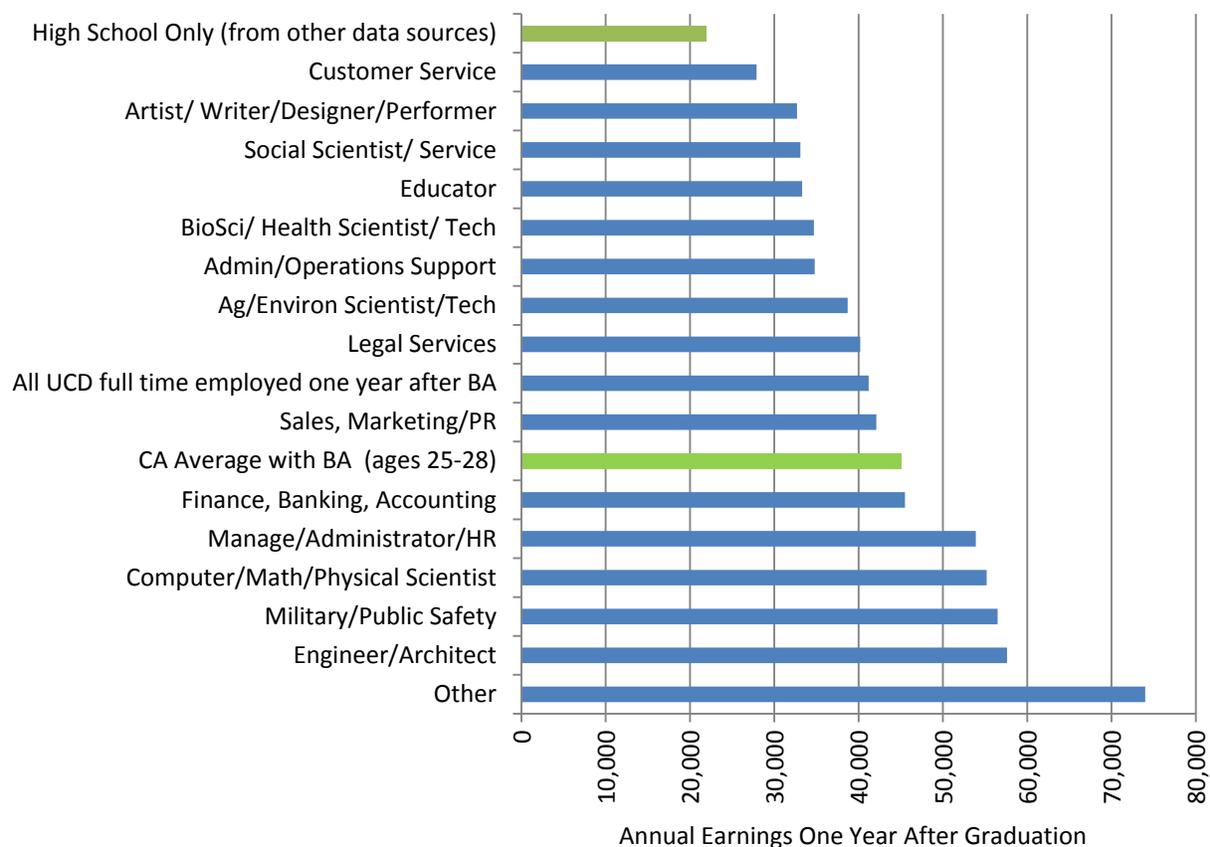


Figure 3. Earnings of UC Davis Baccalaureate Degree Recipients One Year after Graduation⁸

Conclusions

UC Davis students are among the top students academically in the state and stand to benefit significantly from attending our university. Although the concerns about higher tuition are warranted and pose significant budgeting challenges for students and their families, investing in a UC Davis education is likely to have long-run financial benefits. While observed differences in earnings between those with and without college degrees do not necessarily imply that college *causes* all of the increased earnings, the best evidence available on this issue suggests that much of this difference (especially for students with strong academic backgrounds like those attending UC Davis) can be attributed to college attendance. Educating prospective students and their parents about these benefits and about ways to finance their education are important steps in maintaining and improving access to UCD. Finally, investing in a system for accessing

⁸ These figures are based on survey results for the class of 2008, for the closest comparison to the figures from other sources cited above. See more recent salary survey results at: http://www.sariweb.ucdavis.edu/downloads/437.RG2012_Outcomes%20in%20template_final.pdf

more-complete data to consistently measure the earnings and employment of UC Davis graduates could help in those efforts.

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IV. Paper Two: *UC Davis Student Costs*

Costs for Low-Income Students

While increases in tuition throughout the University of California system over the past decade raise obvious questions about affordability, understanding college affordability for low-income students, at UC Davis and nationally, requires a focus on the *net cost* of attendance, as opposed to the “sticker price,” or stated tuition and fee charges. Low-income students typically qualify for substantial amounts of financial aid from federal, state, and institutional sources that offset the total tuition and fee charges and help defray living costs.

Net cost is total payments that must be made by students for tuition, fees, and living expenses less total grants or scholarships from federal sources (such as Pell Grants), state sources (such as Cal Grants), or the universities they attend. Net cost calculations do not subtract from total costs assistance received through eligibility for student loans (whether these loans are subsidized or not). Because all of these sources of financial aid are awarded based on the overall cost of college attendance, parental income, assets, and other factors (such as the number of siblings in college), net cost rises with family income.

In 2010–11, the net cost of attending UC Davis for dependent undergraduate students from California with annual family incomes below \$25,000 was roughly \$9,400. For students with family incomes between \$25,000 and \$49,000, net cost was approximately \$12,400. For a full set of net cost figures by family income from 2001 to 2011, see Table 1, drawn from data provided by the University of California Office of the President.

The evaluation of whether current levels of net cost should be viewed as “affordable” for low income students is necessarily subjective, and requires a more detailed look at the financial and family circumstances beyond the broad category of low income. It is helpful, however, to consider net cost at UCD relative to both the costs at UCD in earlier years, and those for low-income students at peer institutions.

Net cost for the lowest-income students at UC Davis is now at approximately the same level as in 2001. Adjusted for inflation and expressed in 2010 dollars, the net cost of attending one year of college at UC Davis for families with incomes less than \$25,000 was approximately \$9,400 in 2001; net cost for this group peaked at \$11,900 in 2005–6, but then began to decline, and by 2011 was back to approximately \$9,400 per year. Thus, the lowest-income students enrolling at UC Davis have been relatively protected from rising costs, even in the light of the real increases in tuition and fees over the last decade.

