

ADVANCED POLICY ANALYSIS

The Early Academic Outreach Program: Making the biggest difference at the schools in the middle

A statewide analysis of the effectiveness of EAOP in differing schooling
environments

A study for the UC Berkeley EAOP Program,
Berkeley, California

by

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EXECUTIVE SUMMARY

The abolition of affirmative action in University of California admissions led to increased funding for academic preparation programs, including the Early Academic Outreach Program, in an effort to expand the pool of UC-eligible disadvantaged students.

EAOP's primary mission is to help students who face barriers to college attendance, like poverty, become eligible for and attend a UC campus. EAOP provides targeted assistance to such students, the heart of which is academic advising on the classes and steps students should take in order to be eligible. To that end, EAOP works mostly with students at low- and middle-performing schools, while assisting at a few high-performing schools. Indeed, **students from low- and middle-performing schools are underrepresented at the University of California.**

Given EAOP's goal of improving college-going and recent reductions in EAOP resources, the UC Berkeley EAOP program commissioned this study on a statewide EAOP database to identify the schools at which EAOP is most effective at increasing college-going rates. Controlling for school academic performance, the degree of student demographic disadvantages at a school and proximity to the nearest UC campus, this study uses multiple regression analysis to determine the impact of EAOP in differing public high school environments. Primary findings include:

- **EAOP is slightly effective at low performing schools:** Probably due to the combination of too many programs and too few students with realistic college-going potential at low-performing schools, the effects of EAOP at these schools are negligible to nonexistent on college-preparation course completion, UC application, admission and enrollment rates, CSU enrollment rates, and California Community College enrollment rates.
- **EAOP makes a substantial difference at the schools in the middle:** Most likely due to the combination of the lack of programs at middle-performing schools and the considerable numbers of students with realistic potential to attend college who are responsive to a program like EAOP, EAOP has sizeable effects on college-going rates at the schools in the middle. When, for example, EAOP

works with five percent of the students at a middle-performing school, the expected school-wide effects are as follows:

- A 2.1% increase in A-G completion rates where the average is 32.3%.
 - A 2.4% increase in UC applications where the average is 11.8%.¹
 - A 1.9% increase in UC admissions where the average is 9.9%.
 - A 1.3% increase in UC enrollments where the average is 5.8%.
- **EAOP is superfluous at high performing schools:** Most likely due in large part to a ceiling effect, the idea that high-performing schools are already approaching the top level of college-going outcomes that they can expect, EAOP appears to be unnecessary at high-performing schools. Research also suggests that these schools tend to have better college counseling.

These results lead to the following recommendations for EAOP school selection and evaluation:

1. **Focus resources on middle-performing schools:** EAOP should leave virtually all high-performing schools, except perhaps those on the border between high- and middle-performing that do not have other outreach programs. EAOP should leave some low-performing schools, especially when either there are many other academic preparation programs at the school, or EAOP has difficulty recruiting and working with students at the school. EAOP should then redirect resources to middle-performing schools.
2. **Compare actual outcomes to expected outcomes (given a school's academic performance level and student demographics) to evaluate EAOP performance:** An effective way for EAOP to evaluate its success at a school is to compare actual college-going rates at partnership schools to the rates of schools with similar academic performance and demographics.

¹ See page 20 for an explanation of how these rates were calculated, which is different from the way that the University of California Office of the President calculates UC application, UC admission and UC enrollment rates.

3. **At potential new partnership schools for EAOP, compare current outcomes to expected outcomes (given a school's academic performance level and student demographics) to evaluate the school for EAOP intervention:**
Especially at middle-performing schools, EAOP should enter schools that it identifies as having below average college-going rates given the school's academic quality and demographics.
4. **Umbrella organizations, like the Center for Educational Outreach (CEO) at UC Berkeley, should target EAOP at the schools in the middle and more intensive programs like Upward Bound at low performing schools:** Schools themselves have a low capacity for managing the outside programs that enter their doors. UC Berkeley's EAOP, like other EAOP programs, is part of a larger umbrella organization (CEO at UC Berkeley) that should triage schools for the most appropriate academic preparation program(s), placing EAOP at the schools in the middle and more intensive programs, like Upward Bound, at low performing schools.

I. EAOP: A targeted program for helping disadvantaged students attend the University of California and other colleges and universities

Established in 1976 (see www.eaop.org), EAOP targets students with college-going potential who face barriers, like poverty, to attending college and is especially focused on educational access to the University of California (Santelices, 2001).² Currently, EAOP works with approximately 80,000 students in 542 California public schools (EAOP fact sheet). Each UC campus has an EAOP program that targets, almost exclusively, students who will be the first in their family to go to college (EAOP fact sheet).

EAOP is a semi-regular pullout (students are pulled out of class and/or meet during lunch time) and extracurricular program. Typically, an EAOP advisor is on campus one or two times per week to meet with students and to provide workshops. Outside of the school day, some EAOP students attend SAT preparation classes, summer academic enrichment programs, college field trips and special academic support programs (i.e. Saturday Algebra Academies). *The heart of EAOP, though, is the academic advising it provides to participants.* This academic advising function is the most consistent service across EAOP programs, and comprises the largest proportion of field staff time. EAOP advisors meet with participants individually³ and in groups to develop high school academic plans that put participants on the road to college eligibility. The program teaches students

² Note that unless otherwise specified, the University of California refers to entire UC system and not just the University of California at Berkeley.

³ The frequency of these meetings varies from a couple of times in a month to a couple of times in a year depending upon what the student needs and if the student chooses to respond to the summons' of his/her EAOP advisor.

about college options and the steps to becoming eligible for college, providing participants with the knowledge that students at higher-performing schools receive from parents, counselors and other community members. The program also encourages students to take challenging courses that will increase the students' likelihood of admission to and also their likelihood of success in college. Other EAOP activities supplement this core advising work by exposing students to college through college tours and on-campus summer enrichment programs, and by providing targeted academic support (see www.eaop.org for information about EAOP).

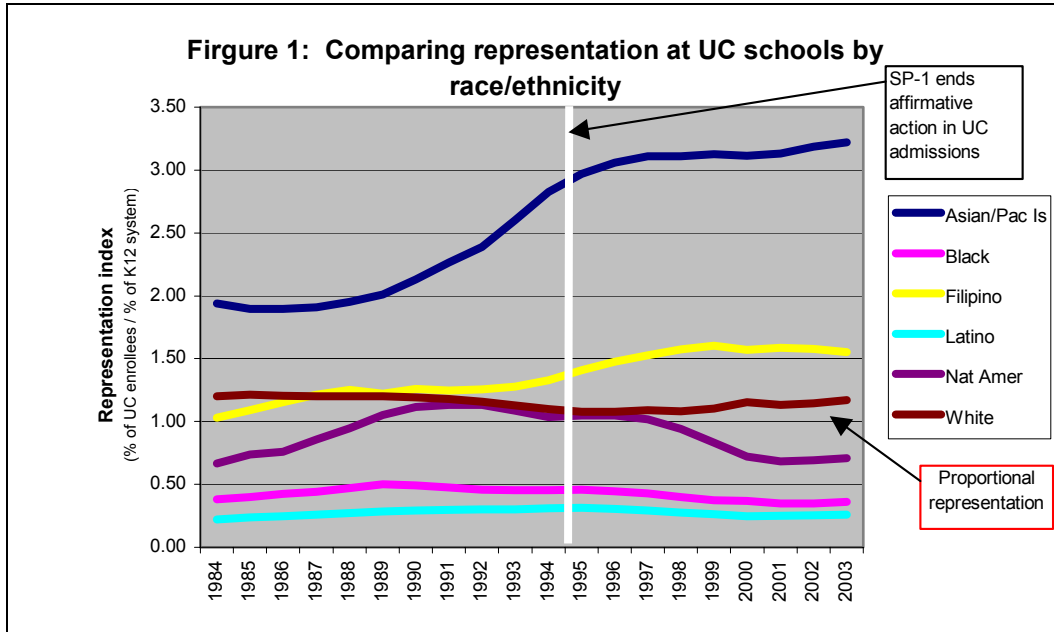
Before SP-1 and 209: A focus on racial inequity

The Organic Act of 1868 established the University of California with the vision that the university would “according to population...so apportion the representation of students, when necessary, that all portions of the State shall enjoy equal privilege therein” (Geiser et al., 2000). The competitive admissions policy of the University of California, established under the state constitutional mandate that the UC system would admit the top 12.5% of California high school graduates (Geiser et al, 2000), limits access to the University of California, which disproportionately affects students from disadvantaged backgrounds. There are a number of indicators that point to the disparity between those who “enjoy” the “privilege” to attend the University of California and those who do not.

Before the UC Regents passed SP-1 in 1995 and the California voters approved Proposition 209 in 1996, both banning the use of affirmative action in admissions policies, the University of California could and did focus on racial diversity as its primary

equity concern in the admissions process. Affirmative action was used at the point of admissions with the specific intent of expanding opportunities to historically underrepresented racial minorities.

Figure 1 displays the representation gap at the University of California according to race:



(UC enrollment data comes from the California Postsecondary Education Committee at www.cpec.ca.gov. K-12 demographic data comes from the California Department of Education at www.cde.ca.gov.)

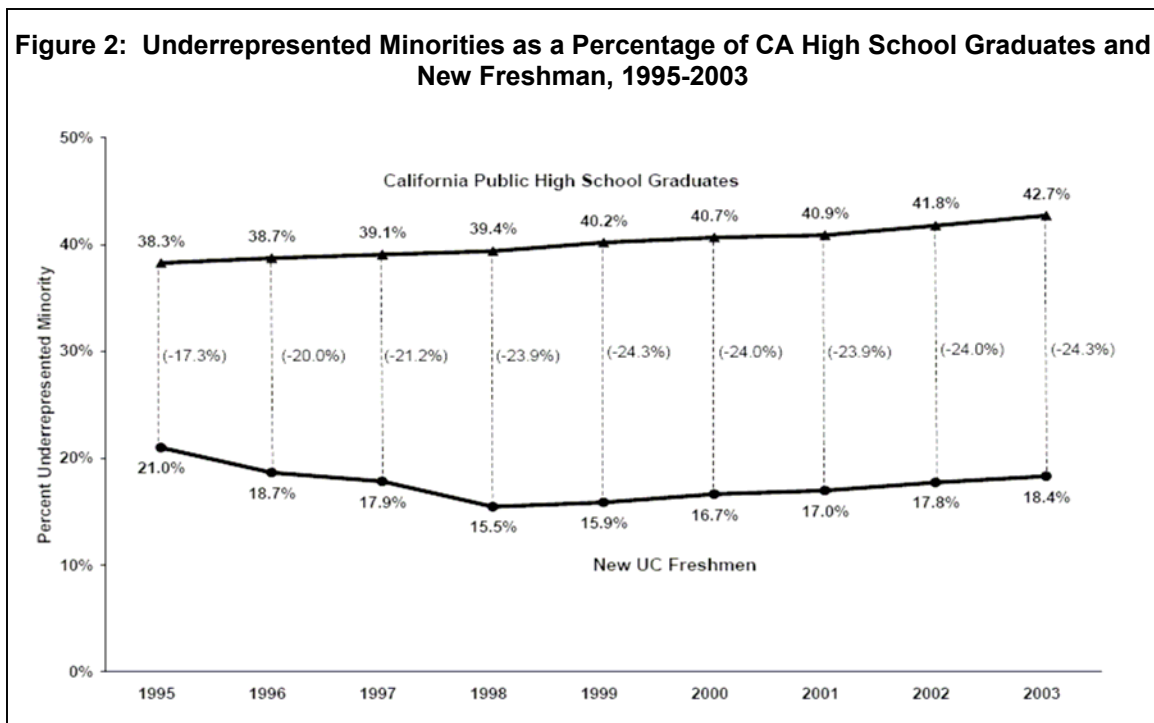
The representation index was calculated by dividing the percent of UC undergraduate enrollees from a particular racial group by the proportional representation of that group in California's K-12 public schools. A value of one denotes perfect proportional representation—the proportion of the group enrolled in a UC campus equals the proportion of that group in the K-12 population.

There are pronounced disparities from perfect proportional representation evidenced in Figure 1. Asian and Pacific Islanders (the UC data treats them as one group), Filipinos

and whites (to a lesser extent) make up larger proportions of the UC population than the K-12 population. The disproportionate representation of Asians is the most dramatic of these groups. The level of disproportional representation has increased for these groups after the passage of SP-1.

Indeed, underrepresented minorities have become more underrepresented after the abolition of affirmative action in admissions. The most significant change has been the shift from approximate proportional representation to underrepresentation for Native Americans. Blacks and Latinos have maintained relatively steady underrepresentation at the University of California, with a dip after SP-1.

An analysis by the University of California Office of the President (UCOP) shows the recent changes in proportional representation of minorities at UC campuses:



Source: This chart was produced by UCOP in an *Analysis of Undergraduate Admissions to the University of California Campuses by Race and Ethnicity* (see the Works Cited section for a complete reference).

Figure 2 shows that (a) the proportion of underrepresented minorities in California public high schools has grown, (b) after the passage of SP-1 in 1995, the underrepresented minority representation gap between new UC freshman and California high school graduates increased until the widest gap in 1999 of 24.3% (the year after Prop 209 was first implemented), and (c) since 1998, the gap has remained relatively steady. In other words, the difference between the proportion of underrepresented minorities graduating from high school and proportion of new UC freshman that are underrepresented minorities appear to have stabilized. Increases in the proportional representation of underrepresented minorities in 1999, 2000, 2001, 2002 and 2003 appear to reflect proportional increases in the population of underrepresented minorities. These data suggest continued and steady underrepresentation of certain racial and ethnic groups.

A shifted focus after SP-1 and 209

In this post-affirmative action world, the equity focus has shifted from race to a broader definition of students who face barriers to attending a UC campus that includes low socioeconomic status students, students whose parents did not attend college, and students who attend schools with low college-going rates. Some might argue that these equity concerns are just proxies for race—a practical response to a political climate that either no longer accepts racial inequity alone as a justification for intervention and/or views affirmative action as reverse discrimination. But, it is probably more accurate to say that race is a proxy for other barriers to college-going, making socioeconomics the more substantive issue to consider for policy intervention.

