



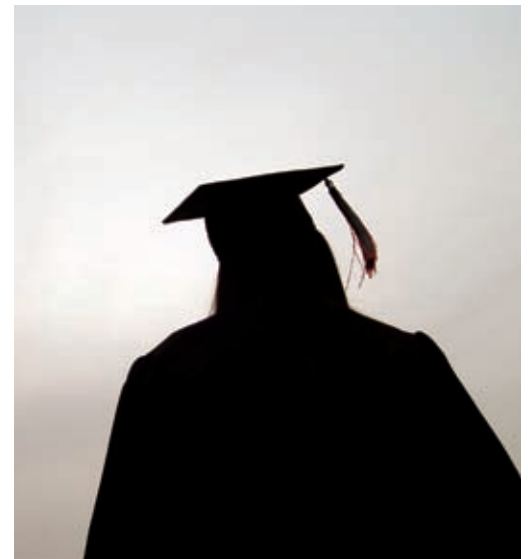
Closing the Gap

Meeting California's Need for College Graduates

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with contributions from Patrick Murphy

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SUMMARY

California is facing a serious shortfall in its supply of college-educated workers. Projections of the state's economy show that it is continuing along a trajectory of steadily increasing demand for a highly educated workforce. But the state is unlikely to meet this demand unless decisionmakers implement policies that effect substantial changes in college attendance and college graduation among the state's young adults. Two strong forces are already at work in constraining California's gradually increasing share of college graduates in the working population: the retirement of the large and relatively well-educated baby-boom cohort—adults born between 1946 and 1964—which will occur over the next 20 years, and demographic shifts toward groups that have historically low rates of college attendance and graduation. California will need to produce many more college graduates if it is to even partially meet its increasing economic demand for college graduates.

In this report, we project the size of the education skills gap in 2025 and identify scenarios that could help close the gap. If current trends persist, California will have one million fewer college graduates than it needs in 2025—only 35 percent of working-age adults will have a college degree in an economy that would otherwise require 41 percent of workers to have a college degree. We discuss three scenarios for improving this outlook: increasing college attendance rates, increasing transfer rates from community colleges to four-year institutions, and increasing graduation rates among four-year institutions. California was once a national leader in higher education. Today, it has much room for improvement. The state's direct

enrollment rate from high school into four-year colleges is among the lowest in the nation, and although students who transfer from community colleges to the University of California (UC) and California State University (CSU) have high success rates, transfer rates are very low. Although graduation rates at UC are impressive, only about half of CSU students earn a bachelor's degree within six years.

Relatively modest improvements in each of these educational pathways would dramatically reduce the education skills gap. For example, if the state were to gradually raise college attendance rates from the current levels of 56 percent to 61 percent by 2025, increase transfer rates by 20 percent over the next 15 years, and modestly improve CSU graduation rates, California could close about half of the projected education gap, adding more than 500,000 new college graduates to the state's population. These improvements in college attendance, transfer, and graduation are not without precedent. For example, at the national level, 61 percent of high school graduates in 2006 went directly to college. Within California, some of the state's community colleges have transfer rates that are twice as high as others with similar student populations. And in the past, CSU has experienced even stronger increases in rates of graduation.

Improving the educational attainment of California's young adults could yield a number of positive outcomes. It would not only enable those adults to succeed in California's increasingly high-skilled economy but would also benefit the state through increased tax revenues and the social and economic mobility that accompanies higher levels of education. Perhaps most important, higher educational attainment among the state's residents will foster greater economic growth. Because it is not likely that the state will be able to completely close the skills gap by increasing the number of college graduates, other forms of postsecondary training and workforce skills development are essential to the state's future.

State policymakers have a vital role to play in ensuring the future prosperity of this state, and the state's three public higher education systems are central to that prosperity. Together, those systems account for over 80 percent of higher education enrollment in California and three-fourths of all bachelor's degrees awarded annually. Currently planned reductions in funding to the state's colleges and universities will only exacerbate the skills gap. Without concerted effort to improve college attendance and graduation in California, the state's economic and fiscal futures will be much less bright. Even modest improvements in college attendance, transfer, and graduation rates have much to offer. It is incumbent on state legislators and decisionmakers in higher education to work together, planning and implementing strategies that will strengthen and revitalize the higher education system in California.

The full report and related resources
are available on the report's publication page:
www.ppic.org/main/publication.asp?i=835

The Need for More College Graduates

The primary focus and function of state and local public policy in California is education. Expenditures on education represent the largest source of state spending, constituting about half of the state's general fund expenditures. Almost one-third of state and local government employees are educators. More than ten million Californians are students, with 86 percent attending public institutions.¹ The state's commitment to education does not end with high school but extends to colleges and universities. California's Master Plan for Higher Education underscores the state's role as the primary provider of postsecondary education. The state's public system of higher education is the largest of its kind in the nation, consisting of three components—the California Community Colleges (CCC), CSU, and UC systems—serving 2.3 million students.² Another 360,000 students attend private colleges and universities.³

Despite these impressive numbers, California has fallen in rankings and now lags behind many other states in the production of college graduates. In 2006, California ranked 23rd among states in its share of 25- to 34-year-olds holding at least a bachelor's degree, down from eighth position in 1960. California colleges and universities, both public and private, award relatively few baccalaureates, given the size of the state's youth population: California ranked 43rd among states in the ratio of bachelor's degrees awarded in 2006 to high school diplomas awarded five years earlier. This situation is exacerbated by the fact that the state's economy is increasingly demanding more highly educated workers. Over the past 26 years, the share of college graduates in the state's workforce has increased from 25 percent to 34 percent (Reed, 2008), but projections suggest that the state's workforce demands will continue to increase and that 41 percent of jobs in 2025 will require a college degree. The severity of this situation becomes more apparent in the light of two shifting demographic trends: The relatively well-educated baby-boom cohort is now beginning to leave the workforce, and groups that histori-



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California lags behind many other states in the production of graduates.

cally have low rates of college completion are now entering the state's workforce population. Absent dramatic increases in college attendance and graduation, we project that only 37 percent of workers and 35 percent of all adults in California will have a college degree in 2025.⁴

The gap between the demands of California's economy and the supply of college-educated workers from the state's population represents a serious impediment to an economically successful future for the state. Less-educated adults have lower incomes, have lower labor force participation rates, and require more social services than do more highly educated adults. The National Center for Higher Education Management Systems projects that California's changing demography and low educational attainment levels among fast-growing groups will translate into substantial declines in per capita income between 2000 and 2020, placing California last among the 50 states in terms of change in per capita income (Kelly, 2005).

The potential skills shortage facing California is not unique. The United States, once the leading nation in college attendance and college graduation rates, has experienced only minimal increases in those rates over the past decade or more, whereas many other developed nations have experienced rapid gains and have caught up or even

surpassed levels of education reached by young adults in the United States. Indeed, the United States is the only nation in the Organisation for Economic Co-operation and Development (OECD) in which the share of adults with a postsecondary degree is lower among 25- to 34-year-olds than among 45- to 54-year-olds. Among the 30 developed nations in the OECD, the United States has a commanding lead in the percentage of 55- to 64-year-olds with a postsecondary education, but it ranks tied for seventh among younger, working-age adults (ages 25 to 34) with a postsecondary education.⁵

There is some disagreement regarding the “correct” level of college attendance and college graduation and whether increasing the number of college graduates is desirable. One concern is that increasing college attendance and graduation rates will diminish the importance of a college degree and will draw less-able students into college who will benefit only marginally from earning a degree. However, even as college graduation has become more common over the last couple of decades, economic returns to a college education have, in fact, increased. Wage premiums for college graduates are probably at record highs and are certainly at the highest level in decades in both California and the nation (Reed, 2008). Brand and Xie (2007) analyze economic returns to a college education by following several cohorts across time and find that individuals with the lowest propensity of completing college, identified as lower-performing students from disadvantaged socioeconomic backgrounds, actually benefit the most in terms of improved wages after they complete college.

Another concern is whether shortages will exist only in some occupations and industries and thus whether the state needs to encourage study in particular majors in its efforts to improve graduation rates. Aside from the difficulty of projecting the nature of the new skills that might be in demand in 2025 and the specific majors that might offer training in those skills, current research on the returns to a college education suggests although earnings do vary substantially with major, returns are high regardless of major.⁶ For example, Robst (2007), using the National Survey of College Graduates, finds that a large

Increasing demand for college graduates is a long-standing pattern in California and the nation.

share of college graduates work in occupations that are not a good match with their major (55% closely related, 25% somewhat related, 20% unrelated). But he also finds that working in an occupation that is not a good match with a student’s major is associated with only a moderate wage penalty (compared to college graduates with a good match) for those least matched (12%) and a very small wage penalty for those somewhat matched (2%). In contrast, the wage premium for college graduates compared to workers with only some college but no degree was over 40 percent in both California and the nation in 2005 (Johnson and Reed, 2007), far higher than any wage penalty associated with working in a job that does not match a college graduate’s major. Reed (2008) found that average hourly wages in 2006 for college graduates were over 80 percent higher than wages for high school graduates.

