

BEYOND THE MASTER PLAN The Case for Restructuring Baccalaureate Education in California

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ABSTRACT

Although a stunning success in many ways, California's 1960 Master Plan for Higher Education has been a conspicuous failure in one respect: California ranks near the bottom of the states in the proportion of its college-age population that attains a baccalaureate degree. California's poor record of B.A. attainment is an unforeseen consequence of the Master Plan's restrictions on access to 4-year baccalaureate institutions. In a cost-cutting move, the framers of the Master Plan restricted eligibility for admission to the University of California and the state colleges (later the California State University) to the top eighth and top third, respectively, of the state's high school graduates. As a result, 2-year institutions have absorbed the vast majority of enrollment growth in California higher education. In addition to their important role in vocational education, the California Community Colleges now enroll between 40% and 50% of all students seeking a B.A., including those at both 2-year and 4-year institutions. Enrollment at 4-year institutions, however, has not kept pace. California now ranks last among the states in the proportion of its college students that attend a 4-year institution. The paper presents comparative data demonstrating the powerful relationship between 4-year college enrollment and B.A. attainment across the 50 states. Although California's low rate of baccalaureate attainment is sometimes blamed on the failure of community colleges to produce more transfers, the data point to a more fundamental problem -- lack of 4-year baccalaureate enrollment capacity. The single most critical factor for California to improve B.A. attainment is to expand 4-year enrollment capacity. Yet building expensive new 4-year campuses is an unlikely option given the state's current and foreseeable fiscal circumstances. The alternative is to restructure California's existing postsecondary system. The paper reviews a variety of baccalaureate reform models that have been introduced in other states. The most promising of these models involve collaborations between community colleges and state universities to create new kinds of intermediary, "hybrid" institutions. Examples include university centers and 2-year university branch campuses. Under the university center model, 4-year universities offer upper-division coursework at community college campuses, enabling "place bound" students to complete their baccalaureate degree program there. Under the 2-year university branch model, some community colleges are converted, in effect, into lower-division satellites of state universities, thereby expanding capacity at the 4-year level and eliminating the need for the traditional transfer process. What these and other hybrid models have in common is that they help bridge the divide between 2-year and 4-year institutions, enabling more students to enter baccalaureate programs directly from high school and progress seamlessly to their degrees. Amending the Master Plan in the manner proposed here need not alter its essential features. While preserving the distinctive missions of UC, CSU, and the California Community Colleges, the need now is to build their capacity to work together as a system to improve baccalaureate attainment -- the one mission that all three segments share.

Introduction

California is widely admired for the extraordinary fusion of world-class universities and mass higher education that has flourished since the inception of the state's Master Plan for Higher Education in 1960. As much as it is known for the quality of its elite research institutions, California is equally renowned for offering its citizens the opportunity to pursue an education as far as their ability and ambition can take them. The "California idea" -- California's tripartite system of public research

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universities, comprehensive four-year undergraduate campuses, and open-access community colleges – has been highly influential, and many other states and even nations have imitated this structure (Douglass, 2000).

So it is a surprising fact that, as a system, California higher education has a decidedly poor record of college completion and 4-year baccalaureate degree attainment: As shown later in this paper, California ranks just 43rd among the 50 states in the proportion of its college-age population who earn 4-year college degrees, and the state performs poorly on other measures of postsecondary educational attainment as well. It is important to be clear about what is being said here. Viewed individually, the different segments of the state's higher education system would seem to work rather well. The University of California (UC), in addition to its contributions in research and public service, has among the highest graduation rates of any public university in the U.S. The California State University (CSU) is the largest 4-year public university in the nation and graduates 75,000 baccalaureates each year. The California Community Colleges (CCC) enroll over 2.5 million students, making it one of the largest postsecondary institutions in the world, annually producing over 100,000 Associate degree holders and transfers to 4-year campuses, as well as providing vocational education vital to the state's economy. California is also home to a robust private sector, including a number of leading independent colleges and universities, that produce over 30,000 B.A.s each year.

Nevertheless, *as a system*, California higher education performs poorly with respect to 4-year baccalaureate degree attainment. Compared to most other states, a smaller proportion of California's college-age population goes on to earn B.A.s, and as shown later, the statistics are even worse for certain subgroups, such as Latinos and African Americans, who represent a large and growing fraction of this demographic. In fact, older adults born in California are more likely to have graduated from college than younger adults. Rather than growing its own college graduates, California is forced to import them from other states. The Public Policy Institute of California has estimated that, given current rates of college completion as compared with projected demand for workers with college degrees, California will face a shortfall of one million B.A.s by the year 2025 (PPIC, 2010).

What accounts for California's comparatively poor record of B.A. production? The state has been especially hard-hit by the Great Recession, but California's low rate of college completion is a long-standing phenomenon that cannot be explained by recent budget cuts, however severe. Other contributing factors are the enormous growth in the state's immigrant population over the last several decades, the deterioration of parts of California's K-12 school system following Proposition 13, and the declining share of the state budget devoted to higher education. Yet many of the same factors are present in other states with higher rates of B.A. completion.

The decisive factor that sets California higher education apart from most other states, this paper shows, is a *structural* difference stemming from the Master Plan itself – its restrictions on access to public, 4-year universities -- which has led to a severe imbalance between 2-year and 4-year enrollments. Public colleges and universities account for the overwhelming majority, 93%, of all postsecondary enrollments in California.¹ Before the Master Plan took effect in 1960, enrollment in California's public sector was about equally divided between 2-year and 4-year institutions. But in a cost-cutting move, the framers of the Master Plan limited eligibility for admission to UC and CSU to the top eighth and top third, respectively, of the state's high school graduates, diverting many students to 2-year institutions. The framers envisioned that students seeking a 4-year degree who were not initially eligible for UC or CSU could complete their lower-division work at a 2-year institution and then transfer to a 4-year campus.

The community-college movement was already well underway in California before 1960 – California was the first state, in 1907, to pass legislation establishing “junior colleges,” as they were then called -- but the Master Plan greatly accelerated this development. The growth of community-college enrollments also was fueled by the emergence of new roles and responsibilities for 2-year institutions. In 1960, transfer was considered the primary function of the community colleges but over time, important new responsibilities for vocational, adult, and continuing education were added, in part to meet the needs of California's growing immigrant population. As with other societal trends, California's embrace of the community-college

¹ Only Alaska, Arizona, New Mexico, Nevada, and Wyoming enroll a higher percentage of college students in public institutions (see Appendix 1). This paper focuses primarily on California's public college and universities not only because they account for the vast majority of postsecondary enrollments, but also because they are governed by statewide policies that offer greater scope for broad-based policy reform than independent institutions.

movement has been more pronounced than in any other state: 2-year institutions now account for three-quarters of all public postsecondary enrollments in California.

Constrained by the Master Plan's caps on eligibility for UC and CSU, however, enrollments at 4-year institutions have not kept pace, and California compares unfavorably with other state higher education systems in this regard: California now ranks last among the states in 4-year enrollment as a proportion of overall college enrollment and 48th in the percentage of its college-age population that attends a 4-year institution, whether public or private. The result is that large numbers of California high school graduates seeking a baccalaureate degree are diverted from 4-year institutions and begin their undergraduate careers at 2-year colleges.

Where a student begins college greatly affects his or her chances of completing a B.A. This paper presents comparative data, state by state, demonstrating the powerful relationship between 4-year enrollment and B.A. attainment. After controlling for other relevant differences, states with a larger proportion of 4-year enrollments have higher rates of baccalaureate completion than states such as California, where most students begin at 2-year institutions. Although California's low rate of baccalaureate attainment is sometimes blamed on the failure of community colleges to produce more transfers, the data point to a more fundamental problem: *Lack of 4-year baccalaureate enrollment capacity*. California's 4-year sector is simply too small in relation to the size of the state's college-age population.

Structural problems demand structural solutions: The single most critical factor for improving B.A. attainment in California is to expand baccalaureate capacity so that more students enter 4-year degree programs directly from high school. Initiatives that fail to address the structural imbalance between 2-year and 4-year enrollments, such as efforts to increase the number of community-college transfers, are unlikely to make a difference in the absence of additional capacity at the 4-year level.

Yet the hard truth is that building expensive new 4-year campuses is probably a financial impossibility given the state's current and foreseeable fiscal circumstances. The alternative is to restructure California's existing postsecondary system. The paper reviews a variety of baccalaureate reform models that have been introduced in other states. The most promising of these models involve collaborations between community colleges and state universities to create new kinds of intermediary, "hybrid" institutions. Examples include university centers and 2-year university branch campuses. Under the university center model, 4-year universities offer upper-division coursework at community college campuses, enabling "place bound" students to complete all or most of their baccalaureate degree program there. Under the 2-year university branch model, some community colleges are converted, in effect, into lower-division satellites of state universities, thereby expanding capacity at the 4-year level and at the same time eliminating the need for the traditional transfer process. What these and other hybrid models have in common is that they help bridge the divide between 2-year and 4-year institutions, enabling more students to enter baccalaureate programs directly from high school and progress seamlessly to their degrees.

It is often overlooked that, rather than being handed down from on high, the original Master Plan was actually the product of strenuous negotiations among representatives of the state's colleges and universities. College and university leaders operated under the threat that, if their negotiations were unsuccessful, the legislature and governor might step in and reorganize higher education under a single governing board. The fact that the Master Plan was developed from within, rather than imposed upon, higher education was vital to its later success and helped preserve the diversity and distinctive strengths of its component institutions (Douglass, 2010).

Half a century later, California higher education faces a similar crisis requiring a similar response. Amending the Master Plan to restructure baccalaureate education is a process best initiated by colleges and universities themselves, if under the watchful eye of the legislature and governor. Such an approach offers the best chance for preserving the distinctive blend of world-class research and mass higher education for which California has become famous, while building the capacity of our colleges and universities to function more effectively as a system to improve baccalaureate attainment for future generations of Californians.

The Master Plan and Baccalaureate Education

California's Master Plan for Higher Education has assumed almost mythic status since 1960, and there is considerable misinformation about its origins. Historian John Aubrey Douglass has pointed out a number of those myths and misconceptions: The Master Plan was not the brainchild of a single individual, then-UC president Clark Kerr, as commonly

believed, but a compromise among the leaders of the state's colleges and universities. The Master Plan did not create California's tripartite system of public higher education; it largely preserved and codified the existing system. The Master Plan was shaped at least as much by political concerns – turf wars among constituent institutions prominently among them – as by purely educational considerations (Douglass, 2010). As Kerr would later write in his memoirs,

The [Master Plan] looked to us who participated in its development more like a desperate attempt to prepare for a tidal wave of students, to escape state legislative domination, and to contain escalating warfare among its separate segments. ... And the preparation, the escape and the containment in each case was barely on time and barely succeeded. The Master Plan was a product of stark necessity, of political calculations, and of pragmatic transactions (Kerr, 2001).

Perhaps the most enduring myth is that the Master Plan was designed to expand access to higher education so that "... every California high school graduate who was able to benefit from college could attend a college or university. California became the first state or, indeed, governmental entity to establish this principle of universal access as public policy" (Callan, 2009).

In fact, a good case can be made that cost containment was a more important consideration than access for those who framed the Master Plan. The framers were confronted, on the one hand, by projections of enormous increases in enrollment demand in California between 1960 and 1975, and on the other, by pressure from the governor and legislature to reduce the costs of postsecondary education. The projections showed that state revenues would be inadequate to fund anticipated enrollment growth under existing admissions policies at UC and the state colleges. The framers' solution was to change admissions policy to *limit access* to 4-year institutions:

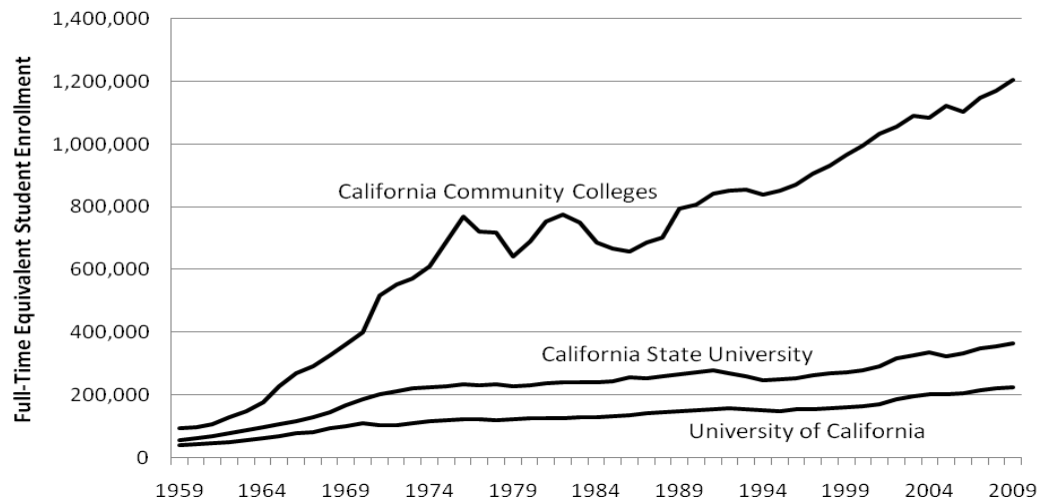
Under a proposal formulated by survey team member Glenn Dumke (president of San Francisco State), the university, the state colleges, and the state of California could benefit by raising admissions standards – essentially gaining a more selective student body. The main motivation was financial. To reduce costs, the University of California and the state colleges (what would become CSU) agreed to reduce their eligibility pools of high school graduates. The University of California would raise its admissions standards with the purpose of lowering its pool of eligible freshmen from approximately its historical figure of the top 15% to the top 12.5% of high school graduates. California State University raised its admissions standards and lowered its eligibility pool from approximately the top 50% to the top 33.3% of California's secondary school graduates. In turn, these revised targets would shift in the new term approximately 50,000 students to the junior colleges (what would be renamed the California Community Colleges) with lower operating costs and funding primarily from local property taxes (Douglass, 2007: 80).

The decision to cap freshman eligibility at 12.5% for UC and 33.3% for CSU was a fateful one. Though it helped solve an immediate problem and win legislative approval for the Master Plan, its long-term consequences have proven problematic. Among other consequences, limiting eligibility for UC to the top eighth of the state's high school graduates would lead, three decades later, to the controversy over affirmative action in admissions. UC's narrow window of eligibility for admission, coupled with California's changing demographics and the growing concentration of Latinos and African Americans in low-performing schools, yielded a student body that was increasingly unrepresentative of the state population; compensatory policies introduced by UC to address the problem provoked a backlash among California voters, culminating in Proposition 209.

