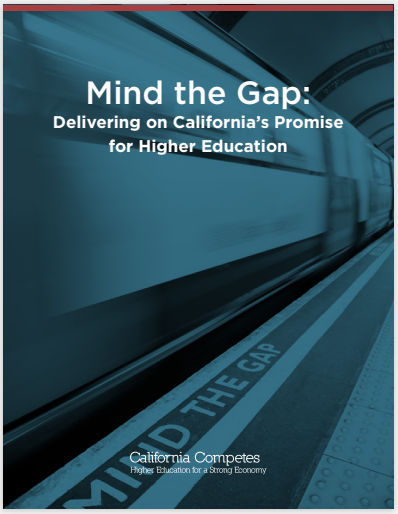
Mind the Gap:

Delivering on California's Promise for Higher Education

TECHNICAL APPENDIX



California Competes
Higher Education for a Strong Economy

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Technical Appendix

In The Road Ahead we determined that the state should aim to have at least 55 percent of its adult population with at least an associate's degree. This was based on the goal of being a top-ten state in terms of educational attainment.

To update our analysis on the degree attainment gap in California we made two major shifts in our understanding of California's supply of postsecondary degrees. The first shift is that we examined the prevalence of degrees among the adult population as a whole, rather than just the people recently graduating from college in California. That means that we are including older people who went to college in years past, and those who came into California but earned their degrees in some other state; we are excluding those who received a degree in California but no longer reside in the state. Therefore, to analyze the supply — the number of adults with degrees – we use data from the U.S. Census, which asks people about their highest level of education.

The second shift in our methodology relates to the types of credentials that are, and are not, specified in the U.S. Census. The Census includes data on associate's, bachelor's, and advanced degrees for all U.S. residents. We examined adults in California ages 25 to 64 to determine the proportion with at least an associate's degree. While our institutional counts in our analysis of bachelors and sub-baccalaureates includes certificates and only some associate's degrees (those that are vocational), the Census data is more limited. The current Census asks about degrees but not about certificates so there is no way to count certificates nor is there a way to distinguish vocational associate's (which should be counted) from transfer associate's. For this and our prior analysis, we are assuming that the number of uncounted certificates and the number of inappropriately-counted (transfer) associate's roughly even out, so that our analysis of "everyone with an associate's degree or above" is a fair count of the progress that the state is making. [1]

Using data from 2005 through 2013, we projected the proportion of California's adult population with at least an associate's degree in 2025, if current trends continue. To determine the gap, we used the California Department of Finance's projections for the population of the state by age[2] and compared the number of adults who would have degrees based on the projected proportion (so, in 2025, 44 percent of the 21.6 million 24-64 year olds, equaling roughly 9.5 million degrees) with the number representing 55 percent of the adult population (roughly 11.9 million). The difference is the 2.4 million degree gap described in the report.

In Figure 1, The Degree Gap: Projected, Needed & Cumulative, we calculated the projected number of degrees added each year (the blue portion of the chart) by multiplying the projections for the overall population of Californians aged 25-64 by the projected proportion of adults with degrees for that year. We then accounted for the number of Californians with at least an associate's degree that are turning 64 and leaving the workforce. We calculated this number using 2010 population projections for those turning 65 for each year from 2015 to 2025. We only wanted to account for those with an associate's degree or higher so we multiplied the population of those turning 65 in a given year by the 2011 estimate of Californians aged 45-64 with an

1 This is probably the last year where such an analysis is reasonable for California. Legislation enacted in 2010 (SB 1440) created transfer associate's in the California Community Colleges. As a result, there is likely to be a significant increase in associate's degrees produced which will be reflected in the Census. Those counts could be illusory, because most (or possibly all) of the increase may be people who previously would have transferred without an associate's degree. In other words, the increase in associate's may not indicate any improvement in output. Because the transfer degrees are very new, the data we used would not be affected substantially by the new associate's degrees.

2 California Department of Finance, "Demographic Research Unit – Projections," http://www.dof.ca.gov/research/demographic/dru/index.php. Retrieved October 8, 2015.

associate's degree or higher. Once we accounted for the number of those leaving the workforce, we arrived at the total number of degrees added for each year between 2015 and 2025. We then compared these projected numbers to what we would need to produce if we were to close the 2.4 million degree gap. By doing this, we calculated that in order to close the gap, we would need to increase degree production by 10 percent per year, each year, for the next decade. (The green portion of the chart depicts the 10 percent for each year while the red portion shows how many degrees would be added in total by all of the 10 percent increases)

Bachelor's Degrees

This section of the report examines the number of bachelor's degrees conferred by California institutions. The numbers are calculated using the data reported by institutions to the U.S. Department of Education, National Center for Education Statistics (NCES), and Institutional Postsecondary Education Data System (IPEDS). When using IPEDS, we generated our own custom data files.

