

Research & Occasional Paper Series: CSHE.4.04



UNIVERSITY OF CALIFORNIA, BERKELEY
<http://ishi.lib.berkeley.edu/cshe/>

THE ROLE OF ADVANCED PLACEMENT AND HONORS COURSES IN COLLEGE ADMISSIONS

2004

Saul Geiser

Center for Studies in Higher Education
University of California, Berkeley

Veronica Santelices

Graduate School of Education
University of California, Berkeley

Copyright 2004 Saul Geiser and Veronica Santelices, all rights reserved.

ABSTRACT

This study examines the role of Advanced Placement (AP) and other honors-level courses as a criterion for admission at a leading public university, the University of California, and finds that the number of AP and honors courses taken in high school bears little or no relationship to students' later performance in college. AP is increasingly emphasized as a factor in admissions, particularly at selective colleges and universities. But while student performance on AP examinations is strongly related to college performance, merely taking AP or other honors-level courses in high school is not a valid indicator of the likelihood that students will perform well in college. These findings suggest that institutions may need to reconsider the use of AP as a criterion in "high stakes" admissions, particularly given the marked disparity in access to AP and honors courses among disadvantaged and underrepresented minority students.

This study examines the role of Advanced Placement (AP) and other honors-level courses in "high stakes" admissions, that is, admissions at highly selective colleges and universities. Originally developed for purposes of college placement, AP is increasingly emphasized as an admissions criterion at selective institutions. The main finding of this study, however, is that, controlling for other academic and socioeconomic factors, the number of AP and honors courses taken in high school bears little or no relationship to students' later performance in college. The study is based on a sample of 81,445 freshmen entering the University of California (UC) between 1998 and 2001. While

student performance on AP examinations is strongly related to college performance, many students who take AP courses do not complete the associated AP exams, and merely taking AP or other honors-level courses in high school is not a valid indicator of the likelihood that students will perform well in college. If the UC sample is representative of other selective colleges and universities, those institutions may need to reconsider the manner in which such courses are treated in “high stakes” admissions. Such reconsideration assumes special importance in view of the marked disparity in access to AP and honors courses among disadvantaged and underrepresented minority students.

The Expanding Role of AP in College Admissions

Begun in 1955, the original intent of the Advanced Placement program was to provide students the opportunity to take college-level coursework and earn college credit while still in high school. Initially, AP was used almost exclusively for purposes of college credit and placement, as distinct from admissions. One difficulty in using AP in admissions decisions is that students ordinarily do not take advanced courses until their junior and senior years in high school, and their scores on the end-of-course AP exams are not available in many cases until well after the admissions process is completed. For that reason, colleges and universities first used AP exam scores mainly to award course credits, allowing high-achieving students to place out of introductory courses and move directly into more advanced college work (Commission on the Future of the Advanced Placement Program, 2001).

The expansion of AP into the area of admissions began only gradually and did not accelerate until the 1980s. This development appears to be confined to highly selective colleges and universities, reflecting those institutions’ need to make increasingly fine distinctions among growing numbers of applicants (National Research Council, 2002a:55). According to a recent survey of deans of admission from 264 colleges and universities conducted by the National Research Council, the primary rationale for increased emphasis on AP and other honors courses in admissions is to assist in identifying highly qualified students:

Because past performance is deemed a strong predictor of student performance, admissions officers carefully review applicants’ transcripts to determine how well and to what extent the applicants have taken advantage of the school- and community-based opportunities available to them in high school. Admissions personnel generally view the presence of AP or IB [International Baccalaureate] courses on a transcript as an indicator of the applicant’s willingness to confront academic challenges. (National Research Council, 2002a:55)¹

¹ The International Baccalaureate program was developed in the late 1960s to provide an international standard of secondary education for children of diplomats and others stationed outside their countries, but is now also offered by many schools in the U.S. during the last two years of high school. In contrast to the AP program, which aims to provide discrete college-level courses for students in high school, IB courses are part of an integrated program designed to prepare students for college. The IB program is much smaller than the AP program and was offered in 255 U.S. high schools in 2000, whereas AP classes were offered in approximately 62 percent of the nation’s schools (National Research Council, 2002a:65,85).

AP courses are useful to admissions officers at selective colleges and universities for other reasons as well. Such courses may serve as indicators of the quality of the academic program offered by the applicant's high school and thereby assist in comparing students from different schools. Moreover, consideration of AP and honors courses in admissions decisions can serve an important incentive or "signaling" function in driving needed changes in the schools (Kirst, 1998). Especially for leading public universities, emphasis on AP and honors as admissions criteria can set *de facto* standards for public schools in their states, creating pressure on the schools to upgrade curricula and instruction. At the same time, students have the incentive to challenge themselves to attempt more rigorous coursework, knowing that this will be viewed favorably in their college applications. The incentive or signaling effect of college admissions criteria for students and schools was one of the primary considerations leading to the adoption of AP as an admissions criterion at the University of California, as described later in this paper.

Today, almost all selective colleges and universities give special consideration to AP and honors courses in admissions decisions, although the manner in which this information is used varies from institution to institution.² Some, like UC, recalculate an applicant's high-school grade-point average (HSGPA) to give additional "bonus points" for approved AP/honors coursework. Others do not recalculate HSGPA but use the HSGPA reported on an applicant's transcript, thus implicitly accepting the school or district weighting of AP/honors (it appears that many high schools now give extra weight for such courses, although there are no good data on the extent of this practice). But beyond the calculation of HSGPA, the most widespread practice among admissions officers is to consider the number of AP/honors courses as part of the comprehensive review of an applicant's high school record. Institutions that use a more quantitative form of comprehensive review often assign extra points to AP and IB courses, which are considered more rigorous than other honors-level courses. Institutions that use a more qualitative form of comprehensive review tend to use AP/honors in other ways, such as comparing the records of applicants from the same high school or comparing the extent to which applicants from different schools have taken advantage of the curricular opportunities available to them.

Given its expanding role in college admissions, the AP program grew dramatically during the 1980s and '90s. According to figures from the College Board, which owns and operates the program, the total number of students taking AP exams (no national data are available on the number of students taking AP courses) increased from 133,702 in 1980-81 to 1,017,396 in 2003-04, a 660% increase, and the total number of AP exams taken increased from 178,159 to 1,737,231, a 750% increase, during the same period (College Board, 2004).

² The following generalizations about how AP/honors are treated in admissions decisions at selective colleges and universities are based on an e-mail survey of a purposive sample of admissions officers at 18 AAU institutions conducted by the authors in early 2003. Twelve institutions responded to the survey, including Harvard, Michigan State, Penn State, Purdue, SUNY-Buffalo, University of Colorado-Boulder, University of Illinois-Urbana, University of Michigan-Ann Arbor, University of Oregon, University of Texas-Austin, University of Washington, and Yale.

Problems with AP as an Admissions Criterion

Yet the growing prominence of AP in “high stakes” admissions has also highlighted a number of problematic features. Disparities in availability and access to AP courses among underrepresented minorities and others from disadvantaged backgrounds have been well documented (Doran, Dugan, and Weffer, 1998; Ekstrom, Goertz, and Rock, 1988; Gamoran, 1992; Oakes, 1990; Oakes, Gamoran, and Page, 1992). Because students from poorer schools typically have less access to AP courses than those from schools with higher college-going rates, emphasis on AP coursework as a selection factor can adversely affect their chances of college admission. Although many states, including California, have adopted policies encouraging expansion of AP coursework in disadvantaged schools (Santoli, 2003; Hurwitz and Hurwitz, 2003), participation in AP and other honors-level courses remains sharply skewed along socioeconomic and racial/ethnic lines. One reason for these persistent group disparities may lie in the fact that, even within the same schools, low-income and underrepresented minority students tend to be tracked into non-college preparatory work and thus enroll in AP and honors-level courses at much lower rates than other students (Oakes, 1985; CSU Institute for Education Reform, 1999).