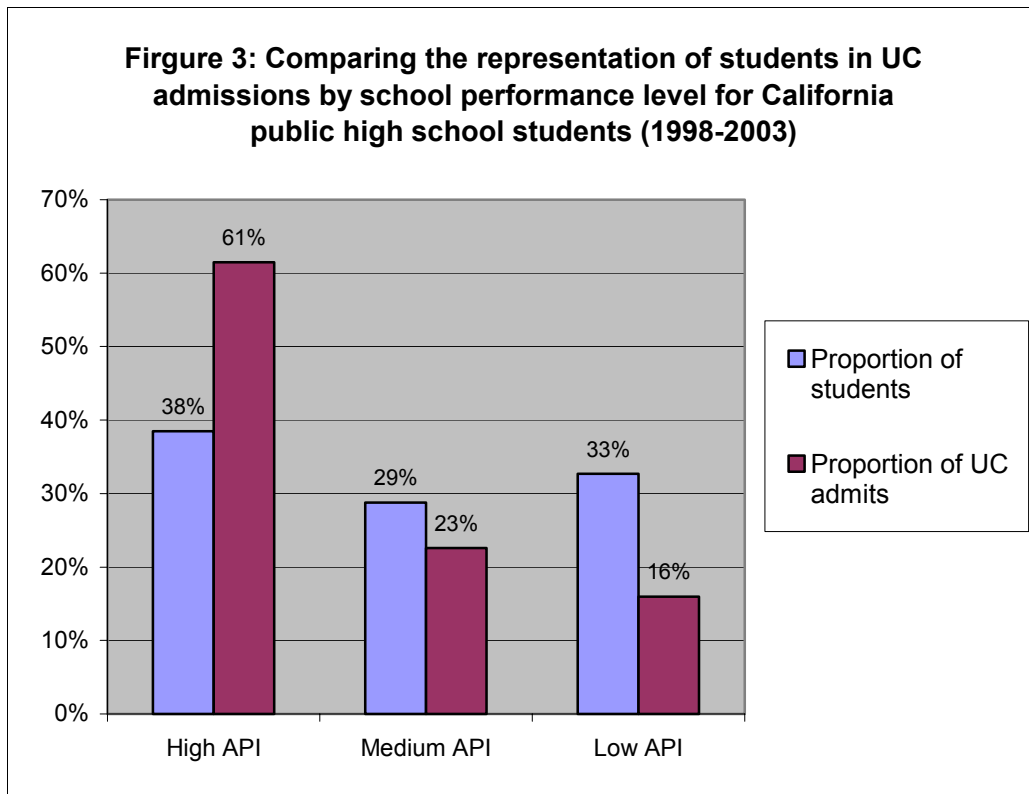
Historical racial injustices have led to higher poverty rates and lower education rates for underrepresented minorities. While the de jure discrimination that fostered these racial inequities no longer exists, the disparities remain. In terms of official public policy and the race gap in education, the tides have shifted. For instance, the federal No Child Left Behind Act and California's own accountability system specifically target closing the minority achievement gap ("API and AYP Key Elements"). Schools are held accountable not only for increasing overall performance, but for improving the performance of racial subgroups. The problem, in other words, is no longer a direct systemic effort to deny access to racial minorities; instead, it is the social circumstances that many racial minorities find themselves in as a result of past oppression.

The other major impact of ending affirmative action has been a reduced focus on solving equity problems at point of the admissions decision, and a greater emphasis on academic preparation programs that try to increase the pool of eligible students from disadvantaged backgrounds. In 1998 (the year that Prop 209 was first implemented), the California Legislature increased outreach funding by \$38.5 million, slightly less than half of which went to Student Academic Development Programs, including EAOP, the Mathematics, Engineering Science Achievement Program (MESA) program, and the Puente Project (*Outreach Taskforce* 2001).

Public high schools as the locus of intervention

Perhaps, the most useful way for EAOP to think about inequity in UC representation is to focus on students according to the high schools that they attend. After all, a student’s school is his/her most immediate scholastic opportunity to prepare for admission to a UC campus. Further, EAOP, like almost all other college outreach programs, operates inside of schools to increase the pool of college eligible applicants who face significant barriers to attending college.

Indeed, students who attend lower- and middle-performing schools are underrepresented in UC admissions:



(The data for this chart comes from both the California Department of Education and UCOP.)

There are discrepancies between the representation of students in UC admissions by school performance level and the proportion that those students comprise in the public high school population.⁴ While high API schools educate only 38% of the potential college-going population,⁵ they constitute 61% of students admitted⁶ to at least one UC campus. For low API and medium API schools, the gap goes the other way—students from low- and middle-performing schools are underrepresented in UC admissions. The difference between potential students and actual representation for medium API schools is noteworthy at 6%, while the 17% gap for low API schools is alarming.⁷

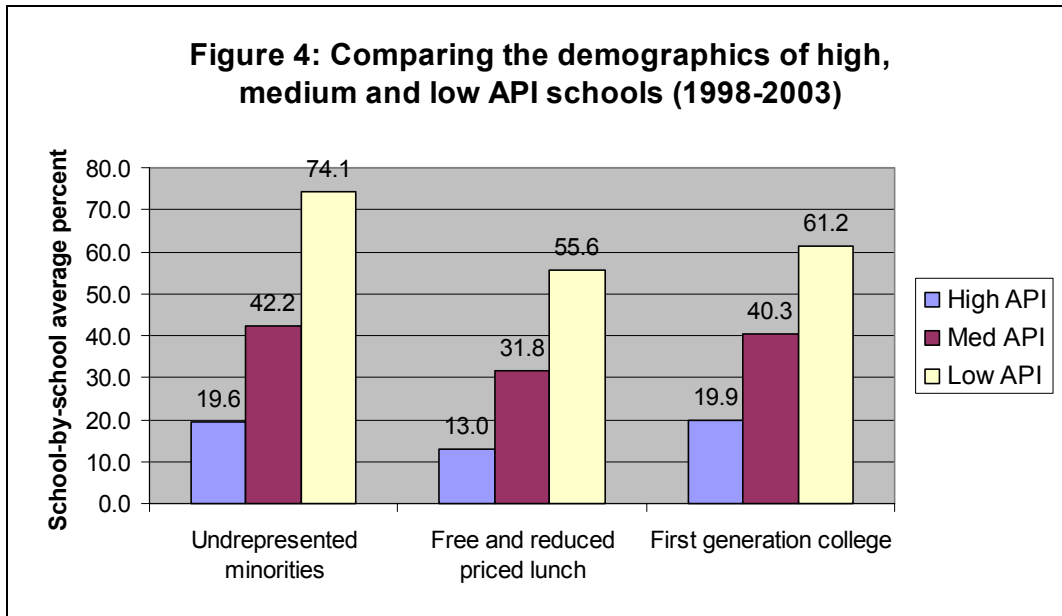
At least partially explaining these discrepancies is the fact that low- and middle-performing schools have higher proportions of students who face significant barriers to attending college:

⁴ This is the first of many charts that divides California public high schools into high-, medium- and low-performing. Using the Academic Performance Index (API), the state of California ranks high schools by decile (this data comes from California Department of Education website at www.cde.ca.gov). The highest performing schools have a rank of ten and the lowest a rank of one. Practitioners and policymakers often refer to schools with a rank of one through three as low-performing, schools with a rank of four through six as medium-performing and schools with a rank of seven or above as high-performing. This analysis uses those cutoffs to divide high schools into three groups according to average API score from 1998 through 2003: high-, middle- and low-performing.

⁵ “Potential college-going population” is being defined here as the proportion of graduates plus dropouts educated by schools at a particular performance level. The combination of graduates plus dropouts is the denominator used to compute all of the postsecondary rates in this analysis. It is an estimate of the total number of students that a graduating class started with at the beginning of high school.

⁶ UC admissions will be used throughout this analysis as a key indicator for EAOP because it approximates UC eligibility. UC admissions is a proxy for UC eligibility because almost all students who are admitted to a UC campus are UC eligible, and any eligible student who applies to at least one of lower tier UC campuses (UC Santa Barbara, UC Riverside or UC Santa Cruz) is guaranteed admission to at least one UC campus. Even if a student does not apply to a lower tier institution, if he/she meets eligibility requirements, his/her application is redirected to an institution that would admit that student.

⁷ UCOP’s internal analysis on the proportion of UC admits from low performing schools suggests proportional representation of approximately 22% for the 2003, 2004, and 2005 incoming classes. One main factor probably contributes to the difference between the combined representation from 1998-2003 reported in Figure 3 and UCOP’s proportions for 2003, 2004, and 2005. This analysis identified API deciles using average API scores from 1998-2003, which is likely to be a more accurate identifier of low-performing schools because it removes schools with unexpectedly poor performance in one or two school years from the low-performing group. This removes middle-performing schools with typically higher UC admissions rates, thus lowering the proportional representation of lower-performing schools in UC admissions.



(The data for this chart comes from the CDE website: www.cde.ca.gov)

Low- and middle-performing schools have substantially higher percentages of disadvantaged students as measured by underrepresented minority status, participation in the school lunch program for impoverished students, and having parents who did not attend college.⁸ Thus, low- and middle-performing schools are both underrepresented in UC admissions, and contain substantial proportions of students who are the target population of EAOP.

II. Filling in the missing pieces: Why and how EAOP should work

The accepted explanation for why poorer, often minority students are less likely to be eligible for and less likely to attend a UC campus is that they lack the social and cultural capital of advantaged students. Social capital has to do with knowledge sharing in a

⁸ The demographic measures in this chart were measured by finding the average percent over five school years from 1998-2003 of students at each school who were either underrepresented minorities, on the free/reduced price lunch program or whose parents did not attend college, depending upon the measure being considered.

person's social network, including the communication of norms, values and expected behaviors. Cultural capital has to do with the factors that define one's class status, like wealth, education and career stature. The term "capital" is used to refer to these assets because individuals and families "invest" their social and cultural resources in order to improve their lives and the lives of their children (Perna, 2000).

Wealthier students whose parents went to college come from families and communities with both the financial resources to support students on the road to attending college, and the experience and familiarity with the college-going process (a) to help students take the right steps, and (b) to understand and to emphasize the immense value of a college education. Parents of advantaged students "spend" their money, time and experience (their social and cultural capital) on giving their children a leg up to achieve at the highest possible level (Auerbach and Tierney, 2005).

Even when a parent or guardian of a disadvantaged student has high aspirations, that parent's or guardian's lack of experience with and lack of knowledge of the college-going process combined with negative influences in the student's environment create significant barriers to college attendance. Deficiencies or gaps in social and cultural capital for disadvantaged students include lack of college knowledge, uncertainty about what classes to take to maximize the likelihood of eligibility and admission, lack of extracurricular academic support, lack of a supportive peer group, lack of financial resources to pay for college admissions support services (i.e. college counseling and

exam preparation courses), lack of a strong K-12 educational experience, and lack of knowledgeable support in the application process (Hagedorn and Tierney, 2002).

EAOP attempts to fill some of the social and cultural capital gaps facing disadvantaged students. In comparison to other outreach programs and other efforts to improve educational equity, EAOP is a highly targeted program that focuses on helping potentially UC eligible students with disadvantaged backgrounds prepare for and attend a UC campus. The program also considers itself successful when it helps students attend any college if they were unlikely to attend college.

Other well-known and common programs like Advancement Via Individual Determination (AVID), MESA, Puente and Upward Bound are more intensive than EAOP. The first three programs are directly integrated into participants' daily school schedules in the form of an academic class. On top of academic advising, Upward Bound provides both weekly instruction in core academic subjects and a live-in summer program (see www.appris.org for information on these programs).

Because of its targeted scope, focusing mainly on academic advising, EAOP is a program that fits well with students on the margin of UC eligibility. A rigorous study of EAOP found that EAOP participants were twice as likely to complete the courses required for UC eligibility as similarly-situated peers at non-EAOP schools (Quigley, 2003), suggesting that EAOP does in fact help participants prepare for college. Indeed, some argue that EAOP can act as the supplemental force that pushes students to the next level

of college eligibility—from totally ineligible to attending some college, UC ineligible to UC-eligible or from minimally eligible for a UC campus to eligible to attend a top tier UC campus (Halimah, 2005).

III. The purpose, data, and methods of this study: Assessing the effectiveness of EAOP in differing schooling environments

A shrinking operating budget (cut in half in 2003-2004) and the sense that the program is effective in some schools, but not in others has caused UC Berkeley's EAOP program to ponder its school selection process. With decreasing resources, the program may be forced to pull out of some schools. Which schools should the program leave? Even if EAOP keeps the same number schools, should it leave some schools for other schools with a higher likelihood of success?

The purpose of this study is to explore the effectiveness of EAOP in differing schooling environments. Specifically, this study seeks to answer the following question: Is EAOP more effective in high-, middle- or low-performing schools?⁹ Note that there may be other ways to think about “school environment,” including, but not limited to, level of school site cooperation, school size, or traditional high school versus charter/alternative school. Nonetheless, school performance level as measured by a school's Academic Performance Index (API) is a useful “first-cut” way for EAOP to think about its relative effectiveness by schooling environment. School API scores are calculated once per year,

⁹ Initially, this study was also to include an analysis of where EAOP students fall off of the UC-eligibility track. The author and the client have decided to defer that analysis to a separate study to follow this one.

are easily accessible, combine the results of multiple achievement tests, and provide a clear delineation between higher and lower performing schools. Moreover, EAOP practitioners already appear to use API levels to distinguish between schools (Halimah, 2005; Aguilar, 2005).

Main data sources

This study is a statewide school-by-school comparison. The data for this study come from various resources¹⁰:

- **Outcomes data for each high school:** UCOP provided a dataset with UC application, admissions and enrollment totals for each California public high school from 1998-2003. UCOP also provided CSU and CCC enrollment for high schools from 1998-2002.¹¹ The 780 public high schools included in this study came from this dataset, which includes virtually all of California's public high schools.¹²
- **EAOP student data:** UCOP also provided statewide student level data for the five EAOP cohorts from 1998-2003. Each cohort includes all EAOP participants who graduated from high school in a particular year. There were 8,211, 7,134, 10,624, 11,499 and 11,906 graduating EAOP participants in the EAOP cohort

¹⁰ This section includes the main data sources for this study. The study also uses data from www.appris.org to analyze program saturation, and the California Postsecondary Education Committee and the National Center for Education Statistics to calculate proximity of high schools to the nearest UC campus.

¹¹ Because every applicant to a California Public College must list the high school they attended, the University of California, the California State University (CSU system) and the California Community College (CCC) system are able to total the number of applicants, admits and enrollees to their campuses by high school. The CSU and CCC systems share their enrollments by California public high school with UCOP. Thus, the data are accurate and complete.

¹² A very small number of California's public high schools were not in this dataset, usually because the school is either an alternative school or a continuation school. The schools in the study are representative (almost 100% representative) of California's traditional public high schools.

datasets for the 1998-1999, 1999-2000, 2000-2001, 2001-2002, and 2002-2003 school years, respectively. Each EAOP campus program maintains a list of EAOP participants that it shares with UCOP. Once a student is enrolled in EAOP, he/she becomes part of this database.¹³ This data includes some demographic information about EAOP participants, and application, admissions and enrollment information for each participant. It also designates which high school the participant graduated from.¹⁴ Using EAOP student data, I was able to derive the number EAOP participants graduating from each high school in a given year, as well as the cumulative outcomes for those students.

- **General California school data:** Data on high school demographics, enrollment, graduation totals, dropout totals and API came from the California Department of Education, which makes this information publicly available on their website (see www.cde.ca.gov).

Some descriptive results

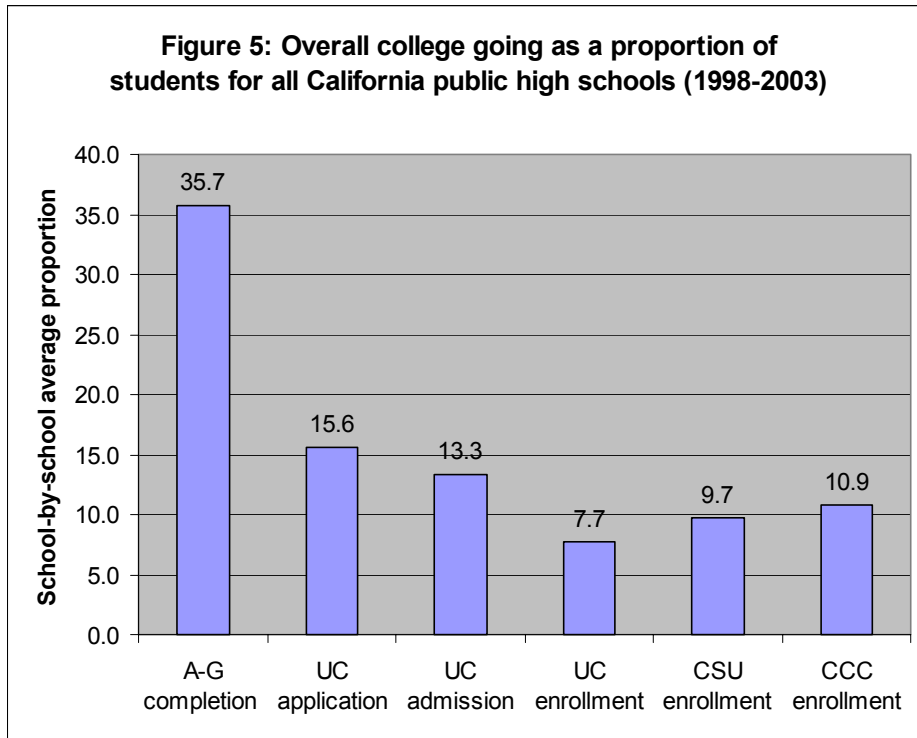
The following descriptive results set the scene for the more rigorous analysis that follows.