Comparing net costs faced by low-income students at other flagship public universities in recent years provides additional context for interpreting the UC Davis numbers. Table 2 shows net costs at a number of public flagship universities for students from families with several

different income levels.⁹ For UC Davis (at the bottom of the table), net cost is estimated at \$10,300. This figure is slightly higher than that reported in Table 1 for several reasons, including because it is for families with income of exactly \$25,000 rather than all incomes below that figure, and because it does not include “gift” or merit-based aid that may be awarded on the basis of academic achievement to students in this category. In contrast, at the University of Virginia, the lowest-income students face a net cost of attendance close to zero, reflecting more-generous aid policies that meet “full need” for all admitted students and slightly lower cost of living in that state. Net cost at the University of Michigan is similar to that for UCD at the top of the range (the calculator for Michigan provided a range, rather than a single figure in this case), and is somewhat higher than UCD at several other institutions, including the Universities of Illinois and Texas.

The ability of UC Davis to maintain affordability for low-income students is directly related to (and made more difficult by) the relatively large number of these students who attend not only UC Davis, but the UC system as a whole. A commonly reported measure of the number of low-income students attending a college is the number or fraction of Pell Grant recipients at the school, since Pell Grants are largely limited to students with family incomes less than \$41,000, and more than three-quarters of Pell Grant recipients come from families with incomes below \$30,000. Thus Table 2 also shows the fraction of Pell Grant recipients at each institution. A point noted in some recent media reports on college affordability is clear in this table: colleges that enroll relatively small numbers of low-income students can afford to provide much more aid to those students. Meeting full need and reducing net cost to nearly zero for the lowest-income students is much less costly at a university that enrolls relatively small numbers of such students than for one that draws close to 40%, such as UC Davis.¹⁰

A final perspective on the affordability of a net cost of \$9,400 per year for college attendance comes from consideration of how such a cost could be paid by the low-income students who enroll. Specifically, how might it be feasible for a dependent student without substantial financial support from his or her family to pay this amount over the course of a year? First, there is the expectation of part-time work during the academic year. Assuming a student earns roughly \$8.50 per hour (the low end of the rate paid at UCD for “student assistant” positions as of 2011) and works 15 hours per week during the academic year ($15 \times 36 = 540$ hours), gross earnings over the year would equal $540 \times 8.5 = \$4,590$. After taxes (assuming relatively little paid in income taxes, but allowing for standard payroll tax rates), this could net approximately \$4,000 of the students' own earnings. Next, most low-income students would be eligible for federally subsidized student loans, with the maximum borrowing per year for freshmen under the subsidized portion of the federal direct student loan program set at \$3,500. After income

⁹ For each of the listed universities, we accessed the institution’s “net cost” calculator, entering data for a family with income of \$25,000 (or \$49,000 or \$80,000) and comparable data on assets, siblings and taxes paid. Numbers reported are the output of each university’s net cost calculator.

¹⁰ For information on the fraction of students receiving Pell Grants, see <http://nces.ed.gov/collegenavigator/>, or http://www.universityofcalifornia.edu/news/documents/uc_access_and_excellence_0928c.pdf, or http://www.ucdavis.edu/about/facts/uc_davis_profile.pdf

from academic year employment and borrowing, there would be a gap of approximately \$2,500 for the lowest-income students, which could be met by earnings from summer employment, additional (unsubsidized) borrowing, or contributions from parents or family. For slightly higher-income students (between \$25,000 and \$49,000 of family income), with net cost in the \$12,000 range, more-substantial savings, work hours, or parental contributions would be necessary.

While, in the sense above, the numbers can "add up" to meet the estimated net cost, they do highlight potential challenges faced by the lowest-income students. First, the availability of employment, including full-time employment in the summer, cannot always be taken for granted. Given the high unemployment rates for young people in the US and in California in the past few years, it may prove difficult for some students to secure full-time employment in the summer. In addition, some students will need to enroll in coursework during the summer, which may make a 40-hour-per-week work commitment impossible.

Second, the above calculations take student loan borrowing as a given. Much recent attention has been focused on student loans and whether they pose undue burdens on students. While we discuss the details of student borrowing for UC Davis students in Paper Three of this report, it is worth noting here what debt burden would result from the hypothetical borrowing pattern discussed above. A student who borrowed \$3,500 per year and took five years to graduate would finish with a total debt burden of \$17,500, which is very close to the current average (2011 is the last year for which we have complete data) level of debt among recent UCD graduates who borrowed (approximately 54% of UCD undergraduates have some student loan debt). With this level of debt, student loan payments under a traditional 10-year repayment plan would be roughly \$200 per month, a level estimated to be affordable under some reasonable scenarios with an annual salary of \$30,000 or higher.¹¹

Costs for Middle- and Higher-Income Students

Students from families with incomes higher in the distribution are also likely to be concerned by and sensitive to the price of college, and we next consider affordability for these students.

Net cost of UC Davis for students from families with incomes above \$49,000 has increased substantially over the past decade. In 2011–12, these students faced a net cost of attendance of approximately \$16,000 to \$25,000 per year, with a higher net cost for the higher-income groups. As shown in Table 1, these students have seen increases over the past decade of 13% to 42% in their inflation-adjusted net cost, with the largest increases within this category occurring for students from families at the top of the income range.

¹¹ Figures taken from a standard student loan repayment calculator, such as <http://mappingyourfuture.org/paying/standardcalculator.htm>.

Table 2 also shows the net-cost figures taken from institutional net-cost calculators for the same set of peer institutions discussed above, this time for a family with income of \$80,000. Here, UC Davis compares favorably with most of the selected institutions on price, with only the University of North Carolina offering a substantially lower net price, and the University of Michigan coming in slightly below this price.

The increases in net cost for these middle- and higher-income students over time raises the critical question of how enrollment at UC Davis among this group has responded to increased net cost. Because different income groups faced different changes in net cost over the past decade, we have had an opportunity to observe the reactions of families to these changes in cost over time. Specifically, the study group looked at enrollment “yield”—defined as the number of students enrolling divided by the number of admitted students from each family income group—in each year from 2001 to 2011, and used some simple graphs and regression models to understand the relationship between net cost and yield.¹²

One way to understand the relationship between net cost and enrollment at UC Davis is through a graphical analysis of trends. For this, the Study Group again used the fraction of admitted students enrolling by year and family income, and also looked at where admitted students go *instead* of UC Davis—other California institutions, or public or private institutions in other states. Many of us have heard (or experienced firsthand) anecdotes suggesting that, as costs at UC Davis and all UCs have increased over time, they are less competitive with many other options—public and private, in and out of the state. Figures 1 and 2 illustrate some key results from this analysis.