The growing emphasis on AP in “high stakes” admissions has had unintended consequences. Like many other aspects of the admissions process at highly selective institutions, AP has become a significant factor in what former UC President Richard Atkinson has called the “educational arms race,” as applicants and their parents seek every advantage to improve their chances of acceptance (Atkinson, 2001). For example, it is now common for upper middle-class parents to evaluate and choose high schools for their children based on the number of AP courses offered at those schools, thereby placing great pressure on schools to expand their AP offerings (Mathews, 1998). According to a recent evaluation of AP and International Baccalaureate (IB) programs by the National Research Council, this pressure can lead schools to offer more advanced courses than they are able to support adequately with trained teachers and other resources (National Research Council, 2002a). There are other unintended consequences as well:

Some schools use the results of AP or IB examinations to evaluate teachers, the consequence of which may be to discourage potentially low-scoring students from taking the courses or the examination. It is not uncommon for selective colleges to view the existence of AP or IB courses on an applicant’s transcript as an important part of their evaluation of the student’s intellectual and academic motivations. Without any measure of the quality of the student’s achievement in such courses, however, this emphasis on the number of AP or IB courses on a transcript leads many students to enroll in the courses without a commitment to mastering the material. (National Research Council, 2002b:536)

A large and apparently growing number of students now enroll in AP coursework without taking the associated AP exams. AP differs considerably in this respect from the IB program, in which examinations are considered an integral part of the coursework and virtually all students take the exams (Campbell, 2000). The Commission on the Future of the Advanced Placement Program estimated in 2001 that over a third of AP students do not sit for the examinations, although this is a rough, overall estimate and varies both

from subject to subject and from state to state (CFAPP, 2001). The National Research Council has commented pointedly on the differing expectations of the IB and AP programs regarding test completion:

It is interesting to note that a far larger percentage of IB than AP students take the final examinations. The IBO [International Baccalaureate Organisation] promotes the idea that IB courses prepare students for success in college and in real life. The examinations, students are told, are an integral part of the course and are the best way for them to demonstrate to themselves and others that they have achieved competence. In contrast, AP materials focus primarily on the usefulness of AP test scores for college credit and placement. If students lose interest in earning credit or placement or the colleges at which they plan to matriculate do not accept AP credits, they may choose not to sit for the examinations. ... [W]e believe that sitting for the examinations should become an integral part of AP courses. Otherwise, students will miss an important opportunity to validate their performance, colleges and universities will lack information that can be highly useful in deciding upon appropriate placements, and AP will be less credible as a rigorous program for high school students. (National Research Council, 2002a:170)

Another unintended consequence of the emphasis on AP coursework in college admissions is grade inflation. Many high schools and colleges give “bonus points” or extra credit for AP and other honors courses so that, for example, a “B” grade in an AP course is counted as the equivalent of an “A” grade in a regular course, thereby increasing the grade points from three to four. With so many students now taking substantial numbers of AP and other honors courses in order to improve their chances of admission to college, high school grade point averages have soared. Among freshmen admitted to UC Berkeley in 2003, for example, the *mean* HSGPA was 4.31.

But perhaps the most problematic aspect of AP’s expanding role in “high stakes” admissions is the extent to which this development has occurred largely unexamined and with little hard evidence of the validity of AP coursework as a selection criterion. Although the College Board and others have conducted research on the relationship between students’ AP exam scores and their subsequent performance in college, little research has been done on the predictive validity of AP coursework *per se*. Probably the most frequently cited research in support of employing AP coursework as an admissions criterion is Adelman’s influential study, *Answers in the Toolbox*, which concluded that the most powerful predictor of college graduation is the “academic intensity” of a student’s high school curriculum (Adelman, 1999). Yet while Adelman did include AP courses as one of several components of his composite index of “academic intensity,” the study was never intended as a systematic examination of AP, and in fact Adelman’s data suggest that, compared to other indicators of “academic intensity,” AP courses were among the weaker predictors of college outcomes (Adelman, 1999:19).

In its recent review of the Advanced Placement and International Baccalaureate programs, the National Research Council noted the paucity of systematic research on the predictive or “consequential” validity of these programs:

[L]ittle evidence is available for evaluating the long-term effects of the AP and IB programs. For instance, the panel could not find systematic data on how students who participate in AP and IB fare in college mathematics relative to other students ... While the College Board and a few colleges that receive IB students have conducted some isolated studies addressing how AP or IB students perform in college ..., the inferences that can accurately be drawn from the findings of these studies are ambiguous ... (National Research Council 2002b:495).

Extant studies have typically examined the validity of using AP exam scores to place students out of introductory college courses (see, for example, Morgan and Ramist, 1998), but few, if any, have examined the validity of AP and other honors-level coursework as admissions criteria. The present study is intended to fill that void.

AP and Honors-Level Courses in UC Admissions

The University of California first began using AP examination scores for purposes of college placement in 1961, but did not recognize AP coursework as a factor in admissions until 1982:

To encourage students to take demanding advanced academic courses, grades in up to four units taken in the last two years of high school will be counted on a scale of A = 5, B = 4, C = 3, if these courses are certified by the high school as offered at an honors level. These courses must be in the areas of history, English, advanced mathematics, laboratory science, and foreign language. Courses in these fields designed to prepare students for the Advanced Placement Examinations of the College Board are considered to be examples of honors courses. (University of California, 1982)

Several aspects of this policy are noteworthy. First is the policy rationale: encouraging students to take more rigorous courses in high school. For the Board of Admissions and Relations with Schools (BOARS), the UC faculty committee responsible for formulating admissions policy, the primary reason for granting extra credit for AP and honors courses was to provide an incentive for prospective UC students to challenge themselves to take more rigorous classes in high school, thereby assuring the University of a well-prepared and high-achieving student body.

A second noteworthy feature is the formulaic character of UC's policy, or what has become known as the "bonus point" for AP and honors courses. While as noted earlier other institutions tend to consider AP and honors coursework more "holistically" in admissions decisions as one factor among many, UC chose to assign such courses a fixed, numeric weight. In part this policy choice reflected the requirements of California's Master Plan for Higher Education, which provides that students must rank within the top one-eighth, or 12.5 percent, of the state's public high school graduates in order to be "eligible" for admission to UC. Incorporating the "bonus point" within the calculation of

HSGPA provided a straightforward method for determining whether an applicant's high school grades were sufficient to achieve eligibility.³

Even at the time, however, BOARS recognized that there were marked socioeconomic and racial/ethnic disparities in AP enrollments, which helps explain a third feature of the policy: giving equal weight to other honors-level courses, in addition to AP. BOARS' intent was to ensure that students attending schools with limited AP course offerings would not be unduly disadvantaged by the "bonus point" policy insofar as other honors-level courses offered at those schools were given equal credit.⁴ For much the same reason, BOARS would later add International Baccalaureate courses, as well as concurrent Community College courses taken while students were still in high school, to the list of courses that could receive the "bonus point."

Last but not least, perhaps the most important feature of the 1982 policy was its severance of the link between AP coursework and the AP examinations: "Courses ... designed to prepare students for the Advanced Placement Examinations ..." were credited with the "bonus point" whether or not students actually completed the exams.

Expansion of AP and Honors in California Schools

Spurred in part by UC's policy as well as by the increasingly competitive environment of college admissions, student participation in AP and other honors-level courses in California grew rapidly after 1982. As California does not have a K-12 student-level data system with which to track course-taking patterns, it is difficult to determine the precise extent of this growth, although it is clearly substantial. Based on historical data from the College Board on AP exam-takers in California (no trend data are available on AP course-takers), the number of students who took at least one AP exam increased from 21,572 in 1982 to 163,581 in 2002, about a 760% increase, and the total number of AP exams taken increased from 25,137 to 291,945, almost a twelve-fold increase, over this same twenty-year period. California's growth rate outpaced the national growth rate on both measures. Moreover, since these data do not include large numbers of students who took AP courses but did not sit for the exams, or who took honors-level coursework other than AP, total growth in AP and other honors-level course enrollments was undoubtedly much greater.⁵

Yet the expansion of AP and honors in California has been highly uneven and varies substantially across socioeconomic and demographic lines. Currently two main sources of data are available with which to examine access to AP and other honors courses in California schools. The first is UC Doorways, a database on California high schools

³ UC's admissions process involves two stages: "eligibility" and "admissions selection." Eligibility establishes minimum requirements for admission to the UC system as a whole, while admissions selection is the process employed to select students at individual campuses with more eligible applicants than places available. AP and other honors courses are considered as part of both eligibility and admissions selection.

⁴ BOARS establishes standards for all courses that UC will accept for admissions, including honors-level courses, and oversees an administrative process for approving individual course descriptions submitted by each high school.

⁵ Estimates of the number of students who take AP courses but do not sit for the exams or who take honors-level coursework other than AP are provided below.

maintained by the university, which lists all approved coursework required for UC admission, including AP and honors courses. Although the UC Doorways database unfortunately does not indicate how many times a given course was offered or how many students participated, it does at least provide a general picture of the distribution of courses across schools. Table 1 below was developed from the UC Doorways database and shows the number of Advanced Placement, International Baccalaureate, and other honors-level courses offered by California public high schools in 2002-03. The schools are categorized by Academic Performance Index (API), using a school-ranking system developed by the California Department of Education. School API rankings are closely associated with socioeconomic, racial/ethnic, and other demographic differences among students who attend them. For example, 87 percent of students attending schools in the lowest API quintile are underrepresented minorities,⁶ compared to only 17 percent among schools in the top quintile.⁷

Table 1

**Average Number of AP, IB and Other Honors Courses
Offered per School by API Quintile, 2002-03**

School API Quintile	Advanced Placement		International Baccalaureate		Other Honors- Level Courses		Total Honors- Level Courses	
	#	%	#	%	#	%	#	%
Quintile 5 (high)	14.5	74%	1.2	6%	4.5	23%	19.7	100%
Quintile 4	12.0	73%	1.1	7%	3.9	24%	16.5	100%
Quintile 3	11.1	70%	1.2	7%	4.1	26%	15.8	100%
Quintile 2	11.3	73%	0.7	4%	3.6	24%	15.4	100%
Quintile 1 (low)	10.2	72%	0.6	4%	3.5	25%	14.2	100%
All Schools	11.3	72%	1.1	7%	3.5	23%	15.5	100%

Source: UC Doorways and California Department of Education.