Overall college-going outcomes

A general sense of college-going outcomes at California public high schools acts as an important set piece for the rest of the analysis:

¹³ This dataset does not include degree of participation for cohort members.

¹⁴ Unfortunately, the cohort data only includes the high school that a student graduated from, so whether a student transferred from one school to another is not captured in this analysis.



The six outcomes listed in this chart are analyzed throughout this study. The A-G completion rate is the percent of students who complete the required courses to be eligible to attend a UC or CSU school. The UC system and the CSU system require students to complete a set of classes (i.e. four years of English) at a “C” or better as part of their minimum admissibility requirements. A-G completion, therefore, is one indicator of how well a school prepares its students for college. The UC application, admission and enrollment measures refer to the proportion of students at a school that are UC applicants, admits and enrollees, respectively. The CSU and CCC enrollment proportions are also displayed in Figure 5 (see the technical note on page 20 for an explanation as to how these rates were calculated).

Technical note: Calculating a school’s college-going outcomes

This analysis compares schools based upon various college-going outcomes. Each of the college-going “rates” in the study is an estimation of the proportion of students at a school successfully achieving a certain outcome. For instance, the measure for a school’s UC admissions rate in this study refers to the proportion of students from a particular school that were admitted to one of the University of California campuses, which differs from the way UCOP calculates a high school’s admissions rate. The rates in this study were calculated by dividing the total number of successful students (e.g. the total number of UC admits from a high school) by the total the total number of graduates at that school plus the total number of dropouts at that school (the dropout number includes freshman, sophomore, junior and senior dropouts in a given year):

$$\text{General case: } \frac{\text{Total number of successful students}}{\text{Total number of graduates} + \text{total number of dropouts}}$$

$$\text{Example: } \frac{\text{Total number of UC admits}}{\text{Total number of graduates} + \text{total number of dropouts}}$$

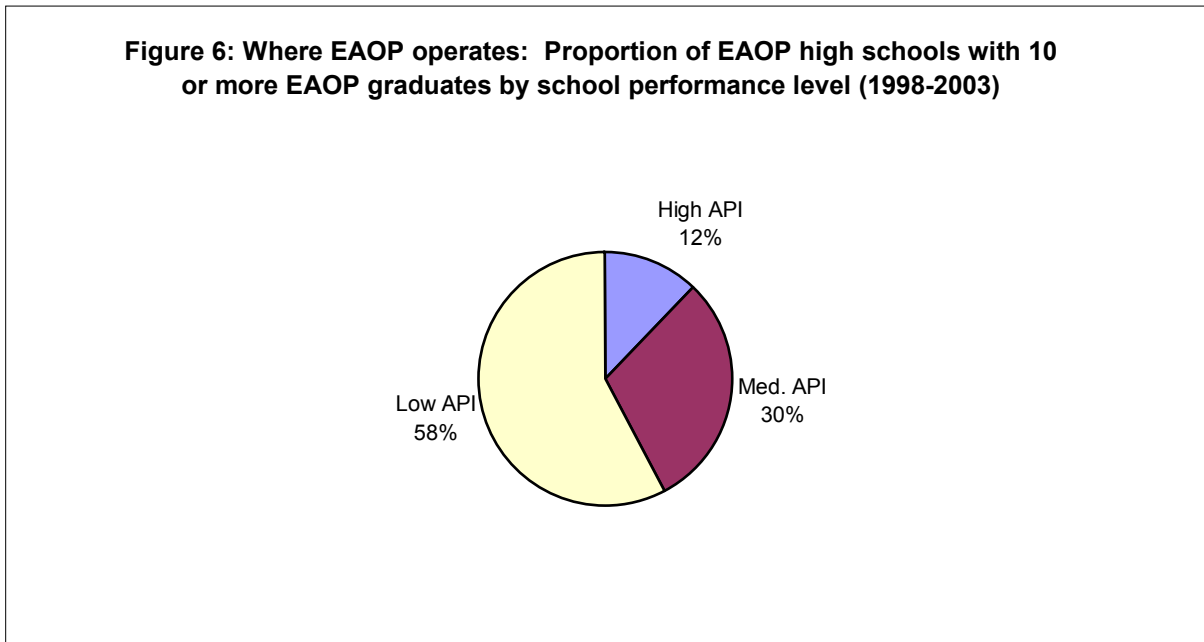
By including graduates and four-year dropouts in the denominator, the college-going rates in this analysis more accurately estimate the degree to which a school is successful at achieving a particular college-going outcome. Results from each of the five years in the study were then averaged to arrive at a single measure for each college-going rate at each school. The number of ninth graders that started with a particular cohort was also considered as a denominator, but it was rejected because of missing data from California Department of Education.

The rates in Figure 5 are important for putting the rest of the analysis into perspective.

For instance, since the average UC admissions rate is only 13.3%, an EAOP presence that can have a one percent impact on UC admissions (i.e., from 13.3% to 14.3%) is making a nontrivial difference. It is also important to keep in mind that students applying to a UC campus are probably applying to other colleges, so that improving UC application rates can indicate more than just augmenting interest in the UC system; it also implies an increase in college-going aspirations.

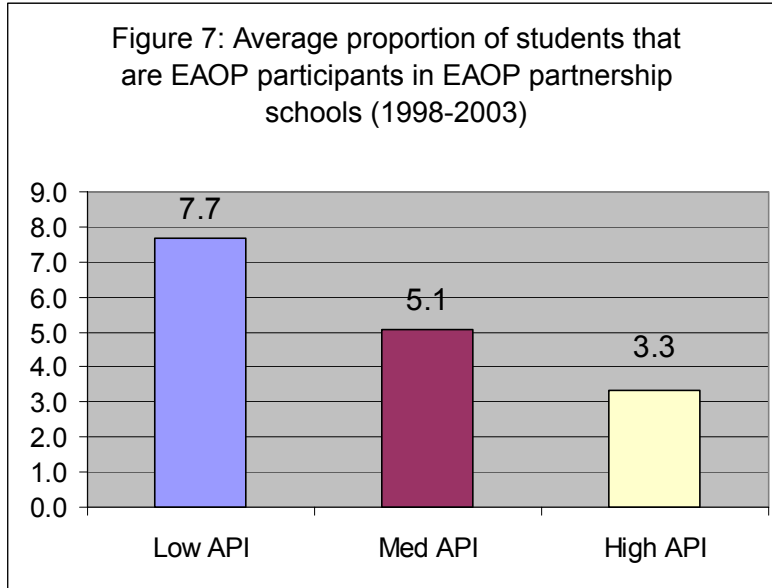
Describing EAOP: Where EAOP operates, level of participation and EAOP demographics

Figure 6 illustrates where EAOP tends to operate by school performance level:



Almost 90% of EAOP partnership schools are low- or middle-performing. Low-performing schools make up 58% of EAOP partnership schools, while about one-third of EAOP schools are middle-performing.

Figure 6 shows the average level of program participation at schools by performance level:



At low-performing schools that had any EAOP presence, EAOP works on average with 7.7% of the students. The level of EAOP participation at middle-performing schools was slightly less at 5.1%, and

EAOP tends to work with a relatively small proportion of each class when it operates in high-performing schools (3.3% on average). This EAOP

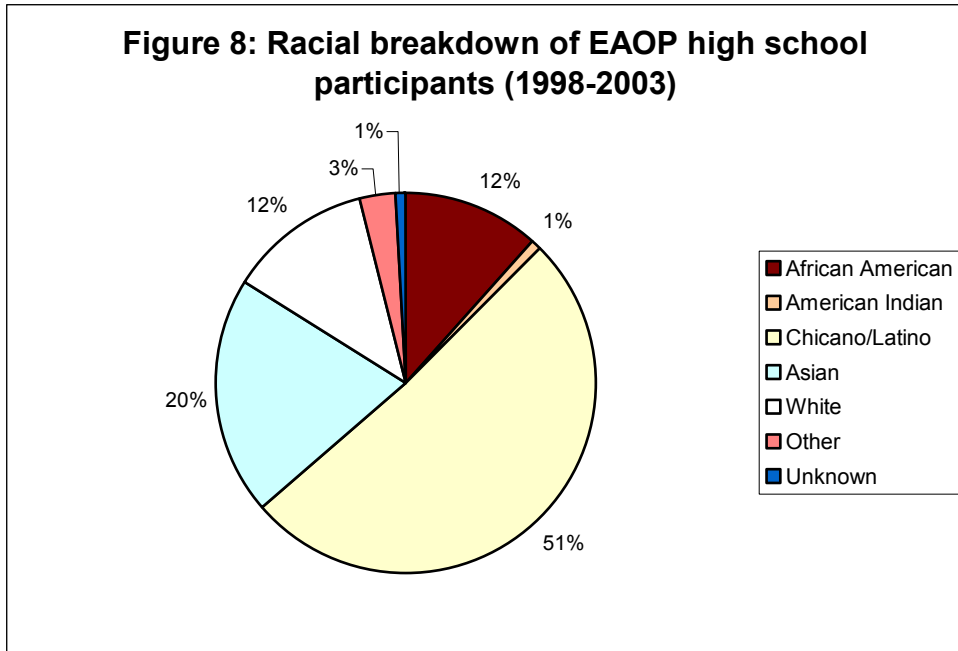
Technical note: Calculating the EAOP participation rate

This analysis calculates the EAOP participation rate in much the same way as college outcomes rates are calculated:

$$\frac{\text{Total number of EAOP participants}}{\text{Total number of graduates} + \text{total number of dropouts}}$$

participation measure, though, does indicate the degree to which participants partake in EAOP services.

Though the greater presence of EAOP at low- and middle-performing schools illustrates its focus on working with students who face barriers to college attendance, it is also useful to get some sense of the demographic breakdown of EAOP:



The majority of EAOP participants are underrepresented minorities (African American, Chicano/Latino, or Native American). However, EAOP also works with a substantial number of students who are not underrepresented at the University of California when one considers their race. The Asian category may be a bit deceiving as some students categorized as Asian are underrepresented, like certain Pacific Islander ethnicities, while others are not. Regardless of whether a student is an underrepresented minority, an EAOP participant must meet one or more criteria to be admitted into the program: (1) the student is economically disadvantaged, (2) the student attends a school with lower than average opportunities to prepare for college (i.e. low college going rates, low SAT taking rates), or (3) the student's parent(s)/guardian(s) did not attend college (see www.eaop.org).

Comparing the outcomes of EAOP schools versus non-EAOP schools

Comparing the outcomes of EAOP schools¹⁵ against non-EAOP schools at the same level of academic performance begins to suggest where and in what ways EAOP is most effective:

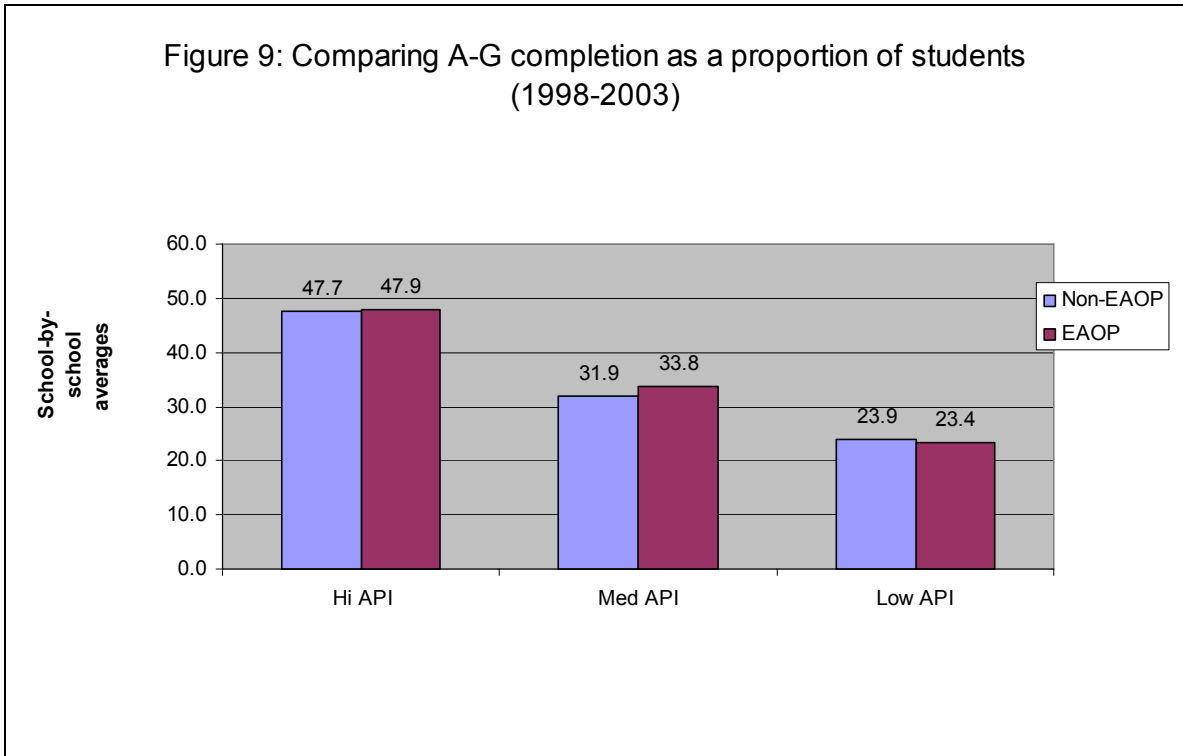
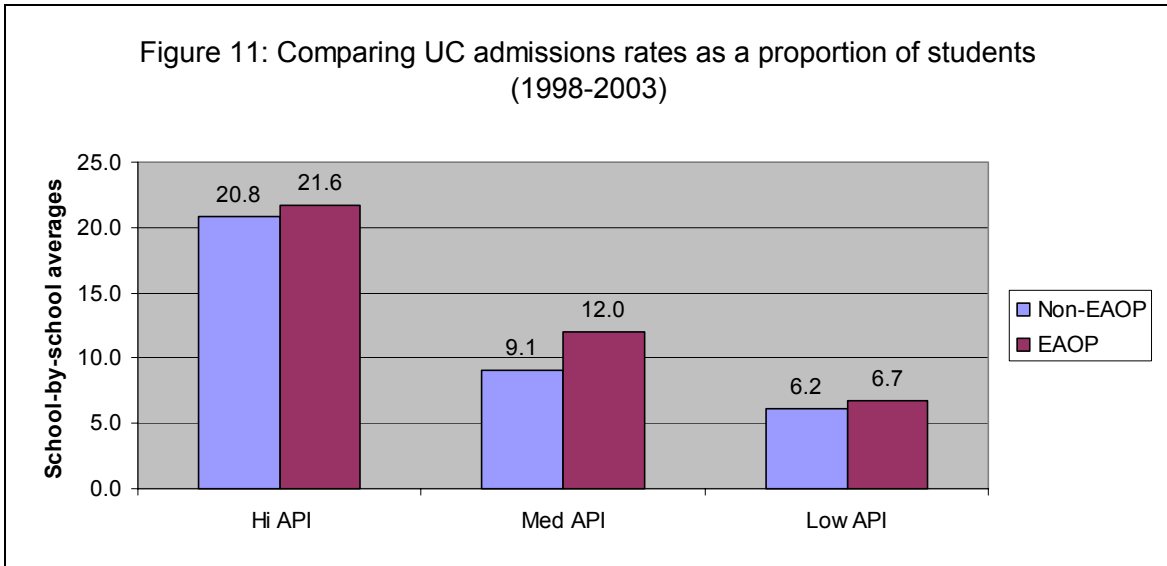
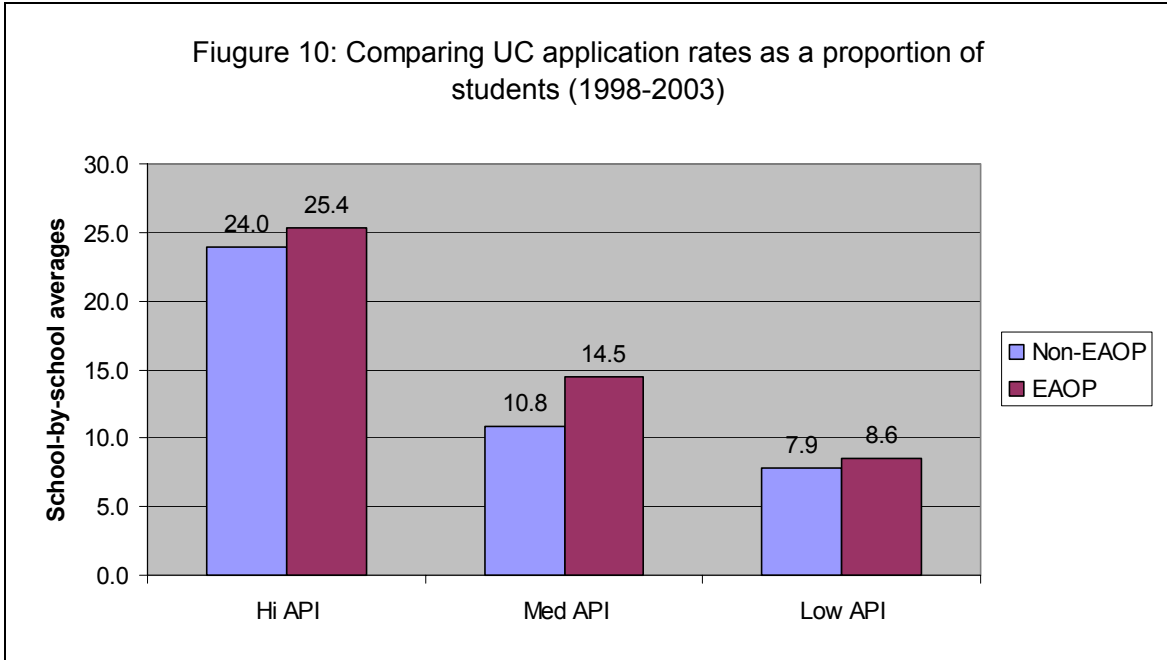
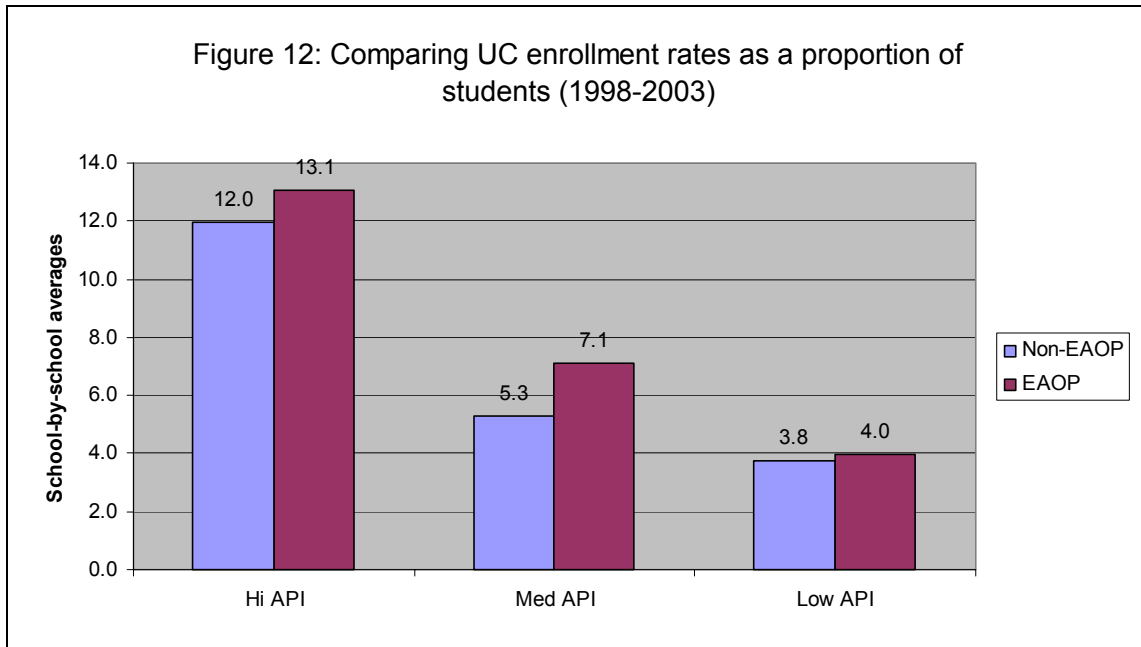


Figure 9 compares A-G completion rates, the proportion of students who complete the requisite classes for UC and CSU eligibility, for EAOP and non-EAOP schools. At high and low API schools, A-G rates are fairly indistinguishable when comparing EAOP schools to non-EAOP schools. Middle-performing EAOP schools have slightly higher A-G completion rates than non-EAOP schools.

¹⁵ An EAOP school is being defined here as a school with ten or more EAOP participants in particular school year.

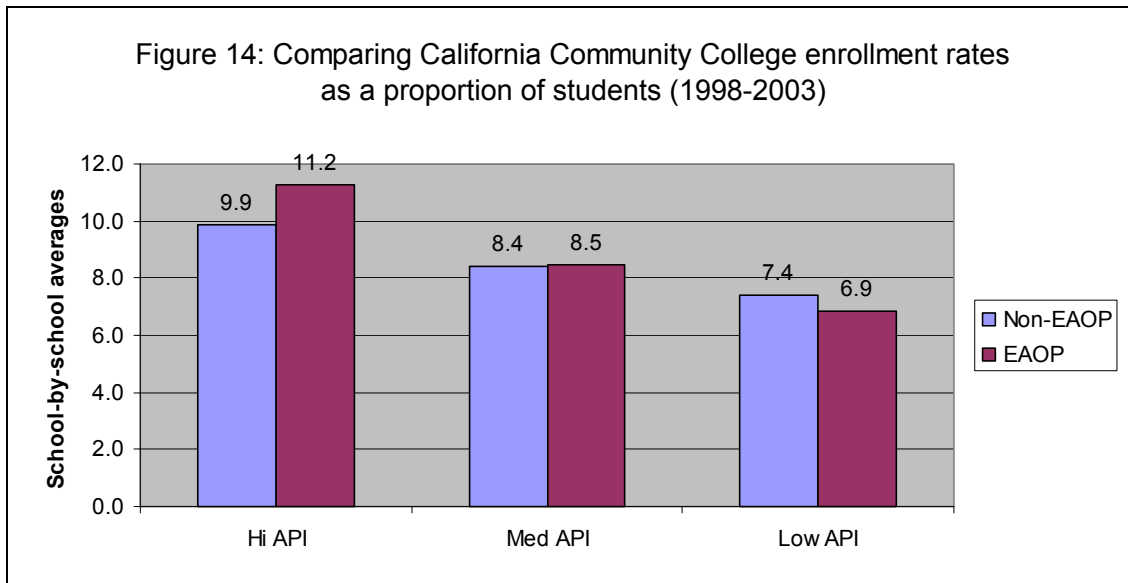
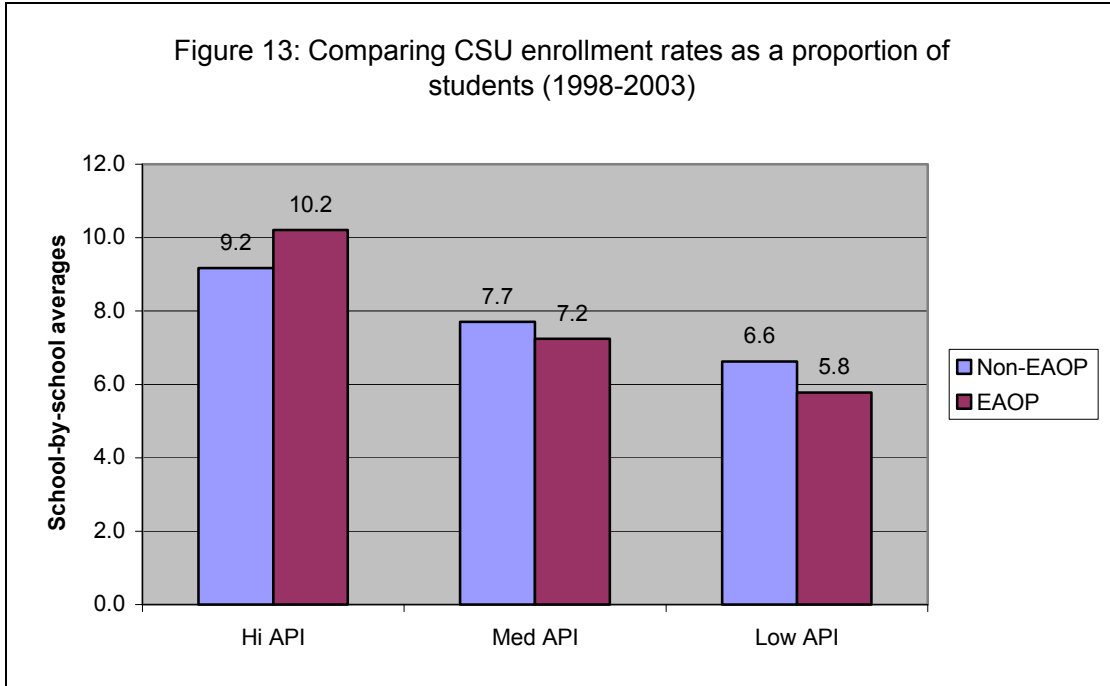
UC application, admission and enrollment rates tell a similar story to one another:





The only substantial gap between EAOP and non-EAOP schools is at medium API schools, where the UC application, admissions and enrollment rates are approximately four, three and two percentage points higher, respectively, at EAOP schools. The differences between EAOP and non-EAOP schools at low and high API schools are negligible.

Comparing CSU enrollment rates and California Community College enrollment rates for EAOP and non-EAOP schools does not hint at a positive EAOP effect the way that A-G completion rates, and UC application, admission and enrollment rates do:



For CSU enrollment rates, the only place where the difference between EAOP and non-EAOP schools is evident is at high API schools. At low- and middle-performing schools, the difference between EAOP and non-EAOP schools is small and in favor of non-EAOP schools. Furthermore, enrollment at California Community Colleges is similar at EAOP

and non-EAOP school for low- and middle-performing schools, and slightly higher at high-performing EAOP schools.

Methods for measuring the effectiveness of EAOP on a school level

Overall, comparing the outcomes for EAOP and non-EAOP schools suggests that EAOP may have slight effects on A-G completion rates, and larger effects on UC application, admission, and enrollment rates at middle-performing schools, but that other effects are probably negligible. This descriptive comparison, though, is not precise enough to come to any conclusions about the effectiveness of EAOP in particular school environments. It could be that for middle API schools, EAOP works with many schools with a decile score of six on a scale of four through six, so that the difference is caused by the fact that EAOP works with schools at the upper end of the middle-performing group. Also, separating schools by API does not entirely control for possible differences in student demographics at EAOP and non-EAOP schools. Further, EAOP's "success" could be just the result of working with schools near a UC campus. Perhaps most importantly, the EAOP schools were identified by including all schools that had ten or more EAOP participants in a particular year; this delineation does not demonstrate whether working with greater proportions of the students at a school leads to better outcomes.

Similarly, EAOP's system-wide goal of increasing the percentage of EAOP participants that are UC-eligible (*Outreach Taskforce*, 2001) does not necessarily measure the program's effectiveness. Increasing the percent of participants that are UC-eligible from one year to the next can be achieved without actually helping students prepare for

college. It could be that the EAOP program has done a better job of preparing its students for college, or it is possible that EAOP has just been able to recruit higher achieving students who were better prepared to go to a UC campus with or without EAOP's help.

Instead, effectiveness must be measured through comparison. On the individual student level, this can be done by comparing the outcomes of an EAOP participant to a similarly situated student who did not have the opportunity to participate in EAOP. In a school-by-school comparison, such as this one, one needs to compare similarly situated schools with varying degrees of EAOP participation.

This study is unique to research on pre-college outreach programs in that it is a statewide school-by-school comparison.¹⁶ Despite large budgetary allocations from state and federal governments, and even though these programs are one of the primary mechanisms used to help at-risk students prepare for college, there is little empirical research on the effectiveness of outreach programs like EAOP (Swail and Perna, 2002; Swail, 2005). Because (a) EAOP operates in many high schools throughout the state of California and (b) California is such a large state with many high schools, a school-level analysis is a feasible way to detect the effectiveness of EAOP in differing schooling environments.

¹⁶ The author has only found one other school-by-school comparison of outreach programs, which studies 32 high schools in the Los Angeles area for the relationship between the quality of the partnership relationship between a school and an outreach program, and college-preparedness (Wang, 2005). Section V discusses Wang's findings.

Outcomes studied in this analysis

On a school level, EAOP should consider itself successful when the program increases the college going rates of a school from what would be expected of that school given other contributing factors like the student demographics and the school's performance level. For the purposes of this study, EAOP will be considered successful when greater EAOP participation can be correlated with higher college-going rates than schools with similar demographics, performance scores and proximity to a UC campus.

The most of important college-going outcomes to EAOP are UC application, admissions, and enrollment rates at high schools with typically low UC rates. Other outcomes tested in this analysis include A-G completion rates, CSU enrollment rates, and California Community College enrollment rates (see the technical note on page 20 for information on how college-going outcomes were calculated). A-G completion rates are one measure of how well a school prepares its students for college. It is a stepping-stone to college.¹⁷ Further, if EAOP increases CSU enrollment rates and/or CCC enrolment rates, it is having the program's desired impact on college attendance.

This study uses the average college going rates from five years of outcomes data (1998-2003) for the final regression equations. Work by Kane and Staiger (2001) shows that there is great variability in school-level outcomes measures from year-to-year, and they

¹⁷ Various individuals, including Elizabeth Halimah, the Director of EAOP at UC Berkeley, have expressed concerns about the reliability of the A-G completion data from the California Department of Education. This is school reported data, and thus inaccuracies in the way some schools measure A-G completion can lead to inflated and deflated numbers. There is no reason to believe that these errors are biased one way or another, but the errors raise concerns about relying on A-G completion as the sole measure of a school's success in preparing students for college. That is why this analysis looks at many college-going rates.

therefore recommended looking at multiple years together. In other words, using an average of several years is a more stable indicator than using the outcomes one year at time because of random variations in outcomes in individual school years. Averaging multiple years together provides a meaningful representation of a school's capacity to prepare students for college.¹⁸

Distilling the effect of EAOP from other factors that influence outcomes

In order to compare the effect of EAOP to similarly situated schools without EAOP, this analysis uses multiple linear regression to control for the effect of a school's academic quality, the proximity of a school to a UC campus, and relevant student demographics:

- **School performance:** This study uses average school API scores from 1998-2003 to measure school academic quality.
- **Proximity to a UC campus:** Proximity to the nearest UC campus, measured in miles, is used to make sure that any EAOP effect detected is not simply the effect of being located near a UC campus, since EAOP works disproportionately with schools in the area surrounding each UC campus.¹⁹

¹⁸ The analyses were also done using weighted averages derived from a quasi-two-staged least squares approach to get an even more accurate measure of these outcomes. There is less variance when one uses ordinary least squares predicted values because the predicted value one uses in the final regression equation acts like a weighted average that pulls out the common signal of college-preparedness from the noise of random variation. However, this approach is much more technical and less transparent, and when I ran the analyses using this method, I only detected slightly higher effects, suggesting that averaging does an adequate job for the purposes of these analyses.