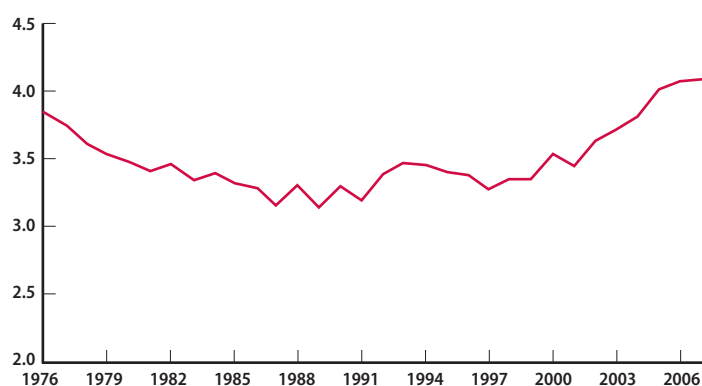
In this report, we use projections of the economic demand for college graduates as a benchmark or goal for increasing the supply of college graduates in California. We do not distinguish across majors, and we focus solely on baccalaureate degrees. Moreover, it is important to note that our *economic demand* projections are not radical departures from the past but instead represent continuations of past patterns. Increasing demand for college graduates relative to workers at other skill levels is a long-standing pattern in both California and the nation. However, our *demographic supply* projections for California do represent a more significant departure from past patterns. We project a continuing increase in educational attainment, including an increase in the share of college graduates, but we project more modest increases in the future for two primary reasons. First, the baby-boom cohort is a relatively large, well-educated cohort that will be exit-

ing the labor force in large numbers over the next couple of decades; in the past, smaller and less-educated older cohorts were replaced in the labor force by younger, larger, and better-educated cohorts. The retirement of baby-boomers will be the first time that the United States and California have experienced the labor force departure of so many college graduates. Second, California's young adult population is increasingly composed of groups, particularly Latinos, that historically have relatively low levels of educational attainment. Although we see strong intergenerational progress in educational attainment among Latinos, rates of college attendance and especially college graduation remain fairly low, even within the second generation. According to a 2004 college eligibility study by the California Postsecondary Education Commission (CPEC), Latino high school graduates' eligibility at CSU grew from 13 percent in 1996 to 23 percent in 2003, and their eligibility at UC grew from 4 percent to 7 percent. However, these eligibility rates are significantly lower than the rates of other racial/ethnic groups and exclude students who did not graduate from high school.

Although California has fallen behind many other states, the number of college graduates produced by the state's public and private universities has kept pace with the state's population growth over the past several decades. The number of bachelor's degrees awarded annually climbed from 83,000 in 1977 to 153,000 in 2007, an increase of 84 percent. This percentage increase in the number of bachelor's degrees awarded is somewhat greater than the percentage growth in the state's population over the same period (69%).⁷ The number of bachelor's degrees awarded per thousand state residents declined from the mid-1970s to the late 1980s but has risen since then (Figure 1). These fluctuations reflect changes in the age structure of the population and changes in college attendance and graduation rates. The most recent increases coincide with considerable growth in the population of young adults as large numbers of children of the baby-boomers enter their prime college-going years.

In the following sections, we first project the number of baccalaureates that would be needed to close, or at least

Figure 1. Bachelor's degrees awarded per thousand state residents, 1976–2007



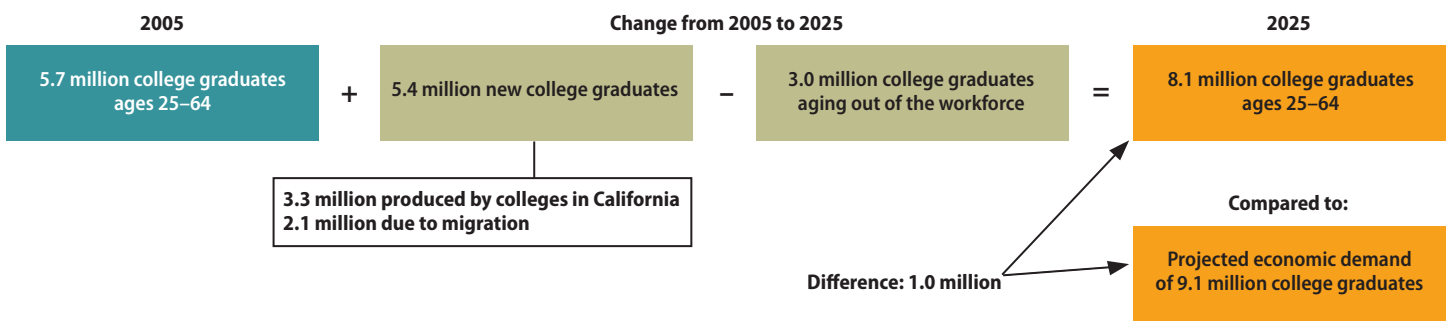
SOURCE: Authors' calculations based on CPEC and Department of Finance data.

partially close, the education skills gap. We then describe three pathways for arriving at this goal: increasing college attendance, increasing transfer rates from community colleges to four-year universities, and increasing graduation rates at four-year universities. Working with these three pathways, we create two scenarios for closing or partially closing California's education skills gap by 2025, and we then conclude the report with a discussion of the policy implications of our findings.

How Many Graduates Will California Need?

If past trends continue, we project that California's economy will demand almost one million more college graduates in 2025 than is likely to be supplied by the state's population (Figure 2).⁹ The state's public institutions currently produce slightly over 110,000 baccalaureates each year, and private institutions account for another 40,000 (see the text box, "The Role of Private Institutions"). Altogether, the colleges and universities in California would need to increase the production of baccalaureates by almost 60,000 per year (about 40% above current levels) to meet projected economic demand by 2025. This is a daunting task, of course, and in the near term very unlikely to be achieved.

Figure 2. Projected supply of college graduates compared to demand, 2005 and 2025



The Role of Private Institutions

Public universities account for the vast majority of degrees awarded in California (about three of every four in 2007). Among the 15 most populous states, California has the lowest share of undergraduate students enrolled in private institutions (16%).⁸ Nonetheless, enrollment in private universities has increased dramatically over the past 30 years. And in the past ten years, growth has been particularly strong in state-approved private colleges that are *not* accredited by the Western Association of Schools and Colleges. These are generally for-profit colleges such as the University of Phoenix, the largest private college in California, with an enrollment of more than 140,000 students across the state, making it the fourth largest college system in the state after the community colleges, CSU, and UC.

The growth of for-profit colleges is undoubtedly a response to flexible schedules, online courses, and the marketing efforts of these schools. The lack of reliable data about student outcomes, including completion rates but also labor market outcomes, makes it difficult to evaluate what, if any, the state's role should be in encouraging growth in this sector. Perhaps the greatest value of the for-profit sector is the example it provides to public sector systems on how to find new students and encourage college attendance.

The more traditional private institutions have generally grown at a pace similar to that of the state's public institutions. With the exceptions of the University of Southern California and Stanford University, these universities and colleges tend to be quite small.

It is likely that state efforts to increase college attendance and college graduation will focus on the state's public institutions and will therefore have smaller effects on the state's private colleges.

As we noted above, the projected skills gap is driven primarily by shifts in population trends rather than by changes in economic trends. Our economic projections represent continuations of long-standing trends in California. For example, from 1990 to 2006, the share of workers with a college degree increased from 25 to 34 percent; our projections indicate that this trend will continue at about the same pace, so that by 2025, 41 percent of workers will need to hold a college degree if the workforce is to meet the demands of the California economy. This projected increase will occur partly as the state's economy shifts to occupations and industries that require more highly educated workers but also as employers demand more highly educated workers *within* industries and occupations (Reed, 2008). Historic increases in the share of college graduates in the workforce have been accompanied by wage premiums that increase more for college graduates than for less-educated workers—an indication that even in the past, increases in the number of highly educated workers have not kept pace with economic demand. In 1980, a male worker with a college degree earned 39 percent more than a similar worker with only a high school diploma, and by 2006, the difference had increased to 86 percent (Reed, 2008). College-educated women in the workforce received similar wage premiums.

If we look at the other side of the equation, we see that population projections indicate a continuing increase in the share of adults with a college degree, but the increase

will be dampened by two demographic shifts. First and most important, large numbers of relatively well-educated baby-boomers will reach retirement age and leave the workforce over the next couple of decades. In 2006, adults between the ages of 55 and 59 were the best-educated cohort in California, with 35 percent having earned at least a bachelor's degree; in comparison, only 27 percent of 25- to 29-year-olds were as highly educated. The second significant demographic event is that California's population is shifting toward groups, most notably Latinos, that historically have relatively low college attendance and graduation rates. Latinos currently make up just over a third of all Californians and are expected to constitute 43 percent of the state's population by 2025.

Options for Increasing the Number of College Graduates

California can increase its production of baccalaureates through several different but related pathways. One option is to increase enrollment in all three components of the higher education system—the state's community colleges, California State University, and the University of California. Adding more students to the system will, all else being equal, lead to an increase in the production of bachelor's degrees. However, this is a rather blunt and fiscally expensive approach. A second option would be to increase the transfer rates from community colleges to four-year colleges and universities, which would also lead to more college graduates. Although there is some debate about how to measure transfer rates, almost everyone involved in higher education in California agrees that the current rates are lower than they could be. Finally, improvements in completion rates for students already enrolled in four-year colleges and universities would obviously lead to an increase in the number of bachelor's degrees awarded in California. This pathway seems the most promising fiscally, but it may not be sufficient to entirely close the skills gap. It is important to note that these pathways are not mutually exclusive, nor are they equivalent fiscally.