AP, IB and "other" honors courses offered by particular schools are not necessarily exclusive of one another and may be counted within more than one category.

As Table 1 indicates, AP courses are by far the predominant type of honors-level courses offered in California public high schools, accounting for about 72 percent of all such course offerings, while IB and other honors-level courses account for the remaining share.⁸ This pattern is evident not only for the schools overall, but also within each quintile of California public schools. Looking across school quintiles, moreover, it is evident that there are fewer AP and other honors-level courses offered in low-quintile than high-quintile schools, although the differences are not as great as perhaps might be

⁶ Underrepresented minorities are defined as those whose proportion of college enrollments are substantially below their proportion of high school graduates. In California, these groups include Chicano/Latino, African American, and American Indian students

⁷ Percentages of underrepresented minorities by school API quintile are calculated from 2003 data on California public high schools available at the California Department of Education website (<http://api.cde.ca.gov/datafiles.asp>).

⁸ Table 1 includes only honors courses recognized by UC, and thus may differ from what a given school or school district considers "honors-level" coursework.

expected. Offerings of AP courses, for example, ranged from 10.2 courses per school in the bottom quintile of schools to 14.5 courses per school in the top quintile. And looking at all honors-level courses combined, the number of offerings ranged from 14.2 courses per school in the bottom quintile to 19.7 per school at the top.

However, because the UC Doorways data shown in Table 1 do not necessarily indicate how many times a course was offered or, if offered, how many students actually enrolled, they may understate differences in student participation in AP and honors courses. To get a better sense of the numbers and types of students who participate in honors-level courses, it is necessary to turn to a second main source of data. Table 2 below presents data from the statewide SAT database, which includes all college-bound seniors who took the SAT in 2002. Almost half of California high-school seniors take the SAT each year, including the great majority of the college-bound population. When students take the SAT, they complete a Student Data Questionnaire (SDQ), and Table 2 shows SDQ results on the number of subjects in which students reported taking at least one honors course:

Table 2
Demographic Profile of California College-Bound Seniors
by Number of AP/Honors Subjects Taken, 2002

Number of AP/Honors Subjects Taken	Number of Students	Percent of Sample	Percent Underrepresented Minority	Percent First-Generation College	Percent from Low-Performing Schools	Percent from Low-Income Families
0	64,577	54.9%	32.3%	46.4%	31.2%	23.2%
1-4	30,947	26.3%	30.5%	47.4%	31.8%	24.0%
5-8	13,872	11.8%	23.7%	40.1%	30.0%	21.3%
9-16	8,137	6.9%	17.4%	31.6%	25.2%	17.3%
17+	117	0.1%	14.5%	23.9%	23.1%	17.9%
Total	117,650	100.0%	29.8%	44.9%	30.8%	22.8%

Source: College Board file on all California college-bound seniors who took the SAT I in 2002.

"Number of AP/Honors Subjects Taken" is the number of subjects in which students report having taken at least one honors course. "Low-Performing Schools" are those within the bottom two API quintiles according to the CA Dept. of Education. "Low Income" indicates families with incomes <\$30,000.

Table 2 shows that there are substantial demographic and socioeconomic differences between students who take many honors courses and those who take few or none. Approximately half of all California SAT-takers reported taking no honors-level courses in high school. Underrepresented minorities comprise almost a third (32.3 percent) of this group, but their proportion falls to only 17.4 percent among the group who report taking honors courses in 9 to 16 subjects. Differences of similar magnitude are evident for first-generation college students and those from low-performing schools and low-income families.⁹

⁹ Similar demographic and socioeconomic differences in AP/honors participation are evident within the pool of applicants to UC. Such differences tend to be slightly smaller within the UC applicant pool than in the statewide pool of SAT takers because of the highly selective nature of UC admissions. Nevertheless, within the pool of UC applicants, participation both in AP/honors coursework and on AP tests remains sharply stratified along racial/ethnic and socioeconomic lines; see Appendix 1.

These disparities in student participation in AP and honors courses became the focus of a class-action lawsuit filed by the American Civil Liberties Union in 1999 against the State of California (Daniel vs. California, 1999). The suit challenged the state for not providing sufficient access to AP courses in all schools and led to a major state-funded initiative supporting expansion of AP course offerings in low-performing schools, rural areas and other underserved regions of the state. It is unclear, however, whether this initiative will substantially reduce disparities in AP participation among underrepresented groups, since such disparities may owe at least as much to patterns of tracking within schools as to differences between schools in the number of AP courses they offer. A recent statewide study of the AP program conducted by the California State University's Institute for Education Reform found that, even in schools with extensive AP offerings, Latino and African American students enrolled in these courses much less often than other students; availability of AP coursework appeared to be less an issue than participation in the courses that were available (CSU Institute for Education Reform, 1999).

Such disparities in student participation in AP and honors coursework make it especially important that their use as an admissions criterion can be empirically validated. Without evidence that participation in such courses is a valid indicator of success in college, it would seem difficult to rationalize continued reliance on a criterion with adverse effects on groups that have been historically underrepresented in higher education.

Data and Methodology

The present study examined the role of AP and other honors courses in predicting college performance for four cohorts of students who entered UC between Fall 1998 and Fall 2001, inclusive. The sample included a total of 81,445 students who enrolled as first-time freshmen at UC's eight undergraduate campuses during that four-year period.¹⁰

Two sources of data were available for the sample. The primary source was the UC Corporate Student System, which provided both admissions data (e.g., HSGPA, SAT/ACT scores, number of AP/honors courses taken in high school) as well as longitudinal data (e.g., college persistence and GPA) for each student. The UC Corporate data also included other relevant information needed for purposes of multivariate analysis, such as parents' income and education, UC campus of enrollment, and student major.

A second data source was statewide information on California AP test-takers made available through a data-sharing agreement between UC and the College Board. Those data were matched against the UC Corporate data file in order to enrich the latter file with information on students' AP test history and their scores, if any, on the AP exams.

¹⁰ Descriptive statistics for the study sample and variables employed in the following analysis are provided in Appendix 2. The main sample used in this analysis was comprised of the three freshman cohorts entering UC between Fall 1998 and Fall 2000. However, because data on the specific types of AP/honors courses taken by students were not available for those cohorts, the sample was augmented with information from UC's electronic application system for the freshman cohort entering in Fall 2001, for whom such data were available; see Table 6 below.

The study employed several indicators of student performance in college. Freshman grade-point average is the most frequently used performance indicator in studies of the predictive validity of college admissions criteria, and that measure was employed in the present study as well. However, because of concerns that first-year grades might mask important differences among students – e.g., some students who took AP/honors courses in high school might repeat the same courses in their first year in college and thus boost their freshman GPA or, alternatively, others might take more advanced college courses and possibly lower their freshman GPA – the study also employed second-year college GPA as an outcome measure. This indicator was based on second-year grades only, not calculated cumulatively with first-year grades, in order to minimize possible confounding effects of repeat course-taking. In addition, the study employed both first-year and second-year college persistence as outcome measures. By far the most attrition occurs, if it occurs at all, within students' first two years at UC, so that student persistence through their first and second years is a very strong indicator of the likelihood that students will continue on through graduation.¹¹

Regression analysis was used to study the extent to which students' grades and persistence in college could be predicted or explained by AP and honors coursework in high school when other factors were held constant. For example, because students from highly educated families and better-performing schools are more likely to take AP and honors courses than other students, it is important to separate the effects of parents' education and school quality from the effects of AP and honors *per se*, and regression analysis permits one to do so. The main predictor variables examined in the analysis, in addition to AP and honors coursework, were HSGPA, SAT I and SAT II scores, AP exam scores, school API quintile, parents' education, student major, and UC campus of enrollment. Ordinary linear regression was used to study the relationship between these predictor variables and first- and second-year UC grade-point average (UCGPA), which is a continuous numerical variable, while logistic regression was employed in the analysis of first- and second-year college persistence, which is a dichotomous (persistence/attrition) outcome variable.