Redirecting baccalaureate enrollment

The most significant long-term effect of the Master Plan's caps on access to 4-year institutions was to redirect enrollment to 2-year institutions. Figure 1 (next page) traces the growth of enrollments in California public higher education over the past half century.

Figure 1: Growth of California Public Higher Education Enrollments Since the Inception of the Master Plan



Source: California Higher Education Policy Center, 1997; California Postsecondary Education Commission, 2009.

Enrollment at 2-year colleges has grown much faster than at 4-year institutions, especially during the period from 1960 to 1975, and then again beginning in the late 1980s. The data in Figure 1 represent Full-Time Equivalent Student (FTES) enrollments, in order to account for differences among the three segments in part-time vs. full-time attendance, and enrollment in credit-bearing vs. non-credit-bearing coursework. If sheer headcount is considered instead, the growth in 2-year college enrollments is even more dramatic: The CCC Chancellor's Office reported a total headcount of 2.9 million students in 2008-09 (in place of the 1.2 million FTES enrollments shown above); total student headcount at UC and CSU combined was less than 700,000 in the same year (CCCCO, 2010; CPEC, 2008b).

To be sure, not all of the growth in CCC enrollments is the result of redirecting pre-baccalaureate students from 4-year to 2-year institutions: Enrollment in vocational and other non-transfer-oriented programs also grew significantly after 1960. Although the "vocationalization" of California's community colleges had begun much earlier – the Carnegie Commission's 1932 report, *State Higher Education in California*, had vigorously supported the view that the primary purpose of 2-year institutions should be to offer terminal vocational degrees rather than to prepare students for transfer (Carnegie Foundation, 1932) – the vocational movement did not gain real traction until much later. Both in California and nationally, the period from 1970 to 1985 saw a surge in vocational enrollments at 2-year institutions, as awards of A.A. degrees in occupational fields outnumbered transfer degrees for the first time (Brint & Karabel, 1989). At the same time, demand for training in basic skills, including English as a second language (ESL), also surged in response to rapid in-migration and growth among California's Asian and Latino populations.

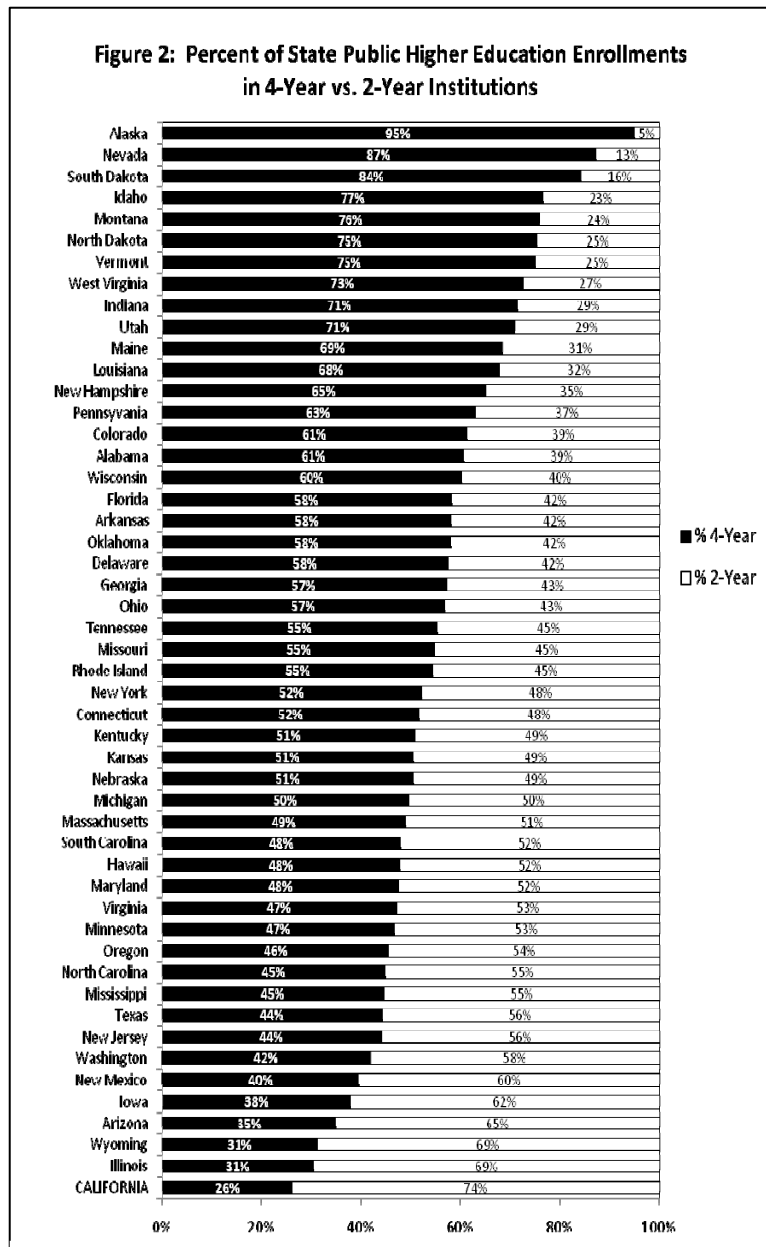
Nevertheless, transfer-directed students (including those who begin with the intent to transfer but do not succeed) continue to account for a significant proportion of CCC enrollments. It is difficult to determine the exact proportion because of differing definitions of the "potential transfer" pool. Students entering the community colleges are asked whether they intend to transfer, but most researchers believe that this indicator is imprecise and employ a behavioral definition instead. The CCC Chancellor's Office has defined transfer-directed students as those who, within a period of six years after matriculation, have attempted transfer-level courses in math or English (regardless of outcome) and completed at least twelve units in the CCC system: "[E]ssentially one-third of the students in our system have the intent to transfer under this definition" (CCCCO, 2002: 25). A recent study by Sengupta and Jepsen for the Public Policy Institute of California, using a different behavioral definition, suggests a somewhat larger proportion. The PPIC study defined transfer-directed students as those who took a majority of UC- and/or CSU-transferable courses during their first year at a community college. On this definition, researchers estimated that transfer-directed students accounted for nearly half, 48%, of all CCC enrollments. Vocational enrollments accounted for 16%, basic-skills/ESL 14%, and non-credit and other enrollments made up the remainder (Sengupta & Jepsen, 2006).

In either case, whether one uses a lower bound of 33% or an upper bound of 48%, it is clear that transfer-directed enrollments continue to account for a substantial share of community college enrollments – and thus of total baccalaureate enrollments in California public higher education, including those at both the 2-year and 4-year level. Applying the percentages to CCC enrollment figures for 2008-09 and combining the results with UC and CSU enrollment figures for the same year, it may be estimated that transfer-directed enrollments at 2-year institutions account for 40% to 50% of all FTES baccalaureate enrollments in California’s public colleges and universities.

Differences between California and other state higher education systems

The effect of the Master Plan in redirecting enrollments from 4-year to 2-year institutions is also evident when comparing California with other states. Figure 2 compares state public higher education systems on the proportion of their enrollments at the 4-year and 2-year levels. In most states, 4-year institutions account for the largest share of college enrollments; the median state, Missouri, enrolls 55% of its postsecondary students in 4-year institutions. Even in large, demographically diverse states comparable to California, like Florida and New York, 4-year institutions account for 58% and 52%, respectively, of all public postsecondary enrollments. California enrolls the lowest proportion of college students in 4-year institutions -- 26% -- and ranks last on this measure by a wide margin.

The Master Plan’s caps on 4-year baccalaureate enrollment seem especially restrictive when viewed in relation to the size of California’s college-age population. Figure 3 (next page) presents further comparative data on state higher education systems, this time with enrollments normalized by the size of each state’s 18-to-29 year old population. “College age” is defined as 18-to-29 years old for purposes of this study, rather than 18-to-24 as traditionally defined, in recognition that many students now take longer to graduate, although the findings are essentially similar if only the traditional college-age cohort is considered.



Source: National Center for Educational Statistics/IPEDS Fall enrollment data, 2006-07.

At first glance, Figure 3 might seem to suggest that California performs well in making higher education accessible to its college-age population, and in one sense this is true. The first column of the table shows that California ranks second among the states in public postsecondary enrollment per population 18-to-29 years old (New Mexico leads the nation on this statistic).

Expressed as a fraction of the state’s college-age population, total enrollment in California public higher education represents about a third of that age group, as compared to the national average of 25%.²

**Figure 3: State Public Higher Education Enrollments
Per Population 18-to-29 Years Old**

	Total Public Higher Ed Enrollment per Population 18-29	2-Year Public Higher Ed Enrollment per Population 18-29	4-Year Public Higher Ed Enrollment per Population 18-29
Alabama	25%	10%	15%
Alaska	24%	1%	22%
Arizona	27%	17%	9%
Arkansas	27%	11%	16%
CALIFORNIA	33%	25%	9%
Colorado	26%	10%	16%
Connecticut	20%	10%	10%
Delaware	26%	11%	15%
Florida	24%	10%	14%
Georgia	21%	9%	12%
Hawaii	23%	12%	11%
Idaho	22%	5%	17%
Illinois	23%	16%	7%
Indiana	25%	7%	18%
Iowa	27%	17%	10%
Kansas	32%	16%	16%
Kentucky	28%	14%	14%
Louisiana	23%	7%	16%
Maine	25%	8%	17%
Maryland	28%	15%	13%
Massachusetts	18%	9%	9%
Michigan	29%	14%	14%
Minnesota	23%	12%	11%
Mississippi	27%	15%	12%
Missouri	20%	9%	11%
Montana	25%	6%	19%
Nebraska	29%	15%	15%
Nevada	21%	3%	18%
New Hampshire	18%	6%	12%
New Jersey	22%	12%	10%
New Mexico	37%	23%	15%
New York	19%	9%	10%
North Carolina	25%	14%	11%
North Dakota	33%	8%	25%
Ohio	22%	9%	12%
Oklahoma	29%	12%	17%
Oregon	26%	14%	12%
Pennsylvania	18%	7%	12%
Rhode Island	22%	10%	12%
South Carolina	24%	12%	11%
South Dakota	26%	4%	22%
Tennessee	20%	9%	11%
Texas	24%	13%	10%
Utah	26%	8%	18%
Vermont	23%	6%	17%
Virginia	26%	14%	12%
Washington	29%	17%	12%
West Virginia	28%	8%	20%
Wisconsin	29%	11%	17%
Wyoming	33%	23%	10%
National Average	25%	11%	14%
	CA Rank = 2nd	CA Rank = 1st	CA Rank = 49th

Source: US Census/Current Population Survey & National Center for Educational Statistics/IPEDS Fall enrollment data, 2006-2007.

A closer look at Figure 3, however, reveals a significant difference between California and other states in how access to higher education is rationed. California’s high overall rate of public postsecondary enrollment is due almost entirely to the state’s massive 2-year sector: As a percentage of its college-age population, California’s 2-year enrollment rate, 25%, is greater than

² Technically, the percentages shown in Figure 3 are ratios, not rates, since some of the students counted in the numerator (state public higher education enrollments) may include small numbers from out of state or those who are less than 18, or older than 29 years of age, and thus not counted in the denominator (state population 18-to-29 years old).

any other state's and more than double the national average of 11%. At the same time, California's 4-year enrollment rate, 9%, is lower than any other state public higher education system but one (Illinois) and well below the national average of 14%.³ This finding echoes the results of a recent UCLA study which found that California ranks 49th in the percentage of seniors who move directly from high school into 4-year baccalaureate institutions (Rogers, Terriquez, Valladares, & Oakes, 2006). These data underscore the extent to which the Master Plan's caps on eligibility for freshman admission have restricted 4-year enrollments, both as compared to other states and in relation to the size of California's own college-age population.

Relationship between 4-Year Enrollment and Baccalaureate Attainment

One of the first studies to draw the connection between the structure of state higher education systems and baccalaureate attainment was Orfield and Paul's *State Higher Education Systems and College Completion*, a study sponsored by the Ford Foundation (Orfield & Paul, 1992). The study examined variations in the structure of postsecondary education in different states -- the extent to which they relied on the 2-year sector to ration access to postsecondary education, and the balance between 2-year and 4-year institutions -- and how such variations affected B.A. completion:

We found that those states with the least reliance on community colleges had high freshman baccalaureate enrollment and higher bachelor degree attainment, while those states with the largest proportional reliance on community colleges frequently had low freshman baccalaureate enrollment and much lower bachelor degree attainment. ... These patterns held true for all students but were particularly so for minorities (Orfield & Paul, 1992: 88).

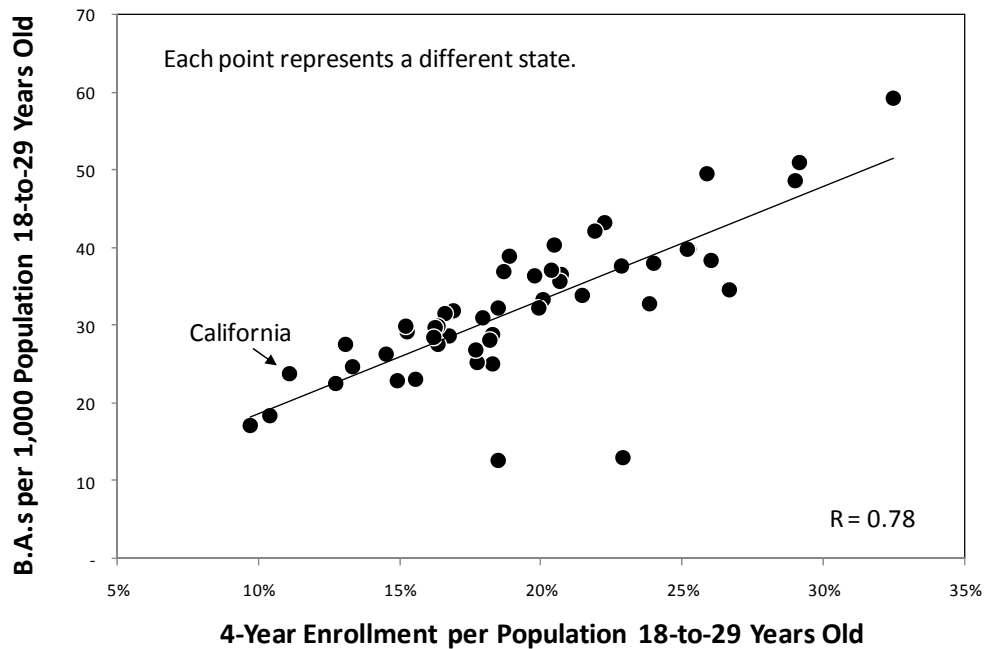
The Orfield/Paul study challenged a number of commonly held views about 2-year institutions and, predictably, was strongly criticized by some community college leaders (Jacobson, 1992). Yet the study was by no means anti-community college -- its point was that the *institutional structure* of state higher education systems, though little noted in either the research literature or policy discussions up to that time, appeared to have a major effect on completion rates.