Delays in increasing the production of college graduates will both exacerbate the shortage in the near term and make it more difficult to close the gap in the long run.

However, if the state is to achieve meaningful progress in increasing the number of college graduates, all three pathways must be involved.

Delays in increasing the production of college graduates will both exacerbate the shortage in the near term and make it more difficult to close the gap in the long run. For example, if the number of bachelor's degrees awarded by California's colleges and universities were to increase immediately and consistently beginning with the 2010 graduating class, the annual increase in baccalaureates needed to close the projected skills gap would be only half the number required if improvements were delayed until 2018.

In the following sections, we discuss each pathway in more detail, highlighting past trends and identifying specific rates and levels of increases that would be necessary to reach specific baccalaureate production goals. We then provide two scenarios for increasing the number of college graduates produced in the state and also discuss fiscal considerations. Although it is not our intent to develop a precise estimate of the costs of the alternative pathways and levels of effort, we do want to provide a general sense of the comparative costs of each approach.

Increasing Transfer Rates from Community Colleges

California's community college system is unique in the nation, both in its size and also in its relatively open access and low student fees. With 1.6 million students in 2007, California's community colleges are the largest higher education system in the nation. Among the 50 states, California ranks fifth in the percentage of college students enrolled in community colleges (58%), surpassed only by Washington (63%), Wyoming (62%), New Mexico (61%),



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Only 10 to 12 percent of an entering class of community college students transfer to a four-year institution.

and Mississippi (61%); the national average is 40 percent.¹⁰ And despite recent increases, California's community college fees are the lowest in the nation.

California's community colleges serve many missions (academic preparation for transfer to four-year colleges, workforce training, basic skills education, and personal enrichment and lifelong learning), with the transfer function emphasized in the state's tripartite Master Plan for Higher Education. In the Master Plan, community colleges serve as an entry point for lower-division education, allowing the CSU and UC systems to focus on upper-division education. To a certain extent, the system fulfills this function: According to the California Community College Chancellor's Office (CCCCO), 55 percent of all CSU baccalaureates and 28 percent of all UC baccalaureates awarded in 2007 started as community college students. However, the vast majority of students who enter community colleges do not transfer to a four-year institution. Only about 10 to 12 percent of a cohort, or entering class, of community college students transfer to a four-year college or university (Sengupta and Jepsen, 2006). Of course, many community college students do not intend to transfer to a four-year institution; they are interested in the college's other services, as stated in the Master Plan—an associate's degree, remedial education, workforce training, career-technical certification, instruction in English as a second language, adult noncredit education, or community service courses.

Researchers use numerous methods to measure historical trends in transfer rates from community colleges to four-year institutions. Unlike at UC and CSU, where nearly all undergraduate students intend to earn a bachelor's degree, students in community colleges have many different goals in mind. Thus, it is difficult to measure any type of transfer rate without making assumptions about who should be included in the pool of students. A previous PPIC study defined a transfer-seeking student as one who enrolled in a majority of transfer-level courses in his or her first year at community college (Sengupta and Jepsen, 2006). Of these students who entered the CCC system in 1997–98, about 26 percent transferred to a four-year institution. The California Postsecondary Education Commission developed a different definition of transfer student. The commission examined the fall 2000 cohort of students who took courses for credit and found that about 22 percent transferred to a CSU or UC campus (CPEC, 2007a). Driscoll (2007) found that 32.5 percent of the 1998 entering cohort of first-time community college students between the ages of 17 and 20 transferred to a four-year institution. The CSU Institute for Higher Education Leadership and Policy used yet another definition of a transfer-seeking student—based on age, degree goals, and course-taking—and found a transfer rate of 26 percent (Shulock and Moore, 2007). In sum, most sources find the CCC system transfer rate to be between 20 and 30 percent.

To compare the transfer function over time without making any assumptions about which students are considered part of the transfer cohort, we looked at transfer counts to CSU and UC per 1,000 full-time-equivalent students (FTES) in the community colleges. Specifically, we used the four-year average of full-time-equivalent (FTE) enrollment for the years preceding the year of transfer. The four-year average FTE figure gives a metric that is comparable over time but does not make assumptions about students' reasons for attending community college. We use the average over four years because students spend, on average, four years in the community college system before transferring.¹¹ Altogether, almost 100,000 students transferred to four-year institutions in 2006–07 (70,000

of whom transferred to CSU or UC). Several thousand other students met the minimum requirements set by the Chancellor's Office to become transfer-eligible but did not transfer to a four-year institution (Horn and Lew, 2007). Some community colleges, particularly those with more-advantaged students, have much higher transfer rates than others. The Chancellor's Office of the California Community Colleges groups colleges into six peer groups on the basis of the demographic and socioeconomic composition of the student and neighborhood population. However, even within each of the six peer groups, transfer rates differ substantially. Because of the sheer size of the community college system, relatively small changes in transfer rates could significantly affect community college student enrollment and graduation rates from four-year colleges. If each racial/ethnic group in each college were to increase its transfer rate to match the average for all colleges in its

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racial and peer group (and colleges with transfer rates at or above the average for their racial and peer group were to maintain their current transfer rates), then the total number of transfers would increase by 8 percent. Alternatively, if each racial/ethnic group in each college were to increase its transfer rate to half that of the two top colleges within its peer group (and colleges with the highest transfer rates in their racial and peer group were to maintain their transfer rates), then the transfer rate would increase by 33 percent. Because transfer students have high graduation rates once they reach UC or CSU, the increase in baccalaureate production could be substantial (although we might expect some fall-off in completion rates because the additional transfer students might not be as proficient as the very select group that currently succeeds in transferring).

Several factors impede community college students' ability to transfer, resulting in low transfer rates throughout the state. Because of its open access policy, which allows anyone who can benefit from instruction to attend, the California community college system enrolls many students who are academically underprepared for college-level work. As a result, many community college students are encouraged to enroll in remedial or basic skills education before undertaking transfer-level coursework. Of course, if the academic outcomes and graduation rates of high school students were to improve, the share of students needing remedial education would decline. A 2008 report from the Legislative Analyst's Office (LAO) finds that more than 600,000 community college students received remedial instruction in 2006–07 (Hill, 2008). This report also finds that half of the students who enroll in remedial courses for credit do not persist in this coursework through the following school year and that only 60 percent of students who enroll for credit in basic skills classes successfully pass remedial English courses, and only 50 percent pass remedial math courses. The percentage of students that pass the entire basic skills sequence is much lower. To improve completion rates in remedial coursework and eventually transfer rates to four-year institutions, the LAO recommends assessing student college readiness in high school, creating a statewide CCC placement test, requiring that unprepared students enroll immediately in basic skills courses, and providing better combinations of classroom instruction and counseling for remedial students. In September 2008, the California Legislature passed Senate Bill (SB) 946 (Scott), which establishes a voluntary CCC Early Assessment Program (EAP) college-readiness test based on the EAP program at CSU (discussed below).

Along with remedial coursework, part-time enrollment and working while in school can prolong the number of terms community college students need to attend to become transfer-eligible, thus allowing more chance for attrition. Almost 80 percent of community college students work, and one study found that two-thirds of students are enrolled only part-time, taking fewer than 12 units each term (Shulock and Moore, 2007). Additionally, many

students are first-generation college students who generally do not have high levels of familiarity with the higher education systems. The transfer process involves navigating both the community college and the receiving four-year institution as well as knowing course articulations and requirements for transfers into specific majors. All of these factors stand as impediments for a large share of community college students. Indeed, in a report published by Policy Analysis for California Education, in one cohort of

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young adult high school graduates enrolled in community college *with the goal of transferring*, 25 percent of students did not return for the spring semester after completing the fall semester, and of these students, only one-third re-enrolled in the following fall semester (Driscoll, 2007).

Community colleges and other stakeholders have been actively working to improve student success and transfer rates through several innovative programs. Efforts to improve information on course alignment between community colleges and four-year colleges include “ASSIST,” an online system that allows community college students to identify courses that can be used to transfer to UC or CSU campuses. The “Transfer Leadership Center,” a joint effort by the Community College Chancellor’s Office, the Research and Planning Group for California Community Colleges, and the California Partnership for Achieving Student Success, has identified transfer-promoting practices in its case studies of community colleges that have high transfer rates. Those practices include strong relationships with high schools and four-year colleges, as well as effective support systems and the development of a culture that encourages transfer (Serban, 2008). One intensive support program is

the Puente Project, a well-established intervention cosponsored by the community colleges and the University of California. This project, which has been active for 25 years, provides guidance to high school and community college instructors and counselors in implementing a program of innovative teaching, directed academic counseling, and mentoring by professional members of the community for underserved students whose goal is to transfer from a community college to a four-year institution. Puente programs are active in 59 community colleges and offer services to 14,000 students in California (Puente Project, 2008).

CSU’s Early Assessment Program is another intervention used to measure and improve the college readiness of prospective community college students. Established in 2004 as a partnership between CSU, the California Department of Education, and the State Board of Education, the program was originally designed to give entering 12th grade students better information on their academic preparedness for CSU-level coursework. Through CSU’s EAP, students have the option to take augmented versions of the 11th grade California Standards Test (CST) and receive feedback on their current academic level. In addition, the program provides assistance and extra coursework for 12th graders underprepared for CSU coursework.¹² As noted above, SB 946 allows for the augmented CST to be used for prospective community college students and also allows modification of scoring to measure academic preparedness for community colleges rather than CSU (CCCCO, 2008). Additionally, the bill authorizes the California Community College Chancellor’s Office (in cooperation with the CSU EAP) to assist 12th graders so that more high school graduates enter the CCC system academically prepared.