The following analysis proceeds from the simple to the complex. We begin by examining the extent to which the "bonus point" for AP/honors, as used in calculating students' HSGPA at point of admission, is related to their subsequent performance in college. Finding that the "bonus point" bears little or no relationship to college performance, we then introduce additional variables into the analysis in an attempt to identify factors that might explain or account for the initial null relationship.

Predictive Validity of the AP/Honors "Bonus Point"

Table 3 examines the relationship between student performance at UC and their high school grades and test scores at point of admission. HSGPA, SAT I, and SAT II scores are the three primary factors considered in UC's "eligibility index," which sets minimum requirements for admission to UC's multi-campus system. The table shows the

¹¹ Based on the most recent available data (for the freshman cohort entering UC in 1997), UC's 6-year graduation rate is 78 percent. Among the 22 percent of the cohort who failed to graduate, 16 percent dropped out within their first two years.

percentage of explained variance (R^2) in freshman and sophomore grades that is predicted by a regression equation that considers HSGPA, SAT I, and SAT II scores:¹²

$$UCGPA = \alpha \text{ HSGPA} + \beta \text{ SAT I} + \varphi \text{ SAT II}$$

The HSGPA variable used in this analysis was an “academic” GPA and included students’ grades in college preparatory subjects only. HSGPA was calculated in three different ways: (1) unweighted, that is, with no bonus points for AP and honors courses; (2) half-weighted, with an additional half grade-point for AP and honors; and (3) fully weighted, with an additional full grade-point for AP and honors.¹³ Table 3 displays the percentage of variance in first- and second-year college grades that is predicted when each of these different HSGPA calculations is substituted within the regression equation, holding SAT I and SAT II scores constant. The table also shows the rank order of the three HSGPA calculations with respect to the percentage of variance they explain:

Table 3						
Percent of Variance in UCGPA Predicted by HSGPA and Test Scores						
With and Without Bonus Points for AP/Honors						
<i>Regression equation: $UCGPA = \alpha HSGPA + \beta SAT I + \varphi SAT II$</i>						
Explained Variance in First-Year UCGPA						
HSGPA	1998		1999		2000	
Weighting	R ²	Rank	R ²	Rank	R ²	Rank
No Bonus Point	21.32%	1	21.46%	1	23.54%	1
Half Bonus Point	20.67%	2	21.10%	2	22.87%	2
Full Bonus Point	19.22%	3	19.82%	3	21.19%	3
Explained Variance in Second-Year UCGPA						
HSGPA	1998		1999		2000	
Weighting	R ²	Rank	R ²	Rank	R ²	Rank
No Bonus Point	14.91%	1	13.88%	1	16.37%	1
Half Bonus Point	14.33%	2	13.34%	2	15.79%	2
Full Bonus Point	13.16%	3	12.28%	3	14.65%	3
Source: UC Corporate admissions and longitudinal data for first-time CA resident freshmen entering in Fall 1998, 1999, and 2000. N = 50,472.						

¹² The SAT I score used in this analysis is the student’s composite score from the math and verbal sections combined. The SAT II score is a composite of the three SAT II tests required for UC admissions: SAT II Math, Writing, and a third subject selected by the student.

¹³ UC employs a “capped” variant of the fully weighted HSGPA for purposes of calculating eligibility: Though a full bonus point is awarded for AP/honors courses, the total number of courses for which students can receive bonus points is capped at eight. For reasons of simplicity, that specific variant of the bonus-point calculation is not shown here; regression results for the “capped” HSGPA variant employed by UC are very similar to those for the fully weighted, “uncapped” variant shown in Table 3.

Examining the results in Table 3, it is evident that an unweighted HSGPA – a GPA that does *not* grant additional points for honors – is consistently the best predictor of both first- and second-year college grades for each of the three cohorts in the sample. The greater the weight given to AP and honors, moreover, the weaker the prediction. Thus, the half-weighted HSGPA is the second-best predictor, after unweighted HSGPA, in all cases, while the HSGPA weighted with a full bonus point for AP and honors is invariably the worst predictor of college performance, at least within this specific regression equation. This finding is consistent with earlier UC studies (Kowarsky, Clatfelder, and Widaman, 1998), and the same general pattern is also evident in disaggregated, campus-level data for each UC undergraduate campus.¹⁴

The complete lack of predictive power associated with an honors-weighted HSGPA came as somewhat of a surprise and led us to expand the analysis in several ways in an effort to try to account for that finding. First, a number of demographic variables were introduced into the regression analysis to determine whether they might be artificially masking the relationship between AP/honors and college performance. A second concern was the possibility that students who take more honors-level courses in high school may also take more difficult coursework in college, which might obscure the relationship between AP/honors and college performance. To address this concern, we disaggregated the analysis by student major to examine differences between the “harder” vs. “softer” academic disciplines in the extent to which AP/honors predict college performance. Third, the analysis was expanded to include outcome variables other than college grades, namely, first- and second-year persistence rates, which are known to be highly correlated with college graduation. Fourth, because UC policy treats AP, IB, Community College, and other honors-level courses as equivalent for purposes of awarding the honors “bonus point,” which could mask important differences, we examined separately the predictive validity of each of these specific types of honors-level courses. And finally, the analysis examined the role of AP test scores in order to assess the extent to which student mastery of AP coursework, as distinct from mere enrollment in such courses, contributed to the prediction of college performance.

Expanded Regression Results

Table 4 displays standardized regression coefficients, by discipline, for six variables in predicting students’ college grades: unweighted HSGPA, school API quintile, parents’ education, SAT I and SAT II scores, and total number of AP/honors courses. Standardized regression coefficients, or “beta weights,” show the relative strength of different predictor variables within a regression equation. The weights represent the number of standard deviations that an outcome variable, in this case UCGPA, changes for each one standard deviation change in any given predictor variable, all other variables held constant. Number of AP/honors courses is considered separately from HSGPA in this analysis in order to isolate the role of AP/honors courses.¹⁵

¹⁴ HSGPA weighted with a full bonus point for AP and honors courses is the worst predictor of both first and second-year college grades at all eight UC undergraduate campuses, while HSGPA with no additional weighting for AP or honors is the best predictor in almost all cases. See Appendix 3 for campus-level data.

¹⁵ The number of AP/honors courses shown in Table 4 represents courses taken in the 10th and 11th grades only. Only 10th and 11th grade transcript data are available at point of UC admission, and for that reason, only 10th and 11th grade AP/honors courses are included in this analysis.

Table 4								
Standardized Regression Coefficients for Specified Variables in Predicting Second-Year UCGPA by Major Disciplinary Area								
Regression equation: $UCGPA = \alpha HSGPA + \beta School\ API + \varphi Parents' Ed + \theta SAT\ I + \mu SAT\ II + \psi AP/Honors$								
Major Field	Standardized Regression Coefficients						R ²	N
	Unweighted HSGPA	School API Quintile	Parents' Education	SAT I Scores	SAT II Scores	Number of AP/Honors		
Biological Sciences	0.24*	0.03	0.06*	0.09	0.22*	0.00	21.2%	2,283
Math & Physical Sci	0.32*	0.00	0.06*	0.05	0.19*	0.05*	23.5%	3,038
Social Sci/Humanities	0.26*	0.07*	0.08*	0.08*	0.17*	0.01	22.3%	4,069
General/Undeclared	0.24*	0.06*	0.08*	0.09*	0.14*	0.00	18.3%	7,122
Other Professions	0.34*	0.01	0.07	0.04	0.13*	-0.08*	17.8%	729
All	0.25*	0.05*	0.08*	0.04*	0.16*	0.01	17.4%	17,245

Source: UC Corporate admissions and longitudinal data for first-time CA resident freshmen entering in Fall 2000 who completed second year.

"Number of AP/Honors" includes only courses taken in 10th or 11th grade and known at point of UC admission.

"Other Professions" includes majors such as Physical Education, Education, Law, Social Work and Journalism.

* = statistically significant at .01 level.

Table 4 shows that, controlling for school API quintile and parents' education as well as unweighted HSGPA and test scores, the number of AP/honors courses that students take in high school bears almost no relationship to their college grades. Second-year UCGPA is used as the outcome variable in the analysis shown here, although the beta weights are virtually identical for first-year UCGPA. Looking at the coefficients for the overall UC sample, shown in the bottom row of Table 4, HSGPA has by far the strongest predictive weight (.25), followed by SAT II scores (.16), parents' education (.08), school API quintile (.05) and SAT I scores (.04) – all of which are statistically significant at the 99% confidence level – but number of AP/honors courses (.01) has no statistically significant predictive weight. Introduction of additional demographic variables into the regression analysis does not, in short, help to improve or explain the null relationship between AP/honors coursework and college grades.