Subsequent research has supported Orfield and Paul's conclusion that institutional factors have a significant bearing on baccalaureate attainment. In his groundbreaking 1994 book, *The Contradictory College*, Kevin Dougherty described the many barriers to B.A. completion for students who begin at 2-year institutions, including (among others): low levels of student integration into the campus community, the greater interest of many community colleges in vocational training, low expectations of teachers and lack of support from fellow students for academic work, and the difficulty of transferring between institutions with different administrative structures and academic cultures. Dougherty summarized the results of research conducted up to that time showing that, after controlling for differences in individual background characteristics, students seeking a baccalaureate degree who began at 2-year colleges had significantly lower rates of B.A. completion than comparable students who began at 4-year institutions (Dougherty, 1994). Later research on this subject is presented in the following section.

The present study confirms that structural differences among state postsecondary systems are strongly related to differences in college-completion rates. Contrary to Orfield and Paul's original findings, however, what matters most is not the proportion of enrollments in 2-year institutions, but 4-year enrollment capacity, that is, the size of a state's 4-year sector relative to its college-age population. Although 2-year enrollment tends to be inversely related to 4-year capacity, this is not invariably the case; Pennsylvania and New Hampshire are examples of states with relatively low proportions of 2-year enrollments that also have relatively low 4-year capacity. The more important determinant of baccalaureate attainment is 4-year enrollment capacity:

³ The picture is essentially the same if private 4-year enrollments are also considered: California ranks 48th in total 4-year college enrollment, both public and private, per population 18-to-29 years old.

Figure 4: Relationship between 4-Year Enrollment and B.A.s Awarded per Population 18-to-29 Years Old



Source: US Census/CPS and National Center for Educational Statistics/IPEDS data, 2006-07.

Figure 4 illustrates the powerful relationship between 4-year enrollment capacity and bachelor's degree attainment across the U.S. The data points for each state are calculated from National Center for Educational Statistics and U.S. Census data, and data for both public and private colleges and universities are included in order to level the playing field for states with a high proportion of private enrollments. As the chart demonstrates, there is a strong, positive correlation (0.78) between 4-year enrollment and the number of B.A.s awarded per population 18-to-29 years old. Note especially California's position at the bottom left portion of the distribution: California ranks 43rd among the 50 states in B.A. attainment among 18-to-29 year olds. Given its extremely low rate of 4-year enrollment, California's low rate of B.A. productivity should come as no surprise.⁴

Effect of other state-level factors on baccalaureate productivity

The importance of 4-year enrollment capacity is further demonstrated in Figure 5 (next page), which considers two additional factors that may contribute to differences in baccalaureate attainment across the states: State spending on higher education, and differences in student preparation for college at the K-12 level. Per capita state expenditures on postsecondary education were used as a measure of the first factor, and National Assessment of Educational Progress (NAEP) scores for each state as an indicator of the second; for the latter, 75th percentile NAEP math scores were used in order to tap student learning at the high end of the K-12 achievement distribution, from which colleges and universities draw most of their students. These factors were considered simultaneously along with 4-year enrollment capacity (including that at both public and private institutions) within a linear regression model to account for variations in state B.A. production:

⁴ See Appendix 2 for state comparison data on B.A. attainment.

Figure 5:
Determinants of B.A.s Awarded per Population 18-to-29 Years Old:
Regression Results from State Comparison Data

Explanatory variable:	Standardized coefficient:
4-year enrollment per state population 18-to-29 years old ¹	.77*
Per capita state expenditures on higher education ²	-.11**
State 75 th percentile score on NAEP mathematics assessment ³	.11**

* Statistically significant at 99% confidence level

** Statistically significant at 95% confidence level

Adjusted R-square = .60 N = 50

1. U.S. Census and National Center for Educational Statistics, 2006-07.
2. U.S. Census Bureau State and Local Government Finances, 2005-06.
3. National Assessment of Educational Progress, 2007.

As Figure 5 shows, per capita state spending on higher education is negatively related to B.A. production,⁵ while differences in student preparation exhibit a weak, if statistically significant, relationship. Both factors pale in importance compared to 4-year enrollment capacity, as indicated by the size of the standardized regression coefficients for each factor. The conclusion is straightforward: The greater the proportion of a state's college-age population enrolled in 4-year institutions, the higher the rate of B.A. attainment.

A Note on Related Research

These findings are consistent with those of a recent investigation by the National Bureau of Economic Research (NBER) into the decline of college-completion rates in the U.S. Although the proportion of high school graduates attending college has risen since 1970, the proportion completing college has fallen. Using National Educational Longitudinal Study (NELS) data from the 1970s, '80s, and '90s, NBER researchers found that supply-side factors accounted for most of the decline. By "supply-side" is meant institutional factors such as the distribution of college enrollments across 4-year vs. 2-year institutions. The study found that "demand-side" factors, such as changes in student preparation for college, explained only a small part of the decline in college-completion rates. The most important factor was "initial college type," that is, where students started college. Students who started out at selective 4-year institutions had significantly higher rates of B.A. completion than those who began elsewhere. But because enrollments at such institutions have declined as a proportion of overall postsecondary enrollment since 1970, completion rates have fallen as well:

⁵ The negative weight associated with per capita state spending may be due in part to differences among the states in the relative size of their private 4-year sectors. In states with a large proportion of 4-year enrollments in private institutions, such as Massachusetts and Rhode Island, state appropriations for public higher education are relatively smaller than in other states, even though total 4-year capacity and B.A. productivity may be similar. See Appendix 1 for comparison of the proportion of 4-year college enrollments in public vs. private institutions in different states.

The key finding of this analysis is that the supply-side of higher education plays an important role in explaining changes in student outcomes. The higher education literature has focused on how student preparation for college translates into college success. Our analysis suggests that, at least for changing completion rates, student preparation is only a partial explanation; characteristics of the supply-side of the market have a substantial influence on student success in college. ... [W]e find the shift in the distribution of students' initial college type, largely the shift toward community colleges, explains roughly 3/4 of the observed decrease in completion rates (Bound, Lovenheim, & Turner, 2009: 5, 30).

As the NBER study illustrates, institutional factors – especially the selectivity of the institution in which a student initially enrolls – have an independent effect on baccalaureate attainment *even after controlling for differences in students' academic qualifications*. This point deserves special emphasis, since it is often assumed that higher rates of college completion at selective 4-year institutions are simply a reflection of the fact that they enroll better qualified students than other colleges. Yet that assumption is mistaken.

This issue has sparked a substantial body of research over the last 25 years. Because selective institutions enroll stronger students, the challenge for researchers has been to separate the effects of institutional from student-level factors on baccalaureate attainment. Perhaps the most comprehensive analysis of B.A. completion yet undertaken is Bowen, Chingos, and McPherson's recent book, *Crossing the Finish Line*. Using a massive sample of students at 21 public flagship universities and four state university systems, Bowen and his colleagues examined the impact of a variety of factors on college completion after controlling for students' academic and socioeconomic characteristics. Institutional selectivity was consistently among the most significant factors:

More selective universities, by definition, enroll students with stronger entering credentials who are more likely to graduate regardless of where they go to college. We find, however (somewhat to our surprise), that controlling for students' high school GPAs, SAT/ACT scores, and demographic characteristics reduces the differences in graduation rates across institutions only modestly. Substantial differences remain ... [W]e suspect that they are due at least in part to peer effects (going to college with students more likely to graduate makes a student more likely to graduate) and the role of norms or expectations (at highly selective institutions with generally high graduation rates, there may be a widely shared expectation that essentially everyone will graduate) (Bowen, Chingos, & McPherson, 2010: 192, 196).

Conversely, there is considerable evidence that -- again controlling for student characteristics -- enrolling at a non-selective 2-year college diminishes students' chances of obtaining a B.A. One of the most rigorous investigations of the effects of community-college enrollment on B.A. completion is a 2009 study by Long and Kurlaender, also under the auspices of the National Bureau of Economic Research. Based on a complete census of postsecondary students in Ohio, the researchers tracked students for nine years and employed a variety of statistical techniques to control for differences in the composition of students entering 2-year vs. 4-year institutions. They found a significant "penalty" associated with enrollment at a 2-year institution:

We find that in fact there is a cost in terms of degree completion, credit accumulation, and risk of dropping out to initially entering postsecondary study through the community college. In other words, we find a persistent community college penalty. Moreover, this penalty persists even after controlling for key student demographic and academic achievement variables. ... [O]n average, the outcomes of students who initially enter higher education through the two-year system appear to lag behind those who enter via a four-year college. Our conservative estimates suggest that these students are 14.5 percent less likely to complete a baccalaureate degree within nine years. This has significant consequences, especially for low income and minority students who disproportionately rely on the community colleges as the primary portal for postsecondary entry. Due to the "penalty" experienced by community colleges students, caution should be exercised when designing policies that might shift enrollment patterns more towards the two-year colleges (Long & Kurlaender, 2009: 25-26).

"Undermatching" and its effects on baccalaureate attainment

The finding that institutional factors have a powerful effect on B.A. completion, independent of student characteristics, leads to a surprising and counterintuitive conclusion: Academic qualifications being equal, students are likely to perform better at a selective 4-year college or university than at less selective 2-year or 4-year institutions.

This was another of the key findings of Bowen, Chingos, and McPherson in *Crossing the Finish Line*. Bowen and his colleagues found that large numbers of students were “undermatched,” that is, they attended colleges that were less demanding than they were qualified to attend.⁶ Using a conservative standard – grades and test scores that would qualify students in the top 10% of admits at highly selective state flagship universities -- they discovered that more than 40% of highly qualified students enrolled instead at less selective 4-year or 2-year institutions, and some did not attend college at all. The pattern was especially pronounced among low-income and underrepresented minority students. Counterintuitively, however, undermatching had a negative effect on baccalaureate attainment, owing to the strong independent effect of institutional selectivity on college completion: Highly qualified students who attended less selective institutions had significantly *lower* completion rates than comparably qualified students who attended a flagship university. This finding has important implications for higher education policy since, as the researchers conclude, the national rate of baccalaureate attainment could be significantly improved if more “undermatched” students began at colleges and universities for which they are qualified:

The extent of undermatching is especially troubling in light of the evidence of differences in educational outcomes – lower graduation rates and longer time-to-degree – associated with taking full advantage of the educational opportunities for which students were presumptively qualified. Efforts need to be made nationwide to improve the process by which students are channeled (or channel themselves) into educational settings that too often fail to encourage them to realize their full potential (Bowen, Chingos, & McPherson, 2010: 110).

One must be careful, however, not to overstate the point. Especially at the 2-year level, it is evident that many baccalaureate aspirants are not “undermatched,” as Bowen and his colleagues define it – most have decidedly poorer academic profiles (and come disproportionately from lower socioeconomic backgrounds). Among researchers who study the community colleges, there is a longstanding debate over whether 2-year institutions have more of a “democratization effect” or a “diversion effect.” As against those who emphasize the community colleges’ role in diverting otherwise qualified students from 4-year institutions (Brint & Karabel, 1989; Grubb, 1991; Dougherty, 1994), other researchers emphasize the importance of 2-year institutions in expanding access to higher education for less qualified students. If not for the community colleges, they argue, many students with poor academic qualifications would not attend college at all (Rouse, 1995; Rouse, 1998; Leigh & Gill, 2003).

Community colleges play both roles, and there is no need to choose between these competing narratives. As a practical matter, the “democratization” and “diversion” theories involve two different groups of students with different educational needs. The first group includes students who aspire to a B.A. degree but whose academic preparation is inadequate for admission to a 4-year baccalaureate institution. This group probably accounts for a majority of transfer-directed students at the 2-year level, many of whom are in need of remedial instruction. For this group, the traditional idea of community-college transfer as a “second chance” for high school graduates who are not initially prepared for a 4-year college remains a compelling option.

Yet in an effort to reduce costs, some states, following California’s lead, have encouraged students to view community colleges as not only a second chance, but a first-choice option. Such policies have contributed to the emergence of a second group of students: baccalaureate aspirants who are academically qualified for 4-year institutions but begin instead at the 2-year level. It is difficult to estimate the size of the “undermatched” group with precision, but it is clear that they account for a significant number, if a minority, of transfer-directed enrollments at the 2-year level. It is also clear that this group suffers a significant “penalty” in terms of diminished B.A. completion.

In sum, a large body of contemporary research reinforces the conclusion here, based on state comparison data, that California’s poor record of B.A. attainment could be significantly improved if more students entered 4-year baccalaureate programs directly from high school. Not all baccalaureate aspirants are academically prepared for UC or CSU, and community-college transfer remains a necessary and appropriate option for that group. But for those who are prepared, it is vital that students matriculate at an institution commensurate with their qualifications and ability.

⁶ Bowen, Chingos, and McPherson use the term “undermatching” to distinguish from “overmatching” – students attending colleges for which they are unqualified – a phenomenon often cited in the debate over affirmative action in college admissions. Bowen and his colleagues found little evidence of overmatching in their national sample, however, while undermatching was widespread (Bowen, *et al.*, 2010: 100).

The Master Plan and Minority Access to the Baccalaureate

California's Master Plan was developed in anticipation of "Tidal Wave I," the demographic bulge of "baby boomers" born after World War II who came of college age in the 1960s. Half a century later, "Tidal Wave II" is now coming of college age. Yet the current wave differs from the earlier generation in one important respect: Tidal Wave II is far more diverse. Latino and African American students already make up a majority of K-12 enrollments and will soon become a majority of California high school graduates. At the same time, these groups remain conspicuously underrepresented in higher education, especially at the 4-year level. It is an open question whether the state is prepared to mount the same effort to accommodate this new, more diverse generation of students as it did for those entering college in the 1960s.

The Master Plan's caps on 4-year enrollment have adversely affected baccalaureate attainment among all students but have had an especially adverse effect on underrepresented minorities. Figure 6 (next page) compares California with other states on several measures of minority participation in state higher education systems; the primary focus is on the public sector, which enrolls 96% of all underrepresented minority college students in California. The table is again based on National Center for Educational Statistics and U.S. Census data from 2006-07, and the measures are again normalized by the size of each state's college-age population, the difference being that the data are now limited to Latino, African American, and American Indian students.