Figures 1a and 1b show net cost and enrollment patterns over time for students from families with incomes between \$74,000 and \$123,000. The bars in the figure show (measured on the left axis) the percentage of admitted students enrolling at UCD or a variety of alternatives. The line shows the trend in inflation-adjusted net costs (measured on the right axis) at UCD for this group of families. In Figure 1a, we show the fraction of students admitted to UC Davis who enroll at UC Davis, at any UC, and at other public institutions within California. In Figure 1b, we repeat this exercise but look at the fraction of students admitted to UCD but enrolling in private and out-of-state schools.

Focusing first on Figure 1a, note the relative stability of the fraction of admits enrolling at UCD from 2004 to 2008, a period that also shows very stable costs for these middle-income families. Over the same period there is little evidence of a sustained increase in attendance at public or private institutions out of the state (see Figure 1b). Patterns of enrollment look quite different from 2008 to 2011. Note the increase in net costs driven by rising tuition during the state budget crisis and the corresponding decline in yield among these students beginning around 2008. Figure 1b focuses on alternatives to enrollment at UCD and illustrates the steady increase

¹² The total number of *applicants* from each income group may also respond to changes in price, and so any decline in enrollments among admitted students associated with higher net costs may understate the total response to rising costs.

in the probability that admitted students go to public and private institutions outside the state beginning around 2008, when net costs at UCD began to increase. While the interpretation of such graphs will often be in the eye of the beholder, to the Study Group these patterns are strongly suggestive that middle- and higher-income families, in particular, have responded negatively to the latest round of increases in net price and may be beginning to vote with their feet (and tuition dollars).

We also include similar graphs for lower- and higher-income students in Figures 2a and 2b. Among the lowest-income students (with family incomes below \$25,000, discussed above) we do not see a strong correlation between periods of rising net cost and reduced yield at UC Davis. Among higher-income students (incomes above \$123,000), we see similar patterns to the middle-income groups, with evidence of a response away from enrollment at UCD in the years when net costs were rising.

We supplement and confirm this graphical analysis with a regression analysis, in which we use the fraction of admitted students who enroll in a given year and family-income group as the dependent variable and relate it to net costs by income over time. The year and income group-specific net cost is the key variable of interest, and we attempt to measure whether, and by how much, an increase in net cost in a given year discourages enrollment of admitted students. We also control for both the academic year and for the effect of the family income itself. The controls for calendar year capture trends in yield that are common across all family-income groups, including both the low-income groups that did not face rising costs, and the higher-income groups that did face rising costs. The controls for family-income group capture the differential enrollment rates of students from families with different income levels that are common across all years. This means that our effect of interest, the effect of net cost, is identified from the differential trends in net costs across different income groups.

The results of the regression analysis show, not surprisingly, that increases in net costs have a statistically significant effect on yield. The estimated effects, however, are relatively small, with a \$1,000 increase in net cost estimated to lower yield by less than one percentage point.

There are several reasons to interpret the exact magnitude of these regression estimates cautiously. First, with the data and variation available to us, we cannot estimate a model that allows for differential responsiveness of enrollment at different family-income levels. It is quite likely that some groups, such as the middle-income group highlighted below, may be particularly price sensitive and the small overall effect estimated may reflect an average over more- and less-sensitive groups. Second, decisions about financial aid policy and how those interact with changes in the “sticker price” are made with the goal of avoiding large reductions in admissions yield (although in the recent atmosphere of budget crises the extent to which this was possible may have been limited). This means that the change in net cost itself is endogenous—determined by factors that may also independently affect yield. This could lead these simple regression models to understate the responsiveness of yield to net cost. Despite these caveats, this simple statistical analysis is valuable in that it does confirm that rising costs have direct consequences in terms of reducing the likelihood that admitted students will enroll.

The potential sensitivity of enrollment among middle-income students to net cost highlights the importance of efforts to communicate with these families about ongoing efforts to hold down costs for this group. For example, in 2013–14, the new “Aggie Grant” plan was initiated to assist students with family incomes between \$80,000 and \$120,000 by providing gift aid to cover 25% of total systemwide tuition and fees. Efforts to broadly publicize such programs to potential applicants and their families may be extremely valuable in future years.

Finally, a critical point to be made in considering affordability is that the analysis of affordability among low-income students cannot be separated from issues of affordability and enrollment of middle- and high-income students. The feasibility of maintaining stable costs (or of lowering costs) for low-income students is very much related to how net cost and enrollment patterns evolve for higher-income families in the state. Tuition dollars paid by higher-income students make it possible to insulate lower-income students from rising costs and reduced affordability, but these higher-income students may have many other options for college attendance in the same or slightly higher price range as UC Davis. This point about the opportunities provided to low-income and first-generation college students by the UCs in general, and UCD in particular, returns us to a key point from Table 2: UCD serves a relatively large fraction of very low-income students. This high fraction of low-income students reflects both the income distribution and demographics of the state, but also a history of effective outreach and access to the UCs for low-income students. This success in attracting and serving low-income students means that it is relatively expensive to hold costs down for this group, because it is a large number of students and a large fraction of our overall student body. Maintaining an attractive price-quality option for higher-income students and thus maintaining healthy enrollments among those families is thus directly related to maintaining affordability for lower-income students.

Summary

This analysis of affordability at UC Davis points to several positive signs:

- Net cost for our lowest-income students is currently at the level that prevailed in 2001, despite the intervening years of the state budget crisis and resulting substantial increases in tuition.
- Net cost of a year of UC Davis education for low-income students, at approximately \$9,500 to \$12,000 per year, seems affordable for many students through a combination of summer earnings, modest amounts of part-time work during the academic year, some assistance from family or other savings, and reasonable levels of student borrowing.
- The UCs in general, and UCD in particular, continue to draw relatively high fractions of their student body from low-income families, suggesting this remains an attractive and viable option to such families in California.