¹⁹ Of the 780 schools in the analysis, 89 were missing a value for proximity to a UC campus due to missing data for latitudes and longitudes. Analyses were run without these schools and then with these schools with the average proximity used as a replacement for missing values. The results reported in this study include the 89 schools that were initially missing a proximity measure. The results are only slightly different in terms of magnitude, and only one effect goes from statistically significant to insignificant when the replacement values are used. I will note this result in the next section. No results become statistically significant that were not significant when these 89 schools were not included.

- **Level of student disadvantage:** A composite student disadvantage variable was used to control for the effect of student demographics that contribute to low outcomes. This composite was calculated by adding the percent of students that were underrepresented minorities to the percent on the free/reduced price lunch program to the percent whose parents did not go to college. The measures were averaged over the five years in the study to get a single measure of the level of student disadvantage at each high school.²⁰

Measuring EAOP

There are many ways to calculate a measure for EAOP in a regression equation. What is an EAOP school? Is it a school with one EAOP graduate? Five? Ten? Thirty? Should one measure the effect of increasing the average number of EAOP participants at a school? Or, what about the proportion of students that are EAOP participants? In the end, the measure used in this study to assess the effect of EAOP for these analyses is the average proportion of students that were EAOP participants at a particular school. This approach mirrors the measure used for college-going outcomes. The analyses therefore reveal whether increasing the proportional participation in EAOP leads to proportional increases in outcomes.

²⁰ Note that each of these measures is highly correlated with the other, and that factor analysis confirms that they all measure the same underlying factor (student disadvantage). The analysis was run using factor scores in place of the composite mentioned above without any noteworthy differences in the results. I therefore used the more straightforward measure. Further, Z-scores were also derived and added together as a potential student disadvantage variable. The z-score composite and the simple addition of percentages composite are perfectly correlated, meaning that the two methods rank the schools exactly the same in terms of student disadvantage. I therefore chose to use the more straightforward version and did not involve z-scores.

IV. Multivariate results: EAOP’s disparate effects in high-, medium- and low-achieving schools

To get a sense of how much room for improvement there is in college going rates for a program like EAOP, it is useful to look at the amount of variation explained by each of the control variables. The control variables are the factors outside of EAOP’s influence at a particular school site:

Table 1: Estimating the room for improvement: Measuring the variance accounted for (R²) by each control variable for all outcomes					
Outcome	Variation explained just by API	Variation explained by API and disadvantage	Gained information from including disadvantage	Variation explained by API, disadvantage and closest UC	Gain from Closest UC
AG completion	56.8%	59.3%	2.5%	60.9%	1.6%
UC application rate	52.3%	61.8%	9.5%	67.3%	5.5%
UC admission rate	55.1%	64.3%	9.2%	68.9%	4.6%
UC enrollment rate	49.4%	58.7%	9.3%	64.2%	5.5%
CSU enrollment rate	17.9%	18.6%	0.7%	18.9%	0.3%
CCC enrollment rate	14.4%	14.6%	0.2%	15.1%	0.5%

Table 1 shows that API alone explains most of the variation in A-G completion, UC application, UC admission, and UC enrollment rates. The variation explained in CSU and CCC enrollment rates by API is relatively small at 17.9% and 14.4%, respectively. Adding the level of student disadvantage to the equation brings a trivial amount of new information to A-G completion rates, but explains some of the variation in UC rates. Similarly, including a measure for proximity to a UC campus does little to explain variations in A-G completion, but provides nontrivial information for understanding UC rates. Neither the level of student disadvantage nor proximity to a UC campus provides much information for predicting CSU and CCC enrollment rates.

The large proportion of variation in UC application, admission, and enrollment rates explained by API, level of student disadvantage and proximity to a UC school give a sense of the degree to which college going rates are outside of the control of any program, including EAOP. Approximately two-thirds of the differences between schools in their A-G completion, UC application, UC admission, and UC enrollment rates can be accounted for by factors faced by EAOP before it enters a school.

It is also useful to get a sense of the relationships of the control measures with one another and with a typical outcome measure:

Table 2: Correlations of control variables with one another and with UC admissions				
		API	Level of student disadvantage	Proximity to a UC campus
API	Pearson Correlation Sig. (2-tailed) N			
Level of student disadvantage	Pearson Correlation Sig. (2-tailed) N	-0.905** <.001 770		
Proximity to a UC campus	Pearson Correlation Sig. (2-tailed) N	-0.063 0.097 691	0.007 0.853 683	
UC admission average	Pearson Correlation Sig. (2-tailed) N	.742** <.001 779	-.542** <.001 769	-.311** <.001 690
** Correlation is significant at the 0.01 level (2-tailed).				

Figure 15 shows the bivariate correlations of each of the control variables with one another, and the correlation between each control variable and the UC admissions average. Bivariate correlations are measured on a scale from negative one to one. The higher the correlation in absolute terms (i.e., closer to either -1 or +1), the larger the relationship between the two measures. Correlations with two-asterisks are statistically significant ($p < .01$).

API is highly negatively correlated with the level of students with disadvantages at a school and positively correlated with UC admissions. That is, higher API scores are related to smaller proportions of students with barriers to college attendance and higher proportions of students being admitted to a UC campus. Higher levels of students with disadvantages are negatively correlated with UC admissions rates. Finally, proximity to a UC campus is negatively correlated with UC admissions rates, but only moderately so.

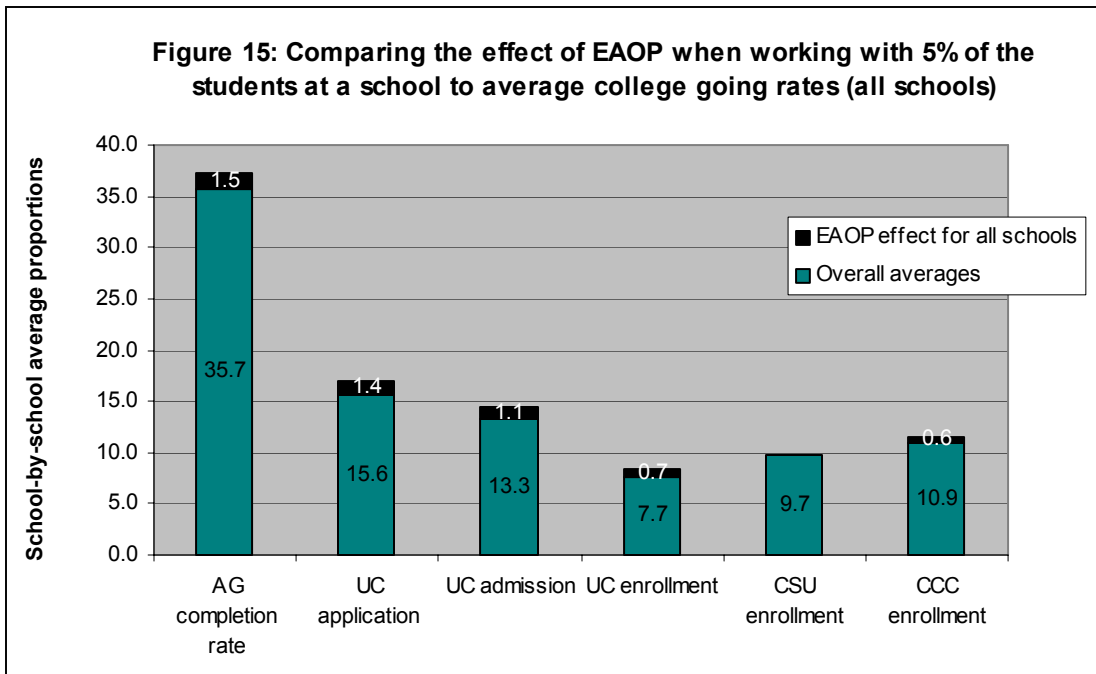
The effectiveness of EAOP in different types of schools

By including a measure for the EAOP proportional presence at each school into the regression analysis, one can estimate the unique effect of EAOP in differing school environments:

Table 3: The differential effects of EAOP when working with 5% of the students at a school				
Outcome	Overall	Low API	Medium API	High API
AG completion	1.53**	1.01	2.13*	1.97
UC application rate	1.365***	0.535*	2.375***	0.92
UC admission rate	1.06***	0.39*	1.94***	0.51
UC enrollment rate	0.695***	0.205	1.285***	0.43
CSU enrollment rate	0.035	-0.209	0.41	0.465
CCC enrollment rate	0.575***	0.525**	0.79**	0.545
*p<.05 **p<.01 ***p<.001				
Note: The effect size is the percent increase caused by working with 5% of one graduating cohort.				

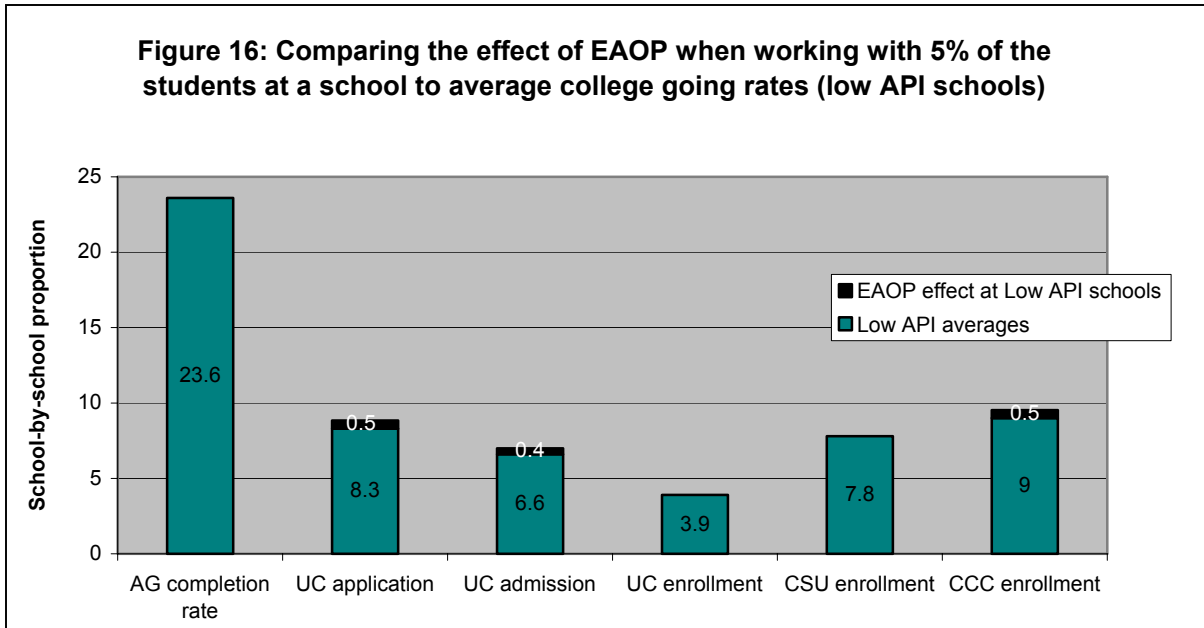
Each of the cells in Figure 16 shows the results of a separate multivariate regression analysis, testing the effect of EAOP on a particular outcome, controlling for API, the level of students with disadvantages, and proximity to a UC campus. An analysis was performed for each outcome for all California public high schools together (N=780), and then separate analyses were performed for all low API schools together (N=234), all middle API schools together (N=234), and all high API schools together (N=312). Recall that low API schools include API deciles 1-3, middle API schools have decile rankings of 4-6, and high API schools include API deciles 7-10. The regression coefficients were multiplied by five to simulate the predicted impact of EAOP if the program works with five percent of the students, which approximates the average proportion of students that EAOP typically works with at a school and hence reflects typical EAOP presence.

By looking at these results next to the average outcomes, one gets a sense of the size of EAOP's impact on college-going:



Overall, there are positive effects for EAOP on A-G completion, UC application, UC admission, UC enrollment, and California Community College rates. Figure 17 shows the relationship between the effects of EAOP and average college-going rates. For instance, the average UC application rate is 15.6%. If EAOP works with 5% of the students at a school, the expected effect would be a 1.4% increase (i.e., from 15.6% to 17%). If a school has 1000 students and starts with average application rates, the change would be from 156 UC applicants to 170 UC applicants, or 14 more students applying to a UC campus.

Breaking down the effects by school performance level clearly demonstrates that EAOP is most effective at the schools in the middle. There were no detectable effects for EAOP at high API schools. Figure 18 shows the effects for low API schools:



EAOP appears to have relatively small effects on UC application, UC admission and CCC enrollment rates at low performing schools.²¹ The largest effect relative to the outcome average for low API schools is the 0.4% increase in UC admissions rates, where the average for low API schools is 6.6%.

The most prominent results are for middle performing schools:

²¹ When one analyzes low performing schools without including the schools that lack a measure for UC proximity, one finds a very small negative effect of EAOP on CSU enrollment rates.

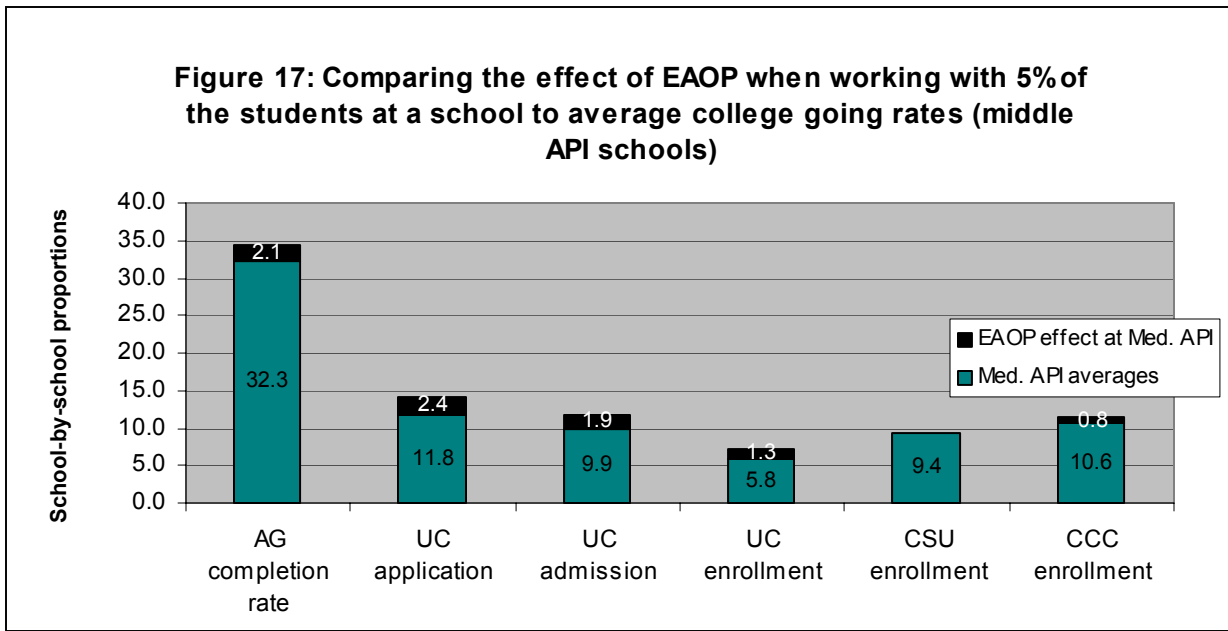


Figure 19 shows the comparatively large of effects of EAOP at middle performing schools. These effects include a 2.1% increase in A-G completion where the average is 32.3%, a 2.4% increase in UC applications where the average is 11.8%, a 1.9% increase in UC admissions where the average is 9.9%, a 1.3% increase in UC enrollment where the average is 5.8%, and a 0.8% increase in CCC enrollment where the average is 10.6%. Looking just at the effect on UC applications for a school with 1000 students and an average UC application rate, the effect when EAOP works with 5% of the students would be an increase from 118 UC applicants to 142 UC applicants, or 24 more students applying to a UC campus. Ultimately, even where EAOP is effective at improving UC rates for low-performing schools, the effect of EAOP on the same UC rates at middle-performing schools is four to five times larger.