About 23% of California's 18-to-29 year old minority population enroll in some form of public higher education, and the state ranks fairly well (13th among the 50 states) on this measure (column 1). In the same pattern noted earlier, however, the overall participation rate for minority students masks substantial differences across 2-year and 4-year institutions. California's high overall rate reflects the heavy concentration of underrepresented minority students at the 2-year level (column 2). Only 5% of the underrepresented minority college-age population is enrolled at the 4-year level, placing California 47th on this measure (column 3). Just one in five underrepresented minority college students attends a 4-year institution, and California ranks last on that measure (column 4). Underrepresented minority students fare worse than California college students in general on both of these indicators (compare Figures 2 and 3 earlier).

Figure 6: Underrepresented Minority (URM) Enrollment in State Public Higher Education Systems per Population 18-to-29

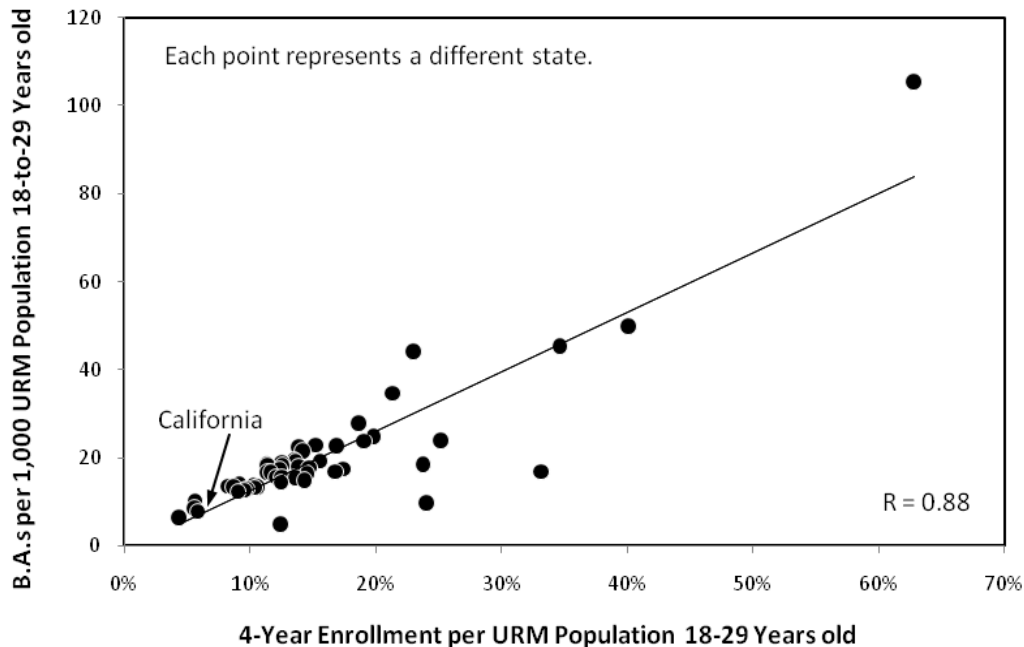
State	Total Higher Ed URM Enrollment per Population 18-29	2-Year Higher Ed URM Enrollment per Population 18-29	4-Year Higher Ed URM Enrollment per Population 18-29	4-Year as Percent of Total Higher Ed URM Enrollment
Alabama	17%	7%	11%	62%
Alaska	26%	2%	23%	92%
Arizona	15%	11%	4%	28%
Arkansas	28%	13%	15%	54%
CALIFORNIA	23%	18%	5%	20%
Colorado	16%	8%	8%	50%
Connecticut	18%	12%	6%	34%
Delaware	18%	8%	10%	54%
Florida	19%	8%	12%	61%
Georgia	17%	9%	8%	46%
Hawaii	11%	5%	6%	51%
Idaho	18%	4%	14%	80%
Illinois	20%	16%	4%	22%
Indiana	20%	6%	13%	67%
Iowa	21%	15%	6%	29%
Kansas	20%	12%	7%	38%
Kentucky	24%	12%	13%	52%
Louisiana	18%	7%	11%	61%
Maine	35%	11%	24%	68%
Maryland	21%	11%	10%	47%
Massachusetts	20%	14%	7%	33%
Michigan	23%	14%	10%	42%
Minnesota	21%	15%	6%	30%
Mississippi	23%	13%	10%	44%
Missouri	17%	9%	9%	50%
Montana	33%	18%	16%	47%
Nebraska	17%	10%	7%	40%
Nevada	14%	1%	12%	90%
New Hampshire	14%	6%	8%	58%
New Jersey	17%	11%	7%	38%
New Mexico	36%	23%	14%	37%
New York	15%	7%	8%	51%
North Carolina	20%	11%	9%	45%
North Dakota	22%	8%	14%	65%
Ohio	15%	8%	8%	49%
Oklahoma	30%	13%	17%	58%
Oregon	12%	7%	4%	37%
Pennsylvania	16%	8%	9%	52%
Rhode Island	13%	8%	5%	41%
South Carolina	20%	13%	7%	37%
South Dakota	28%	5%	23%	83%
Tennessee	20%	8%	12%	59%
Texas	19%	11%	8%	44%
Utah	19%	9%	10%	52%
Vermont	40%	12%	28%	70%
Virginia	19%	11%	8%	40%
Washington	18%	11%	7%	40%
West Virginia	41%	13%	29%	70%
Wisconsin	18%	10%	8%	46%
Wyoming	26%	20%	6%	23%
National Average	21%	10%	11%	50%
	CA Rank = 13th	CA Rank = 3rd	CA Rank = 47th	CA Rank = 50th

Source: US Census/Current Population Survey and National Center for Educational Statistics/IPEDS Fall enrollment data, 2006-2007.

Inevitably, underrepresentation of Latino, African American, and American Indian students in California’s 4-year sector translates into lower rates of baccalaureate attainment. Figure 7 (next page) shows the relationship between underrepresented minority enrollment in 4-year institutions and B.A. completion across the 50 states. Given California’s low rate of minority enrollment in baccalaureate institutions, its low rate of minority B.A. attainment is unsurprising: California ranks 45th on this measure:⁷

⁷ See Appendix 3 for state comparison data on B.A. attainment among underrepresented minority students.

Figure 7: Relationship between 4-Year Enrollment and B.A.s Awarded per Population 18-to-29 Years Old: Underrepresented Minority (URM) Students



Source: US Census/CPS and National Center for Educational Statistics/IPES data, 2006-07

What accounts for California's poor record of minority enrollment, and thus B.A. attainment, at the 4-year level? It may be tempting to blame these patterns on California's K-12 schools, but differences in educational preparation account only partially for these results. The concentration of Latino, African American, and American Indian students in low-performing schools undoubtedly contributes to lower 4-year participation rates, yet the same problem is also evident in other large, urban states that enroll a greater proportion of their minority population in 4-year colleges and universities.⁸

Nor can these patterns be attributed to California's recent ban on affirmative action in admissions to public universities. The state's low rate of minority enrollment in 4-year institutions is a longstanding pattern that dates back well before Proposition 209.

The role of eligibility in minority admissions

The underlying factor that distinguishes California from other state higher education systems and that poses the most immediate barrier to enrollment of underrepresented minority students is the Master Plan's policy on "eligibility" for admission to UC and CSU. California is the only state that distinguishes eligibility for admission from admission itself and sets different criteria for each. Eligibility for admission to UC and CSU traditionally has been determined by means of an index comprised of students' grades in college-preparatory coursework together with their scores on norm-referenced admissions tests. The criteria are intended to identify the top 12.5% and top 33.3% of the state's high school graduates for UC and CSU,

⁸ See Appendix 4 for additional measures of minority underrepresentation in California's 4-year colleges and universities compared to other states. While some of the attrition of underrepresented minorities in California's "pipeline" from K-12 to higher education reflects lower high-school graduation rates among these groups, most of the attrition occurs after high-school graduation at point of entry into higher education.

respectively, as mandated by the Master Plan. Traditionally, meeting eligibility requirements has guaranteed admission somewhere at UC or CSU, though not necessarily at students' campus of choice.

Admissions criteria, on the other hand, are employed at heavily "impacted" UC and CSU campuses, that is, those with more eligible applicants than they have space available. Admissions criteria include more rigorous academic requirements than for general eligibility as well as non-academic factors such as students' socioeconomic background or geographic origin, aimed at admitting a student body broadly representative of the state population.

The difference between eligibility and admissions and its impact on minority access to the baccalaureate is not always well understood. Most of the debate over affirmative action in California centered on the admissions criteria used at highly selective UC campuses, such as Berkeley and UCLA. Before Proposition 209, race and ethnicity were included among the criteria used by those campuses to select from the pool of eligible applicants. After affirmative action was phased out in 1998, those campuses saw substantial declines in admissions of underrepresented minority students.

By policy, however, students who met eligibility requirements were still guaranteed admission somewhere at UC. Eligible Latino and African American applicants thus continued to be offered admission to UC even after Proposition 209, though more often at less selective campuses whose offers were not as attractive (Geiser & Caspary, 2005). While elimination of affirmative action in admissions had a major redistributive (or "cascade") effect within the UC system, it had no effect on eligibility criteria, nor did it alter the racial/ethnic composition of the eligibility pools from which either UC or CSU draw their students (Geiser, Ferri, & Kowarsky, 2000).

The California Postsecondary Education Commission (CPEC) conducts periodic surveys of high school graduates to monitor eligibility rates for UC and CSU, and over the years those surveys have shown large and persistent gaps between underrepresented minorities and other students (CPEC, 1976, 1985, 1988, 1992, 1997, 2001, 2004, 2005, 2008a). The results of the most recent CPEC survey are shown below:

**Figure 8:
Eligibility Rates for UC and CSU
by Race and Ethnicity, 2007**

	UC	CSU
African American	6.3%	24.0%
Latino	6.9%	22.5%
White	14.6%	37.1%
Asian American	29.4%	50.9%
All high school graduates	13.4%	32.7%

Source: CPEC, 2008a.

Because students must be eligible for UC or CSU before they can be admitted, low eligibility rates are the proximate cause of the underrepresentation of Latino, African American, and American Indian students within California's public universities.⁹ And while it is true that eligibility rates reflect real differences in academic preparation at the K-12 level, those differences are magnified by two features of the Master Plan: The small percentage of students deemed eligible for UC and CSU, and the "zero-sum" nature of eligibility.

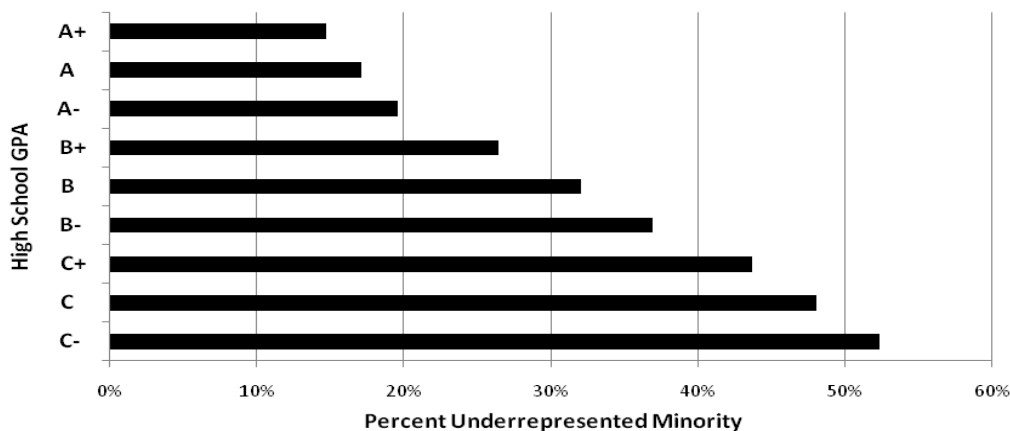
⁹ UC policy also permits up to 6% of entering freshmen to be admitted "by exception," that is, without meeting all eligibility requirements, but this policy is utilized relatively infrequently.

Relationship between the size and diversity of the eligibility pool

To understand how the size of the eligibility pool affects racial/ethnic stratification, it is necessary to appreciate that virtually all indicators of student academic achievement are stratified along racial and ethnic lines. Of the indicators traditionally used to determine eligibility, scores on norm-referenced tests like the SAT and ACT tend to be more stratified, and high-school grades somewhat less, but underrepresented minority students perform more poorly than other students, on average, on both criteria (Geiser & Santelices, 2007). Such differences reflect the concentration of these groups in California’s lowest performing schools, and the differences are especially pronounced at the high end of the achievement distribution, from which UC and CSU draw their students. Figure 9 below shows the proportion of underrepresented minority students, by high-school grade point average (HSGPA), among California seniors who take the SAT.

Figure 9 illustrates why the diversity of the eligibility pool is highly sensitive to the percentage of students deemed eligible: Latino, African American, and American Indian students are least represented among students with the highest GPAs, but their proportion increases at each successively lower HSGPA level. As a result, when eligibility is restricted to a very small percentage – such as the Master Plan cap of 12.5% for UC -- underrepresented minority students are disproportionately excluded. Conversely, the greater the percentage deemed eligible, the larger the proportion of underrepresented students in the pool. This is the reason that CSU’s eligibility pool is substantially more diverse than UC’s, though the proportion of underrepresented minorities in both pools still lags far below their proportion among California high school graduates.¹⁰

Figure 9: Underrepresented Minority Percent of California SAT Takers at Each HSGPA Level



Source: College Board, California college-bound seniors file, 2001.

It is important to be clear that expanding the pool increases not only the absolute number, but the *proportion* of underrepresented minority students in the pool – the diversity of the eligibility pool is positively related to its size. In unpublished simulations undertaken to estimate the possible impact of expanding the UC eligibility pool beyond 12.5%, the

¹⁰ The most recent CPEC eligibility study, from 2007, showed that Latino, African American, and American Indian students together accounted for 22% of the UC eligibility pool and 30% of the CSU eligibility pool, as compared with 44% of all California public high school graduates. Those percentages were inflated, however, by the introduction of the California High School Exit Exam (CAHSEE) in 2006. Eligibility rates are calculated as the number of UC- or CSU-eligible high-school graduates divided by the total number of graduates, but since 2006 students have had to pass the CAHSEE to graduate. This has restricted the number of seniors graduating, particularly among Latinos and Blacks, and thus artificially increased eligibility rates for those groups. A truer picture of the eligibility gap may be provided by the previous CPEC eligibility study, from 2003, which showed that underrepresented groups accounted for 19% of the UC eligibility pool and 24% of the CSU eligibility pool, as compared with 42% of all California public high school graduates (CPEC, 2004, 2008a).

author found that increasing the pool to 18% of California high school graduates would expand the proportion of underrepresented minority students within the pool by about 15% (Geiser & Studley, 2003).