On the other hand, some areas of concern are also clear:

- Net cost for low-income students is higher, sometimes substantially so, at UCD than at a number of strong public four year universities in other states.
- The fact that UCD enrolls a substantial fraction of low-income students means that efforts to maintain or reduce net cost for these students will be relatively expensive (compared to peer institutions enrolling smaller fractions of lower-income students) if future tuition cost rises.
- Because most low-income students, and many higher-income students, will be expected to incur some student loan debt and work while enrolled, issues of student employment and concerns about student borrowing at UCD are now, and will remain, particularly important into the future.
- The tuition increases over the past several years seem to be associated with more middle- and upper-income families choosing options outside the UC system and outside the state of California. Steps must be taken to continue attracting these middle- and higher- income students since they are critical to maintaining access for all students.

Table 1: Net Cost of Attendance by Income for UC Undergraduates, Constant 2010-2011 Dollars

Academic Year	Independent	Less than \$25,000	\$25,000-49,000	\$49,000-74,000	\$74,000-99,000	\$99,000-123,000	\$123,000- \$149,000	\$149,000 and above	All Students	Annual Change
UC Campuses Average (9)										
2001-2002	\$11,505	\$9,899	\$11,163	\$15,248	\$18,152	\$19,389	\$19,754	\$20,300	\$16,196	
2002-2003	\$11,738	\$10,055	\$11,355	\$15,370	\$18,189	\$19,264	\$19,613	\$20,257	\$16,182	-0.09%
2003-2004	\$12,311	\$10,684	\$12,114	\$16,401	\$19,574	\$21,183	\$21,584	\$22,337	\$17,447	7.82%
2004-2005	\$13,063	\$11,688	\$12,909	\$17,425	\$20,965	\$22,637	\$22,946	\$23,766	\$18,586	6.53%
2005-2006	\$12,634	\$11,630	\$13,026	\$17,578	\$21,386	\$23,162	\$23,497	\$24,356	\$18,850	1.42%
2006-2007	\$12,419	\$11,394	\$12,791	\$17,610	\$21,362	\$23,150	\$23,571	\$24,338	\$18,736	-0.60%
2007-2008	\$11,939	\$11,105	\$12,657	\$17,506	\$21,669	\$23,466	\$23,840	\$24,536	\$18,767	0.17%
2008-2009	\$11,431	\$10,668	\$12,228	\$17,479	\$21,372	\$23,737	\$24,130	\$24,950	\$18,729	-0.20%
2009-2010	\$11,166	\$10,045	\$12,434	\$17,376	\$21,970	\$24,601	\$25,030	\$26,142	\$18,760	0.17%
2010-2011	\$11,179	\$10,516	\$12,707	\$17,529	\$22,964	\$26,664	\$27,073	\$28,828	\$19,578	4.36%
9 Year Change	-2.83%	6.23%	13.83%	14.96%	26.51%	37.52%	37.05%	42.01%	20.88%	
UC Davis Student Data										
2001-2002	\$11,471	\$9,376	\$10,761	\$14,481	\$17,314	\$18,417	\$18,656	\$19,003	\$15,513	
2002-2003	\$11,707	\$9,647	\$11,201	\$14,813	\$17,246	\$18,092	\$18,537	\$18,822	\$15,576	0.41%
2003-2004	\$12,529	\$10,327	\$11,805	\$15,707	\$18,628	\$19,987	\$20,372	\$20,855	\$16,881	8.38%
2004-2005	\$13,529	\$11,595	\$13,132	\$17,203	\$20,593	\$22,184	\$22,484	\$22,906	\$18,425	9.15%
2005-2006	\$13,585	\$11,914	\$13,264	\$17,255	\$20,614	\$22,264	\$22,636	\$22,997	\$18,422	-0.02%
2006-2007	\$12,949	\$10,845	\$12,982	\$17,160	\$20,406	\$22,113	\$22,549	\$22,841	\$17,987	-2.36%
2007-2008	\$12,267	\$10,011	\$12,339	\$16,693	\$20,224	\$21,827	\$22,315	\$22,663	\$17,446	-3.01%
2008-2009	\$11,718	\$9,832	\$12,026	\$16,869	\$20,536	\$22,091	\$22,557	\$23,179	\$17,532	0.49%
2009-2010	\$11,280	\$9,185	\$12,439	\$16,501	\$20,559	\$22,975	\$23,457	\$24,389	\$17,492	-0.23%
2010-2011	\$11,636	\$9,396	\$12,354	\$16,349	\$21,528	\$24,679	\$25,476	\$26,929	\$18,212	4.12%
9 Year Change	1.44%	0.21%	14.80%	12.90%	24.34%	34.00%	36.56%	41.71%	17.40%	
2010-2011 UC Davis Comparison to UC Average										
	4.09%	-10.65%	-2.78%	-6.73%	-6.25%	-7.44%	-5.90%	-6.59%	-6.98%	

Data Source: UCOP Corporate Student System (CSS) updated February 2012.

Notes: Net cost is defined as each student's full cost of attendance less any grants, scholarships, and fee exemptions. Students were assigned to constant-dollar parent income categories based on the income they reported on either the Free Application for Federal Student Aid (FAFSA) or the US Application for Undergraduate Admission, or imputed based on the parents' demographic profile. Net costs and incomes are expressed in constant 2010-2011 dollars. Inflationary adjustments relied on the Consumer Price Index for Urban Wage earners and Clerical Workers (CPI-W).

Table 2: Net Cost at Peer Universities and UC Davis

School	Net Cost: Parental Income=\$25,000	Net Cost: Parental Income=\$49,000	Net Cost: Parental Income=\$80,000	Fraction of Undergrads with Pell Grants (2011-2012)
U Texas-Austin	\$12,998	\$12,308	\$25,908	28
U Michigan-Ann Arbor	\$6730 to \$9930	\$10,679 to \$13,879	\$18173 to \$21373	16
U Virginia	\$153	\$11,109	\$24,560	12
U Illinois	\$13,318	\$20,837	\$29,594	20
UNC-Chapel Hill	\$2,700	\$10,088	\$18,748	21
UC Davis	\$10,300 (not including gift aid)	\$14,465 (not including gift aid)	\$22,194 (not including gift aid)	43

Net cost is calculated from various schools' net price calculators on 7/11/2013.

Student Information was entered into net price calculators as follows: Parents were married with one parent earning the entire family income as listed. Students were residents of the state where the university was located, were planning to live on campus if this was requested, and were only children. Assets and taxes paid were \$0 and \$1000, \$0 and \$3000, and \$20,000 and \$10,000, respectively, for the above income categories in order from left to right (not all schools asked for this information but if it was requested these amounts were given.) If any other income was asked about, such as student's own income or investments, an amount of zero was entered. UNC was the only school that asked explicitly about home ownership information, in fact most other schools requested not to include home values when reporting asset amounts. For UNC, the information was entered assuming no home ownership.