This same general pattern of regression coefficients holds, moreover, across all major disciplines shown in Table 4. Although the weight for AP/honors is statistically significant in one disciplinary area, math/science, the size of the effect is extremely small: The regression coefficient of .05 for math/science translates into an effect size of only about three one-hundredths of a grade point, or the difference between a college GPA of 3.01 and 3.04. If it is true that students who take more AP/honors courses in high school tend to enter more difficult academic fields in college, where grading standards are tougher, then one would expect to find larger differences across disciplines in the predictive weight associated with AP/honors. But this is not the case.

Analyses including 12th grade AP/honors (senior-year courses that students planned to take, as indicated on their college application) were also performed and produced virtually identical results to those shown here.

The predictive weight associated with AP/honors is uniformly small across all disciplinary areas.

College Persistence as an Outcome Variable

Table 5 examines the relationship between AP/honors and another outcome variable, college persistence. Both first- and second-year college persistence rates are considered. Dropouts, or non-persisters, were defined as those who left school in academic difficulty, that is, with a college GPA below 2.0. Logistic regression results are shown for each of the three freshman cohorts entering UC between 1998 and 2000:

Table 5							
Standardized Regression Coefficients for Specified Variables in Predicting First- and Second-Year Persistence							
<i>Equation: Persistence = αHSGPA + βSchool API + φParents' Ed + θSAT I + μSAT II + ψAP/Honors</i>							
First-Year Persistence							
Freshman Cohort	Standardized Regression Coefficients						N
	Unweighted HSGPA	School API Quintile	Parents' Education	SAT I Scores	SAT II Scores	Number of AP/Honors	
1998	0.24*	0.11*	0.07*	-0.04	0.27*	0.03	17,287
1999	0.26*	0.15*	0.10*	-0.08	0.17*	0.06	15,086
2000	0.33*	0.11*	0.13*	-0.03	0.20*	0.04	18,099
Second-Year Persistence							
Freshman Cohort	Standardized Regression Coefficients						N
	Unweighted HSGPA	School API Quintile	Parents' Education	SAT I Scores	SAT II Scores	Number of AP/Honors	
1998	0.25*	0.12*	0.09*	-0.09*	0.25*	0.03	17,013
1999	0.28*	0.17*	0.10*	-0.12*	0.21*	0.06	15,016
2000	0.32*	0.13*	0.11*	-0.02	0.19*	0.05	18,018
Source: UC Corporate admissions and longitudinal data for first-time CA resident freshmen.							
"Number of AP/Honors" includes only courses taken in 10th or 11th grade and known at point of UC admission.							
* = statistically significant at .01 level.							

The pattern of regression weights for college persistence is very similar to that observed previously for college grades. HSGPA and SAT II scores have by far the greatest predictive weight, followed by school API quintile and parents' education, but AP/honors courses (and SAT I scores) have little relationship to either first-or second-year college persistence in any of the three freshman cohorts studied.¹⁶

¹⁶ This finding is consistent with other UC research that has failed to find any significant relationship between AP credits and time to graduation (Eykamp, 2003).

Predictive Validity of Specific Types of Honors-Level Courses

One potential criticism of the findings presented thus far is that we have treated AP, IB, and other honors courses interchangeably and so may have failed to discern important differences among them. Even though AP courses account for the great majority of honors-level courses offered in California schools, it is nevertheless possible that disaggregating these different types of courses could reveal significant variations in their capacity to predict college performance.

Although disaggregated, course-specific data were not available for our main sample of freshmen entering UC between 1998 and 2000, such data were available from electronic application files for the freshman cohort entering in 2001. First-year outcome data were also available for this cohort, and Table 6 displays that data. The first column in Table 6 shows standardized coefficients and percentage of explained variance in first-year college grades for a regression equation *without* AP, IB, Community College, and other honors-level courses. The following columns then show the results when AP, IB, and other honors courses are successively added in to the equation, thus allowing one to isolate the contribution of each to the prediction.

Table 6					
Standardized Coefficients and Explained Variance for Specified Regression Models/Equations in Predicting First-Year UCGPA					
Predictor Variables	Standardized Regression Coefficients for Specified Prediction Models/Equations				
	Unweighted HSGPA	0.31*	0.31*	0.31*	0.31*
School API Quintile	0.09*	0.10*	0.10*	0.10*	0.10*
Parents' Education	0.06*	0.06*	0.06*	0.06*	0.06*
Family Income	0.02*	0.02*	0.02*	0.02*	0.02*
SAT I Scores	0.05*	0.05*	0.05*	0.05*	0.05*
SAT II Scores	0.15*	0.15*	0.15*	0.15*	0.15*
AP Courses		0.02*	0.02*	0.02*	0.03*
IB Courses			0.02*	0.02*	0.02*
Other Honors Courses				0.02	0.02
Community College Courses					0.00
% Explained Variance (R²)	23.7%	23.8%	23.8%	23.8%	23.8%

Source: UC Application Processor data and UC Corporate admissions and longitudinal data for first-time CA resident freshmen entering in Fall 2001 for whom complete data were available for all variables. N = 16,455.
* = statistically significant at .01 level.

Table 6 indicates that none of the specific types of honors-level coursework adds substantially to the prediction of college grades. Though it is true that the regression weights for AP and IB courses are statistically significant, this result is due primarily to the large size of the UC sample, which permits more precise estimates of even very small statistical effects. That AP and IB and other honors courses have little practical significance or effect in predicting college grades is shown by the findings on explained variance at the bottom of Table 6. Adding AP, IB, Community College, and other honors courses into the regression equation increases the percentage of explained variance in college grades by only one-tenth of one percentage point, from 23.7% to 23.8%. Whether individually or in combination, AP, IB and other honors-level coursework contributes little to the prediction of college performance.

Predictive Validity of AP Examination Scores

The final set of regression results to be considered here concerns the predictive validity of AP examination scores, as distinct from AP coursework. Although the AP exams were originally intended as end-of-course tests, a large and apparently growing number of students now enroll in AP coursework without taking the associated AP exams. It is difficult to estimate the extent of this trend due to the fact that, while the number of AP test takers is known, the number of AP course enrollments is not. Based on test data for California, an educated guess is that only about 55 to 60 percent of students enrolled in AP courses go on to take the AP exams.¹⁷ This is unfortunate, because there is research to suggest that performance on the AP exams may be a good indicator of students' performance in college (Morgan and Ramist, 1998; Morgan and Maneckshana, 2000).

Our regression results emphatically support this conclusion. Whereas AP coursework, by itself, contributes almost nothing to the prediction of college performance, AP examination scores are among the very best predictors, according to the UC data. Table 7 below shows standardized regression coefficients for all of the predictor variables examined previously, but with AP examination scores now added into the regression equation:

¹⁷ Based on data for California college-bound seniors who took the SAT I in 2002, about 40 percent of students who reported taking honors-level courses on the SDQ had AP test scores on file. However, this sample includes students enrolled in honors-level courses other than AP. The UC Doorways database indicates that AP accounts for about 72 percent of all honors-level courses offered in CA schools (see Table 1 above). Dividing the 40% estimate from the SAT database by the 72% estimate from UC Doorways, we can calculate that about 56 percent (40%/72%) of AP students sit for the AP exams, although this estimate must be considered very rough. The California data also suggest that there are substantial variations across AP subjects with respect to test completion, with Calculus and History having among the highest rates of test completion and English Language and Spanish Literature having among the lowest.

Table 7									
Standardized Regression Coefficients for Specified Variables in Predicting Second-Year UCGPA by Major Disciplinary Area									
<i>Regression equation: UCGPA = αHSGPA + βSchool API + ϕParents' Ed + θSAT I + μSAT II + ψAP/Honors + ωAP Scores</i>									
Major Field	Standardized Regression Coefficients							R ²	N
	Unweighted HSGPA	School API Quintile	Parents' Education	SAT I	SAT II	Number of AP/Honors	AP Exam Scores		
Biological Sciences	0.21*	0.01	0.05	0.07	0.14*	0.01	0.19*	23.7%	2,038
Math & Physical Sci	0.29*	-0.02	0.05*	0.03	0.08	0.06*	0.22*	25.8%	2,816
Social Sci/Humanities	0.26*	0.06*	0.08*	0.08*	0.09*	0.02	0.11*	22.9%	3,480
General/Undeclared	0.23*	0.04*	0.09*	0.07*	0.06	0.01	0.15*	19.7%	6,030
Other Professions	0.35*	0.04	0.06	0.03	0.13	-0.06	0.01	20.3%	558
All	0.24*	0.03*	0.08*	0.03	0.08*	0.02	0.15*	18.8%	14,926

Source: UC Corporate admissions and longitudinal data for first-time CA resident freshmen entering in Fall 2000 who completed second year and for whom data on AP exam scores was available.