The “zero-sum” nature of eligibility

While a proportional increase of this magnitude might seem modest, numerous efforts undertaken over the past decades have struggled to produce *any* significant improvement in eligibility rates among underrepresented minorities. The reason for that failure involves a second important feature of the eligibility construct, namely, its “zero-sum” nature. Although the framers of the Master Plan were probably unaware of it at the time, their decision to set specific percentages for UC and CSU eligibility set in motion a zero-sum dynamic whereby, in order to improve for eligibility rates for one group, rates for other groups must decline.

Soon after the inception of the Master Plan, Berkeley and UCLA launched what would later become known as “outreach” programs aimed at improving academic preparation and eligibility rates among underrepresented minority high-school students; both UC and CSU have greatly expanded their outreach programs since that time. Over the same period, however, White and Asian American students, responding to the increasingly competitive environment of UC and CSU admissions, also began achieving eligibility in larger and larger numbers, with the result that Latino and African American eligibility rates have remained stubbornly low.

Likewise, efforts to reconfigure eligibility criteria to capture a more diverse pool have run up against the same zero-sum dynamic. UC’s policy “Eligibility in the Local Context” (ELC), introduced in 2001, extended eligibility for admission to top students in low-performing schools. But due to concerns about displacing students who were already eligible, ELC was limited to the top 4% of students in each high school and has not had a major impact on the composition of UC’s overall eligibility pool (Geiser, 1998; University of California, 2002).¹¹ As this experience suggests, the zero-sum nature of the eligibility construct has contributed to a social and political climate in which the needs of different racial/ethnic groups too often are perceived as pitted against one another.

If UC and CSU eligibility rates for underrepresented minorities do not improve, however, the implications are sobering. Because eligibility rates are lowest among the fastest-growing groups – particularly California’s Chicano and Latino population -- *underrepresentation in the state’s 4-year sector is likely to worsen rather than abate over time*. Although the number of UC- and CSU-eligible Latino, African American, and American Indian students will gradually increase, their combined share of the pool will lag further and further behind their proportion of high school graduates (Geiser, Ferri, & Kowarsky, 2000). This perverse dynamic predates Proposition 209 and would continue to restrict underrepresented minority admissions at UC and CSU even if affirmative action were reinstated.

These considerations point to the need for a “non-zero-sum” approach to improving minority access to California’s public universities: Lifting the Master Plan’s caps and expanding the overall percentage of high school graduates eligible to attend UC and CSU. This is one of the few options with the potential to enhance the diversity of the pool of students admitted to 4-year institutions, yet without displacement of other students and the political fallout that would inevitably result. Not only would this change improve access for those who have been historically underrepresented in higher education, but also it could command the support of all Californians with a stake in expanding opportunities to attain a 4-year college degree.

¹¹ UC has recently approved a number of additional changes in its eligibility requirements that are scheduled to take effect in 2012. The changes include increasing the ELC percentage from 4% to 9% and creating a new category, “Entitled to Review” (ETR), under which students will have no fixed eligibility requirements but will be selected based on local campus admissions criteria. Though it was originally hoped that these changes would broaden the UC eligibility pool to include a more diverse group of students, recent simulations now suggest that the changes will have “... essentially race-neutral effects across the system” (University of California, 2010: 8). Reconfiguration of UC eligibility criteria is unlikely to make a substantial difference in the diversity of the pool as long as it is limited by the Master Plan’s 12.5% cap.

Proposals for Expanding Baccalaureate Capacity and Degree Attainment

Proposals to lift the Master Plan's caps on eligibility for UC and CSU have surfaced periodically over the years but have never gained serious momentum due to the prohibitive costs of building and operating new 4-year campuses. In their 1987 review, the California Commission for the Review of the Master Plan issued a series of discussion papers that included this recommendation:

While it is true that there are definite benefits to the current system, it is also true that access to the baccalaureate degree is difficult for many. Although most of the relevant problems are not of the universities' making... it remains clear that UC and CSU's selective admissions policies further exacerbate the access dilemma. ... One of the most obvious possibilities for change is to alter the percentages of students the two systems are allowed to enroll. By altering percentages, the eligibility pool could be broadened while leaving university admission criteria otherwise intact (Commission for the Review of the Master Plan, 1987).

The recommendation did not, however, become part of the Commission's final report. Similar recommendations made by the California Assembly Committee on Higher Education and other state higher education experts have never advanced beyond the discussion stage (Assembly Committee on Higher Education, 1993; Callan 1992; Hamlett, 2006).

Expanding eligibility targets for California's public universities is simple enough in concept but considerably more difficult in practice: How could sufficient additional enrollment capacity be created to accommodate the larger numbers students who will become eligible as a result? The following sections consider three approaches that have been proposed for expanding baccalaureate enrollment capacity and degree attainment: (1) building new 4-year campuses and/or expanding existing ones; (2) enabling the community colleges to offer 4-year degrees; and (3) converting some community colleges into 2-year UC and CSU branch campuses. Examples and models from other states are presented. As will be seen, each approach presents its own problems and challenges.

Before that, however, it is necessary to deal with another oft-discussed approach – improving the community college transfer function. An important implication of the foregoing analysis is that efforts to improve the transfer function are unlikely to have a significant impact on baccalaureate attainment in California in the absence of additional enrollment capacity at the 4-year level.

The limits of transfer

With the highest number and proportion of community-college enrollments of any state, California has a long history of efforts to improve the transfer function and make it more efficient. From the beginning, transfer was viewed as the potential Achilles heel of the Master Plan (Clark, 1960), and since then a great deal of hard work and innovation has gone into expanding the flow of students from 2-year to 4-year institutions. Those efforts were redoubled in the mid-1980s, when California launched a series of transfer initiatives including Project ASSIST (Articulation System Stimulating Interinstitutional Transfer), a computerized articulation and transfer planning system supported jointly by the three public higher education segments; the California Articulation Numbering (CAN) system, which assigned common numbers to courses deemed comparable across segments; Community College Transfer Centers, designed to provide on-campus counseling and guidance to potential transfer students; and the Intersegmental General Educational Transfer Curriculum (IGETC), a core transfer curriculum that community college students may use to satisfy all of their lower-division general education requirements for UC or CSU. Several of these innovations have been imitated by other states.

Yet despite these efforts and notwithstanding the huge expansion in CCC enrollments since the 1980s, the number of transfers has grown very little. Over the last two decades, the combined number of CCC transfers to UC and CSU has risen from about 57,000 students to just 64,000 per year, and in several years the numbers have shown declines.¹² In a recent report, the California Postsecondary Education Commission had this harsh assessment of the state's track record on transfer:

¹² UC recently has enjoyed somewhat more success in increasing transfer admissions, though starting from a much smaller base than CSU. The number of full-year CCC transfers to UC increased from about 10,000 in 1990 to about 14,000 in 2009, with most of the increase occurring in the last 10 years as a result of memorandum of understanding between UC and CCC. CCC transfers to CSU increased from

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As the numbers above show, progress on student transfer has been uneven, at best, and totally absent at worst with regard to transfer to the UC and CSU. Of great concern is that declines in transfer to UC and CSU campuses do not appear to be impacted by the advent of the many new State-funded transfer initiatives and policies that have been created over that time (CPEC, 2002: 11).

The CPEC report continued:

[F]or all of the concern expressed about the failings of the current transfer process, very little research has been done on the potential that, given the complexity and diversity of students, *there might be some effectively maximum levels of transfer the State can reasonably expect. It is possible that, absent substantial changes in segmental mission and State law, the numbers of students transferring annually could be averaging some natural, operational ceiling, although one that is lower than policymakers envision.* While it is clear that adjustments should be made to the current process to better facilitate community college transfer, the extent to which any such changes will yield increased numbers of successful transfers has yet to be determined (CPEC, 2002: 11-12, emphasis added).

If there is an operational ceiling to the number of community-college transfers, the reason is not hard to find: California's relatively limited 4-year enrollment capacity has restricted not only freshman admissions, but transfer admissions as well. Although the Master Plan requires that both UC and CSU maintain a 60%/40% ratio of upper-division to lower-division enrollments in order to leave room for upper-division transfers from the community colleges, those percentages also include many continuing students, so that the space available for first-time students – whether freshmen or transfers – is relatively limited. At UC, freshmen traditionally have accounted for the largest share of all first-time undergraduates, about 70%, with transfers making up the balance. At CSU, in contrast, transfers historically have accounted for the majority of first-time students, although this pattern has reversed in recent years; transfers have declined from about 60% of all first-time students in the early 1980s to about 43% today, and freshmen now account for the majority of new CSU undergraduates.

It follows that, to produce a significant increase in transfer admissions at California's public universities, freshman admissions would need to be reduced in inverse proportion (assuming that continuation rates for other students remained constant). Not only would this contravene the Master Plan's provisions for freshman eligibility, but also it would likely worsen California's already poor record of baccalaureate attainment. Fewer students would enter 4-year institutions directly from high school, more students would be diverted to 2-year institutions, and a greater proportion of qualified students would attend institutions for which they were "undermatched" – all of which could be expected to diminish, rather than improve, 4-year completion rates. Expanding transfer admissions is an unlikely prescription for improving baccalaureate attainment in California in the absence of additional capacity at the 4-year level.¹³

Building new 4-year capacity

Perhaps the most compelling case yet made for building new 4-year enrollment capacity has been put forward in a recent study conducted by Hans Johnson for the Public Policy Institute of California:

PPIC projects a deficit of one million college educated workers in California by 2025 unless the state is able to substantially increase rates of college enrollment and graduation. California cannot close the gap by drawing college educated workers from elsewhere. Instead, the state will need to produce more graduates through its own colleges and universities. ...

about 47,000 1990 to 50,000 in 2009. These and other transfer data cited in the text are drawn from CPEC's website: <http://www.cpec.ca.gov/OnLineData/TransferPathway.asp>.

¹³ Another, more radical proposal to improve transfer rates would be to divide up community colleges into vocational and transfer-only campuses, thereby taking advantage of the efficiencies of specialization (see, e.g., Orfield & Paul, 1992). Even if this reform were successful in producing more transfer-ready students, however, California has too little baccalaureate capacity at the 4-year level to accommodate these additional students without displacing first-time freshmen.

Today, 50 years after the Master Plan went into effect, the same quotas for the UC and CSU systems are still in place -- even though workforce demands in California have changed dramatically. Currently, 31 percent of working age adults in California have at least a bachelor's degree -- a dramatic increase over 1960 but still too low for an economy that will increasingly demand more highly educated workers. In today's economic and educational context, then, the Master Plan perpetuates levels of college completion that are insufficient for the challenges of the 21st century (Johnson, 2010: 1,4).

Consistent with the argument advanced here, the PPIC analysis draws upon a variety of educational indicators to demonstrate that B.A. attainment in California is alarmingly low compared with other states, that many more of the state's high school graduates are prepared for university-level work than are now attending, and that underrepresented minorities would benefit disproportionately from raising the Master Plan's caps on 4-year eligibility. On this basis, the PPIC analysis proposes:

Eligibility goals for the CSU and UC systems should be gradually increased to new levels by 2025. The share of the state's high school graduates eligible for UC should grow from the top 12.5 percent to the top 15 percent of high school graduates. The share eligible for CSU should grow from the top 33.3 percent to the top 40 percent (Johnson, 2010: 1).

The proposed eligibility targets would expand enrollments by about 20% at both UC and CSU.

As the PPIC analysis acknowledges, however, creating the capacity to accommodate these additional students is an expensive proposition. The analysis is not entirely clear whether the increased capacity would be created by building new UC and CSU campuses or expanding existing ones, but in either case the additional cost to the state would be considerable:

Judging by 2008–2009 levels of state expenditures per full-time-equivalent (FTE) student, we estimate that our eligibility and transfer proposals—once fully implemented in 2024–2025—would cost the state an additional \$1.6 billion in General Fund expenditures, an increase in higher education expenditures of 17 percent. These costs would support increased enrollments at UC and CSU (\$940 million for enrollment of newly eligible high school graduates and \$440 million for new transfer students) and increases in Cal Grants (\$220 million) (Johnson, 2010: 15).

Moreover, this estimate considers only additional operating costs and does not take into account the substantial capital costs required to build new 4-year campuses or expand existing ones.¹⁴

Given California's current and foreseeable fiscal climate, it seems unlikely that the state would be willing and able to fund expansion of its public universities to the extent that the PPIC analysis envisions. Higher education has received a steadily declining share of the state budget over the last several decades, a trend that has only worsened during the recent recession. In the last two years alone, state funding for higher education has been slashed by over \$1.2 billion or about 25% (Legislative Analyst's Office, 2009), and both UC and CSU for the first time have denied admission to some eligible students. In view of these circumstances, it is unrealistic to expect a significant augmentation in state funding to expand 4-year enrollment capacity. Merely recouping state support to return to existing Master Plan enrollment targets may prove a major challenge.

Short of building or expanding 4-year campuses, there are a number of other options for creating additional enrollment capacity at UC and CSU although they, too, are not without difficulties. Former UC provost C. Judson King has provided a comprehensive catalog of such options (King, 2006), but most would either involve significant additional costs or else yield relatively minor improvements in capacity. The proposal for UC and CSU to build or purchase satellite campuses, for example, would require additional capital outlays as well as ongoing operating support from the state. Proposals to free up enrollment capacity by making more efficient use of existing 4-year campuses, such as by moving to year-round operation, may seem initially plausible but on closer examination are less so. The advantage of year-round operation is that more students can be accommodated within the same physical plant, thereby reducing future capital outlays (the cost of a building

¹⁴ The only mention of capital outlays in the PPIC analysis is the following footnote: "Capital expenditures have been less of an impediment. Voters in California readily passed bonds for educational facilities. ... PPIC's November 2009 statewide survey shows that a majority of voters would support a higher education bond measure. Also, UC has been fairly successful in raising private funds for capital" (Johnson, 2010: 23).

not built) and accelerating student time-to-degree, at least in theory. But mounting a full academic program during the summer term requires additional operating revenues to support the expanded instructional program, so that any future capital savings are quickly outweighed by the upfront increase in operating costs as well as the loss of revenues from Summer Session and other summer-term activities for which campus facilities are already used (Geiser, 1994). During the recession in the early 1990s, UC analyzed a variety of proposals to free up enrollment capacity through greater operating efficiency and faster student “throughput” – e.g., encouraging students to enter with advanced standing, charging for excess units, making better use of the physical plant during evenings and weekends as well as summer term, creating incentives for students to “finish in four,” offering a three-year degree in some fields – but concluded that such measures, while useful, would have only a marginal overall impact on enrollment capacity (Geiser, Gordon, & Guerra, 1994; Geiser, 1994; Guerra & Merritt, 1994; Guerra, 1994).