Testing the school-wide effect of EAOP with other measures of EAOP

The above analyses measure EAOP as the proportion of students who participate in EAOP. The proportional measures show that increasing the participation level at a school leads to better outcomes in some cases. Analyses were also done with other measures of EAOP. First, I examined the effect of being an EAOP school by defining an EAOP school as a school with one or more EAOP graduates. I then increased the threshold to five or more EAOP graduates, and ultimately tested the effect of EAOP with minimum participation levels of ten, fifteen, twenty, twenty-five, thirty, thirty-five, forty and forty-five EAOP graduates. These analyses yielded significant effects for the all schools together and for low API schools when the threshold for being defined as an EAOP school was low. But, as the threshold increased, the effects went away. However, the effects for middle-performing schools increased as the threshold increased and remained statistically significant, further showing that the effect of EAOP is strongest at the schools in the middle. Similarly, when testing the effect of the average number of EAOP participants, only at the middle API schools does one find that higher average student participation led to better (statistically significant) outcomes (see Appendix B for these results).

Formally testing for the interaction effect of API and EAOP

The results suggest that the effect of EAOP is different depending upon the performance level of the school. In other words, there is an interaction between school performance level and EAOP that ultimately leads to differing outcomes for EAOP in schools at different API levels. An interaction analysis was performed to see if EAOP has a

significantly different effect on college-going outcomes at different levels of API. The interaction effect of EAOP and API is statistically significant for all outcomes except for CSU enrollment rates, supporting the evidence that EAOP has different effects at high-, medium- and low-performing schools (see Appendix C for these results).

V. Exploring the results: Why EAOP works best in the schools in the middle

The results suggest that EAOP is ineffective at high-performing schools, somewhere between ineffective and slightly effective at low-performing schools, and highly effective at the schools in the middle. This section explores potential explanations for these results.

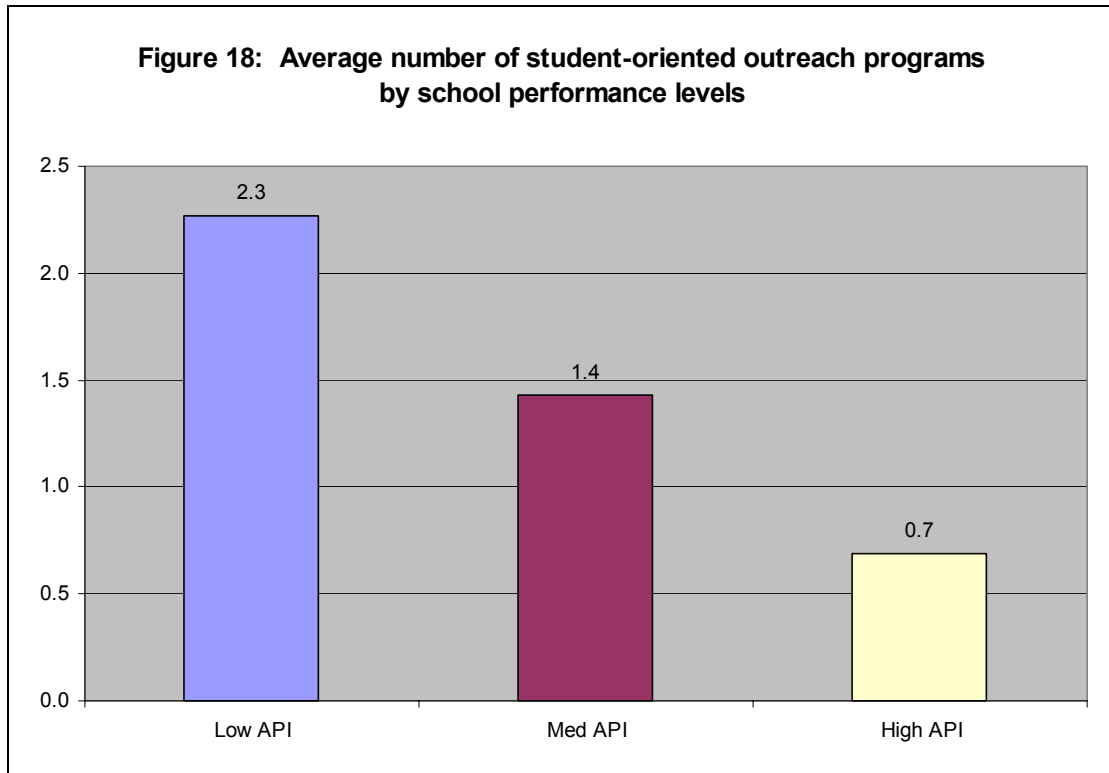
Explaining the relative ineffectiveness of EAOP at low-performing schools

There are several possible reasons for why EAOP is relatively ineffective at low performing schools:

- **Program saturation problem:** Like EAOP, many other academic preparation programs are most often found in low-performing schools. If there are multiple programs providing similar services to students, then EAOP is superfluous. As one practitioner explained it, “The effect of the first program and maybe the second program might be big, but by the time you get to the third, fourth or fifth program, there isn’t going to be much of an effect” (Cantor, 2005). In other words, there are diminishing marginal returns as more outreach programs enter a school. In fact, anecdotal evidence suggests that EAOP sometimes finds itself

competing for students with other outreach programs, especially at low API schools (Halimah, 2005; Adorno-Jimenez, 2005).

Empirical evidence confirms the program saturation problem:



(Source: Data for this chart comes from www.appris.org).

Figure 18 shows the average number of student-oriented outreach programs by school performance level.²² Low API schools have on average 2.3 programs and middle API schools have 1.4 programs on average. In fact, less than 10% of

²² The data for this chart comes from www.appris.org, a clearinghouse with data on academic preparation programs throughout the state of California. The student-oriented programs that this website has data on are EAOP, PUENTE, MESA, TRIO, AVID and SUP. For each high school, the website confirmed whether or not each program was at the school. There are certainly other academic preparation programs working in California high schools, but these are the main ones. There are some small discrepancies between this source and UC Berkeley's internal data, but for the most part, www.appris.org is accurate. Thus, the data from this website is useful for getting a general sense of where program saturation occurs, but it is not useful for individual school-to-school comparisons.

middle-performing schools have three programs and very few (less than 5%) have more than three programs. However, low API schools appear to be saturated with outreach programs. Forty percent of low API schools have more than three programs.

- **Lower numbers of students with realistic college-going potential:** Once a student gets to high school, there is only so much that can be done by an academic preparation program in four years to prepare that student for college, especially for the rigors of the University of California. Students attending low-performing are less likely as entering high school freshman to be prepared to pursue courses that will lead them to college. To wit, an analysis by Horn and Nunez (2000) shows that (a) students who complete Algebra I in the eighth grade are more likely to complete advanced math classes in high school, (b) students who complete advanced math classes in high school are more likely to go onto college, and (c) students whose parents did not go to college are less likely to complete steps ‘a’ and ‘b.’ Thus, Figure 4, which shows that the average proportion of students whose parents did not go to college at low API schools is 74.1%, suggests that entering students at low API schools are less likely to be on a college-going track. Indeed, several practitioners referred to their efforts at low API schools as searching for “the diamonds in the rough” (Arriaga, 2005; Halimah, 2005; Adorno-Jimenez 2005). Combine multiple programs fighting over the few students with realistic potential, and it is no wonder that EAOP has little to no *detectable* effect at lower-performing schools.

- **High proportions of students with needs outside of the scope of EAOP:**
EAOP is a targeted program that currently has neither the capacity nor the expertise to help students with the severe challenges that many students face at low-performing schools (i.e. poverty, crime, learning English, educationally disadvantaged schools). Further, Professor Jeannie Oakes, Director of the All Campus Consortium for Research for Diversity for the University of California (UC ACCORD), comments that “low-income, Latino and African American students are clustered in the state’s most educationally disadvantaged schools—the schools with the fewest qualified teachers, the fewest academically challenging courses, the most inadequate facilities and so forth” (Oakes, 2004). EAOP is not currently equipped to deal with these larger, school-wide problems; the focus of EAOP right now is on working with individual students.
- **Overwhelmed and dysfunctional schools:** Lower-performing school administrators, faculty members, and, most importantly, counselors are overwhelmed by day-to-day survival and safety issues. This makes it difficult to partner with low-performing schools. EAOP practitioners need access to space, students, and to the school computer system (which allows the onsite EAOP advisor to pull students out of class). A recent study by UC ACCORD looked at program fidelity, the strength of implementation of an outreach program, which is closely related to the strength of the partnering relationship between a school and a program. UC ACCORD’s longitudinal analysis found that strong program fidelity is correlated with better results (Wang, 2005). What’s more, anecdotal evidence from practitioners suggests that program fidelity is weakest at lower-

performing schools, where school site staff tend to be too overwhelmed to provide the minimal accommodations that make EAOP's work feasible (Adorno-Jimenez, 2005; Arriaga, 2005). In fact, one EAOP director commented that when the EAOP budget was cut in half, he chose to pull out of some low API schools due to poor partnering capacity at those schools (Aguilar, 2005).

Explaining the positive effect of EAOP on the schools in the middle

EAOP is probably effective at middle-performing schools for reasons related to why the program is relatively ineffective at low-performing schools:

- **Program need:** The schools in the middle tend not be saturated with outreach programs in the way low API schools are. EAOP tends to be welcomed at middle API schools, which are functional enough to know that with an average of 1.1 counselors for every 1000 students (EdSource, 2004), middle API schools cannot provide students with enough support to prepare them for college. Counselors, who are often the primary resource for college information, have had their advising role increasingly subsumed by administrative duties (McDonough, 2005). This allocation of counselor time away from college and other academic advising is most prominent for students at lower socioeconomic schools, such as the low and middle API California public high schools. A study by the National Association of College Admissions Counselors found that counselors in higher socioeconomic schools spend more time on college counseling, and other research finds that schools with large proportions of students of color are most lacking in college counseling services (McDonough, 2005).

- EAOP advisors can provide the extra push and guidance to get EAOP participants on track to being UC-eligible, where those students' overwhelmed counselors cannot be of assistance. In fact, the effectiveness of EAOP is probably in its pushing of students to take a more rigorous course-load. Several studies have found that taking more challenging high school courses can mitigate the effects of coming from a disadvantaged background (Choy 2002; Adelman 1999).
- **Critical mass of students who need a push:** At the schools in the middle, it is more likely that there will be a critical mass of students, who would not be served without EAOP, and who would benefit from the support that EAOP provides. Recall from Figure 4 that middle-performing schools tend to have substantial proportions of students who face barriers to college attendance, but because these students have likely gone to better middle schools than their low API counterparts, they are more likely to be on course for college. Combine these two facts with the relative dearth of programs in middle-performing schools, and one can see why EAOP is able to enter a middle-performing school and move students from ineligibility to eligibility.

Explaining the ineffectiveness of EAOP at high-performing schools

At higher performing schools, EAOP is likely to be superfluous. Administrators and counselors have the time and resources to focus on college attendance (McDonough, 2005). Parents and the community members can provide students with the support they need to prepare for college. I would caution the reader, however, when it comes to

schools on the border between middle- and high-performing. It may be that there are some schools with a decile ranking of seven or even eight that have substantial disadvantaged populations that would benefit from EAOP. Some practitioners refer to “bimodal” schools, which can sometimes look like two separate schools at the same school (Kaufman, 2005). Berkeley High School is an often-referred-to example of a bimodal school. Despite a relatively high API rank of 7, half of the students at the school are underrepresented minorities and half are on the free/reduced price lunch program, and these disadvantaged students do not perform as well as their advantaged schoolmates (see cde.ca.gov).

VI. Conclusion: Implications for school selection

Students at low- and middle-performing schools are underrepresented at the University of California. These schools have large proportions of students who face one or more barriers to attending college. At middle-performing schools, when EAOP works with 5% of the student population, the expected school-wide effects are as follows:

- A 2.1% increase in AG completion rates where the average is 32.3%.
- A 2.4% increase in UC applications where the average is 11.8%.
- A 1.9% increase in UC admissions where the average is 9.9%.
- A 1.3% increase in UC enrollments where the average is 5.8%. While

EAOP tends to operate in low-performing schools, it is most effective at increasing the college-going outcomes at the schools in the middle.

Recommendations for school selection

The disparate effects of EAOP in differing school environments should inform how EAOP decides which schools to operate in:

Recommendation 1: Stay at the schools in the middle, and leave some low and almost all high performing schools.

High performing schools should be vacated immediately.²³ EAOP does not have the resources to stay at schools with disproportionately high UC outcomes rates. EAOP should also consider leaving some low-performing schools, especially if (a) there are enough other outreach programs at the school to serve the small handful of students with realistic college-going potential and/or (b) the school is so difficult to work with that EAOP is unable to set up a functioning program with enough EAOP participants to justify staff time (see the explanatory note on the next page for an explanation of how EAOP can work with its target demographics at middle-performing schools).

Recommendation 2: Examine success at a particular school by comparing expected outcomes to actual outcomes

UC admissions rates are an important indicator of EAOP success. All UC-eligible students who apply to the University of California are guaranteed admission to at least one UC campus (though not necessarily their first choice). Higher UC admissions rates,

²³ Again, a state ranking of seven, which is on the border between high and middle performing, should not be the only deciding factor for eliminating an EAOP partnership, but it should raise red flags.

Explanatory Note: Operating in middle-performing schools does not have to alter the target demographics of EAOP

Some may be concerned that redeploying EAOP from low-performing schools to middle-performing schools will change the target demographics of EAOP. On the contrary, EAOP tends to work with similar proportions of underrepresented minority students at low, medium, and high API schools (comprehensive data on socioeconomic indicators for EAOP participants was not available for this analysis):

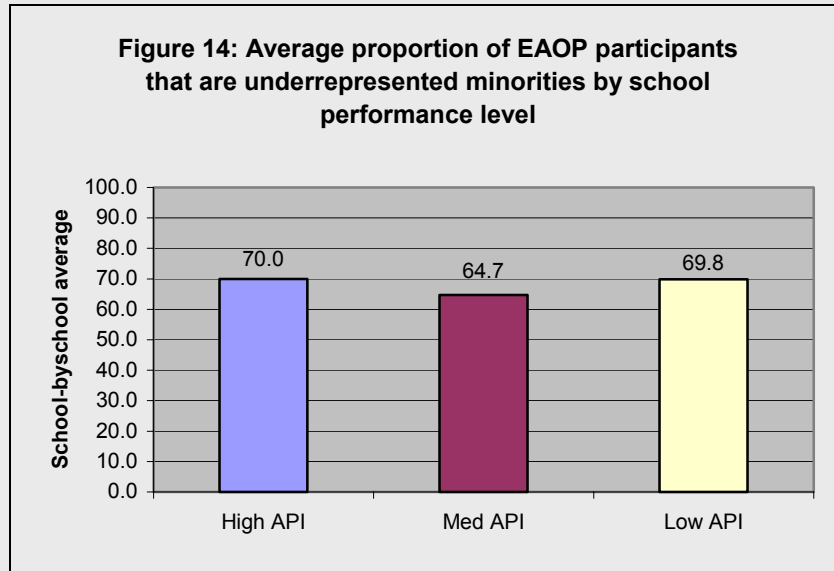


Figure 14 shows that the difference between underrepresented minority participation at middle- and low-performing schools is 5%. EAOP can close this gap with targeted recruiting at middle API schools, especially if programs decide to leave some low-performing schools for middle-performers.