* = statistically significant at .01 level.

As Table 7 demonstrates, students' scores on the AP exams are remarkably strong predictors of performance in college. In contrast to the number of AP/honors courses taken, which carries little or no predictive weight, AP scores have greater predictive weight than any other factor except high-school grades, and this pattern holds not only for the total UC sample, but also for every major disciplinary area with the exception of "Other Professions." Overall, introducing AP exam scores into the regression equation improves the percentage of explained variance in second-year college GPA by 1.4 percentage points, from 17.4 percent to 18.8 percent.¹⁸

This finding is consistent with previous research on the superiority of curriculum-based achievement tests over tests of generalized reasoning ability or aptitude in predicting college performance (Crouse and Trusheim, 1988; Geiser with Studley, 2003). Contrary to the conventional wisdom, that research has shown that tests that measure students' mastery of specific, college-preparatory subjects, such as the SAT II, are consistently better predictors of college performance than tests that are designed to assess students' general reasoning capacity or aptitude for learning, such as the SAT I. The subject-specific, curriculum-intensive AP exams are the epitome of "achievement tests," in this sense, and their validity in predicting college performance should not be surprising from that standpoint.

Summary and Policy Implications

Originally developed for purposes of college placement, AP is increasingly emphasized as a factor in "high stakes" admissions at leading colleges and universities. The main finding of this study, however, is that, controlling for other academic and socioeconomic

¹⁸ Compare Table 8 with Table 4 above. It should be noted that, because not all students take the AP exams, the sample upon which the regression findings in Table 7 are based is smaller (N = 17,245) and more selective than the sample upon which the earlier findings in Table 4 were based (N = 15,691).

factors, the number of AP and other honors-level courses taken in high school bears little or no relationship to students' later performance in college. This finding holds consistently for each of the four cohorts in the UC sample; for outcome measures including college persistence as well as first- and second-year college grades; for every major disciplinary area; and for all major types of honors coursework, including AP, IB, and other honors-level courses. While AP exam scores are strongly related to college performance, many students who enroll in AP courses do not complete the associated AP exams, and merely taking AP or other honors-level courses in high school is not a valid indicator of the likelihood that students will perform well in college. If the UC sample is representative of other selective colleges and universities, admissions officers need to reconsider the manner in which AP and honors courses are treated in "high stakes" admissions. Such reconsideration assumes special importance in light of the disparity in AP and honors participation among groups that have been historically underrepresented in higher education.

In the concluding paragraphs, we discuss several policy options for changing the manner in which AP and honors coursework is treated in admissions decisions. For each option, the discussion considers issues not only of predictive validity, but also of educational equity, the incentive or signaling effect of admissions policy on students and schools, practicality, and possible unintended consequences. As will be seen, there appears to be no one, perfect solution that simultaneously addresses all of these issues and that might be equally appropriate for all institutions.

Require minimum AP examination scores

A first policy option is to give extra weight to AP coursework in admissions decisions only where students take the associated end-of-course AP examinations and achieve exam scores sufficient to demonstrate their mastery of the subject matter. This option would, in effect, extend the AP program model from the area of college placement to the area of admissions, and it has a number of features to recommend it. Such a policy is well justified on grounds of predictive validity, as AP exam scores are demonstrably related to college performance. With respect to its incentive or signaling function, the exam-score option would provide an incentive for students not only to enroll in advanced courses, as under present policy, but also to master the course content and take the end-of-course exams, for which present policy provides no incentive.

From the standpoint of educational equity as well, the exam-score option could have a net positive effect. Though it is true that disadvantaged and underrepresented minority students tend to score lower than others, on average, on the AP exams, requiring a minimum exam score would greatly reduce the *total* number of additional credits granted for AP coursework. Requiring a minimum AP score of four, for example, would reduce the total number of additional AP credits granted by over 90 percent, according to simulations based on UC applicant data. With so many fewer applicants receiving AP credits, the gap between disadvantaged or underrepresented minority students and other applicants would be substantially smaller than under present policy.¹⁹

¹⁹ Proportionately, compared to their 18-percent share under UC's current policy of granting "bonus points" for merely taking AP/honors courses, underrepresented minorities would receive

The main issues with an exam-score requirement, however, concern its practicality and possible unintended consequences. By design, AP and other higher-level coursework are most appropriate for students in their later years in high school, after they have completed the necessary introductory and prerequisite courses. But because students apply to college in the middle of their senior year, exam scores for AP courses that students take as seniors are not available at the point that colleges make admissions decisions.

Exam scores are available at point of admission for AP courses taken in the tenth- and eleventh grades, but this raises other concerns. Many have questioned whether courses taken in the tenth grade or earlier can be legitimately considered “advanced” work. The competition for admission to elite colleges has led many students to take AP courses in earlier and earlier grades, and the National Research Council has noted the perverse effect of this trend in creating “curriculum compression” within the schools:

Compression of the curriculum also can occur when students are allowed to skip prerequisite courses and take an AP course as a first course.

Among the sciences, AP physics is the course students most frequently select as the first course in the discipline. Data obtained from the College Board indicate that almost half of all physics test takers had had no prior experience with physics before enrolling in the AP course. Thus, the AP course had to cover both a year of high school physics and a year of college physics, making in-depth examination of any topic nearly impossible (National Research Council, 2002a:190).

A possible unintended consequence of an exam-score requirement could be to reinforce and perhaps even accelerate this trend toward offering “advanced” coursework in earlier grades. And such a requirement could add significantly to the already heavy burden of standardized tests imposed upon K-12 students.

Finally, the exam-score option also poses problems with respect to honors-level courses other than AP, for which standardized, end-of-course examinations may not be available. Requiring students who take other types of honors-level courses to sit for the AP exams would violate a fundamental principle of testing, namely, that assessment should be aligned with curriculum (American Educational Research Association, et al., 1985).²⁰

about 17 percent of all points awarded under a policy that required a minimum AP test score of four, according to simulations based on UC applicant data. But because so many fewer applicants would receive “bonus points” under a minimum-score policy, the deficit in the absolute number of points awarded to underrepresented minorities vs. other applicants would be reduced approximately ten-fold.

²⁰ Most states have K-12 assessment systems that might be adapted for this purpose, but it is not clear that such systems have sufficient psychometric rigor for use in “high stakes” admissions. For example, California’s K-12 assessment system, called the California Standards Test, is geared toward the general K-12 population and, based on preliminary studies conducted jointly by UC and the State of California, appears to lack sufficient reliability and predictive validity at the high end of the achievement distribution to be useful for purposes of admissions at highly selective institutions such as UC.

In short, although an exam-score requirement seems initially attractive in many respects, there are a variety of reasons why it might prove problematic in practice.

Consider AP/honors coursework in local context

A second policy option is to consider students' AP and honors coursework in local context, that is, within the context of the available curriculum at each student's particular school. Some colleges and universities already follow this practice as part of the process of comprehensive admissions review. In addition, this option might be useful in states such as California, Florida, and Texas, which emphasize students' class rank in school as a criterion for admission to their public university systems.²¹ Rather than looking simply at the number of AP/honors courses that applicants have completed, the local-context option focuses on the extent to which applicants have taken advantage of available opportunities within their individual schools.

The primary rationale for considering students' AP/honors coursework in local context is that it "levels the playing field" and eliminates unfair comparisons between students who attend schools with many AP/honors courses and those who attend schools with few or none. Admissions officers may take a very different view of two applicants who both have four AP courses on their transcripts, knowing that one attends a school with a broad range of AP offerings and the other is from a school with only four. And for students, the local-context option preserves the incentive to take as many advanced-level courses as possible from among the available offerings at their school.

A key problem with the local-context option, however, is the lack of any demonstrable relationship between AP/honors courses and students' later performance in college. This objection is not necessarily fatal, as colleges and universities can and do frequently employ other admissions criteria with little or no predictive validity (e.g., criteria designed to promote geographic, socioeconomic, or demographic diversity). The lack of predictive validity becomes problematic only where such criteria can be shown to have an adverse impact on groups that have been historically underrepresented in higher education. But that is precisely the case here. Educational research provides abundant evidence that *even within the same schools*, underrepresented minority students tend to be tracked out of college-preparatory coursework and to enroll in AP/honors courses at much lower rates than other students. According to a recent study of the AP program in California conducted by California State University's Institute for Education Reform,

[E]ven when Hispanics and African-Americans are in schools with large AP programs, their rate of participation is lower than their proportionate share of enrollment. In short, for Hispanics and African-Americans, the crucial problem is not availability ... but participation in the classes that are offered (CSU Institute for Education Reform, 1999).