Through its annual Practices with Promise report, the Campaign for College Opportunity has documented many campus-level working solutions for fostering student success (Campaign for College Opportunity, 2008). For example, the English department at Sierra College established a single departmental final exam for a basic skills English course to help improve the quality of its remedial English curriculum. This final exam addressed concerns that the curriculum was not aligned in multiple sections and that many students were

enrolling in transfer-level English courses without the necessary writing skills. The departmental exam now ensures that all students who move from remedial to college-level English have a certain level of writing skill. Since the development of this exam in 2000, course completion and persistence have improved substantially at Sierra College. The Practices with Promise report also covers other programs that increase student success through improved access and participation and institutional efficiency.

As a pathway for increasing the number of bachelor degree graduates in California, the community college transfer function has much potential and also considerable room for improvement. With more than 70 percent of public higher education students in California in community colleges, the importance of the transfer function to increase bachelor degree production cannot be overstated. Although not all students in community colleges enroll to eventually earn a baccalaureate, a large percentage of them are working toward this goal. State policies affecting community colleges, through either fiscal incentives or accountability measures, could be revised to further encourage transfer to four-year institutions. For example, the state's contributions per FTE at community colleges are relatively small, and resource limitations are cited by the colleges as one hindrance to improving transfer outcomes.

Increasing Graduation Rates at UC and CSU

The UC and CSU systems are the primary grantors of bachelor's degrees in California. In 2007, almost three of every four baccalaureate degrees awarded in California were awarded through these universities. Although the UC system enrolls far fewer undergraduate students than the CSU system (in 2007, UC had less than half as many undergraduates as CSU, 167,000 versus 349,000, including part-time students), the UC system produces about 60 percent as many baccalaureates (42,000 versus 71,000 in 2007). This is primarily due to the substantially higher completion rates at the University of California. About four of every five UC students who enter as freshmen graduate within six years, compared to only about half of CSU students. Differences in completion rates are not

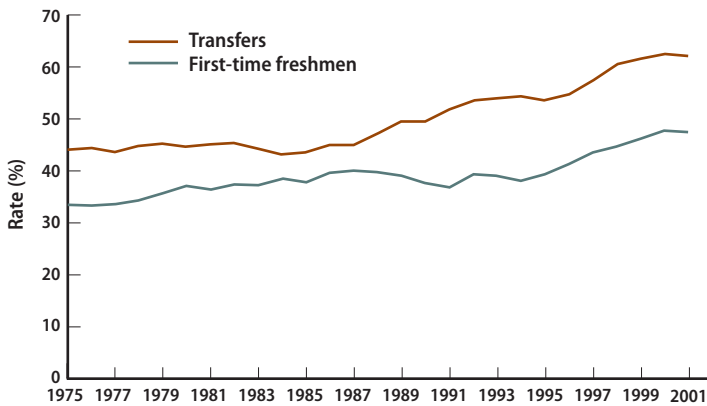
necessarily a reflection of greater effectiveness at UC than CSU but rather indicate, at least to some degree, better prepared students and more resources on the part of both the students and the university. According to the LAO, more than half of CSU's admitted freshmen are unprepared for college-level writing or math (Hill, 2008).

As might be expected, graduation rates differ by ethnicity, gender, student type (new first-year student versus transfer student), and university system. Six-year graduation rates for students who entered UC as full-time freshmen range from 61 percent for black males to 87 percent for Asian females.¹³ In the CSU system, six-year graduation rates range from 31 percent for blacks to 53 percent for whites. Transfer students from community colleges have higher graduation rates at UC and CSU because they enter those systems as juniors (or sophomores) and thus have fewer units and years left in which to complete their coursework than incoming freshmen. Completion rates for transfer students are similar to those of other UC and CSU students at the same class level.

The relatively high graduation rates for the UC system imply that there is not much room for improvement and that the magnitude of any improvements will be small, relative to the size of the education gap. For example, even if the graduation rate for all incoming freshmen increased to 90 percent and for all transfer students increased to 95 percent, the system would produce only 11 percent more baccalaureates each year. This would amount to only about 5,500 additional baccalaureates awarded by the UC system over a baseline level of 50,400 in 2025.¹⁴

The lower graduation rates at CSU do leave substantial room for improvement. The CSU system has recognized the problem and has made strong progress in the past 20 years (Figure 3), but even so, only about half of CSU freshmen graduate within six years. Further improvement in completion rates at CSU could lead to dramatic gains in the production of baccalaureates in California. For example, if CSU graduation rates (by ethnic group and transfer status) were to increase to three-fourths of current UC levels from 2009 to 2025, the total number of additional baccalaureates would reach 44,000 in 2025, with an accumulated addition over the entire period of about

Figure 3. Historical six-year graduation rates at CSU, 1975–2001



NOTE: Transfers typically enter CSU campuses as either sophomores or juniors.

400,000 bachelor's degrees. Improvements in K–12 preparation, particularly in math, would lead to less remediation and higher rates of persistence. If it works as hoped, CSU's early assessment program will lead to higher graduation rates. Although not completely closing the education skills gap, such an increase would narrow it considerably.

Improving graduation rates is an attractive policy option for several reasons. First, these students are already enrolled in the state's public universities, so the difficulties and obstacles that prevent high school and community college students from being eligible and enrolling in the CSU and UC systems have already been overcome.¹⁵ Second, the state has already invested in these students by subsidizing their postsecondary education and, with a bit more investment, could realize the full benefits of having produced a college graduate. Finally, the additional investment required to “finish the job” is much lower than the costs associated with any of the other pathways (discussed below).

Why do students drop out of the state's public universities? After all, students who have successfully reached one of California's public universities are in the top one-third of California's high school graduates or, if transfer students, are among the relatively few who have been able to successfully navigate course requirements and sustain the academic performance required to reach eligibility for UC or CSU from a community college.¹⁶ And although student

fees have risen substantially at the state's public universities, they remain lower in California than in public systems in many other states and are far lower than those of private colleges, although factoring in the cost of living does substantially increase total student costs.

Research on persistence and completion suggests that college costs are an impediment to both college attendance and college graduation but that the burden may be alleviated to some degree by financial assistance. Bettinger (2004) finds that receipt of Pell Grants leads to greater persistence,¹⁷ and Dynarski (2005) estimates that large state merit aid programs in Georgia and Arkansas increase graduation rates by 5–11 percent. However, Dynarski also notes that even with improved aid programs, large shares of students continue to drop out. A concomitant problem is that increasing costs in the form of fees, living expenses, and other education costs have led many college students, especially those at CSU, to work while attending school—a factor associated with lower persistence (CPEC, 2006). California's CalGrant program provides aid for low-income students who meet certain academic criteria and can cover the costs of tuition or fees as well as some other expenses.

Many of those who drop out of college, of course, do so because they are not succeeding academically. According to Dynarski (2005), “more than tuition reduction will be necessary in order to substantially increase the stock of college-educated labor. Candidate mechanisms are better preparation in elementary and secondary school, more intensive institutional supports in college, and funding that extends beyond direct costs to opportunity costs” (p. 37). Impressive gains in graduation rates at CSU over the past 20 years demonstrate that well-considered improvements in the system can lead to productive results. Assessing and addressing students' needs, both academically and financially, are key elements in developing such interventions.

Increasing College Enrollment at All Levels

One approach to increasing baccalaureate production is to simply increase the number of students in all of the state's higher education systems. Increasing college attendance rates by young adults in general, and by recent high

school graduates in particular, would eventually lead to an increase in the number of bachelor's degrees awarded in California as more students traveled through the system.

Certainly there is room for improvement in college enrollment among California's high school graduates. The share who directly enroll at baccalaureate-granting colleges and universities is lower in California than in other states. In 2004, California ranked 19th among the 20 most populated states, with only 26 percent of high school graduates going directly to four-year colleges. Only Arizona ranked below California, and in four states (Indiana, Massachusetts, New York, and Pennsylvania), direct college-going rates approached 50 percent (CPEC, 2007b). In Texas, the second most populous state and one with a

High school students who go directly to UC have the greatest likelihood of earning a degree.

large Latino population, 31 percent of high school students went directly to four-year colleges. Community colleges play a larger role in California than in most other states, but including community colleges in the calculation still leaves California near the bottom in college enrollment rates (Table 1).

Ironically, California's large community college system is also a factor in the state's low attendance rate at baccalaureate-granting institutions. In 2004, 30 percent of California high school graduates enrolled directly in community colleges. However, even including high school graduates who go to community colleges, California ranks 40th among the 50 states in college attendance rates. Only 56 percent of California's high school graduates go on to *any* college the following year, compared to the national average of 62 percent and rates exceeding 70 percent in New York and Massachusetts (National Center for Public Policy and Higher Education, 2008). Within California, college attendance rates at UC and CSU are especially low among high school graduates from rural counties. How-

ever, representative rates in some of the more-populated counties of the San Joaquin Valley are also low, and even below average in the Inland Empire.