In sum, short of building new enrollment capacity at 4-year institutions, it is doubtful that efficiency measures could create sufficient additional capacity to accommodate the large number of newly eligible UC and CSU students that the PPIC proposal envisions. Yet the idea of expanding or building expensive new 4-year campuses seems equally implausible given the state’s structural budget deficit and long-term fiscal outlook.

Enabling community colleges to offer 4-year degrees

A growing, if controversial, practice is to enable community colleges to award 4-year degrees. Led by Florida, some states have authorized their community colleges to confer bachelor’s degrees, usually in applied fields such as nursing or public safety (Floyd, Skolnik, & Walker, 2005). Rather than build additional baccalaureate capacity at the 4-year level, the “community college baccalaureate” aims to boost B.A. attainment by adding that capacity at the 2-year level and thereby eliminating the need for transfer – students can complete a 4-year degree without having to leave their local community college. In addition to Florida, whose community colleges now offer 4-year degree programs in over 100 majors, several other states including Arkansas, Georgia, Hawaii, Montana, Nevada, Oklahoma, Texas, Utah, and West Virginia also have authorized some of their community colleges to award bachelor’s degrees (Floyd, 2005: 36-39). Indeed, the growing number of community colleges that award B.A.s has prompted the Carnegie Classification of Institutions of Higher Education to add a new category called “baccalaureate/associate’s colleges” – colleges that primarily confer associate’s degrees and certificates, but where at least 10 percent of the conferrals are bachelor’s degrees (Carnegie Foundation, 2010).

The idea of the community college baccalaureate has faced strong criticism not only from 4-year colleges and universities, as might be expected, but also from some within the community colleges themselves. Critics fear that community colleges will undergo “mission creep” (Mills, 2001) or “status creep” (Pederson, 2001), resulting in the kind of unregulated institutional competition for resources and prestige that characterized California higher education prior to the adoption of the Master Plan. Those at public universities are concerned that the costs of mounting upper-division programs at 2-year institutions will divert scarce resources that could be deployed more effectively at the 4-year level. Interestingly enough, some within the community colleges also express concern that offering the baccalaureate will change them from open-door, community-based, vocationally oriented institutions to more exclusive, upwardly mobile, academically oriented institutions. A number of 2-year colleges that have been authorized to award the B.A. have subsequently transformed into 4-year institutions offering numerous baccalaureate programs and have dropped “community” from their names (Townsend, 2005: 184).

Proponents of the community college baccalaureate respond to these criticisms in two main ways. First, they point out that in most cases, community college baccalaureate programs are offered in applied majors that 4-year institutions are unwilling to offer, such as manufacturing technology, culinary arts, information technology, and the like. Such programs are sometimes collectively referred to as “applied baccalaureates” or “workforce baccalaureates” for this reason. Proponents argue that such programs are not only a natural extension of the community colleges’ vocational mission, but also that they do not compete with senior institutions or duplicate their programs (Walker & Floyd, 2005).

The second response is that the community college baccalaureate is necessary to extend access to 4-year degree programs for those who “... can’t complete a bachelor’s degree because they can’t relocate, they’re on limited incomes, they’re held back by the transfer restrictions of receiving institutions, or they aren’t equipped to face the hardships of readjusting to a new higher education environment (Burke & Garmon, 1995: 35). It is not surprising that the two largest states that have thus far authorized community colleges to award 4-year degrees, Florida and Texas, rank in the top ten in 2-year college enrollments but, like California, fall in the bottom ten in B.A.s awarded per population 18-to-29 years old (see Appendix 2).

The push for the community college baccalaureate has led in some instances to the adoption of a related institutional model with which it is sometimes confused -- the "university center" model (Floyd, 2005; Lorenzo, 2005). Under this model, 2-year and 4-year institutions collaborate to offer upper-division coursework, enabling students to complete all or most of their 4-year degree program at a community college campus. Unlike the community college baccalaureate, however, the senior institution actually awards the degree. Although not a new concept, the university center model has gained new momentum in recent years at least in part because it has allowed 4-year institutions to fend off the push for the community college baccalaureate. In Florida, for example, before 2-year campuses can be authorized to offer a B.A. in a given field, 4-year institutions may decide whether they are willing to offer the same program; in 2003, Florida denied authority for two community colleges to offer B.A. programs because the State Board of Education instead recommended a partnership with local 4-year colleges (Townsend, 2005: 186). A similar scenario has occurred in Arizona (McKee, 2001). The university center model (sometimes also known as the "joint use" or "co-location" model) is now employed in at least 20 states (Floyd, 2005: 34), several of which have also approved the community college baccalaureate.

Legislation to introduce pilot baccalaureate programs in three community college districts has been proposed in California (AB 2400, Anderson, Block, & Hill), but has been opposed by both UC and CSU and appears to have stalled as of this writing (Gao, 2010). One issue is cost. Like the proposal to expand or build new 4-year campuses, so too the proposal to authorize 2-year colleges to offer the B.A. can involve significant new startup as well as ongoing costs, as Florida has discovered:

Community colleges can incur large start-up costs to offer baccalaureate degree programs. Community colleges offering their own baccalaureate degrees must fulfill the accreditation requirements of the Southern Association of Colleges and Schools (SACS). To meet these requirements, a community college may need to expand its library holdings, upgrade its facilities, and increase the number of faculty with Ph.D.s to teach the proposed programs. For example, Miami-Dade College needed to upgrade its science laboratories to offer a baccalaureate degree in secondary science education (Florida Office of Program Policy Analysis and Government Accountability, 2005: 7).

There is too little of a track record to know whether community college baccalaureate programs would help boost B.A. attainment in California. Such programs eliminate the need for transfer and so might help improve completion rates for "place bound" students. Yet given the strong relationship noted earlier between institutional selectivity and degree completion, expanding baccalaureate capacity at the 2-year level, among institutions where B.A. completion is neither the expectation nor the norm, might have much less of an effect than hoped. Another concern is the quality of the community college baccalaureate degree and whether it would be accepted in the workplace or by other universities for admission to advanced degree programs (Manzo, 2001; Wattenbarger, 2000). Finally, authorizing a community college baccalaureate would represent a major change in the Master Plan and would likely face stiff resistance from California's public universities for that reason.

The university center model, on the other hand, seems a better fit for California in several ways, and it is much more frequently employed in other states (Floyd, 2005). Students can still complete their B.A. at a community college but accreditation is not a concern (since degrees are awarded by 4-year institutions), the quality of the degree is less of an issue, and startup costs are lower (Florida Office of Program Policy Analysis and Government Accountability, 2005: 4). Another advantage of the model is that, unlike the community college baccalaureate, it need not be limited to degrees in applied fields, so that a wider spectrum of degree programs is possible. Nor would any change in the Master Plan be needed to authorize community colleges to offer the B.A.

Yet university centers would require additional operating revenues in order to support expansion of upper-division enrollments at the community colleges. Though a portion of those costs might be mitigated by having 4-year institutions offer some upper-division coursework online (Lorenzo, 2005), the additional costs would still be non-trivial. Moreover, establishing university centers in California's community colleges would require the active support and collaboration of UC and CSU, and it could be difficult to persuade them to participate in a reform effort of this kind at a time when their own fiscal situation is so precarious.

Converting some community colleges into 2-year university branch campuses

A third approach to expanding 4-year baccalaureate capacity in California would be to convert some community colleges into 2-year branches of UC and CSU campuses. Of all of the options considered here, this approach would be least expensive

since, rather than build new capacity, it would redeploy capacity that already exists. At the same time, however, it would be administratively difficult and likely face political opposition.

Conversion of community colleges into university branch campuses is not a new idea. Among the first to broach this proposal were Orfield and Paul in their comparative study of state higher education systems and college completion. To improve college completion in states, like California, with a heavy investment in 2-year institutions, Orfield and Paul advocated "... dividing them by mission and purpose into a set of vocational campuses and a set of transfer campuses," and then affiliating the transfer campuses with 4-year institutions (Orfield & Paul, 1991).

Similarly Steven Brint, a leading student of the community colleges and co-author, with Jerome Karabel, of the definitive history of the community college movement, *The Divided Dream*, has suggested:

One solution to the persisting performance problems of community colleges would be to split the colleges into three parts: one modeled on private-sector vocational training, another organized as two-year branches of four-year institutions, and a third as a community center for courses of avocational interest (Brint, 2003: 16).

Perhaps the most compelling case for converting community colleges into university branch campuses has been made by Kevin Dougherty in *The Contradictory College*:

Although the community college has become the norm for two-year colleges, it is by no means the only way a rewarding comprehensive two-year education can be provided. An alternative very much worth considering is the two-year state university branches that are found in several states: Alaska, Connecticut, Hawaii, Kentucky, Louisiana, New Mexico, Ohio, Pennsylvania, and South Carolina ... (Dougherty, 1991: 266).

Dougherty noted several features of 2-year branch campuses that make them more effective than traditional community colleges in boosting B.A. completion. Branches are typically considered an integral part of the parent university, rather than a separate institution, so that student movement between campuses is easier, often without the need for a transfer-admissions process. Financial aid can be administered as part of a unified student aid program that serves branch-campus students as well as those at the parent campus. Usually the parent university approves branch courses in advance -- branch courses may even have the same curricula and numbering as those at the senior campus -- so that students have much less difficulty in receiving academic credit for their work. Branch-campus faculty are in some cases approved by the parent campus and considered members of universitywide departments, so that there is not the disparity in academic norms and standards that too often divides community-college and university faculty. All of these features help surmount the structural obstacles to baccalaureate attainment posed by the community-college transfer function (Dougherty, 1991: 266-269).

At least 18 states¹⁵ have established 2-year branch campuses as part of their state university systems, and they offer an array of models for how such institutions may be organized and operated. The University of Connecticut administers a set of five "regional" campuses where students can complete the first two years of study in over 100 undergraduate majors and then transition to the main campus at Storrs to complete their B.A.s. In the University of South Carolina system, branches offer associate degree programs paired with baccalaureate degrees offered by the closest 4-year campus. The University of Wisconsin operates thirteen 2-year campuses throughout the state dedicated exclusively to baccalaureate preparation; Wisconsin is one of the few states, with Indiana, to draw a sharp separation between transfer and vocational education at the 2-year level, with different campuses dedicated to each mission. Conversely, the branch systems in Alaska, Hawaii, Kentucky, and New Mexico maintain strong vocational programs (Dougherty, 1991: 266).¹⁶

¹⁵ The National Center for Educational Statistics stopped collecting separate branch campus statistics in 1986, so that precise data are unavailable. Part of the problem is defining precisely what is meant by a "branch" campus. These may include 4-year as well as 2-year institutions, although the focus here is on the latter. Under any definition, however, it is clear that recent growth in the number of branch campuses throughout the U.S. has been considerable (Fonseca and Bird, 2007; Schuman, 2009).

¹⁶ Ironically, one factor that has facilitated the recent proliferation of branch campuses is information technology. Rather than eliminating the need for a physical campus, that technology has made it easier to establish satellite campuses to serve place-bound students who are geographically restricted in their choice of college:

Branch campuses also vary widely in their modes of governance and the degree to which the parent campus exerts authority over administrative and academic affairs. The Ohio State University devolves authority over most administrative matters to its five branch campuses, but retains central authority over the critical academic areas of curriculum and tenure; branch faculty are tenured and considered part of the main campus departments at Columbus. Where there is a strong tradition of local control, branches sometimes operate under the dual authority of a local board and a systemwide board (Schwaller, 2009: 68). In states such as Georgia and Minnesota, on the other hand, where there is less of a tradition of local control, integration of 2-year campuses within their respective state university systems has been effected at the statewide level (Phillippe & Patton, 2000).

While a variety of administrative arrangements are possible, one feature that appears essential to provide students a seamless transition from the branch to the parent campus is uniformity of the academic program. In the ideal case, branches are treated by their parent campuses as part of the same university. Pennsylvania State University, for example, operates its branch campuses under a philosophy "...of one university, one academic program, and one faculty" (Pennsylvania State University, 1983). In 2005, Penn State consolidated 14 branch campuses, located throughout the state, into one "university college." The campuses offer a limited number of terminal degrees in selected fields, but in most cases students pursue lower-division programs of up to two years of study in over 160 baccalaureate majors offered by the university. Students then transition to the main campus at University Park to complete their degree programs, a process known as "change of assignment" since transfer, as such, is effectively eliminated (Pennsylvania State University, 2010).

Any number of branch models might work in California, although some kind of joint governance arrangement might make the most sense, since California would not be building its branch system from scratch but converting some of its existing community colleges for this purpose. Administering branch campuses under the joint authority of the 2-year and 4-year systems would respect the CCC's strong tradition of local governance, yet be responsive to UC and CSU's needs to ensure that the academic program is fully equivalent to that at the parent campus.

Relatively few of California's 112 community colleges would need to be converted into university branch campuses in order to expand 4-year baccalaureate capacity in significant proportion. For example, to expand enrollment capacity at UC and CSU by 20%, as envisioned by the PPIIC proposal, as few as ten to fifteen community colleges would need to be designated as branch campuses; the great majority of 2-year campuses would be unaffected.¹⁷ For those community colleges designated as university branches, an effective arrangement could be to affiliate them with the most selective UC and CSU campuses. Those campuses have the highest graduation rates and most exemplify a collegiate culture in which graduation is both the expectation and the norm. Taking advantage of the strong relationship between institutional selectivity and college completion, noted earlier, affiliating 2-year branch campuses under the umbrella of a UC Berkeley or CSU San Luis Obispo would be most likely to boost baccalaureate completion rates.

Because branch campuses would continue to serve their primary mission of "instruction at the lower-division level" (California Education Code Section 66010.1-66010.8), it may be assumed that funding both from local tax revenues as well as state General Fund apportionments under Proposition 98 also would continue. Proposition 98 funding accounts for the largest share of community college revenues, followed by property taxes. It is true that revenues from both sources have fallen far short of need in recent years. The legislature has voted repeatedly to suspend the statute guaranteeing the community

It may be that the real impact of technology has been to enable the expansion of branches. Distance education, whether by web or interactive television, allows hard-to-deliver courses to be transmitted from main campus to branch and from branch to branch. But technology has allowed more than just distance delivery of classes. Library access via technology has enabled branch campuses to operate with a small core of books and journals while offering almost the same digital access to written materials as on the main campus. Electronic data transfer allows low-cost synchronous access to registration, admission, and financial aid transactions without the cost of duplicating expensive computer systems and personnel at the branch campus (Fonseca & Bird, 2007).