²¹ UC currently employs a "local context" approach both in determining students' eligibility under UC's "Top 4% Plan" and also in admissions selection, where many campuses group together and rank applicants from the same high school as part of their comprehensive admissions review process. However, UC also considers AP/honors coursework in comparing applicants from *different* schools, such as when an "honors-weighted" HSGPA is used to rank applicants across schools. Under a strict "local-context" approach, the latter use would not be permitted.

Given persistent patterns of tracking in the schools, admissions officers cannot safely assume that, even for students from the same school, different levels of AP/honors participation reflect different levels of ability or commitment to education. Though the local-context option may help to “level the playing field” *between* schools, it does little to address concerns about equity *within* schools and, to the contrary, could serve inadvertently to preserve and reinforce existing disparities at the K-12 level.

Reduce the weight for AP/honors coursework

A final policy option to be considered here is to reduce the weight given to AP and honors coursework in college admissions. This option would be most practical for institutions, such as UC, that assign quantitative weights for AP/honors within their admissions processes. One variant of the reduced-weight option, for example, would be to assign only a half point rather than a full “bonus point” for AP/honors classes in calculating HSGPA. Another would be to impose a cap restricting the total number of AP/honors courses for which students could receive extra credit.²² A more extreme variant, of course, would be to stop giving any additional weight to AP/honors courses in admissions decisions.

Short of eliminating consideration of AP/honors entirely, the primary rationale for the reduced-weight option is to strike a balance between two fundamental, but competing, policy concerns: maintaining an incentive for students to take rigorous, higher-level coursework while minimizing disparities among disadvantaged and underrepresented minority students. The issue is often simplified as a question of balance between “academic quality” and “fairness,” and the reduced-weight option “splits the difference,” in effect, between these two core values. Granting only a half point for AP/honors, for example, preserves an incentive for students to take advanced coursework in high school but at the same time is intended to mitigate the adverse impact of such coursework as a criterion for college admission.

Although “splitting the difference” is understandable as a way of balancing the competing values at stake, the question remains whether this represents an internally coherent and defensible educational policy. It is not clear that halving the “bonus point” for AP/honors, for example, would have any effect in ameliorating group disparities in admissions, since the result might be simply to restrict the HSGPA range without any change in the relative standing of individuals or groups within the applicant pool. But even if the reduced-weight option did have this effect – and this is the important point – at least some residual disparity would remain. By what standards or principles does one decide how much residual disparity is acceptable as the price for realizing other educational values?

The standard normally employed in answering this question is the legal standard applied in “disparate impact” analysis (National Research Council, 1999a). As it has evolved from case law on employment discrimination into the area of educational testing and college admissions, this standard holds that standardized tests and other selection criteria may have a disparate impact on protected groups only to the extent that can be justified by “educational necessity.” The determination of educational necessity, in turn, involves a two-part test: Do the criteria have a significant relationship with the

²² UC policy already caps the total number of honors at eight. The reduced-weight option might, for example, lower this number to four.

educational purpose intended, and are there alternative criteria that could achieve the same purpose with less disparate impacts?

For selective colleges and universities, the primary purpose of admissions criteria is to select a high-achieving student body (and in the case of public institutions, one that is broadly representative of the populations they serve). The present study, however, provides no grounds for believing that use of AP/honors as a selection criterion is necessary or valid for this purpose, as AP/honors coursework bears virtually no relationship to student achievement in college. The case for reducing the weight for AP/honors but accepting some residual disparate impact thus rests on a secondary and more diffuse purpose of college admissions criteria, that is, their incentive or signaling effect upon K-12 students and schools.

Whether the incentive function of giving at least partial credit for AP/honors courses rises to the level of “educational necessity” is an open question and one that is difficult to answer on purely empirical grounds. While college admissions criteria clearly do have a substantial impact on students and schools, many other influences at the local, state, and federal levels also affect the extent to which schools offer, and students enroll in, advanced-level coursework. It is therefore difficult to isolate the impact of college and university admissions criteria in this regard. Moreover, the educational-necessity test also requires colleges and universities to consider whether they might achieve the same purpose by other means – such as expanded outreach to K-12 schools – without giving extra weight to AP/honors in admissions. Indeed, a case can be made that there are already strong incentives, both intrinsic and extrinsic, for students to take honors-level courses – more interesting learning experiences, improved performance on college entrance exams, better references from teachers – so that additional incentives may be unnecessary.

In sum, like both the exam-score and local-context options discussed previously, the rationale for reducing the weight for AP/honors in college admissions, while initially plausible, on closer analysis seems more equivocal.

Conclusion

It is important to emphasize that the present study is not intended as an assessment of the value or effectiveness of the Advanced Placement or International Baccalaureate programs, nor of other honors-level coursework offered by high schools in either the U.S. or California. Given the decentralized system of educational governance in the U.S. and the lack of national curricular standards, programs such as AP and IB appear to offer one of the most promising strategies for improving the academic rigor of school curricula nationwide, while remaining responsive to state and local standards (National Research Council, 2002a:30). Participation in rigorous, advanced-level coursework may be especially strategic for disadvantaged and underrepresented minority students if our society is to make inroads in reducing pervasive disparities in educational achievement (Adelman, 1999).

The present study has focused on a different issue, namely, the use of AP and other honors-level coursework as a criterion for admission at elite colleges and universities. Developed originally for purposes of college placement, AP is increasingly emphasized

as a factor in “high stakes” admissions, but this evolution has occurred largely unexamined and with little systematic study of the extent to which its use for that purpose is valid. The UC data indicate that AP/honors coursework has little, if any, validity with respect to the prediction of college outcomes.

Lacking an empirical rationale, it is probably inevitable that discussions of the future role of AP/honors in admissions may devolve into the familiar value conflict between those who would emphasize “academic quality” and those who would emphasize “fairness” in college admissions. Yet closer analysis of the various options for recasting the role of AP/honors in admissions suggests that there is an imbalance, in this case, between those competing values. The primary purpose of admissions criteria is to select a high-achieving student body, but the predictive-validity findings raise doubts whether the academic quality of admitted students, as measured by their actual performance in college, would in any way suffer if AP/honors coursework were not considered in admissions. The argument for academic quality thus turns on a secondary and more diffuse purpose of college admissions criteria, their incentive or signaling effect on K-12 students and schools. Balanced against that generalized and hard-to-measure effect is the specific, immediate, and disparate impact of AP/honors on admissions of those who have been historically underrepresented at elite colleges and universities. Different observers may strike this balance differently, but the preponderance of both data and policy considerations would appear to favor a fundamental reconsideration of the role of AP and honors in “high stakes” admissions.

References

- Adelman, C. (1999). Answers in a Toolbox: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment. Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement.
- American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (1985). Standards for Educational and Psychological Testing. Washington, DC: American Psychological Association.
- Atkinson, R.C. (2001). “Standardized tests and access to American universities.” The 2002 Robert H. Atwell Distinguished Lecture, delivered at the 83rd Annual Meeting of the American Council on Education, Washington, D.C.
- Campbell, P. (2000). “International Baccalaureate Program.” Paper presented to the Committee on Programs for Advanced Study of Math and Science in American Schools meeting, March 26, Irvine, CA.
- College Board. (2002). “AP Central – Participation in AP: Annual Participation.” <<http://apcentral.collegeboard.com/article/0,3045,150-156-0-2055,00.html>>.
- Commission on the Future of the Advanced Placement Program. (2001). “Access to Excellence: A report of the Commission on the Future of the Advanced Placement Program.” New York: College Entrance Examination Board.

- Crouse, J., and Trusheim, D. (1988). The Case Against the SAT. Chicago: University of Chicago Press.
- CSU Institute for Education Reform. (1999). "The Advanced Placement program: California's 1997-98 experience." Sacramento: California State University.
- CSU Institute for Education Reform. (2001). "Characteristics and performance of Advanced Placement classes in California." Sacramento: California State University.
- Daniel v. California. (1999). Case No: RDVSOC174397, Superior Court of the State of California.
- Doran, B.J., Dugan, T., and- Weffer, R. (1998). "Language minority students in high school: The role of language in learning biology concepts." Science Education, 82(3), 311-331.
- Ekstrom, R.B., Goertz, M., and Rock, D.A. (1988). Education and American Youth. Philadelphia: Falmer Press.
- Eykamp, P. (2003). "The effect of Advanced Placement credit on time to degree at the University of California." Paper presented at American Institutional Research 2003 Forum. Oakland, CA: UC Office of the President.
- Gamoran, A. (1992). "The variable effects of high school tracking." Sociology of Education, 57(4), 812-828.
- Geiser, S., with R. Studley. (2003). "UC and the SAT: Predictive validity and differential impact of the SAT I and the SAT II at the University of California." Educational Assessment, 8(1), 1-26.
- Hurwitz, N., and S. Hurwitz. (2003). "Is the shine off the AP apple?" American School Board Journal, March.
- Kirst, M.W. (1998). "Improving and aligning K-14 standards, admissions, and freshman placement policies." Stanford, CA: Stanford University, National Center for Postsecondary Improvement.
- Kowarsky, J., Clatfelter, D., and Widaman, K. (1998). "Predicting university grade-point average in a class of University of California freshmen: An assessment of the validity of a-f GPA and test scores as indicators of future academic performance." Institutional research paper. Oakland, CA: UC Office of the President.
- Mathews, J. (1998). "100 best high schools in America." Newsweek, March 30.
- Morgan, R., and Maneckshana, B. (2000). "AP students in college: An investigation of their course-taking patterns and college majors." Princeton, N.J.: Educational Testing Service.