An assessment of high school outcomes is beyond the scope of this report, but it is important to note that increases in academic performance and high school graduation rates might also lead to increased numbers of students eligible for college. California's high school dropout rate is estimated by the Department of Education to be 24 percent. (Although there is some debate about the accuracy of the measure, statewide longitudinal data are, for the first time, available to calculate the rate.) Reducing the high school dropout rate by half would result in about 60,000 more high school graduates each year, on average, in California between now and 2025. Of course, students who struggle to finish high school would be the least likely to enroll and succeed in college. Improvements in academic performance and college readiness of high school students who are on the margins of pursuing a college education could have a more important effect on college enrollment and completion.

The total number of high school graduates in California is projected to peak in 2008–09, with the 2009 graduating class 50 percent larger than the 1996 class. Subsequent graduating classes will be slightly smaller through 2019, but will then begin to increase again. Nonetheless, the annual number of high school graduates is projected to remain at or slightly above 400,000 each year through 2025, and thus small improvements in college enrollment rates among graduating high school students would contribute to considerable improvements in the total number of students enrolled in college and working toward a bachelor's degree. For example, bringing California's college attendance rate up to the national average would increase the number of college degrees awarded in 2025 by almost 20,000 (assuming similar rates of completion as achieved by college students in other states).

High school students who go directly to UC have the greatest likelihood of earning a degree, and UC is projecting a very slight increase in the share of high school students it will admit (University of California Office of the

Table 1. College enrollment rates in the 20 largest states, 2006

Eventual enrollment rate in college by age 19 among ninth graders			Direct college enrollment rate of high school graduates		
	Percentage enrolling	Rank		Percentage enrolling	Rank
Nation	41.8		Nation	61.6	
Minnesota	58.2	1	New York	74.4	1
New Jersey	57.2	2	Massachusetts	71.7	2
Massachusetts	53.6	3	New Jersey	69.6	3
Wisconsin	49.8	4	Minnesota	68.4	4
Pennsylvania	48.7	5	Georgia	68.2	5
Maryland	48.2	6	Virginia	67.2	6
Virginia	45.9	7	Maryland	65.6	7
Illinois	45.4	8	North Carolina	65.6	8
Ohio	44.6	9	Michigan	65.2	9
New York	44.4	10	Tennessee	63.5	10
Indiana	44.3	11	Indiana	63.4	11
Missouri	44.0	12	Pennsylvania	62.1	12
North Carolina	42.7	13	Wisconsin	61.2	13
Michigan	42.5	14	Illinois	60.7	14
Tennessee	42.5	15	Florida	60.2	15
Georgia	38.1	16	Ohio	60.0	16
California	36.3	17	Missouri	57.1	17
Texas	35.4	18	California	55.8	18
Washington	33.0	19	Texas	55.2	19
Florida	32.4	20	Washington	48.0	20

SOURCE: National Center for Higher Education Management Systems.

President [UCOP], 2009). Historically, however, both UC and CSU have increased their eligibility requirements to keep the share of high school graduates eligible for either public system at Master Plan levels. In 2003, 14.4 percent of high school graduates were eligible for UC. In 2007, 13.4 percent were eligible (according to CPEC estimates), slightly higher than the Master Plan level of 12.5 percent. The decline in eligibility over this four-year period was not the result of a deterioration in student qualifications but was an intended consequence of UC measures to restrict eligibility. Those measures, adopted after 2003, include requiring a higher grade point average along with more stringent rules about how to calculate it (CPEC, 2008).

In a similar vein, CSU added course requirements for high school students in 2003, including additional years of history, social science, and laboratory science. CSU eligibility in 2007 stood right at the Master Plan level, with 32.7 percent of high school graduates eligible for enrollment in the CSU system. Were it not for the more-stringent eligibility requirements at both UC and CSU, as well as the California High School Exit Exam, which has restricted the pool of high school graduates in recent years, increasing numbers of high school students would be eligible for UC and CSU.

Of course, not all college students are young adults who enter college directly from high school. Many enter at

older ages and still more return to *complete* college at older ages. Among freshmen at community colleges in 2007, 36 percent were age 25 or older and 19 percent age 30 or older. At UC and CSU, only about 1 percent of freshmen were age 25 or older. However, some students leave the UC and CSU systems and eventually return as older students, and other older students transfer from the community colleges to UC and CSU. Older students represent a substantial share of seniors at CSU. In 2007, two of every five seniors at CSU were at least 25 years old, and 17 percent were age 30 or older. UC students, in contrast, are typically much younger: Only 11 percent of seniors in 2007 were age 25 or older, and just 3 percent were age 30 or older. College attendance among older adults is generally less promising than among younger adults, at least in terms of economic returns. Older students are less likely to complete college, and the benefits in terms of improved economic outcomes will be smaller, both for the individual and for the state, since older students are likely to be employed for fewer years.

Research shows that tuition costs and parental education can substantially influence trends in college attendance (Kane, 1994). Because California has such a large share of children from relatively poor families and with parents who do not have any college experience,¹⁸ providing information about pathways to college before a child starts high school can be an important and relatively inexpensive way to encourage college attendance. In 2008, the legislature passed and the governor signed SB 890, establishing an “Early College Commitment” program. The program is designed to provide low-income students and their parents with a roadmap to college. Students and their parents sign a pledge to meet certain academic requirements; in return, students are “guaranteed” a spot in college with tuition assistance if their incomes warrant. The tuition assistance is really nothing more than the financial aid already available to low-income students; hence, the program is more of an informational than a financial intervention designed to set children on a pathway to college. California’s program is modeled after Indiana’s “Twenty-First Century Scholars Program,” a statewide

early college commitment program developed in 1990 and targeted at low-income students. Evaluations of Indiana’s program show that eighth grade students who enroll in the program are much more likely than other students to enter college (85% versus 56%). Controlling for a host of other factors, including college intentions, participants in the program were 4.4 times more likely to enroll in a public four-year college, 6.4 times more likely to enroll in a two-year college, and 6.1 times more likely to enroll in a private college in Indiana. Scholarships provided to the students were associated with higher persistence in college (St. John et al., 2002).¹⁹

The costs of attending college represent a serious impediment for many families. Fees at UC and CSU have increased much faster than inflation over the past several decades. They are lower than at many public institutions in other states and make up less than one-third of total costs of attending a CSU or UC campus. But it is not simply the fees at California’s public colleges and universities; the cost of room and board as well as other education-related expenses also present a hardship for less-advantaged families. Total expenses for students who live on campus are about \$25,000 per year at most UC campuses and about \$20,000 at most CSU campuses.



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Total expenses for students who live on campus are about \$25,000 per year at most UC campuses.

The California Postsecondary Education Commission reports that fees relative to family incomes have risen substantially over the past several decades, making college more difficult to afford (CPEC, 2008). In a recent PPIC survey of Californians, more than half of all parents with children age 18 or younger said that the lack of affordability in the state’s public colleges and universities was a “big problem,” almost three-fourths felt that students need to borrow too much to pay for their college education, and only 26 percent of parents said they were doing a good job of saving for their children’s college education (Baldassare et al., 2008). California’s CalGrant program has been shown to boost college attendance rates. Among students who file for financial aid, receipt of a CalGrant raises the probability of attending college by 3 to 4 percentage points and leads to a greater likelihood of choosing a private four-year university (Kane, 2003).²⁰ In light of California’s current fiscal situation and impending increases in systemwide student fees, UC President Mark Yudof, in January 2009, proposed a “Blue and Gold Opportunity Plan” designed to increase grants and scholarships to Californian residents with incomes below the state’s household annual median of \$60,000 (UCOP, 2009). The goal of the plan is to encourage more low-income students to apply to UC and to make the financial aid process more transparent. If the program is approved, students accepted to UC with family incomes below \$60,000 would receive grant money to cover their fees and those with family incomes between \$60,000 and \$100,000 would receive grants to cover at least half of the increase in fees. Many students would also be eligible to receive additional grants to cover the costs of textbooks, housing, food, and transportation.

Scenarios for Increasing Production of Baccalaureates

Working within our three pathways—first-time college attendance, transfers from community colleges, and completion at UC and CSU—we create two scenarios for closing, or partially closing, California’s education skills gap by 2025. We compare these scenarios to a baseline

scenario that assumes that current postsecondary trends will continue (Table 2; see also Technical Appendix A for a discussion of the development and assumptions of the scenarios and Technical Appendix B for annual projections). The baseline scenario is consistent with current enrollment projections for the state’s higher education systems. The moderate improvement scenario eliminates about half of the projected skills gap, and the ambitious scenario completely closes the gap. Both scenarios will require actions by state policymakers, and the sooner the actions are undertaken, the greater the chance of success.

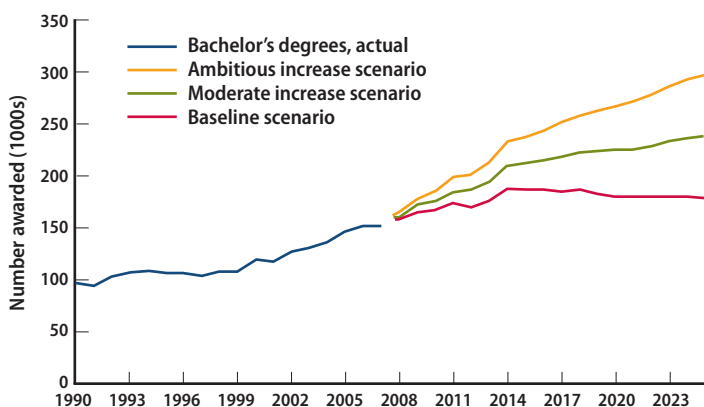
The ambitious scenario is not achievable without substantial increases in state investments in all aspects of education, including primary and secondary education as well as postsecondary education. Because it would require dramatic changes in all three pathways, the ambitious scenario is not likely to be achieved, and we present it primarily to show what would have to be done to close the gap entirely. In contrast, the moderate pathway requires improvements that we believe are possible, given the current experiences of other states or of certain groups or campuses within California. It is important to note that data collection and assessment will be a key requirement of any new policy initiative. The state currently lacks sufficient information with which to guide funding designed to increase the number of college graduates produced in the state.