Institutions

We counted as a "California" institution any campus that reported its credentials through IPEDS as a California-based institution, regardless of where a student may reside. The segments (i.e., "sector") were the institutions' identified segment for each particular year. We broke up the four-year public institutions category into UC and CSU. We also examined four-year nonprofits and four-year for-profits.

Bachelor's degrees

We included all degrees identified as bachelor's degrees (i.e., "completions") in the reporting by the institutions, for each year. The year used in the report is for the lagging year of the reporting year. For example, bachelor's degrees described as "2013" consist of all degrees conferred during the 2012-13 academic year (July 31 to June 30). At most traditional campuses, the bulk of those degrees would be conferred in June. In counting the number of completions within a given major, we used only the "primary" or "first" major rather than any minor or second major. We only reviewed full-time, first time students for our analysis.

Majors

In IPEDS, colleges do their best to categorize their majors into any of 1,891 detailed types, though the school's name for a major may not fit exactly any category. These thousands of groupings are combined into larger category groups. For our primary analyses, we used the least detailed 38 categories, what is known as the [two-digit] Classification of Instructional Programs (CIP) code. See below for a full list of all two-digit undergraduate categories.

In some cases we analyzed the majors in more detail, using the four- or even six-digit codes. For example, the overarching category of Business and Marketing is divided into 22 four-digit categories that are more specific (i.e., International Business, Finance and Financial Management Services) which is further broken down into 94 six-digit ones (i.e., International Finance, General Finance, Credit Management, etc.). We relied most heavily on the two- and four-digit categories though if any category was particularly high, we would delve deeper into the six-digit to see what the spread of students across the most specific majors (i.e., see Example: Computer and Information Sciences section on page 15 of Mind the Gap).

Race

In addition to reporting the majors of each graduate, institutions report to IPEDS the race/ethnicity as well as the gender of each credential recipient. For the analyses of bachelor's degrees, we used IPEDS data to identify completions for any given year across the two-digit major categories by race/ethnicity. As of 2008 IPEDS classifies race/ethnicity into nine categories: American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Black or African-American, Hispanic or Latino, White, Race/ethnicity unknown, two or more races, and nonresident alien. IPEDS relied on slightly different definitions prior to 2008 and gave institutions until 2010 to fully transition to using the new definitions. In the transition period from 2008 to 2010, IPEDS offered a count within each race/ethnicity that combined both the new and old definitions (without repeating), which they called "derived." We relied on the derived numbers for that period.

For the race and ethnicity of California's bachelor's degree recipients, we looked at all four-year institutions.

Agriculture, Agriculture Operations and Related Sciences	Military Technologies and Applies Sciences
Natural Resources and Conservation	Multi/Interdisciplinary Studies
Architecture and Related Services	Parks, Recreation, Leisure and Fitness Studies
Area, Ethnic, Cultural, Gender, and Group Studies	Philosophy and Religious Studies
Communication, Journalism, and Related Programs	Theology and Religious Vocations
Communications Technologies/Technicians and Support Services	Physical Sciences
Computer and Information Sciences and Support Services	Science Technologies/Technicians
Personal and Culinary Services	Psychology
Education	Homeland Security, Law Enforcement, Firefighting, and Related Protective Service
Engineering	Public Administration and Social Service Professions
Engineering Technologies and Engineering-related Fields	Social Sciences
Foreign Languages, Literatures, and Linguistics	Construction Trades
Family and Consumer Sciences/Human Sciences	Mechanic and Repair Technologies/Technicians
Legal Professions and Studies	Precision Production
English Language and Literature/Letters	Transportation and Materials Moving
Liberal Arts and Sciences, General Studies and Humanities	Visual and Performing Arts
Library Sciences	Health Professions and Related Programs
Biological and Biomedical Studies	Business, Management, Marketing, and Related Support Services
Mathematics and Statistics	History

Sub-baccalaureate Degrees and Credentials

To calculate the number of Associate's degrees conferred in California we mirrored the process described above for Bachelor's degrees. The numbers are calculated using the data reported by institutions to the U.S. Department of Education, National Center for Education Statistics (NCES), Institutional Postsecondary Education Data System (IPEDS). When using IPEDS, we generated our own custom data files.