Fraction of undergraduates who receive Pell Grants from Department of Education's "College Navigator" at: <http://nces.ed.gov/collegenavigator/>

Figure 1a: Freshman Admits to UCD with Family Income \$74,000 to \$123,000: Net Costs and Percent Attending California Public Institutions

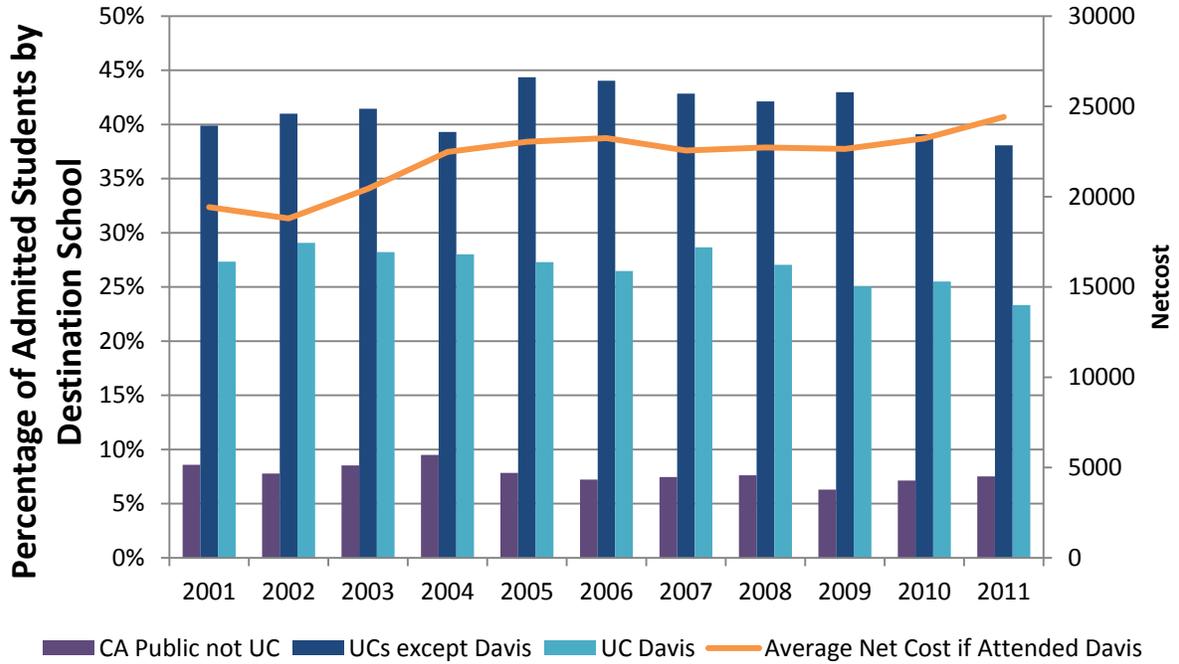


Figure 1b: Freshman Admits to UCD with Family Income \$74,000 to \$123,000: Net Costs and Percent Attending Private and Out of State Institutions