The two scenarios we develop would lead to large increases in the number of baccalaureates over our baseline scenario (Figure 4). The baseline scenario projections are based on a continuation of current trends and policies. The number of bachelor’s degrees awarded each year in the state increases until 2014 as the large cohorts—known as Tidal Wave II in the higher education community and as the echo of the baby boom to demographers—reach the prime ages of graduation from college. Declines from 2014 to 2025 occur as the number of high school graduates declines (the smaller and younger cohorts of the children of the baby bust replace the older and larger cohorts of the children of the baby boom) and as the population of young adults continues to shift to groups that traditionally have lower college attendance and graduation rates.

Table 2. Scenarios and projected levels of bachelor’s degrees awarded

Scenario	Description	Level
Baseline	College enrollment and graduation rates remain unchanged from current levels	Number of bachelor’s degrees increases 30,000 per year by 2025 to accommodate a 20 percent increase in population
Moderate increase	College enrollment, transfer, and graduation rates increase substantially; direct enrollment rates from high school increase from 55% to 61%; transfer rates increase by 22%; CSU graduation rates increase from about 50% to 62%	Number of bachelor’s degrees from 2008 to 2025 increases 30,000 per year on average over baseline levels to substantially narrow the gap; total increase is 547,000
Ambitious increase	College enrollment, transfer, and graduation rates completely close the gap between economic demand and population supply; direct enrollment rates from high school increase from 55% to 65%; transfer rates increase by one-third; CSU graduation rates increase from about 50% to 69%	Number of bachelor’s degrees from 2008 to 2025 increases 60,000 per year on average over baseline levels to close the gap; total increase is 1,066,000

Figure 4. Bachelor’s degrees awarded, historically and projected, by scenario, 1990–2025



SOURCE: Authors’ projections; see Technical Appendix B.

The moderate increase scenario represents just one combination of changes in college attendance, transfer, and graduation that would close half of the projected education skills gap. The specific combination of improvements we present are somewhat subjective, although we attempt to base the improvements on an empirical record of what is achievable. Specifically, we first assume that the college attendance rates of high school graduates going directly to either four-year universities or community colleges in

California increase from the current rate of 55 percent to 61 percent by 2025. This scenario is somewhat modest in that it would raise California’s college attendance rate to the current average level observed in the rest of the nation. Second, we assume that transfer rates increase by 22 percent over current rates by 2025. An increase of this magnitude means that the current gap in transfer rates between low-performing community colleges and colleges with high transfer rates within the same peer group is reduced by one-third by 2025.²¹ Finally, we assume that the gap in graduation rates between CSU and *current* graduation rates at UC close by half by 2025 for each ethnic group and that future graduation rates at UC increase by an average of 4.8 percent over current levels by 2025 (thereby lowering the dropout rate by one-fourth at UC). All of these improvements would not happen in the first year but rather would occur gradually between 2009 and 2025. Specifically, we assume linear increases in rates from 2009 to 2025. The improvement over the baseline projections in total numbers of baccalaureates would grow from just 2,500 in 2008–09 to almost 60,000 in 2025 and would amount to 547,000 additional college graduates over the entire projection period of 18 years. The largest contributor to the increase, accounting for 40 percent of the 547,000

additional degrees, would be the improvement in college graduation rates at CSU and UC; improvement in college attendance rates would account for 23 percent of the total increase, and improvement in community college transfer rates would account for another 31 percent. Private colleges would account for 15 percent of the increase.

The ambitious scenario closes the projected education skills gap entirely. The improvements in college attendance, transfer, and graduation significantly exceed those currently observed in California and would represent a radical increase from current trends; thus, they seem unlikely to be achieved. For example, college attendance rates would have to increase to 65 percent, similar to some of the highest rates observed among the 50 states today. Transfer rates at each community college would need to improve to match the average of the two highest rates observed today for the best-performing community college in the same peer group. Graduation rates at CSU would need to close three-quarters

**Additional funding will be necessary
just to accommodate currently projected
enrollment increases.**

of the difference with UC graduation rates, and UC dropout rates would need to fall by one-half. We present the ambitious scenario just to show what would be necessary to close the gap and also to provide a context for understanding why our moderate scenario is indeed quite modest.

The scenarios and each of the constituent pathways involve a set of trade-offs. These trade-offs include what is attainable in student performance and what is possible from a fiscal standpoint. With unlimited funds, we might expect much better outcomes. Unfortunately, evaluations of programs designed to improve student outcomes in California—even when they exist—do not generally provide the kind of information that is necessary to evaluate cost-effectiveness across different interventions. Our moderate scenario shows that substantial gains could be

made through improving graduation rates at CSU—the least expensive fiscal option—as well as improving transfer rates, the second-least-expensive option. Still, it would not close the gap entirely, and other forms of postsecondary education including career technical education would be necessary to improve workforce skills and outcomes.

Measuring the fiscal costs of each scenario is not an entirely straightforward process. However, a general relative cost can be considered by comparing instruction-related expenditures per FTE. These figures in 2006–07 were \$15,548 for UC, \$13,336 for CSU, and \$5,751 for the community colleges (Table 3).²² The much lower expenditures for community college students are notable. However, other issues should also be considered. For example, reducing time to degree will not by itself affect the number of baccalaureates produced in the long run, but it could lead to greater efficiencies and higher completion rates. On average, it takes incoming freshmen at CSU six years to earn a degree, and it takes five years for those at UC. Students can spend four years or more at a community college before successfully transferring, and the cost of large numbers of students who fail to transfer should also be considered. Certainly, increasing college attendance is the most expensive pathway, and it would be less expensive for students to navigate quickly toward transferring from community colleges. However, the least expensive pathway is to improve persistence and graduation rates of students already attending either CSU, where there is much room for improvement, or UC, where there is not much room for improvement. For example, FTE instructional costs for a UC student who graduates in four years would be about \$62,000 (four years at \$15,548 per year), compared to \$42,000 for a UC graduate who goes to a community college for two years and transfers to UC as a junior (two years at \$15,548 per year and two years at \$5,751 per year). Comparable estimates for a CSU graduate would be \$53,000 for those who entered as freshmen and about \$38,000 for those who transferred from a community college. In contrast, additional FTE costs for a student who completes a bachelor's degree instead of dropping out after the sophomore year would be only \$31,000 at UC and \$27,000 at CSU.²³

Table 3. Costs and summary statistics for California's public higher education systems

	Community Colleges	California State University	University of California
Campuses	110 in 72 districts	23	10
Enrolled students (2007)	1,548,000	433,000	220,000
Full-time undergraduates (2007)	704,000	359,000	168,000
Bachelor's degrees awarded (2007)	n/a	71,000	42,000
Graduation rate	n/a	52%	81%
Transfer rate to four-year college	10–12%	n/a	n/a
Total student fees (2008–2009)	\$600	\$3,797	\$8,020
Annual state expenditures (2006–2007)	\$5,751	\$13,336	\$15,548

SOURCES: California Postsecondary Education Commission data; UC Office of the President; CSU Chancellor's Office.

NOTES: Only nine UC campuses offer undergraduate programs. Undergraduate enrollment is based on full-time equivalents. Graduation rate is based on the share of incoming freshmen who graduate with bachelor's degrees in six years or less. CSU rates are for the entering 2000 cohort; UC rates are for the entering 2001 cohort. Transfer rates for community colleges are based on all students. Rates are substantially higher for those intending to transfer (see the discussion in the text). Fees are based on full-time students for an academic year. Expenditures are instructional costs per FTE (see Technical Appendix D). n/a = not applicable.

Capital costs are also an important consideration, although they have been less of a constraint than operational costs. The public has repeatedly shown a willingness to pass education facilities bonds, approving \$7 billion in such bonds since 2000. Nonetheless, each of the three systems estimates that additional funding will be necessary just to accommodate enrollment increases currently projected (equivalent to our baseline scenario for number of bachelor's degrees awarded). The community colleges estimate that \$11.8 billion is necessary for new facilities and \$14.8 billion to modernize existing facilities to meet current deficiencies and to accommodate projected enrollment growth through 2013–14 (\$9 billion more than is currently available to fund these projects). Costs at CSU and UC, with their much lower enrollment levels, are projected to be \$5.9 billion and \$5.5 billion, respectively, over the next five years for modernization and new facilities (Larsen and Lipscomb, 2008). The capital costs associated with the pathways differ in the same way as the operating costs: Improving retention at CSU would have the lowest effect on total enrollment (and thus on the need for new facilities), whereas increasing college attendance rates would have the largest effect and thus would be the most expensive option.

In light of the current fiscal situation, it is unlikely that California will be able to quickly increase college atten-

dance or graduation rates. Delays in such improvements will make it more difficult to achieve even the moderate scenario. For example, if additional growth in the number of bachelor's degrees awarded each year does not begin until 2012, then the moderate scenario would lead to a gain of only 425,000 bachelor's degrees between now and 2025, compared to 547,000 without a delay.²⁴ However, current proposals to cut funding will mean that even the baseline scenario might not be realized, at least in the short run.