¹⁷ According to the California Postsecondary Education Commission, total FTE enrollment at UC and CSU combined was about 580,000 in 2009; a 20% increase in enrollment capacity would translate into approximately 116,000 additional FTE students. The 112 California Community Colleges had a total FTE enrollment of about 1,204,000, or an average of about 11,000 FTE students per campus. Thus, depending on the particular community colleges chosen, about 10 to 15 campuses would need to be designated as branches in order to expand baccalaureate capacity by 20% at the 4-year level.

colleges a minimum share of Proposition 98 funding, and property tax revenues have continued the long-term decline that began with passage of Proposition 13 in 1978 (Murphy, 2004). Community colleges now receive an appropriation of about \$4,000 for each additional full-time equivalent student, compared to about \$8,000 for CSU and \$11,000 for UC.¹⁸

Yet lower-division instruction is much less expensive than upper-division and graduate-level instruction. Lower-division classes are typically larger, with higher student-faculty ratios and lower instructional costs than upper-division and graduate-level classes (Brinkman, 1990), so that the per-student cost of lower-division instruction at UC and CSU is much closer to community colleges' instructional cost than is often realized. Were some community colleges converted into lower-division branches of UC or CSU campuses, the marginal cost of instruction formula under which community college enrollments are currently funded would likely be sufficient to cover most if not all core instructional costs. Nor would significant new capital outlays be required.^{19, 20}

At the same time, however, conversion of some community colleges into university branch campuses raises a number of difficult issues. For those community colleges designated as UC or CSU branch campuses, the goal would be to make these institutions academically equivalent in every respect – admissions requirements, curriculum, quality of instruction, and so forth – with lower-division programs at the parent UC or CSU campus. This would mean eliminating the current open-door admissions policy at those campuses. It would require de-emphasizing vocational programs in favor of pre-baccalaureate instruction at branch campuses (though not at other community colleges). It also might require replacing some faculty, who are unionized and whose positions are contractually protected.²¹ Though the vast majority of California's 2-year institutions would not be affected by these changes, implementation of the university branch model at designated community colleges undoubtedly would be a difficult process.

For these reasons, the proposal to convert some 2-year institutions into university branch campuses could well face political opposition. Even if branch campuses were administered under the joint auspices of California's community colleges and universities, it is likely that some at the 2-year level would perceive such reforms as a "takeover" of community colleges by UC and CSU. To be successful, the proposal would require the active collaboration of the community colleges, and it is not immediately apparent what incentive they might have to support it.

A Path Forward

California urgently needs to increase the number of students who enter 4-year degree programs directly from high school in order to improve baccalaureate attainment among its growing and increasingly diverse college-age population. Yet creating new baccalaureate capacity, either by building new 4-year campuses or, as in the case of the proposed community college baccalaureate, creating new B.A. programs at the 2-year level, is prohibitively expensive. Instead of building new capacity, a strategy of restructuring California's existing postsecondary system makes a great deal more sense even though it, too, presents its own problems.

¹⁸ Based on California Postsecondary Education Commission's estimates of the marginal cost of instruction within each segment, assuming restoration of state appropriations for unfunded enrollment after 2010 (CPEC, 2010).

¹⁹ One type of capital improvement that might be required in order to foster a residential environment are student dormitories, although these are often treated as self-supporting auxiliary enterprises at the 4-year level and are not necessarily supported from state revenues.

²⁰ Expansion of lower-division enrollments at branch campuses also implies changes in enrollment patterns at parent UC and CSU campuses in order to accommodate additional students at the upper-division level. Options include altering the ratio of upper-division to lower-division enrollments; bringing enrollment up to existing Long Range Development Plan (LRDP) targets; raising LRDP targets; and employing instructional technology to offer some classes offsite or at branch locations (King, 2006). While raising LRDP targets could involve significant new costs, most of the other options listed would not be as expensive and, in any case, would be far less costly than building and operating new 4-year campuses.

²¹ King (2006) has suggested that it would be administratively simpler for public universities to create new lower-division satellite campuses from scratch, either by building or purchasing new sites, rather than converting existing community college campuses for this purpose. Though administratively simpler, however, that approach would incur much larger capital and operating costs.

A hint at what structural reform might look like is provided by both the university center and 2-year university branch models. Both would create new “hybrid” institutions at the interface between California’s 2-year and 4-year sectors. In the case of the university center model, UC and CSU would offer upper-division coursework at community college campuses; in the case of the branch model, some community colleges would become, in effect, lower-division satellites of UC and CSU campuses. Both would enable students to progress seamlessly to a baccalaureate degree. University centers would allow “place bound” students to complete their entire baccalaureate program at a community college campus; the university branch model would facilitate baccalaureate attainment by eliminating the traditional transfer function and expanding capacity at the 4-year level. What these models have in common is that they help bridge the divide between 2-year and 4-year institutions, enabling more students to enter baccalaureate programs directly from high school and complete their degrees with a minimum of interruption.

The university center and 2-year branch models are only two examples of this approach to structural reform, and there may well be other useful models. UC’s unsuccessful effort earlier in this decade to establish a “dual admissions” program in partnership with the California Community Colleges was motivated by the same impulse.²² Outside of California, the last two decades have seen a flurry of partnerships between community colleges and 4-year institutions that go beyond traditional articulation agreements to establish new, hybrid institutional forms for baccalaureate education. In place of traditional “2 + 2” models, “3 + 1” models have become increasingly common, with students completing three years rather than two years of their baccalaureate program at a community college before transferring to a 4-year institution for their final year (Floyd, 2005: 32). “Joint use” or “co-location” models also have become much more common, whereby 2-year and 4-year institutions deliver instruction at the same physical location, most often on the community college campus; in a recent survey, 20 states (not including California) reported joint-use facilities of this kind (Windham, Perkins, & Rogers, 2001). In some states, consortia made up of several institutions (sometimes including private partners as well) have united to establish “multi-institutional teaching centers”; Minnesota, South Carolina, and Texas are examples of this approach (Lorenzo, 2005: 78-79). Other states, such as Arkansas, Hawaii, Louisiana, Oklahoma, and West Virginia, have established collaborations between university extension programs and community colleges to offer 4-year degrees. The university extension model is similar to the university center model in that upper-division courses are delivered at local sites apart from the main university campus, but differs in that the sites are formally considered part of the university (Floyd, 2005: 35-36). Yet another approach is the “virtual” model, under which 4-year institutions offer upper-division programs online rather than onsite; Ohio’s Community College Alliance is probably the nation’s premier example of this model (Lorenzo, 2005: 80).

Outside of the U.S., Canada has been a leader in developing new, hybrid institutions of this kind (Laden, 2005). The Canadian province of British Columbia is one example. Until the 1990s, British Columbia’s postsecondary system was divided between its universities and a set of 16 comprehensive community colleges, modeled on California’s, that combined university transfer with vocational programs. Concerned with the need to improve baccalaureate attainment, British Columbia converted five of its 2-year institutions into “university colleges,” partnered with 4-year institutions, which now offer the B.A. (Skolnik, 2005).

There are, then, a number of possible variations on this general theme. These kinds of intermediary, hybrid institutional forms would seem the ideal prescription for California’s sharply bifurcated postsecondary system, with its highly restricted 4-year segments and massive 2-year sector.

Given the collaborative nature of such models, however, they would require the active support of California’s community colleges and public universities, which is by no means certain or even likely. To the contrary, UC and CSU might be more likely to oppose establishment of university centers on 2-year campuses as a diversion of scarce resources, just as the CCC system might reject conversion of some its campuses into university branches. Indeed, the question must be asked whether structural reforms of this type and magnitude are even possible in California.

²² Under the “dual admissions” proposal, students who ranked within the top 12.5% of their high school graduating class, but who were not otherwise eligible for UC under freshman eligibility criteria, would be guaranteed automatic admission to UC as juniors upon completion of specified coursework at a community college. The proposal thus would have eliminated the requirement for participating students to apply and be admitted to UC under the normal transfer–admissions process. The proposal was administratively complex, however, and preliminary simulations indicated that the yield of additional transfer students would have been relatively small (Geiser, 2000). Though approved by the UC regents, the dual admissions proposal did not receive funding from the state and was never implemented.

Lessons of the Master Plan

The 1960 Master Plan was the last great episode of planned structural reform in California higher education, and it is useful to recall the circumstances under which those reforms were enacted. When the idea of a master plan first surfaced in the late 1950s, there was considerable support among state officials for the idea of a “superboard” to oversee all public colleges and universities. Most other states would follow this path – by 1969, 33 states had established governing boards with regulatory powers over all or most public 4-year institutions – and it appeared for a time that California would be among them (Douglass, 2000).

As historian John Aubrey Douglass has observed in *The California Idea*, it is fortunate for the state that this did not happen. The final plan that eventually emerged from negotiations among the state's higher educational leadership endorsed a strict differentiation of functions among UC, the state colleges, and the junior colleges, thereby avoiding the costly institutional competition for resources and prestige common in other states. Consistent with the principle of differentiation of function, UC maintained its own, constitutionally autonomous board of regents, and a new, independent board of trustees was created for the state colleges (later to become CSU). Instead of a superboard, the plan established a new state agency, the Coordinating Council for Higher Education (later to become the California Postsecondary Education Commission), whose role was limited to approving new campuses and reviewing proposals for graduate programs. Given that the Master Plan was developed from within, rather than imposed upon, higher education, it is no accident that it preserved and built upon the distinctive strengths within each segment of the tripartite structure of postsecondary education that already existed in California (Douglass, 2000).

The circumstances facing California higher education in 1960 are similar in some ways to the situation it confronts today. Then as now, higher education faced projections of increasing enrollment demand coupled with the prospect of limited long-term growth in state revenues; the essential question was and is how to accommodate enrollment growth in an era of limited resources.

But the circumstances differ in other ways. In 1960, there was no single voice that could speak for the junior colleges. Though the Master Plan Survey Team included a representative from the junior colleges, the negotiations were dominated by representatives of the state colleges and UC. Today the community colleges not only have grown enormously but are represented by an increasingly powerful voice in the CCC Chancellor's Office, whose authority both within and without the 2-year sector has been reinforced by the declining importance of local tax revenues and the growing importance of state appropriations in funding that sector. The community colleges will have a much stronger and more unified voice in any negotiations conducted today.

Another important difference is that half a century has passed since the original Master Plan was enacted, and that experience offers the benefit of hindsight on what features have worked, and not worked, effectively. The principle of differentiation of function laid the foundation for the blend of world-class research and mass higher education for which California is admired, and that principle is now widely accepted. The growth of vocational education in the community colleges is another great success story and is generally regarded as vital to the state's economic well-being. What has not worked effectively is the Master Plan's design for baccalaureate education, including but not limited to the transfer function.

These reflections on the history of the Master Plan suggest the following conclusions and principles to guide future efforts to reform it:

1. Amending the Master Plan need not, and should not, alter its essential features. The principle of differentiation of function has worked well in encouraging UC, CSU, and the community colleges to pursue excellence in their respective spheres and thereby avoid the costly competition for resources and prestige often seen elsewhere. While preserving the distinctive missions of California's postsecondary institutions, the need now is to build their capacity to work together as a system to improve baccalaureate education – the one mission that all three segments share.
2. Rather than building new baccalaureate enrollment capacity, a strategy of restructuring existing institutions makes more sense. Indeed, given higher education's current and foreseeable fiscal environment, restructuring may be the only

possible strategy. Initiatives that fall short of structural reform, such as efforts to improve the traditional transfer function, have failed to improve baccalaureate attainment in the past and are unlikely to do so in the future.

3. Vocational education must not be compromised. The goal of structural reform should not be to expand baccalaureate programs at the expense of vocational education, but to utilize more effectively the baccalaureate capacity that already exists within California higher education.
4. A promising direction for structural reform is creation of a set of intermediary, hybrid institutions at the interface between California's community colleges and public universities. A variety of examples, including university centers and 2-year university branch campuses, can be found in other states. Such collaborative arrangements help bridge the divide between 2-year and 4-year institutions and enable students to progress more seamlessly to a B.A.
5. Amending the Master Plan is a process best initiated from within California higher education, if under the watchful eye of the legislature and governor. Institutional reform involves a host of complex issues that faculty and administrative leaders of the three segments are best positioned to address. Negotiation of reforms by those closest to the ground is most likely to yield a workable and educationally sound result.

The question remains: What is the incentive for California's public colleges and universities to engage in this kind of large-scale structural reform?

One incentive may be the desire to pre-empt a state-imposed solution. Many lawmakers have become increasingly dissatisfied with the state's lack of progress in baccalaureate attainment, especially with regard to transfer, and have offered legislative solutions of their own. Two "transfer reform" bills (SB 1440, Padilla and AB 2302, Fong) recently have been signed into law that guarantee junior status at CSU for students who complete a prescribed community college program, and that prod UC to create a similar transfer pathway; neither bill includes budget provisions for accommodating the additional students who may become eligible for CSU or UC as a result. As noted earlier, legislation also has been introduced in California to authorize community colleges to award B.A.s, and the threat of such legislation has led other state higher education systems to introduce university centers and similar reforms as a preventative move. As with the original Master Plan, the prospect of an externally imposed solution may once again spur California's colleges and universities to renegotiate the structure of baccalaureate education.

Yet there is a more fundamental incentive: California's public universities and community colleges each have what the other needs to complete their shared baccalaureate mission. The community colleges have the baccalaureate enrollment capacity that public universities need to expand student access and degree attainment at the 4-year level. Public universities have the academic curricula, degree programs, and accreditation that community colleges need to improve baccalaureate progress at the 2-year level, perhaps even to the extent of enabling many students to complete their B.A.s there. All segments have an incentive to explore new partnerships and collaborations that build upon each other's assets and strengths. A variety of models are available in other states, but it would be surprising if California educators could not devise even better models. In an era of limited resources, institutional innovation, more than expansion, will be the key to the continued vitality of California public higher education.