- Morgan, R., and Ramist, L. (1998). "Advanced placement students in college: An investigation of course grades at 21 colleges." Princeton, NJ: Educational Testing Service.
- National Research Council. (1999a). High Stakes: Testing for Tracking, Promotion, and Graduation. J. Heubert and R. Hauser, eds. Committee on Appropriate Test Use, National Research Council. Washington, D.C.: National Academies Press.
- National Research Council. (1999b). Myths and Tradeoffs: The Role of Tests in Undergraduate Admissions. A. Beatty, M. R. C. Greenwood, and R. Linn, eds. Washington, D.C.: National Academies Press.
- National Research Council. (2002a). Learning and Understanding: Improving Advanced Study of Mathematics and Science in U.S. High Schools. Jerry P. Gollub et al., eds. Washington: National Academies Press.
- National Research Council. (2002b). Learning and Understanding: Improving Advanced Study of Mathematics and Science in U.S. High Schools – Report of the Content Panel on Mathematics. Washington: National Academies Press.
- Oakes, J. (1985). Keeping Track: How Schools Structure Inequality. New Haven, CT: Yale University Press.
- Oakes, J. (1990). "Multiplying inequalities: Race, social class, and tracking students' opportunities to learn mathematics and science." Santa Monica: RAND.
- Oakes, J., Gamoran, A., and Page, R.N. (1992). "Curriculum differentiation: Opportunities, outcomes and meanings." In P. Jackson (ed.), Handbook of Research on Curriculum, pp. 570-608. New York: Macmillan.
- Santoli, S. (2003). "Is there an Advanced Placement advantage?" American Secondary Education, 30(3), Summer.
- University of California. (1982). "May 5, 1982, Academic Senate, Northern Section: Notice of Meeting of the Representative Assembly." Berkeley: UC Academic Council.

Appendix 1
**Demographic Profile of UC Applicants by
Number of AP/Honors Subjects Taken**

Number of AP/Honors Subjects Taken	Number of Students	Percent of Sample	Percent of Total			
			Under-represented Minorities	First Generation Students	Students from Low-Performing Schools	Low Income
0	4,343	8.5%	23.2%	34.5%	13.8%	22.1%
1-4	9,305	18.2%	22.9%	34.7%	16.1%	23.1%
5-8	10,024	19.6%	19.9%	33.1%	18.4%	22.0%
9-16	18,169	35.6%	17.5%	29.8%	19.5%	20.6%
17-24	7,578	14.8%	12.6%	23.7%	15.4%	18.7%
25 or more	1,677	3.3%	11.2%	19.6%	15.3%	17.1%
TOTAL	51,096	100%	18.5%	30.5%	17.4%	21.1%

**Demographic Profile of UC Applicants by
Number of AP Exams Taken**

Number of AP Exams Taken	Number of Students	Percent of Sample	Percent of Total			
			Under-represented Minorities	First Generation Students	Students from Low-Performing Schools	Low Income
0	27,302	53.4%	20.1%	30.2%	13.5%	19.9%
1	4,820	9.4%	20.4%	37.0%	23.3%	24.8%
2	4,940	9.7%	18.9%	33.8%	24.8%	24.1%
3	4,318	8.5%	17.8%	31.4%	23.4%	23.7%
4	3,344	6.5%	15.7%	29.2%	21.0%	21.2%
5 or more	6,372	12.5%	12.1%	24.3%	18.0%	19.3%
TOTAL	51,096	100%	18.5%	30.5%	17.4%	21.1%

Source: College Board and UC Admissions data, Fall 1998.

Population includes only California residents. Number of honors-level courses includes those completed by applicants in 10th, 11th and 12th grades.

Appendix 2**Descriptive Statistics for Study Sample and Variables****1998 Fall UC Freshman Cohort**

Variable	N	Mean	Median	SD
Unweighted HSGPA	19,772	3.53	3.57	0.34
SAT I Composite	18,965	1191	1200	165
SAT II Composite	18,800	1748	1750	245
Number of AP/Honors	19,820	6.6	6.0	4.6
AP Exam Scores	14,031	3.0	3.0	0.9
Parents' Education	18,701	15.7	16.0	3.3
1st Year UCGPA	19,074	2.90	2.98	0.65
2nd Year UCGPA	17,772	3.00	3.06	0.64
1st Year Persistence	18,682	n/a	n/a	n/a
2nd Year Persistence	18,390	n/a	n/a	n/a

1999 Fall UC Freshman Cohort

Variable	N	Mean	Median	SD
Unweighted HSGPA	16,934	3.55	3.60	0.33
SAT I Composite	16,907	1204	1210	164
SAT II Composite	16,791	1797	1800	249
Number of AP/Honors	16,981	7.6	8.0	4.9
AP Exam Scores	14,328	3.0	3.0	1.0
Parents' Education	16,350	15.6	16.0	3.3
1st Year UCGPA	16,560	2.92	3.00	0.64
2nd Year UCGPA	15,487	3.03	3.11	0.63
1st Year Persistence	16,122	n/a	n/a	n/a
2nd Year Persistence	16,045	n/a	n/a	n/a

2000 Fall UC Freshman Cohort

Variable	N	Mean	Median	SD
Unweighted HSGPA	20,376	3.54	3.58	0.34
SAT I Composite	20,441	1192	1200	167
SAT II Composite	20,065	1789	1790	250
Number of AP/Honors	20,471	7.7	8.0	5.2
AP Exam Scores	17,347	2.9	3.0	1.0
Parents' Education	19,624	15.4	16.0	3.4
1st Year UCGPA	20,041	2.89	2.97	0.67
2nd Year UCGPA	18,724	3.03	3.11	0.62
1st Year Persistence	19,714	n/a	n/a	n/a
2nd Year Persistence	19,626	n/a	n/a	n/a

2001 Fall UC Freshman Cohort

Variable	N	Mean	Median	SD
Unweighted HSGPA	24,363	3.53	3.58	0.34
SAT I Composite	24,502	1195	1210	165
SAT II Composite	24,177	1809	1810	251
Number of AP Courses	24,292	3.0	2.0	2.8
Number of IB Courses	24,305	0.2	0.0	1.3
Number of CCC Courses	24,292	0.5	0.0	1.4
Number of Other Honors	24,291	3.5	3.0	3.1
Parents' Education	23,622	15.5	16.0	3.4
Family Income	20,189	\$ 79,319	\$ 60,928	\$ 76,779
1st Year UCGPA	24,424	2.92	3.00	0.65

Appendix 3

By-Campus Results

Regression Equation: $UCGPA = \alpha HSGPA + \beta SAT I + \varphi SAT II$

UC Berkeley

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.154	1	0.141	1
Half Bonus Point	0.145	2	0.134	2
Full Bonus Point	0.129	3	0.120	3

UC Davis

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.269	1	0.187	1
Half Bonus Point	0.259	2	0.178	2
Full Bonus Point	0.236	3	0.161	3

UC Irvine

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.141	1	0.081	1
Half Bonus Point	0.139	2	0.077	2
Full Bonus Point	0.124	3	0.067	3

UC Los Angeles

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.233	1	0.190	1
Half Bonus Point	0.224	2	0.182	2
Full Bonus Point	0.206	3	0.167	3

UC Riverside

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.136	2	0.103	2
Half Bonus Point	0.140	1	0.106	1
Full Bonus Point	0.130	3	0.097	3

UC San Diego

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.198	1	0.142	1
Half Bonus Point	0.183	2	0.136	2
Full Bonus Point	0.147	3	0.117	3

UC Santa Barbara

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.212	1	0.144	1
Half Bonus Point	0.204	2	0.132	2
Full Bonus Point	0.179	3	0.110	3

UC Santa Cruz

HSGPA Weighting for AP/Honors	Dependent Variable			
	1 st Year GPA		2 nd Year GPA	
	R ²	Rank	R ²	Rank
No Bonus Point	0.152	1	0.093	2
Half Bonus Point	0.151	2	0.094	1
Full Bonus Point	0.140	3	0.090	3

Source: College Board and UC admissions and longitudinal data for new UC freshmen entering in Fall 2000.