Finally, because the ambitious scenario is unlikely to be achieved, and because the moderate scenario does not completely close the skills gap, other types of skill development will be required. Worker training, including career technical (vocational) education programs offered at community colleges, could play an important role in providing skills that employers would accept in lieu of a bachelor's degree. This kind of training, if done effectively and valued by employers, could be very cost-effective.

Policy Issues

California's state government is in the throes of yet another budget crisis. Recent proposed cuts in higher education funding have led both the UC and CSU systems to plan for reductions in the number of students accepted for admission.

Two of every three Californians
believe that many who are qualified do not
have the opportunity to go to college.

In January 2009, UC officials proposed reducing freshmen enrollment for fall 2009 by 2,300 students, or 6 percent, to deal with state budget cuts. Similarly, the CSU system plans to reduce its 450,000 student enrollment by 10,000 (Gordon, 2009). The higher education “compact,” an agreement between the state university systems and the governor established in 2004 in response to earlier funding cuts to the systems, was supposed to have prevented the universities from facing any further loss of funding. That compact provided funding for enrollment increases of 2.5 percent per year from 2005–06 through 2010–11 and introduced some accountability reporting requirements (CSU, 2004).²⁵

Californians express widespread support for the state’s public colleges and universities. They are more satisfied with the state’s higher education system than perhaps with any other function of state government. In a November 2008 PPIC Statewide Survey, large majorities of adults across all regions, ethnic groups, and political affiliations rated each of the state’s higher education systems as “excellent” or “good.” Californians recognize the value of a college education, with two of every three believing that college is necessary to be successful in work—an attitude held even more widely among Latinos (84%) than any other group. And Californians believe that the quality of education in each of the higher education systems is high; only 18 percent regard the quality of higher education as a “big problem,” compared to over half (53%) who regard the quality of K–12 education as a “big problem” (Baldassare et al., 2008).

But Californians have concerns about higher education. A majority say that the lack of affordability of a college education is a “big problem,” and only a small (and declining) percentage of residents approve of the way the governor and legislature have handled California’s higher education system. Two of every three Californians believe that many who

are qualified do not have the opportunity to go to college, with 81 percent of Latinos voicing this concern. One sign of unmet demand for opportunities within California is that the state, once a net importer of new freshmen, is now a net exporter of freshmen to other states. Net outflows are highest for freshmen attending doctoral or research universities, whether public or private.²⁶ The flows are relatively small compared to the number of students who remain in the state, but they serve as a marker for opportunities within California relative to other states.

Like many other states, California has pulled back from its commitment to fund public higher education. California’s Master Plan was ambitious for its time. In 1960, when the Master Plan was developed, only 20 percent of 19- to 21-year-olds in California were enrolled in college (including community colleges), yet the Master Plan allowed fully one-third of high school graduates to be eligible for UC or CSU. By 2006, the Master Plan had become regressive. More than half (51%) of 19- to 21-year-olds were in college, yet the Master Plan still only allowed one-third of high school graduates to be eligible for UC or CSU.²⁷ Far higher proportions of high school and community college students intend to complete college than actually succeed in doing so, yet UC and CSU have both raised their eligibility requirements to keep the share of eligible students at levels close to those outlined in the Master Plan.

State policymakers and education leaders could play an important role in revitalizing the state’s public higher education system. Certainly a more highly educated population will generate greater tax revenue and, to the extent that education improves cognitive abilities, lead to more rapid economic growth (Hanushek and Wößmann, 2007). Aside from economic and fiscal considerations, policies that encourage or even require that the higher education components work together could lead to improved outcomes for California’s students. Of particular importance are efforts to align courses between the community colleges and the UC and CSU systems. Such efforts would smooth student transitions between systems and allow students to have ready knowledge about required courses. Improved evaluations of student preparation and effective



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Even modest improvements in attendance, transfer, and completion rates could lead to substantial gains in the number of graduates.

remediation strategies are essential, as large numbers of students who are not fully equipped to succeed at college-level coursework graduate from high school. Clarifying desired outcomes and aligning fiscal policies with those desired outcomes for all three public school systems would provide the right set of incentives for colleges to identify and incorporate effective policies.

Enrolling and graduating more students from college in California will require additional expenditures. Yet across the nation, tuition and fees doubled from 1970 to 2001 (in constant dollars) but government support per capita rose only 3 percent (National Center for Education Statistics [NCES], 2005). In California, the trends are similar and higher education's share of the state budget is lower now than in 1970. Even the moderate scenario would require additional expenditures, and because it does not completely close the skills gap, other forms of postsecond-

ary education such as career technical education will need to be expanded.

Although there are numerous sources of the state's budget problems, some of which are well beyond the reach of state policymakers, the inability of California policymakers to resolve those problems predates the current economic downturn and has prevented strategic planning for the state's long-term future. Without such planning, California is unlikely to produce the number of highly skilled workers it needs. The findings of this report suggest that even modest improvements in college attendance, transfer, and completion rates could lead to substantial gains in the number of college graduates produced in California and prepare the state for the demanding future that lies ahead. Yet those improvements are unlikely to occur without the concerted and coordinated efforts of state policymakers and decisionmakers in higher education. ●

All technical appendices to this report
 are available on the PPIC website:
www.ppic.org/content/pubs/other/409HJR_appendix.pdf.

Notes

¹ Authors' calculations based on 2006 American Community Survey data; the number includes all students regardless of age and full-time or part-time status. Data on public K–12 enrollment are consistent with California Department of Finance reports.

² California's Master Plan, first adopted in 1960, assigned specific roles for each educational system. It also set ambitious goals for the overall system, promising an accessible, low-cost, quality postsecondary education to all who could benefit from it.

³ Authors' calculations based on California Postsecondary Education Commission data.

⁴ Labor force participation rates are lower for less-educated adults than for college graduates. PPIC's ongoing "California 2025" series of reports includes population and economic projections. See Reed (2008) for projections of workforce need by educational attainment and Johnson and Reed (2007) and Hanak and Baldassare (2005) for additional details on methods and population projections. Technical Appendix A describes the methods employed in this report. (All technical appendixes to this report are available on the PPIC website at www.ppic.org/content/pubs/other/409HJR_appendix.pdf.)

⁵ OECD (2006), Indicator A1, Table A.1.3a, for reference year 2003.

⁶ One possible exception might be students who major in education (Arcidiacono, 2004).

⁷ The increase in degree production has been notably larger than the population growth of 20- to 29-year-olds (21%). In 2007, almost nine of every ten bachelor's degrees granted in public universities in California were awarded to adults ages 20 to 29 (authors' calculations of CPEC data).

⁸ Authors' estimates based on 2006 American Community Survey data.

⁹ See Technical Appendix A for a discussion of economic and population projection methods.

¹⁰ Authors' calculations based on the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS) online data retrieval program (NCES, 2008).

¹¹ See Technical Appendix C for a list of each community college's transfer rates by race/ethnicity for 2007–08.

¹² There is some concern that such interventions might occur too late. Zau and Betts (2008) find that students at risk of failing the California High School Exit Exam can be identified as early as fourth grade, and that interventions for students who have failed the exam multiple times do not appreciably increase success rates. Students who are eligible for CSU, however, are in the top one-third of California high school students and might be better able to improve academic readiness for CSU at older ages.

¹³ The six-year graduation rate is the share of students that earn a bachelor's degree within six years of entering the university.

¹⁴ Expanding enrollment at UC might be another way to improve completion rates in general, since the universities in the system have such high graduation rates. However, the high UC completion rates might be attributable to drawing more highly qualified students and not a consequence of UC efficiency. We know of no studies that control for these selection effects. One study of students at UC San Diego finds that those admitted under the university's now-discontinued affirmative action program were substantially less likely to graduate than students just above the regular admission cutoff (Rose, 2005).

¹⁵ However, many of these students, especially those in the CSU system, require remediation.

¹⁶ Many community college transfers enter UC and CSU as sophomores rather than as upper division students as intended by the Master Plan.

¹⁷ Bettinger finds that, under most model specifications, a \$1,000 increase in Pell Grants leads to a 3 to 5 percent decline in the probability of students withdrawing.

¹⁸ In 2005, about half of California children had fathers who had not attended college (authors' calculations based on American Community Survey data).

¹⁹ We could not find any studies that identified the causal effect of such programs. Students who already intended to go to college are more likely to enroll in such programs.

²⁰ Kane uses a regression discontinuity design and controls for other factors. For qualified students, CalGrants can cover the full cost of fees at state colleges and a substantial share of fees at many private colleges.

²¹ Specifically, the assumption is that current differences in transfer rates between colleges with low transfer rates and colleges with high transfer rates are closed by one-third by 2025, with differences determined within ethnic groups and college peer groups. Colleges with high transfer rates are defined as the two colleges within a peer group of colleges that have the highest transfer rates. We assume that colleges with the highest transfer rates in their racial and peer group maintain those transfer rates.

²² See Technical Appendix D for an explanation of these numbers.

²³ Of course, these rough calculations do not include the additional costs associated with programs designed to improve completion rates.