The success of these students is, however, different according to school performance level:

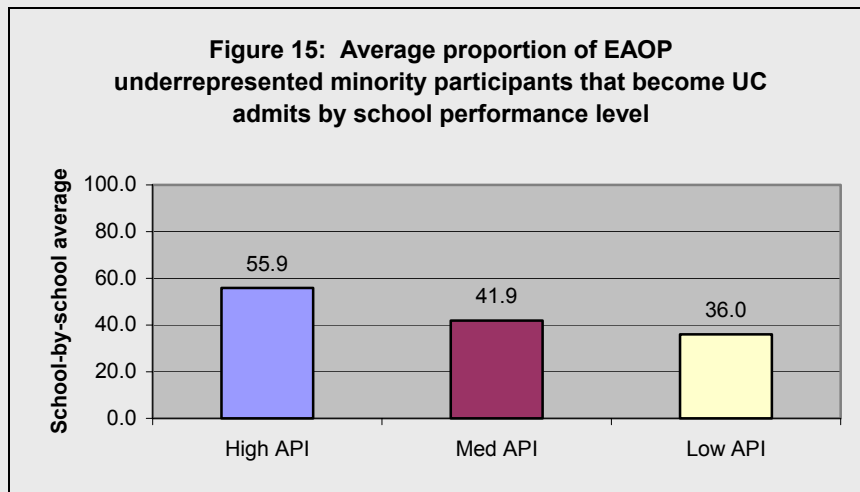


Figure 15 shows that while at low-performing schools 36% of underrepresented minority EAOP participants were UC admits, 41.9% of such students were UC admits at middle-performing EAOP partnerships schools. Similar results occur for UC applications and UC enrollment. Thus, EAOP can work with similar student demographics at middle-performing schools with greater success rates for those students.

therefore, probably mean that EAOP is doing its primary job at a particular school of preparing disadvantaged students to attend a UC campus.

One simplified way to examine the success of EAOP at a particular school is to compare the actual admission rate (or any other college-going rate)²⁴ for an EAOP school with the average admission rates of schools with similar API scores and similar levels of students with disadvantages:

Table 4: UC admissions averages for all public high schools (1998-2003)									
Demographics of the student population									
		High disadvantage	High/mid. Disadvantage	Middle disadvantage	High./mid. Advantage	High advantage			
API quintiles	Low API	5.8 +/- 2.0	6.7 +/- 2.7						
	Low/Mid. API	9.2 +/- 3.8	8.3 +/- 4.8	7.7 +/- 4.3					
	Middle API		12.3 +/- 5.7	10.3 +/- 5.3	8.9 +/- 4.4				
	Mid./high API			15.5 +/- 6.0	13.3 +/- 6.8	12.8 +/- 4.9			
	High API				22.0 +/- 13.1	28.9 +/- 14.1			
Note: Values should be read as the UC admission average plus or minus one standard deviation. One standard deviation describes the range of approximately two-thirds of schools at particular API and demographic quintiles.									

Table 4 can act as an index of expected UC admission rates, given a school’s API quintile and level of student disadvantage. For instance, the average UC admissions rate for schools that are “low API” (lowest quintile for API) and “high/mid. disadvantage” (the second quintile for level of disadvantage) is 6.7% plus or minus 2.7% (i.e., a range from 4% to 9.4% contains approximately two-thirds of these schools). Blank cells exist because there were too few or no schools in the cell in question to calculate an average.

Consider two UC Berkeley EAOP partnership schools, which I will call the “Big Success School” and the “So-So School.” Both of these schools are “low/mid. API” and “high/mid. disadvantage,” so the expected UC admissions average is 8.3% plus or minus

²⁴ For the purposes of this section, I look only at UC admissions. But, I would encourage practitioners to consider various college-going indicators when evaluating a school.

4.8% (i.e., a range from 3.5% to 13.1% contains approximately two-thirds of the schools at this level of API and student disadvantage). The “Big Success School” has a UC admissions average of 19.1%, which is not only above average, it six points beyond the typical upper end of the range for these types of schools. The “Big Success School” has an average EAOP participation rate of 12.5%, which is also above average. The “So-So School” has a UC admissions average of 8.2%, slightly below average, and an EAOP participation rate of 6.2%, which is about average. The results at these two schools certainly follow from the finding of this study that increased participation leads to higher UC admissions rates.

In terms of evaluation, these disparate results should generate a conversation among EAOP practitioners familiar with the school sites in question. Does EAOP have trouble recruiting students at the “So-So School”? Is the school site administration unwilling to partner with EAOP at this school? Can EAOP be effective at the below average school, and if so, what will it take? EAOP administrators should ask similar questions about what seems to make the program so effective at the “Big Success School.” What might explain the success at this school? Is the school administration easy to work with? What strategies have been successful at this school that can be used in other schools?²⁵

²⁵ Note that where possible, the best indicator of EAOP success at a school is to compare college going rates before EAOP enters to college going rates after EAOP starts working with students.

Recommendation 3: Examine the potential for success at possible new EAOP partnership schools

EAOP should use the same expected UC admissions rates from Table 4 to think about which new schools the program should enter. Imagine the UC Berkeley EAOP program is considering two new potential partnership schools (again, the schools are actual schools in the UC Berkeley catchment area). Both schools do not have an EAOP presence at this time, and are “schools in the middle.” That is, they are schools at the “middle API” quintile and “middle disadvantage” quintile. The average admissions rate for similar schools is 10.3% plus or minus 5.3% (i.e., the range from 5% to 15.6% contains approximately two-thirds of the schools at this API quintile and disadvantage level).

One school has an average admission rate of 16.9%, which is not only above average, but also beyond the upper end of the typical range for similar schools. The other school has a UC admissions average of 10%, which is slightly below average. The first school would probably not be a good use of EAOP’s resources, given the fact that the school is already doing a substantially above average job of getting students admitted to a UC campus. The second school should be considered a potential partner for EAOP. It is a school in the middle that is doing an about average job of helping students be admitted to a UC campus. These numbers are a starting point, which should lead EAOP to a more qualitative evaluation of the latter school. Is the school site administration interested in working with EAOP? Is there space for EAOP to work with students? Given the

school's current outcomes, if questions like these lead the EAOP staff to believe that this school would be a good partner, EAOP should seriously consider entering the school.

Recommendation 4: The Center for Education Outreach (CEO), which is the umbrella organization for academic preparation programs at UC Berkeley, should deploy EAOP to work with the schools in the middle, while reserving its more intensive programs like Upward Bound for lower performing schools.

This study suggests that EAOP is most effective at the schools in the middle. Further, a Mathematica study of Upward Bound suggests that Upward Bound is most effective with students that start with lower aspirations and have greater needs (Myers et al., 2004).

CEO should triage high schools in the UC Berkeley catchment area according to need, and send the more intensive programs to the lower-performing schools and EAOP to the schools in the middle. Other UC campuses should similarly target academic preparation programs to the schools where they are likely to be most successful. High schools tend not to have the resources to manage which programs enter their doors, but individual UC campuses tend to manage many academic preparation programs in a single campus department. These programs should collaborate in school selection to spread resources out and target resources at the places where they will be put to the best use. While this might not mean that EAOP should leave all low-performing schools, this certainly suggests that EAOP should be redeployed from low-performing schools that already have one or more highly similar academic preparation programs to EAOP (i.e. Education Guidance Center and East Bay Consortium for UC Berkeley) in order to enter a middle-performing school with below average outcomes and no academic preparation programs.

In conclusion, the results of this analysis support previous work on EAOP that suggests the program is effective at improving college-going outcomes at partnership schools.

What's more, the findings of this study expand upon previous analyses by finding that EAOP is most effective at the schools in the middle. Between the UC-run and non-UC-run academic preparation programs in California public high schools, there is no reason why programs should be as concentrated as they are in low-performing schools. Perhaps EAOP should be the program that targets the schools in the middle.

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Appendix A: Technical methodology

This appendix contains a technical version of the methodology employed in this study.

The variables

The following variables were used in this study (in order of appearance in the study):

Variable	Description	Source of original data²⁶
STUDENTS _{it}	Total students at school <i>i</i> in year <i>t</i>	CDE
UCADMITS _{it}	Total UC admits at school <i>i</i> in year <i>t</i>	UCOP
URM _{it}	Proportion of students who were underrepresented minorities at school <i>i</i> in year <i>t</i>	CDE
FRPL _{it}	Proportion of students who were on the free/reduced price lunch program at school <i>i</i> in year <i>t</i>	CDE
FSTGEN _{it}	Proportion of students whose parents did not attend college at school <i>i</i> in year <i>t</i>	CDE
UREMAVG _i	Average proportion of students who were underrepresented minorities at school <i>i</i> from 1998-2003	CDE
FRPLAVG _i	Average proportion of students who were on the free/reduced priced lunch program at school <i>i</i> from 1998-2003	CDE
FSTAVG _i	Average proportion of students whose parents did not attend college at school <i>i</i> from 1998-2003	CDE
AG _{it}	Total number of students completing the A-G course requirements at school <i>i</i> in year <i>t</i>	CDE
UCAPP _{it}	Total number of students applying to a UC school at school <i>i</i> in year <i>t</i>	UCOP

²⁶ Some the measures come directly from the source as is. Others were derived from the source(s) mentioned.

$UCADM_{it}$	Total number of students admitted to at least on UC at school i in year t	UCOP
$UCENR_{it}$	Total number of students enrolling in a UC at school i in year t	UCOP
CSU_{it}	Total number of students enrolling in a CSU at school i in year t	UCOP
CCC_{it}	Total number of students enrolling in a CCC at school i in year t	UCOP
$GRADS_{it}$	Total number of students graduating at school i in year t	CDE
$DROPOUTS_{it}$	Total number of students dropping out at school i in year t	CDE
$AGRATE_{it}$	Proportion of graduates plus dropouts completing the A-G course requirements at school i in year t $AG_{it}/(GRADS_{it} + DROPOUTS_{it})$	CDE
$UCAPPRATE_{it}$	Proportion of graduates plus dropouts applying to a UC school at school i in year t $UCAPP_{it}/(GRADS_{it} + DROPOUTS_{it})$	UCOP, CDE
$UCADM RATE_{it}$	Proportion of graduates plus dropouts admitted to at least on UC at school i in year t $UCADM_{it}/(GRADS_{it} + DROPOUTS_{it})$	UCOP, CDE
$UCENRRATE_{it}$	Proportion of graduates plus dropouts enrolling in a UC at school i in year t $UCENR_{it}/(GRADS_{it} + DROPOUTS_{it})$	UCOP, CDE
$CSURATE_{it}$	Proportion of graduates plus dropouts enrolling in a CSU at school i in year t $CSU_{it}/(GRADS_{it} + DROPOUTS_{it})$	UCOP, CDE

$CCCRATE_{it}$	Proportion of graduates plus dropouts enrolling in a CCC at school i in year t $CCC_{it}/(GRADS_{it} + DROPOUTS_{it})$	UCOP, CDE
$AGRATEAVG_i$	Average proportion of graduates plus dropouts completing the A-G course requirements at school i from 1998-2003.	CDE
$UCAPPRATEAVG_i$	Average proportion of graduates plus dropouts applying to a UC campus at school i from 1998-2003	UCOP, CDE
$UCADM RATEAVG_{it}$	Average proportion of graduates plus dropouts admitted to at least on UC at school i from 1998-2003	UCOP, CDE
$UCENRRATEAVG_{it}$	Average proportion of graduates plus dropouts enrolling in a UC at school i from 1998-2003	UCOP, CDE
$CSURATE_{it}$	Average proportion of graduates plus dropouts enrolling in a CSU at school i from 1998-2002	UCOP, CDE
$CCCRATEAVG_i$	Average proportion of graduates plus dropouts enrolling in a CCC at school i from 1998-2002	UCOP, CDE
$EAOPPARTNER(threshold)_{it}$	Dummy variable for if a there were a particular number (a threshold) or more EAOP graduates at school i in year t . “Threshold” refers to the threshold being used to identify EAOP partnership status.	UCOP EAOP COHORT DATA
$EAOPPARTNERAVG(thresh)_i$	The average for $EAOPPARTNER(threshold)_{it}$ at school i from 1998-2003. “Threshold” refers to the threshold being used to identify EAOP partnership status.	UCOP EAOP COHORT DATA
$EAOPSTU_{it}$	Total number of EAOP participants graduating from school i in year t	UCOP EAOP COHORT DATA
$EAOPRATE_{it}$	Proportion of graduates plus dropouts participating in EAOP at school i in year t $EAOPSTU_{it}/(GRADS_{it} + DROPOUTS_{it})$	UCOP EAOP COHORT DATA

EAOPRATEAVG _{<i>i</i>}	Average proportion of graduates plus dropouts participating in EAOP at school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPSTUAVG _{<i>i</i>}	The average number of EAOP participants at school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPAA _{<i>i</i>}	Total number of African-American EAOP participants graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPAI _{<i>i</i>}	Total number of American Indian EAOP participants graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPCL _{<i>i</i>}	Total number of Chicano/Latino EAOP participants graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPAS _{<i>i</i>}	Total number of Asian-American EAOP participants graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPWH _{<i>i</i>}	Total number of white EAOP participants graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPOT _{<i>i</i>}	Total number of “other” EAOP participants graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPUN _{<i>i</i>}	Total number of EAOP participants with an unknown race graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
EAOPURM _{<i>i</i>}	Total number of EAOP participants that were underrepresented minorities (African-Americans, Chicanos/Latinos or American Indians) graduating from school <i>i</i> from 1998-2003	UCOP EAOP COHORT DATA
API _{<i>it</i>}	API at school <i>i</i> in year <i>t</i>	CDE
DISADV _{<i>it</i>}	Sum of the proportions of underrepresented minorities, FRPLs, and students whose parents did not attend college at school <i>i</i> in year <i>t</i> UREM _{<i>it</i>} + FRPL _{<i>it</i>} + FSTGEN _{<i>it</i>}	CDE
APIAVG _{<i>i</i>}	API average at school <i>i</i> from 1998-2003	CDE
DISADV _{<i>i</i>}	Average disadvantage total at school <i>i</i> from 1998-2003	CDE

UCPROX _i	Proximity to the nearest UC campus for school <i>i</i> (calculated by using the latitudes and longitudes of each high school and the nearest UC campus)	National Center for Education Statistics, California Postsecondary Education Commission
PROGRAMS _i	Total number of student-oriented outreach programs at school <i>i</i>	www.appris.org
EAOPURMUCADM _i	Total number of EAOP participants that were underrepresented minorities (African-American, Chicano/Latino or American Indian) and were admitted to a UC school graduating from school <i>i</i> from 1998-2003	
OUTREACH _i	The total number of outreach programs from the www.appris.org sample for school <i>i</i> .	www.appris.org

Methodology

The methodology for each figure and table is explained in this section.²⁷

Methodology for Figure 3

The methodology for identifying the proportion of students at particular API levels was calculated by finding the proportion of graduates plus dropouts that went to a school at the API level in question:

- Proportion high API = (Sum of GRADS_{it} + DROPOUTS_{it} for all high API schools for all years of the study)/(Sum of GRADS_{it} + DROPOUTS_{it} for all schools for all years of the study)

²⁷ The methodology for Figure 1 is made fairly explicit in the text and Figure 2 comes entirely from another source.