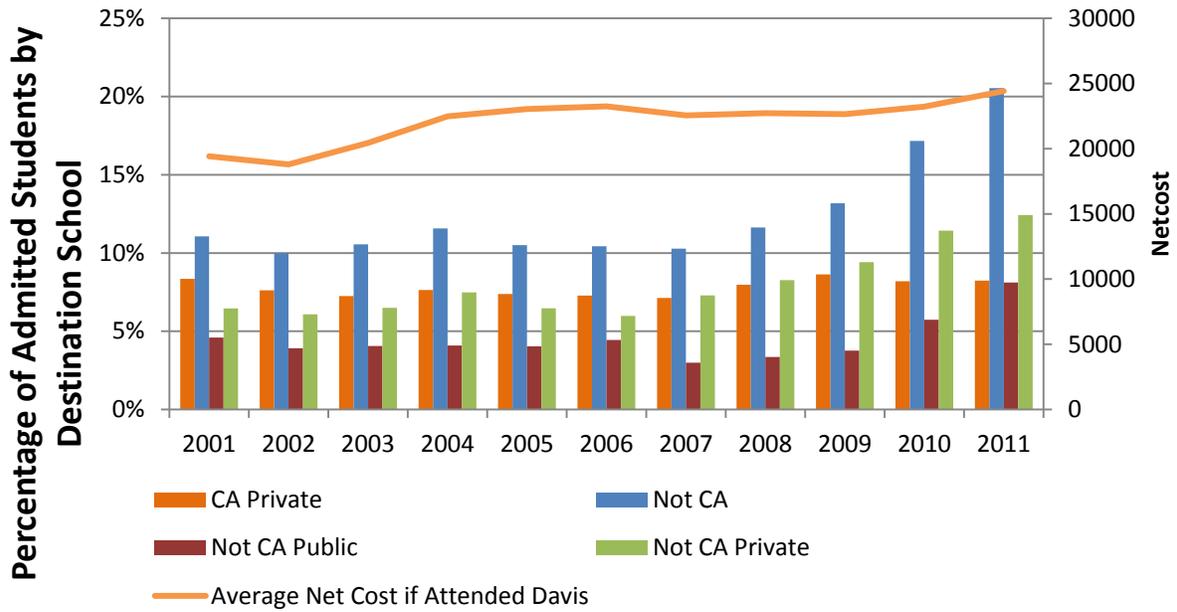


Figure 2a: Freshman Admits with Family Income between \$25,000 and \$49,000

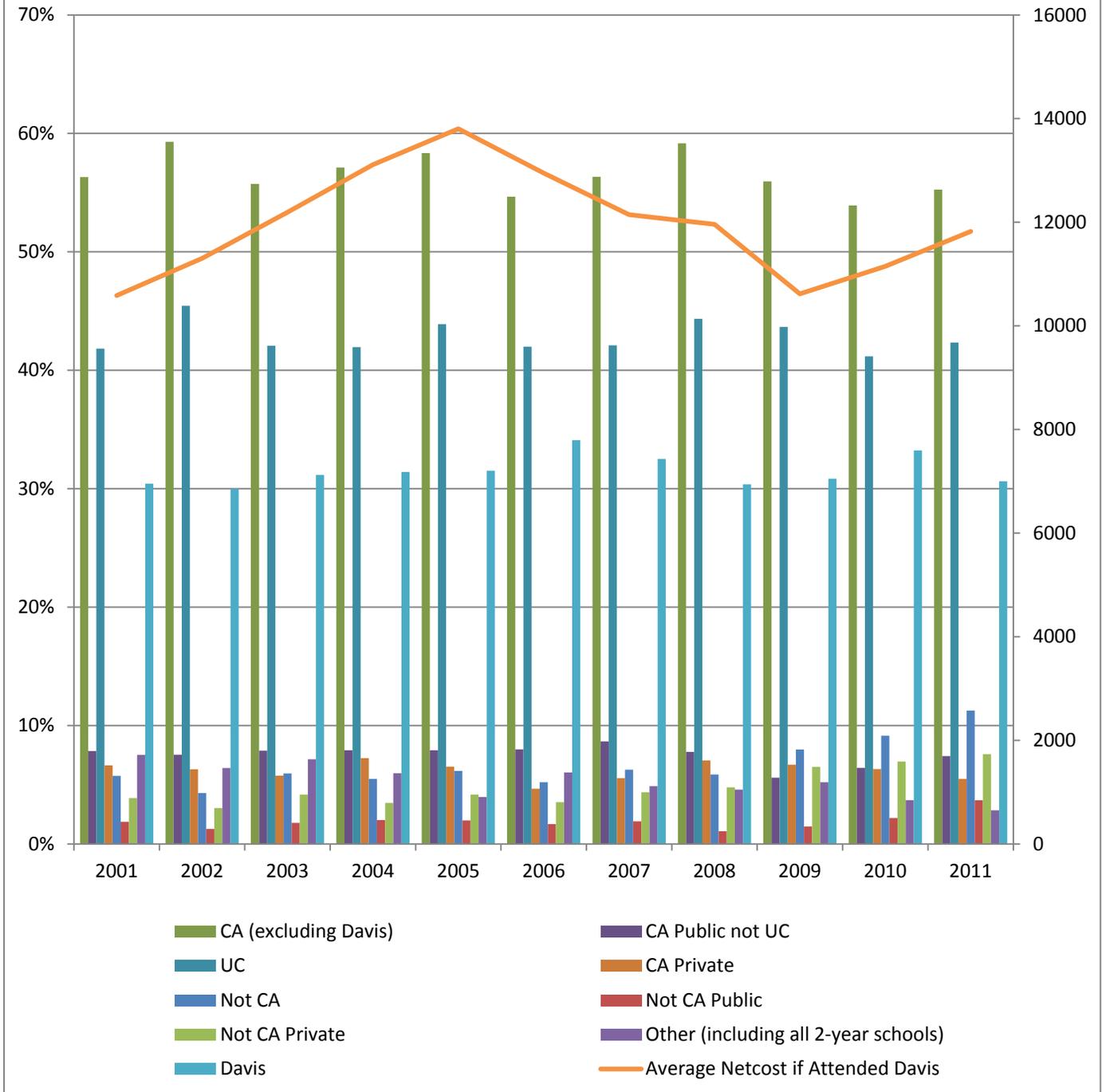
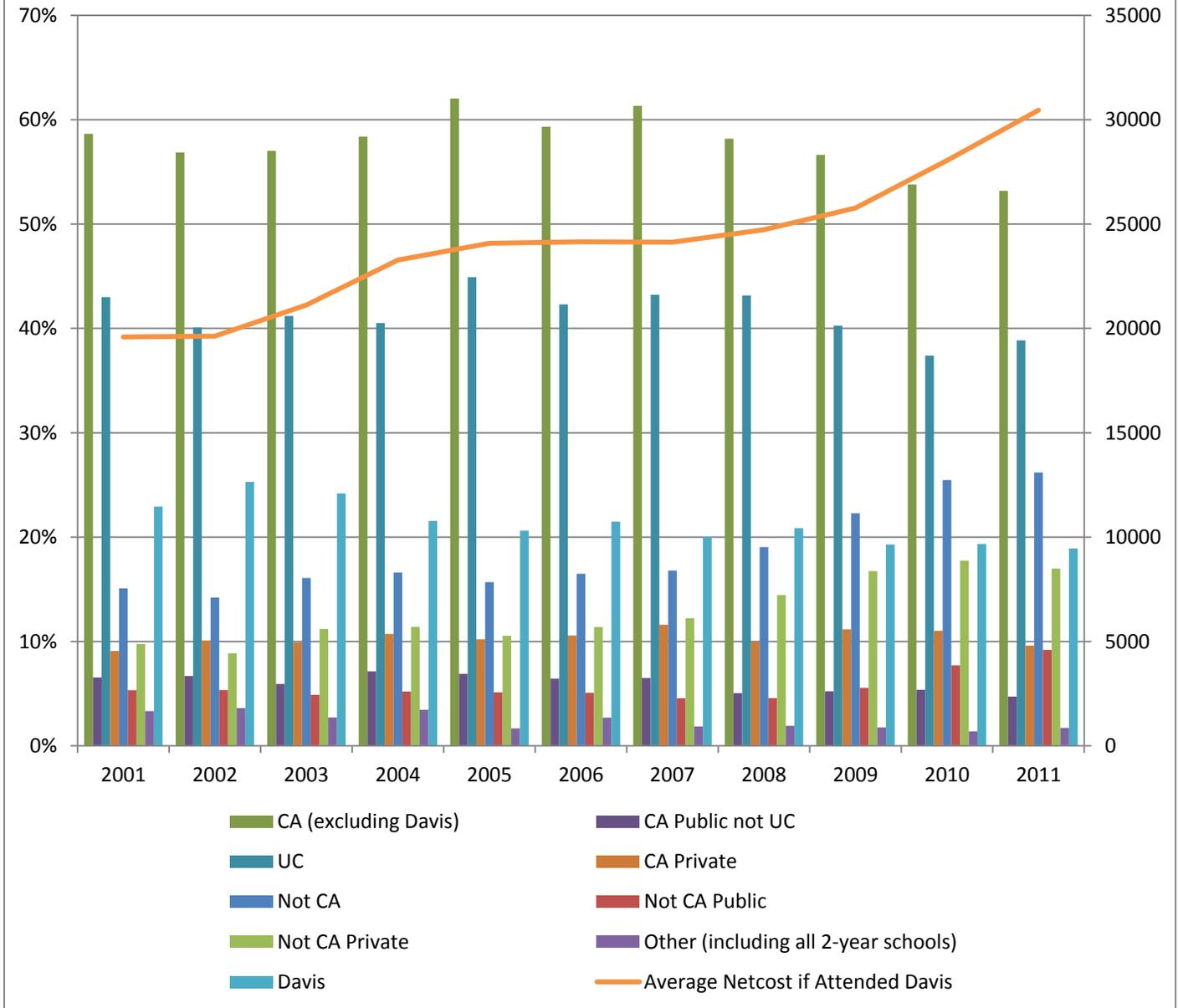


Figure 2b: Freshman Admits with Family Income above \$149,000



V. Paper Three: *Student Borrowing in the United States and at UC Davis*

Attention to student loan borrowing by the press and policy makers has focused on high and rising student loan burdens for U.S. students. At UC Davis, more than half of all undergraduates or their families take on some student debt before graduation, and the amounts borrowed have increased in recent years. This makes it critical to understand the facts about student borrowing and associated trends, the implications of amounts borrowed for repayment obligations, and how and when UC Davis and our students can best use student loans to assist with their educational expenditures.