²⁴ Part of the reduction in number of bachelor's degrees awarded occurs over the next few years, as no gains are made above the baseline, but a larger share of the reduction occurs in later years, because improvements are postponed. Waiting times between taking action and realizing additional bachelor's degrees differ with each pathway, with increases in college attendance taking the longest time and improvements in retention offering quicker returns.

²⁵ The compact required that the universities collect data and report annually on a number of measures, including "efficiency in graduating students, including number of degrees and time-to-degree; utilization of system-wide resources such as student/faculty ratio and change in employee salaries; student-level information, including student proficiency levels and progress on achieving community colleges course articulation agreements; and capital outlay, including five-year plans with priorities by campus" (CSU, 2004).

²⁶ Authors' calculations based on the NCES IPEDS fall enrollment file.

²⁷ Authors' calculations based on data from the 1960 decennial Census and the 2006 American Community Survey.

Bibliography

Arcidiacono, Peter, "Ability Sorting and the Returns to College Major," *Journal of Econometrics*, Vol. 121, No. 1-2, 2004, pp. 343–375.

Baldassare, Mark, Dean Bonner, Jennifer Paluch, and Sonja Petek, "Californians and Higher Education," *PPIC Statewide Survey*, Public Policy Institute of California, San Francisco, California, November 2008.

Bettinger, Eric, "How Financial Aid Affects Persistence," Case Western Reserve University–Department of Economics; National Bureau of Economic Research, NBER Working Paper No. W10242, January 2004.

Brand, Jennie E., and Yu Xie, "Who Benefits Most from College? Evidence for Negative Selection in Heterogeneous Economic Returns to Higher Education," *California Center for Population Research Online Working Paper Series*, University of California, Los Angeles, California, 2007.

California Community College Chancellor's Office, *California Community Colleges Government Relations Division 2007–08 Legislative Bill Analysis*, SB 946, 2008, available at www.cccco.edu/Portals/4/Executive/Board/2008_agendas/july/attach_3_1_sb_946.doc.

California Department of Finance, *California Public Postsecondary Enrollment Projections, 2006 Series*, Sacramento, California, December 2006.

California Postsecondary Education Commission, *University Eligibility Study for the Class of 2003*, May 2004, available at www.cpec.ca.gov/completereports/2004reports/04-05.pdf.

California Postsecondary Education Commission, *California Higher Education Accountability: Goal—Student Success, Measure: First-Year Persistence Rates*, December 2006.

California Postsecondary Education Commission, *California Higher Education Accountability: Goal—Student Success, Measure: California Community College Students' Degrees and Certificates Awarded and Successful Transfers*, March 2007a, available at www.cpec.ca.gov/completereports/2007reports/07-06.pdf.

- California Postsecondary Education Commission, *College-Going Rates: A Performance Measure in California's Higher Education Accountability Framework*, Commission Report 07-04, March 2007b, available at www.cpec.ca.gov/completereports/2007reports/07-04.pdf.
- California Postsecondary Education Commission, *Who Can Afford It? How Rising Costs Are Making College Unaffordable for Working Families*, Sacramento, California, June 2008.
- California State University, *California State University, University of California and Gov. Schwarzenegger Reach Agreement on Long-term Funding Plan for 2005/06 to 2010/11*, May 2004, available at www.calstate.edu/PA/news/2004/compact.shtml.
- California State University, *Cost Saving Measures and Budget Update*, 2009, available at www.calstate.edu/executive/communications/090109.shtml.
- Campaign for College Opportunity, *Practices with Promise 2008: A Collection of Working Solutions for College Opportunity and Student Success*, November 2008, available at www.collegecampaign.org/assets/docs/pwp/pwp-full-report-2008-11-19.pdf.
- Driscoll, Anne K., "Beyond Access: How the First Semester Matters for Community College Students' Aspirations and Persistence," *Policy Analysis for California Education*, Policy Brief 07-2, Berkeley, California, August 2007.
- Dynarski, Susan, "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion," *American Economic Review*, Vol. 93, No. 1, 2003, pp. 279–288.
- Dynarski, Susan, "Building the Stock of College-Educated Labor," *National Bureau of Economic Research Working Paper 11604*, September 2005, available at www.nber.org/papers/w11604.
- Gordon, Larry, "University of California Officials Urge 6% Cut in Freshmen for Fall," *Los Angeles Times*, January 10, 2009, available at www.latimes.com/news/local/la-me-ucfreshmen10-2009jan10,0,3862072.story.
- Gordon, Tracy M., Jaime Calleja Alderete, Patrick J. Murphy, Jon Sonstelie, and Ping Zhang, *Fiscal Realities: Budget Tradeoffs in California Government*, Public Policy Institute of California, San Francisco, California, 2007.
- Hanak, Ellen, and Mark Baldassare, eds., *California 2025: Taking on the Future*, Public Policy Institute of California, San Francisco, California, 2005.
- Hanushek, Eric, and Ludger Wößmann, "The Role of Education Quality in Economic Growth," World Bank Policy Research Working Paper 4122, February 2007, available at www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2007/01/29/000016406_20070129113447/Rendered/PDF/wps4122.pdf.
- Hill, Elizabeth G., *Back to Basics: Improving College Readiness of Community College Students*, Legislative Analyst's Office, Sacramento, California, 2008.
- Horn, Laura, and Stephen Lew, "California Community College Transfer Rates: Who Is Counted Makes a Difference," MPR Associates, Inc., Berkeley, California, 2007.
- Johnson, Hans, and Deborah Reed, "Can California Import Enough College Graduates to Meet Workforce Needs?" *California Counts*, Vol. 8, No. 4, Public Policy Institute of California, San Francisco, California, May 2007.
- Kane, Thomas J., "College Entry by Blacks since 1970: The Role of College Costs, Family Background, and the Returns to Education," *The Journal of Political Economy*, Vol. 102, No. 5, 1994, pp. 878–911.
- Kane, Thomas J., "A Quasi-Experimental Estimate of the Impact of Financial Aid on College-Going," *National Bureau of Economic Research Working Paper 9703*, 2003, available at www.nber.org/papers/w9703.pdf.
- Kelly, Patrick J., *As America Becomes More Diverse: The Impact of State Higher Education Inequality*, National Center for Higher Education Management Systems, November 2005, available at www.nchems.org/pubs/docs/Inequality%20Paper%20Jan2006.pdf.
- Larsen, Eric, and Steve Lipscomb, "Education Facilities," *Just the Facts*, Public Policy Institute of California, San Francisco, California, September 2008.
- Mortenson, Thomas G., ed., *Postsecondary Education Opportunity*, no date, available at www.postsecondary.org (subscription required).
- Murray, Charles, "Should the Obama Generation Drop Out?" *The New York Times*, December 28, 2008.
- National Center for Education Statistics, "The Condition of Education 2005," U.S. Department of Education, NCES Paper 2005-094, Washington, D.C., 2005.

- National Center for Education Statistics, Computation by DAS-T Online Version 5.0, "Institution Type by State, 2004 Undergrads Variance Estimation Method: BRR," June 3, 2008.
- National Center for Public Policy and Higher Education, *Measuring Up 2008: The National Report Card on Higher Education*, San Jose, California, 2008.
- Organisation for Economic Co-operation and Development, "Education at a Glance," 2006, available at www.oecd.org/document/52/0,3343,en_2649_39263238_37328564_1_1_1_1,00.html.
- Puente Project, "About Puente," 2008, available at www.puente.net/about/.
- Reed, Deborah, *California's Future Workforce: Will There Be Enough College Graduates?* Public Policy Institute of California, San Francisco, California, 2008.
- Robst, John, "Education and Job Match: The Relatedness of College Major and Work," *Economics of Education Review*, Vol. 26, No. 4, 2007, pp. 397–407.
- Rose, Heather, "The Effects of Affirmative Action Programs: Evidence from the University of California at San Diego," *Education Evaluation and Policy Analysis*, Vol. 27, No. 3, Fall 2005, pp. 263–289.
- Sengupta, Ria, and Christopher Jepsen, "California's Community College Students," *California Counts*, Vol. 8, No. 2, Public Policy Institute of California, San Francisco, California, November 2006.
- Serban, Andreea, "An Analysis of Seven Case Studies Featuring Colleges with Consistently Higher-Than-Expected Transfer Rates," 2008, www.rpgroup.org/documents/TLC_Cross_Case_Analysis.pdf.
- Shulock, Nancy, and Colleen Moore, *Rules of the Game: How State Policy Creates Barriers to Degree Completion and Impedes Student Success in the California Community Colleges*, Institute for Higher Education Leadership and Policy, Sacramento, California, 2007.
- St. John, Edward P., Glenda Droogsma Musoba, Ada B. Simmons, and Choong-Geun Chung, *Meeting the Access Challenge: Indiana's Twenty-First Century Scholars Program*, Lumina Foundation for Education, Indianapolis, Indiana, 2002.
- University of California, "UC Systemwide Enrollment Projections: Undergraduate & Graduate Enrollment Through 2020–21 Phase I Report 2008," Paper 5, 2008, available at repository.ucop.edu/enrllmt_projections_reports/5.
- University of California Office of the President, "UC President to Bring Proposal to Board of Regents Providing Minimum Gift Aid for Lower-Income Students," January 22, 2009, available at www.universityofcalifornia.edu/news/article/19341.
- Zau, Andrew C., and Julian R. Betts, *Predicting Success, Preventing Failure: An Investigation of the California High School Exit Exam*, Public Policy Institute of California, San Francisco, California, 2008.

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