Institutions

We counted as a "California" institution any campus that reported its credentials through IPEDS as a California-based institution, regardless of where a student may reside. The segments (i.e., "sector") were the institutions' identified segment. We looked at all California community colleges, which make up the two-year public category on IPEDS. We did not review the 11 less-than-two-year public institutions. For the nonprofit and for-profit segments, we used both the two-year institutions as well as the four-year institutions. We did not consider less-than-two-year institutions.

Associate's degrees

We included all degrees identified as associate's degrees (i.e., "completions") in the reporting by the institutions, for each year. As described further below, we only counted vocational certificates. The year used in the report is for the lagging year of the reporting year. For example, associate's degrees described as "2013" consist of all degrees conferred during the 2012-13 academic year (July 31 to June 30). At most traditional campuses, the bulk of those degrees would be conferred in June. In counting the number of completions within a given major, we used only the "primary" or "first" major rather than any minor or second major. We only reviewed full-time, first time students for our analysis.

Majors

In IPEDS, colleges do their best to categorize their majors into any of 1,891 detailed types, though the school's name for a major may not fit exactly any category. These thousands of groupings are combined into larger category groups. For our primary analyses, we used the least detailed 38 categories, what is known as the [two-digit] Classification of Instructional Programs (CIP) code. See below for a full list of all two-digit undergraduate categories.

Our goal in this analysis was to generate counts of sub-baccalaureate vocational credentials: certificates or degrees that prepare a student for an occupation but are not primarily a progress indicator toward a bachelor's degree. (In the first section we explain the problem with including transfer degrees in this analysis). We deleted both associate's degrees and certificates in categories that seemed obviously non-vocational, like history, English, Liberal Arts, etc. For communications and business, we eliminate only the associate's degrees, not the certificates.

Associate's degrees and certificates INCLUDED as vocational:

Agriculture, Agriculture Operations and Related Sciences	Military Technologies and Applies Sciences
Natural Resources and Conservation	Parks, Recreation, Leisure and Fitness Studies
Architecture and Related Services	Philosophy and Religious Studies
Communications Technologies/Technicians and Support Services	Theology and Religious Vocations
Computer and Information Sciences and Support Services	Science Technologies/Technicians
Personal and Culinary Services	Homeland Security, Law Enforcement, Firefighting, and Related Protective Service
Education	Public Administration and Social Service Professions
Engineering	Social Sciences
Engineering Technologies and Engineering-related Fields	Construction Trades
Foreign Languages, Literatures, and Linguistics	Mechanic and Repair Technologies/Technicians
Family and Consumer Sciences/Human Sciences	Precision Production
Legal Professions and Studies	Transportation and Materials Moving
Library Sciences	Health Professions and Related Programs

EXCLUDED as primarily transfer:

Area, Ethnic, Cultural, Gender, and Group Studies	Physical Sciences
Communication, Journalism, and Related Programs (ONLY AAs)	Psychology
English Language and Literature/Letters	Social Sciences
Liberal Arts and Science, General Studies and Humanities	Visual and Performing Arts
Biological and Biomedical Sciences	Business, Management, Marketing, and Relation Support Services (Only AAs)
Mathematics and Statistics Multi/Interdisciplinary Studies	History

We also excluded certificates that are less than one year and all post-baccalaureate certificates.

Race

In addition to reporting the majors of each graduate, institutions report to IPEDS the race/ethnicity as well as the gender of each credential recipient. For the analyses of sub-baccalaureate credentials, we used IPEDS data to identify completions for any given year across the two-digit major categories by race/ethnicity. As of 2008 IPEDS classifies race/ethnicity into nine categories: American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Black or African-American, Hispanic or Latino, White, Race/ethnicity unknown, two or more races, and nonresident alien. IPEDS relied on slightly different definitions prior to 2008 and gave institutions until 2010 to fully transition to using the new definitions. In the transition period from 2008 to 2010, IPEDS offered a count within each race/ethnicity that combined both the new and old definitions (without repeating), which they called "derived." We relied on the derived numbers for that period.

For the race and ethnicity of California's associate degree and certificate recipients we looked at all associate's and certificates from all four-year and two-year institutions (we did not look at less-than-two-year institutions). We did not exclude nonvocational degrees and certificates. To understand race/ethnicity at the various segments, we looked at four-year, two-year, and less-than-two-year institutions.