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Appendix 1:							
Public vs. Private Enrollment							
in State Higher Education Systems							
	Total	Total	Public %	4-Year	4-Year	Public %	
	Public	Private	of Total	Public	Private	of 4-Year	
	Enrollment	Enrollment	Enrollment	Enrollment	Enrollment	Enrollment	
Alabama	203,562	18,760	92%	123,824	18,760	87%	
Alaska	27,191	514	98%	25,843	514	98%	
Arizona	304,798	3,600	99%	106,700	3,600	97%	
Arkansas	122,393	13,347	90%	71,162	12,221	85%	
California	2,019,350	141,213	93%	529,303	139,848	79%	
Colorado	203,655	18,666	92%	125,052	18,480	87%	
Connecticut	100,384	40,604	71%	51,950	40,604	56%	
Delaware	35,305	8,025	81%	20,311	7,773	72%	
Florida	646,474	104,115	86%	376,613	104,011	78%	
Georgia	322,705	48,713	87%	185,040	47,654	80%	
Hawaii	43,922	11,080	80%	21,013	11,080	65%	
Idaho	53,874	16,069	77%	41,344	16,069	72%	
Illinois	500,015	136,365	79%	152,738	135,001	53%	
Indiana	243,198	68,178	78%	173,794	67,453	72%	
Iowa	139,636	45,865	75%	52,961	45,664	54%	
Kansas	149,700	17,457	90%	75,754	17,025	82%	
Kentucky	188,078	25,811	88%	95,545	25,811	79%	
Louisiana	173,817	18,554	90%	117,888	18,446	86%	
Maine	43,680	14,096	76%	29,936	13,898	68%	
Maryland	234,606	27,736	89%	111,811	27,736	80%	
Massachusetts	173,455	165,946	51%	84,954	163,688	34%	
Michigan	452,214	93,388	83%	224,312	93,111	71%	
Minnesota	224,780	51,123	81%	105,211	51,024	67%	
Mississippi	125,974	10,283	92%	56,350	10,283	85%	
Missouri	198,980	95,702	68%	109,173	93,879	54%	
Montana	38,449	4,385	90%	29,167	3,908	88%	
Nebraska	83,790	21,289	80%	42,339	21,116	67%	
Nevada	95,336	444	100%	83,170	412	100%	
New Hampshire	36,351	18,074	67%	23,627	17,813	57%	
New Jersey	284,256	48,653	85%	125,345	48,221	72%	
New Mexico	112,636	2,072	98%	44,762	2,072	96%	
New York	590,117	349,001	63%	308,619	339,957	48%	
North Carolina	367,277	68,807	84%	165,452	67,949	71%	
North Dakota	38,051	5,000	88%	28,727	4,396	87%	
Ohio	406,509	109,331	79%	231,190	107,009	68%	
Oklahoma	167,588	17,066	91%	97,432	17,066	85%	
Oregon	148,618	20,055	88%	67,942	20,055	77%	
Pennsylvania	351,535	205,888	63%	221,261	195,751	53%	
Rhode Island	36,977	34,737	52%	20,166	34,599	37%	
South Carolina	160,588	33,460	83%	77,222	32,570	70%	
South Dakota	33,663	6,917	83%	28,336	6,453	81%	
Tennessee	193,380	53,694	78%	107,161	52,967	67%	
Texas	993,638	94,164	91%	439,734	92,959	83%	
Utah	136,440	40,728	77%	96,688	39,412	71%	
Vermont	22,558	12,649	64%	16,950	12,168	58%	
Virginia	319,191	57,626	85%	150,626	56,771	73%	
Washington	282,039	29,632	90%	118,800	29,150	80%	
West Virginia	76,383	10,709	88%	55,430	10,709	84%	
Wisconsin	249,113	46,703	84%	150,416	46,076	77%	
Wyoming	30,322	-	100%	9,492	-	100%	
	CA Rank = 1st	CA Rank = 4th	CA Rank = 6th	CA Rank = 1st	CA Rank = 4th	CA Rank = 21st	

Source National Center for Educational Statistics/Integrated Postsecondary Education System Fall enrollment, 2006-07.

**Appendix 2:
B.A.s Awarded by State Colleges and Universities
Per Population 18-to-29 Years Old**

State	State Population 18-29	B.A.s Awarded by Public Institutions	Public B.A.s per 1,000 Population 18-29	B.A.s Awarded by All Institutions	Total B.A.s per 1,000 Population 18-29
Alabama	806,702	18,499	22.9	21,727	26.9
Alaska	115,242	1,419	12.3	1,503	13.0
Arizona	1,137,872	18,570	16.3	19,575	17.2
Arkansas	456,294	9,188	20.1	11,435	25.1
California	6,050,430	112,661	18.6	144,062	23.8
Colorado	776,966	21,425	27.6	25,055	32.2
Connecticut	495,314	9,600	19.4	18,298	36.9
Delaware	138,071	3,821	27.7	5,113	37.0
Florida	2,713,728	47,879	17.6	68,400	25.2
Georgia	1,559,623	26,860	17.2	35,735	22.9
Hawaii	191,460	3,586	18.7	5,486	28.7
Idaho	240,633	5,149	21.4	7,883	32.8
Illinois	2,201,755	33,074	15.0	60,613	27.5
Indiana	958,793	25,247	26.3	38,210	39.9
Iowa	522,234	10,747	20.6	20,314	38.9
Kansas	469,055	13,624	29.0	17,020	36.3
Kentucky	668,267	14,741	22.1	18,803	28.1
Louisiana	746,514	17,400	23.3	21,477	28.8
Maine	173,603	4,334	25.0	6,900	39.7
Maryland	841,697	20,767	24.7	26,604	31.6
Massachusetts	961,825	14,401	15.0	47,654	49.5
Michigan	1,580,082	40,478	25.6	52,661	33.3
Minnesota	963,276	18,420	19.1	28,576	29.7
Mississippi	458,581	10,032	21.9	12,052	26.3
Missouri	983,440	18,382	18.7	34,993	35.6
Montana	154,250	4,634	30.0	5,217	33.8
Nebraska	285,089	7,440	26.1	12,294	43.1
Nevada	452,722	5,673	12.5	5,728	12.7
New Hampshire	202,340	4,379	21.6	8,145	40.3
New Jersey	1,305,259	23,830	18.3	32,266	24.7
New Mexico	301,194	6,462	21.5	6,939	23.0
New York	3,134,694	50,028	16.0	114,759	36.6
North Carolina	1,442,373	28,312	19.6	41,113	28.5
North Dakota	114,156	4,763	41.7	5,543	48.6
Ohio	1,886,078	37,666	20.0	58,263	30.9
Oklahoma	575,074	15,394	26.8	18,532	32.2
Oregon	579,777	12,921	22.3	17,384	30.0
Pennsylvania	1,902,712	40,467	21.3	80,163	42.1
Rhode Island	168,684	3,191	18.9	9,982	59.2
South Carolina	671,636	14,345	21.4	20,095	29.9
South Dakota	130,387	3,520	27.0	4,504	34.5
Tennessee	980,209	16,936	17.3	27,007	27.6
Texas	4,188,897	75,624	18.1	94,191	22.5
Utah	523,511	12,103	23.1	20,047	38.3
Vermont	99,955	2,702	27.0	5,088	50.9
Virginia	1,228,836	29,312	23.9	39,188	31.9
Washington	971,397	21,442	22.1	28,414	29.3
West Virginia	275,919	8,506	30.8	10,498	38.0
Wisconsin	860,967	23,564	27.4	32,320	37.5
Wyoming	91,537	1,687	18.4	1,687	18.4
	CA Rank = 1st	CA Rank = 1st	CA Rank = 38th	CA Rank = 1st	CA Rank = 43rd

Source: US Census/Current Population Survey and National Center for Educational Statistics/IPEDS Fall enrollment data, 2006-2007.

Appendix 3:					
B.A.s Awarded by State Colleges and Universities					
Per Population 18-to-29 Years Old:					
Underrepresented Minority (URM) Students					
State	State URM Population 18-29	URM B.A.s Awarded by Public Institutions	URM Public B.A.s per 1,000 Population 18-29	URM B.A.s Awarded by All Institutions	Total URM B.A.s per 1,000 Population 18-29
Alabama	331,520	3,936	11.9	5,176	15.6
Alaska	22,199	210	9.5	220	9.9
Arizona	532,882	3,357	6.3	3,499	6.6
Arkansas	100,538	1,491	14.8	1,772	17.6
California	3,079,152	25,320	8.2	31,921	10.4
Colorado	226,329	2,418	10.7	2,835	12.5
Connecticut	121,548	1,146	9.4	2,270	18.7
Delaware	45,827	652	14.2	889	19.4
Florida	1,222,171	14,064	11.5	20,177	16.5
Georgia	641,313	5,607	8.7	8,564	13.4
Hawaii	16,208	117	7.2	319	19.7
Idaho	24,532	315	12.8	419	17.1
Illinois	703,110	5,219	7.4	9,631	13.7
Indiana	139,689	1,956	14.0	3,342	23.9
Iowa	45,726	454	9.9	1,031	22.5
Kansas	92,711	896	9.7	1,301	14.0
Kentucky	75,116	1,183	15.7	1,460	19.4
Louisiana	320,003	4,121	12.9	5,053	15.8
Maine	4,868	108	22.2	243	49.9
Maryland	367,555	5,336	14.5	6,205	16.9
Massachusetts	140,550	1,196	8.5	4,891	34.8
Michigan	307,645	3,945	12.8	5,507	17.9
Minnesota	101,741	848	8.3	1,307	12.8
Mississippi	227,250	3,177	14.0	3,825	16.8
Missouri	150,491	1,571	10.4	4,215	28.0
Montana	11,141	217	19.5	269	24.1
Nebraska	43,874	341	7.8	695	15.8
Nevada	163,326	821	5.0	824	5.0
New Hampshire	7,941	99	12.5	352	44.3
New Jersey	480,843	5,035	10.5	6,479	13.5
New Mexico	159,264	2,750	17.3	2,902	18.2
New York	1,156,162	10,851	9.4	21,154	18.3
North Carolina	529,900	6,417	12.1	9,350	17.6
North Dakota	12,045	185	15.4	225	18.7
Ohio	383,712	3,267	8.5	5,226	13.6
Oklahoma	133,583	2,815	21.1	3,343	25.0
Oregon	122,774	836	6.8	1,077	8.8
Pennsylvania	309,067	3,717	12.0	7,109	23.0
Rhode Island	40,029	251	6.3	867	21.7
South Carolina	228,466	2,517	11.0	4,317	18.9
South Dakota	10,578	128	12.1	180	17.0
Tennessee	197,298	3,041	15.4	4,515	22.9
Texas	2,188,543	23,918	10.9	28,788	13.2
Utah	56,337	455	8.1	845	15.0
Vermont	1,953	70	35.8	206	105.5
Virginia	379,024	4,747	12.5	6,939	18.3
Washington	168,161	1,786	10.6	2,387	14.2
West Virginia	13,543	487	36.0	616	45.5
Wisconsin	117,918	1,028	8.7	1,724	14.6
Wyoming	8,825	71	8.0	71	8.0
	CA Rank = 1st	CA Rank = 1st	CA Rank = 41st	CA Rank = 1st	CA Rank = 45th

Source: US Census/Current Population Survey and National Center for Educational Statistics/IPEDS Fall enrollment data, 2006-2007.

Appendix 4:			
Underrepresentation in Public 4-Year Colleges and Universities			
<i>States ranked by difference between underrepresented minority (URM) % of 4-year public enrollments and URM % of population 18-to-29 years old</i>			
State	URM % of 4-Year Enrollments - URM % of Population 18-29	URM % of High School Grads - URM % of Population 18-29	URM % of 4-Year Enrollments - URM % of High School Grads
West Virginia	2.1%	-0.3%	2.4%
Tennessee	1.8%	3.8%	-2.0%
Vermont	1.2%	1.1%	0.1%
Maine	1.1%	0.2%	0.8%
Alaska	0.9%	7.8%	-6.9%
South Dakota	0.6%	0.9%	-0.3%
Oklahoma	0.4%	10.2%	-9.8%
Arkansas	-0.4%	3.3%	-3.7%
Montana	-1.2%	3.1%	-4.3%
New Hampshire	-1.2%	*	*
Kentucky	-1.4%	*	*
Idaho	-1.8%	0.1%	-1.9%
Missouri	-3.4%	1.6%	-4.9%
Iowa	-3.4%	-1.8%	-1.6%
Massachusetts	-3.6%	2.2%	-5.8%
Indiana	-4.0%	-2.1%	-1.9%
Wyoming	-4.2%	0.6%	-4.8%
Hawaii	-4.2%	-2.5%	-1.8%
Pennsylvania	-4.3%	*	*
Minnesota	-4.5%	-1.6%	-2.8%
North Dakota	-4.6%	-3.6%	-1.0%
New Mexico	-4.7%	6.9%	-11.6%
Utah	-5.0%	-1.8%	-3.2%
Michigan	-6.1%	-2.0%	-4.0%
Florida	-6.6%	-5.2%	-1.4%
Washington	-6.8%	-2.3%	-4.6%
Wisconsin	-7.2%	-2.2%	-5.0%
Ohio	-7.8%	-5.9%	-1.9%
Nebraska	-8.1%	-2.8%	-5.3%
North Carolina	-8.3%	*	*
New York	-8.8%	-7.7%	-1.1%
Mississippi	-9.8%	-1.9%	-8.0%
Texas	-10.4%	-3.0%	-7.4%
Connecticut	-10.4%	-2.7%	-7.8%
Kansas	-10.8%	-4.6%	-6.2%
Delaware	-10.9%	-0.4%	-10.4%
Maryland	-10.9%	-4.9%	-6.0%
Illinois	-11.4%	-3.9%	-7.5%
New Jersey	-11.5%	-7.0%	-4.6%
Nevada	-11.8%	-5.5%	-6.3%
Virginia	-11.8%	-2.8%	-9.0%
Alabama	-12.1%	-7.2%	-4.9%
South Carolina	-12.6%	*	*
Rhode Island	-13.0%	-2.3%	-10.7%
Oregon	-13.2%	-7.3%	-5.9%
Louisiana	-13.7%	-3.3%	-10.4%
Georgia	-14.5%	-3.1%	-11.4%
Colorado	-14.6%	-6.0%	-8.5%
CALIFORNIA	-23.9%	-6.5%	-17.4%
Arizona	-25.7%	-6.4%	-19.3%
National Average	-7.1%	-1.8%	-5.5%
	CA Rank = 49th	CA Rank = 43rd	CA Rank = 49th

* Data on race/ethnicity of high school graduates unavailable.
Source: US Census/Current Population Survey and National Center for Educational Statistics/IPEDS Fall enrollment data, 2006-2007.