Facts about student borrowing nationwide

There have been clear increases over the past two decades in the prevalence and use of student loans in the United States. These increases, however, have happened very unevenly across different types of students and, particularly, different types of institutions.

The latest figures from the Project on Student Debt show that, *nationally*:

- Approximately two-thirds of college seniors graduating from public and private nonprofit four-year colleges in 2011 had student loan debt;
- The average amount borrowed (as undergraduates) among those with loans was \$26,660.

Both the fraction of undergraduate students with any loans and the average amount borrowed have increased over time. For example, calculations by the Federal Reserve Bank of New York show that the fraction of 25-year-olds with some student debt rose from 27% in 2004 to more than 40% by 2012.¹³ The real (inflation-adjusted to 2011 dollars) value of debt among recent graduates of four-year public institutions went from \$11,000 in 2000 to \$13,600 in 2011. At private institutions the comparable figures were \$14,800 in 1999 and \$19,700 in 2011.¹⁴

A crucial detail underlying many of the headlines on student debt is that debt levels, the fraction of students borrowing, and trends in each of these over time vary across different types of institutions of higher education. The largest debt burdens and most rapid increases are not occurring among four-year public universities. Borrowing among students attending for-profit colleges is much higher—in terms of both debt levels and the fraction borrowing—than among those attending private or public nonprofit colleges. This is also true when we look at unusually high levels of borrowing. For example, one report, using data from

¹³ See <http://www.newyorkfed.org/newsevents/mediaadvisory/2013/Lee022813.pdf>

¹⁴ From *Trends in Student Aid 2012*, College Board Advocacy and Policy Center.

the National Postsecondary Student Aid Study, shows that the percentage of graduates with “excessive borrowing”—defined as \$45,000 or more for a bachelor’s degree recipient—was:

- 3.5% among those with four-year degrees from public institutions
- 10.1% among those with four-year degrees from private nonprofit institutions
- 16.7% among those with four-year degrees from for-profit institutions¹⁵

How much do UC Davis students borrow?

In 2010–11 (the last year for which complete data are available) at UC Davis:

- 54% of undergraduate students graduated with student loan debt
- The average level of debt among those who borrowed was \$17,081
- 18% of UCD graduates had debt in excess of \$25,000
- Less than 2% of UCD graduates had debt in excess of \$50,000

Are UC Davis students able to repay their loans after graduation?

Given the barrage of numbers on student borrowing, and different figures depending upon the specific student and type of university, it is critical to think carefully about whether various debt levels are manageable for typical graduates. For typical amounts of student loan debt accumulated by UC Davis graduates, what would repayment terms look like, and are these terms likely to be manageable, given what we know about the typical salaries earned by our graduates?

To answer this question, we considered a range of debt levels above and below the mean debt among recent UCD graduates. For several hypothetical levels of debt, we used a standard repayment calculator¹⁶ to see what monthly repayment amounts would be under available repayment plans. For each potential amount borrowed the chart shows the standard monthly payment assuming a 10-year repayment plan; the monthly payment under a graduated repayment plan; and the monthly payment under an income-contingent repayment plan.

¹⁵ See <http://www.finaid.org/educators/20100929debtdistribution.pdf>

¹⁶ For example, the figures here come from <http://studentaid.ed.gov/repay-loans/understand/plans/standard/comparison-calculator>, which can be used to calculate repayment rates for a given loan balance and interest rate under regular, graduated, and income-contingent repayment plans.

Amount Borrowed	Standard Monthly Payment	Monthly Payments under Graduated Repayment Plan	Initial Monthly Payment Under Income Contingent Plan (with annual income of \$20,000)
\$10,000	\$115	\$79-\$173	\$63
\$20,000	\$230	\$158-\$345	\$127
\$30,000	\$345	\$237-\$518	\$147

Whether or not these levels of monthly payments are manageable for students depends on both the monthly payment amount and the incomes that recent UCD graduates are earning. Financial advisors often provide general guidelines for loan payments as a fraction of total monthly income, viewing payments as likely to be manageable if they are *less than 20% of monthly income*, with payments under 10% of monthly income considered ideal. Others have argued that student debt repayment should ideally be kept to less than 8% of income. An alternative simple rule of thumb is that payments are likely to be manageable if the *total debt is less than a graduate's annual earnings*. This sampling of expert suggestions of the range of manageable debt hint at both some uncertainty about how much borrowing is likely to be too much and the fact that this depends critically on the level of earnings after graduation.

Using a guideline of 10% of income as an example, a student borrowing \$20,000 would need an annual income of approximately \$28,000 to keep loan payments under 10% of income. During difficult economic times or for graduates working in less lucrative fields, graduated and income-contingent repayment options available on many loans would substantially lower the income needed for reasonable management of repayments. It is also possible to defer repayment of federally subsidized student loans during periods of documented unemployment or other financial hardship.¹⁷

Evidence suggests that most recent UCD graduates should have earnings that are sufficient to support current levels of borrowing among our students. A survey of recent UCD graduates suggests that earnings among employed graduates one year after graduation average approximately \$40,000. This is consistent with data from national sources on the average earnings levels of young college graduates in California. Tabulations of data from the American Communities Survey (a nationally representative data set collected by the Census Bureau) show that average earnings of 25 to 28-year-old college graduates in California were approximately \$45,000 in 2009.