The methodology for identifying the proportion of UC admits at particular API levels was calculated by finding the proportion of UC admits that went to a school at the API level in question:

- Proportion of high API UC admits = (Sum of UCADMITS_{it} for all high API schools for all years of the study)/(Sum of UCADMITS_{it} for all schools for all years of the study)

Methodology for Figure 4

The methodology for calculating each of the demographic averages for high, medium and low API schools was the same. I found the average percent for the measure and API levels in question. For example:

- Underrepresented minority low API average = (Sum of UREMAVG_i for all low API schools)/(The total number of low API schools)

Methodology for the average college-going rates in Figures 5, 9, 10, 11, 12, 13, 14, 15, 16, and 17

Figures 5, 9, 10, 11, 12, 13, 14, 15, 16, and 17 all contain measures of average college going rates. The basic methodology for calculating these rates was the same. I calculated the average rate for the measure in question for the group in question. For instance, to calculate the average UC application rate for all schools in Figure 5, I added the UC application averages for each school in the study and divided by the number of schools in the study:

- UC application average (from Figure 5) = (Sum of UCAPPRATEAVG_i for all schools)/(Total number of schools in the study)

This same methodology was used to calculate average college-going rate for subgroups in the study. For instance, the following shows how the UC admissions rate for non-EAOP middle-performing schools was calculated:

- UC admissions average for non-EAOP middle performing schools (from Figure 11) = (Sum of UCADMRATEAVG_i for all schools middle-performing non-EAOP schools)/(Total number of middle-performing non-EAOP schools in the study)

Methodology for Figure 6

The methodology for calculating the proportion of EAOP partnership schools at particular API levels was as follows:

- Proportion of low API EAOP partnerships schools = (Sum of EAOPPARTNER(10)_{it} for low API schools over all years of the study)/(Sum of EAOPPARTNER(10)_{it} for all schools over all years of the study)

Methodology for Figure 7

The EAOP average participation rates in Figure 7 were calculated by finding average EAOP participation at schools with greater than zero EAOP participation. In other words, schools with no EAOP participation were eliminated from this average. For example, the medium API EAOP average participation rate was calculated as follows:

- EAOP average participation at medium API schools = (Sum of EAOPRATE_{it} where the EAOPRATE_{it} was greater than zero for all schools over all years of the study)/(the number of values that met the criteria to be in the numerator)

Methodology for Table 1

Table 1 shows the R²s for various multivariate regression models containing increasing numbers of control variables, and then the additional explained variation (R²) accounted for by adding each new control variable. The generic multivariate regression models used are as follows:

- Equation 1 (Just API): $OUTCOME_i = B_{API}APIAVG_i + e_i$

- Equation 2 (API and disadvantage): $OUTCOME_i = B_{API}APIAVG_i + B_{DIS}DISADVAVG_i + e_i$
- Equation 3 (API, disadvantage and UC proximity): $OUTCOME_i = B_{API}APIAVG_i + B_{DIS}DISADVAVG_i + B_{FST}FSTAVG_i + e_i$

An example such a set of equations would be the following:

- Equation 1 (Just API): $AGAVG_i = B_{API}APIAVG_i + e_i$
- Equation 2 (API and disadvantage): $AGAVG_i = B_{API}APIAVG_i + B_{DIS}DISADVAVG_i + e_i$
- Equation 3 (API, disadvantage and UC proximity): $AGAVG_i = B_{API}APIAVG_i + B_{DIS}DISADVAVG_i + B_{FST}FSTAVG_i + e_i$

The R^2 s for Equation 1 are in the ‘variation explained by just API’ column. The R^2 s for Equation 2 are in ‘variation explained by API and disadvantage’ column. The ‘gained information from including disadvantage is the difference between the R^2 s for Equation 1 and the R^2 s for Equation 2.

Methodology for Table 3 and Figures 15, 16, and 17

Table 3 and Figures 15, 16, and 17 contain the multivariate regression coefficients for the effect of EAOP multiplied by five (to simulate the effect of when EAOP works with five percent of the population). The general equation for attaining these coefficients is as follows:

- $OUTCOME_i = B_{EAOP} EAOPRATEAVG_i + B_{API}APIAVG_i + B_{DIS}DISADVAVG_i + B_{FST}UCPROX_i + e_i$

B_{EAOP} is the unadulterated (it has not been multiplied by five yet) measure for the effect of EAOP on the outcome in question. The following is an example of this approach:

- $AGAVG_i = B_{EAOP} EAOPRATEAVG_i + B_{API}APIAVG_i + B_{DIS}DISADVAVG_i + B_{FST}UCPROX_i + e_i$

To attain different parameters for varying API levels, I separated the data. So, in order to find the EAOP effect on A-G completion for middle-performing schools, I used the equation above for middle API schools only. Figures, 15, 16 and 17 show only the statistically significant effects (in black) on top of overall averages for the API level in question.

Methodology for testing the school-wide effect of EAOP with other measures of EAOP

Other measures beside the proportion of students participating in EAOP were used to measure the effect of EAOP. These alternative measures were EAOPPARTNERAVG(thresh)_i for varying thresholds and EAOPSTUAVG_i. Instead of the EAOPRATEAVG_i, the aforementioned variables were used to test for the effect of EAOP (see Appendix B for the results).

Methodology of measuring the interaction of EAOP and API

The following general multivariate regression equation was used to measure the interaction of EAOP and API:

- $OUTCOME_i = B_{interaction} (EAOPRATEAVG_i) * (APIAVG_i) + B_{API} APIAVG_i + e_i$

A specific example of such a regression equation is as follows:

- $UCADMAVG_i = B_{interaction} (EAOPRATEAVG_i) * (APIAVG_i) + B_{API} APIAVG_i + e_i$

Methodology for Figure 18

Figure 18 shows the average number of student-oriented outreach programs at the schools in the study. This average was taken by adding the total number of outreach programs ($OUTREACH_i$) at schools at a particular school performance level and dividing by the total number of schools at that performance level.

Methodology for Figures 19 and 20

Figures 19 and 20 provide portions of underrepresented minorities (Figure 19) and underrepresented minority UC admits (Figure 20) that were EAOP participants from varying school performance levels. For each proportion, the total number of students in question (i.e. underrepresented minority students from middle-performing schools) was divided by the total number of EAOP participants at the performance level in question.

The following provides an example:

- Proportion of middle API EAOP participants that were UC admits = (Sum of $EAOPURMUCADM_i$ for all middle API schools)/($EAOPSTU_{it}$ for all middle API schools over all years of the study)

Methodology for Table 4

The same methodology for calculating UC admissions averages that was employed for Figures 5, 10, 11, and 12 was used to calculate the UC admissions averages and standard deviations in Table 4. The difference in Table 4 is that instead of calculating averages for schools at high/middle/low API, I calculated admissions averages for schools with same

API quintile and student disadvantage quintile. I also calculated standard deviations for these averages.

Appendix B: Using other measures to test for the effect of EAOP

Two other measures were used to test the effect of EAOP. One was an EAOP partnership variable, which used various minimum thresholds to identify a school as an EAOP school. The other was the average number of EAOP participants at a school. This appendix contains the results of those analyses.

Results for EAOP partnerships status (defined at varying thresholds)

The tables below show the effect of being an EAOP partnership school at varying thresholds of what it means to be an EAOP partnership school, controlling for school API, student demographics and proximity to a UC campus. Statistically significant results are in bold. In this case, the effect of EAOP is the expected increase to the college outcome in question when the school is an EAOP partnership school. Only outcomes with at least one statistically significant effect for at least one outcome are shown in this section:

Table 5: The effect of being an EAOP partnership school on UC applications (all schools)		
EAOP threshold	Effect	P-value
At least one	2.953	<.001
Greater than five	1.92	0.01
Greater than ten	1.895	0.015
Greater than fifteen	1.682	0.048
Greater than twenty	1.368	0.149
Greater than twenty-five	1.046	0.313
Greater than thirty	0.875	0.432
Greater than thirty-five	0.73	0.539
Greater than forty	0.624	0.612
Greater than forty-five	0.407	0.756

Table 6: The effect of being an EAOP partnership school on UC admissions (all schools)

EAOP threshold	Effect	P-value
At least one	2.576	<.001
Greater than five	1.681	0.009
Greater than ten	1.673	0.013
Greater than fifteen	1.447	0.049
Greater than twenty	1.151	0.16
Greater than twenty-five	0.869	0.332
Greater than thirty	0.662	0.491
Greater than thirty-five	0.498	0.626
Greater than forty	0.345	0.745
Greater than forty-five	0.191	0.865

Table 7: The effect of being an EAOP partnership school on UC enrollment (all schools)

EAOP threshold	Effect	P-value
At least one	1.725	<.001
Greater than five	1.034	0.013
Greater than ten	0.981	0.024
Greater than fifteen	0.815	0.084
Greater than twenty	0.601	0.254
Greater than twenty-five	0.343	0.551
Greater than thirty	0.093	0.881
Greater than thirty-five	-	0.957
Greater than forty	-	0.804
Greater than forty-five	-	0.624

Table 8: The effect of being an EAOP partnership school on CSU enrollment (all schools)

EAOP threshold	Effect	P-value
At least one	-0.534	0.165
Greater than five	-0.773	0.028
Greater than ten	-0.75	0.042
Greater than fifteen	-0.636	0.112
Greater than twenty	-0.643	0.15
Greater than twenty-five	-0.642	0.189
Greater than thirty	-0.357	0.496
Greater than thirty-five	-0.118	0.832
Greater than forty	-0.038	0.947
Greater than forty-five	-0.026	0.966

Table 9: The effect of being an EAOP partnership school on CCC enrollment (all schools)

EAOP threshold	Effect	P-value
At least one	0.288	0.439
Greater than five	0.122	0.721
Greater than ten	0.21	0.556
Greater than fifteen	0.351	0.364
Greater than twenty	0.498	0.248
Greater than twenty-five	0.407	0.389
Greater than thirty	0.809	0.109
Greater than thirty-five	1.04	0.053
Greater than forty	1.461	0.009
Greater than forty-five	1.577	0.008

Table 10: The effect of being an EAOP partnership school on CSU enrollment (low API schools)

EAOP threshold	Effect	P-value
At least one	-1.96	0.001
Greater than five	-1.793	<.001
Greater than ten	-1.757	<.001
Greater than fifteen	-1.585	0.002
Greater than twenty	-1.68	0.003
Greater than twenty-five	-1.729	0.004
Greater than thirty	-1.354	0.027
Greater than thirty-five	-1.025	0.107
Greater than forty	-0.988	0.129
Greater than forty-five	-1.003	0.136

Table 11: The effect of being an EAOP partnership school on UC applications (medium API schools)

EAOP threshold	Effect	P-value
At least one	4.284	<.001
Greater than five	4.123	<.001
Greater than ten	4.559	<.001
Greater than fifteen	4.834	<.001
Greater than twenty	4.771	<.001
Greater than twenty-five	5.365	<.001
Greater than thirty	6.251	<.001
Greater than thirty-five	7.657	<.001
Greater than forty	7.734	<.001
Greater than forty-five	6.552	0.004

Table 12: The effect of being an EAOP partnership school on UC admissions (medium API schools)

EAOP threshold	Effect	P-value
At least one	3.615	<.001
Greater than five	3.502	<.001
Greater than ten	3.834	<.001
Greater than fifteen	4.067	<.001
Greater than twenty	3.987	<.001
Greater than twenty-five	4.474	<.001
Greater than thirty	5.135	<.001
Greater than thirty-five	6.319	<.001
Greater than forty	6.332	<.001
Greater than forty-five	5.334	<.001

Table 13: The effect of being an EAOP partnership school on UC enrollment (medium API schools)

EAOP threshold	Effect	P-value
At least one	2.38	<.001
Greater than five	2.113	<.001
Greater than ten	2.355	<.001
Greater than fifteen	2.573	<.001
Greater than twenty	2.533	<.001
Greater than twenty-five	2.873	<.001
Greater than thirty	3.162	<.001
Greater than thirty-five	3.909	<.001
Greater than forty	3.781	<.001
Greater than forty-five	3.137	0.01

Table 14: The effect of being an EAOP partnership school on CCC enrollment (all schools)		
EAOP threshold	Effect	P-value
At least one	0.841	0.156
Greater than five	0.876	0.102
Greater than ten	1.086	0.054
Greater than fifteen	1.278	0.045
Greater than twenty	1.386	0.051
Greater than twenty-five	1.118	0.169
Greater than thirty	1.366	0.148
Greater than thirty-five	1.478	0.172
Greater than forty	2.271	0.042
Greater than forty-five	2.766	0.031

Results for the average number of EAOP participants at a school

The tables below show the effects of increasing the number EAOP participants at a school, controlling for school API, student demographics and proximity to a UC campus. Statistically significant results are in bold. In this case, the effect of EAOP is the expected increase to the college outcome in question when EAOP works with one more students at a school.

Table 15: The effect of having more EAOP participants at a school on various college going outcomes (all schools)

Outcome	Effect of EAOP	P-value
AG completion	0.003	0.896
UC application rate	0.012	0.447
UC admission rate	0.009	0.583
UC enrollment rate	0.002	0.858
CSU enrollment rate	-0.009	0.248
CCC enrollment rate	0.017	0.022

Table 16: The effect of having more EAOP students at a school on various college going outcomes (low API schools)

Outcome	Effect of EAOP	P-value
AG completion	0.012	0.688
UC application rate	0.001	0.895
UC admission rate	0.002	0.759
UC enrollment rate	-0.004	0.511
CSU enrollment rate	-0.023	0.011
CCC enrollment rate	0.01	0.244

Table 17: The effect of having more EAOP participants at a school on various college going outcomes (medium API schools)

Outcome	Effect of EAOP	P-value
AG completion	0.033	0.493
UC application rate	0.087	<.001
UC admission rate	0.074	<.001
UC enrollment rate	0.045	0.001
CSU enrollment rate	0.008	0.612
CCC enrollment rate	0.028	0.048

Table 18: The effect of having more EAOP participants at a school on various college going outcomes (high API schools)

Outcome	Effect of EAOP	P-value
AG completion	0.017	0.759
UC application rate	0.06	0.175
UC admission rate	0.038	0.327
UC enrollment rate	0.017	0.506
CSU enrollment rate	0.018	0.402
CCC enrollment rate	0.034	0.094

Appendix C: The interaction of EAOP and API

This appendix contains the results for the analyses of the interaction of API and EAOP.

The interaction effect of EAOP and API is statistically significant for all outcomes except for CSU enrollment:

Table 19: The interaction effect of EAOP and API on A-G completion rates

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	-49.952	2.806		-17.803	p<.001
APIAVGi	.132	.004	.804	31.688	p<.001
APIEAOPinteract	.001	.000	.124	4.898	p<.001

Table 20: The interaction effect of EAOP and API on UC application rates

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	-50.815	2.231		-22.779	p<.001
APIAVGi	.101	.003	.802	30.642	p<.001
APIEAOPinteract	.001	.000	.196	7.485	p<.001

Table 21: The interaction effect of EAOP and API on UC admission rates

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	-46.385	1.924		-24.105	p<.001
APIAVGi	.091	.003	.815	31.959	p<.001
APIEAOPinteract	.001	.000	.180	7.072	p<.001

Table 22: The interaction effect of EAOP and API on UC enrollment rates

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	-26.880	1.234		-21.779	p<.001
APIAVGi	.053	.002	.781	28.830	p<.001
APIEAOPinteract	.001	.000	.192	7.087	p<.001

Table 23: The interaction effect of EAOP and API on CSU enrollment rates

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	-.979	.898		-1.090	.276
APIAVGi	.017	.001	.441	12.426	p<.001
APIEAOPinteract	6.7E-005	.000	.044	1.246	.213

Table 24: The interaction effect of EAOP and API on CCC enrollment rates

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	.791	.847		.933	.351
APIAVGi	.015	.001	.436	12.132	p<.001
APIEAOPinteract	.000	.000	.139	3.861	p<.001