While all of these figures suggest that current average borrowing levels are manageable, perhaps the best measure of whether student borrowing is reasonable is in the default rate on

¹⁷ For details see <http://www.direct.ed.gov/postpone.html>

student loans by recent graduates. At UC Davis the 3-year default rate in the most recent year was approximately 3%, far below the national rate of 13%.¹⁸

These statistics on default and on the fraction with high loan burdens do show that a small number of UC Davis students take on excessive loan burdens and/or have difficulties with repayment. This should prompt continued efforts to monitor borrowing and make sure that students and parents are well informed as they make borrowing decisions.

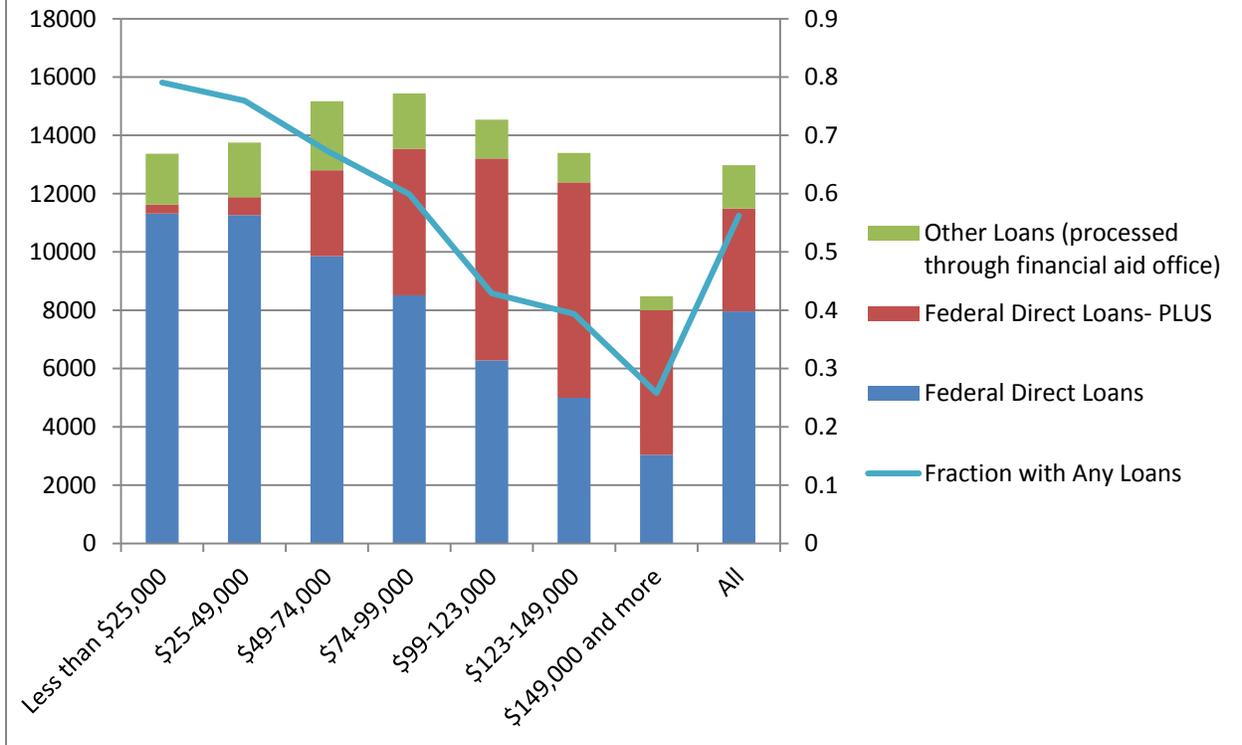
Student borrowing at UCD by family income and degree completion

Concerns about student borrowing may be particularly pressing for students with more-limited family financial resources. The figure below shows both total amounts borrowed by recent graduates (including non-borrowers) and the fraction of cohorts with any student debt for different family income categories. Average debt varies only slightly from income levels below \$25,000 through family incomes up to \$149,000.

The relatively constant level of student loan debt across most income levels stands in contrast to two clear differences by family income levels. First, the fraction of students with any loans falls rapidly as family income rises. Nearly 80% of students from families with income of \$25,000 or less take on some student loan debt before graduating, compared with 40% or fewer among students with family income above \$123,000. Second, there are clear differences by family income as to whether students or their parents are taking on the loan burden. Among families with incomes of \$49,000 or less, virtually all of the debt is borrowed by the students. In higher income families, a substantial fraction of the total educational debt is borrowed by the parents, through the federal PLUS loan program for parents of dependent undergraduate students. The different implications of student versus parental borrowing are not clear, but may be a potentially important distinction to make in monitoring future borrowing trends and considering their implications.

¹⁸ As reported in http://news.ucdavis.edu/search/printable_news.lasso?id=10696&table=news. See also <http://www.ed.gov/news/press-releases/default-rates-continue-rise-federal-student-loans> for information on default-rates nationwide.

Dependent Freshman Graduating from UCD in 2010-2011 by Family Income



Another area of potential concern involves borrowing by students who do not ultimately complete their degree. Even if loan burdens are manageable for students who earn a degree, there will always be some students who take out loans but do not complete their degree. Among UC Davis students who have not graduated within seven years of entering, approximately 59% have student loan debt and the average amount borrowed is approximately \$7,000.¹⁹ These students may face difficulties with repayment since they will not have the clear earnings advantage of a college degree. Many of these students leave UC Davis after a relatively short stay of one or two years, which likely explains their somewhat lower (though still substantial) debt levels. Given this, it may be worth considering whether there are feasible strategies that would shift the need for some borrowing out of the first year and into later years, when those students who remain may have a greater probability of successfully completing college.

¹⁹ These tabulations are based on cohorts entering as freshmen between 2002 and 2005. This is done to allow sufficient time to elapse after entry to see whether a degree will be obtained within 7 years.

Summary

Student loan borrowing is currently a sizeable piece of how many UC Davis students finance their education. Rates of borrowing and amounts borrowed have increased over time at UC Davis. Current debt levels of the vast majority of UC Davis graduates are in a range that many financial experts would view as manageable with payments for most likely to be less than 10% of their post-graduation income levels. Ultimately, judgments of what constitutes an appropriate level of borrowing will vary across students and their families.

An important role for UC Davis is to monitor student and parent borrowing and insure that students and families are well informed about the details of this borrowing. Additionally, the university should provide the best information possible about both the terms of student loans and the earnings of recent graduates, which can help provide important context for evaluating potential repayment concerns. All of these concerns may be particularly salient for lower-income students who borrow at higher rates, and for those students who are themselves—rather than their parents—the borrowers. Finally, it is important to monitor loan burdens for students who do not complete degrees and may not receive the earnings advantage of a college degree.