

**MEASURING THE ACHIEVEMENT GAP**  
**IN SAN DIEGO CITY SCHOOLS**

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**Prepared by:**

**Hugh Mehan**  
**Professor of Sociology and Director, Teacher Education Program**  
**University of California, San Diego**

**and**

**Scott Grimes**  
**Director of Research and Program Development**  
**San Diego Dialogue**

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## **I. Introduction**

In response to ongoing community concerns about the level of K-12 student achievement in San Diego, the leadership of San Diego Unified School District has introduced an ambitious educational plan to implement high academic standards for all students. This plan includes the specific objective of closing the achievement gap between low-income and minority students and their peers in the District. If the performance of San Diego students is to be raised to uniform standards of excellence, then all San Diego students must be provided with the same high quality opportunities to learn.

In order to establish a baseline for achieving these goals, it is important to measure both total student performance and the achievement gaps among groups of students. This, in turn, requires accurate measures of school characteristics, school quality, and student achievement.

This study, commissioned by San Diego Dialogue, is a contribution towards measuring the achievement gap in San Diego Unified. Our approach is to rank the 16 comprehensive high schools in the District on a socioeconomic scale from low to high poverty, as measured by the incidence of students eligible for free and reduced meals at each school. The Dialogue elected to begin with the high schools of San Diego Unified in order to measure the educational “output” of the region's largest school system. In future studies the Dialogue will extend its analysis to include middle and elementary schools in San Diego Unified and other K-12 school districts in San Diego County.

The data employed in this study, because it is the most readily available to the public, is limited in many respects. The data lacks important

information about students' academic performance, including individual course grades and test scores. The only comprehensive standardized test in the data is the Stanford-9, which has widely recognized drawbacks. Furthermore, the socioeconomic continuum analyzed here is school-specific, rather than student-specific, which means we cannot disaggregate performance data for just low-income students. In general, the lack of performance data makes it difficult for educators, parents, and the broader community to evaluate the relative success of schools and individual student performance.

One conclusion of this study is that more accurate, student-based measures of school characteristics, school quality, and academic performance are needed. Such information would allow educators in the District and throughout the region to measure progress towards implementing high standards and closing the achievement gap.

The data presented in this report is organized into three sections. The first describes the socioeconomic characteristics of the high schools and notes the correlation between parents' income level and other factors such as minority enrollment and Limited English Proficiency. The second section provides two measures of educational quality in the district, both of which focus on the teaching force in the schools. In presenting data that focuses on the distribution of qualified teachers, as opposed to dollars spent, we are guided by the accumulating evidence that quality of teaching is the most important determinant of student success (Darling-Hammond, 1998; Elmore & Burney, 1997a, 1997b; Greenwald et al 1996; Haycock, 1997; The Education Trust, 1998). The third section presents a variety of measures of student achievement, ranging from dropout rates and participation in advanced-level coursework to performance on standardized tests. The report closes with a

short discussion of the policy implications related to these findings, as well as promising areas for future research.

Closing the achievement gap will require that all students have access to high quality educational opportunities. Unfortunately, the level of academic achievement differs substantially between the high schools of San Diego Unified. Generally speaking, student performance declines along the socioeconomic continuum from low poverty to high poverty schools. The poorer the student population at the school, the lower the level of performance on measures of student achievement.

The distribution of educational resources in San Diego Unified also follows this same pattern. Poor, underrepresented minority, and limited English proficient students are concentrated in schools where teachers have fewer years of experience. In addition, these students, who have the greatest scholastic needs, are being taught by teachers with relatively lower levels of academic preparation.

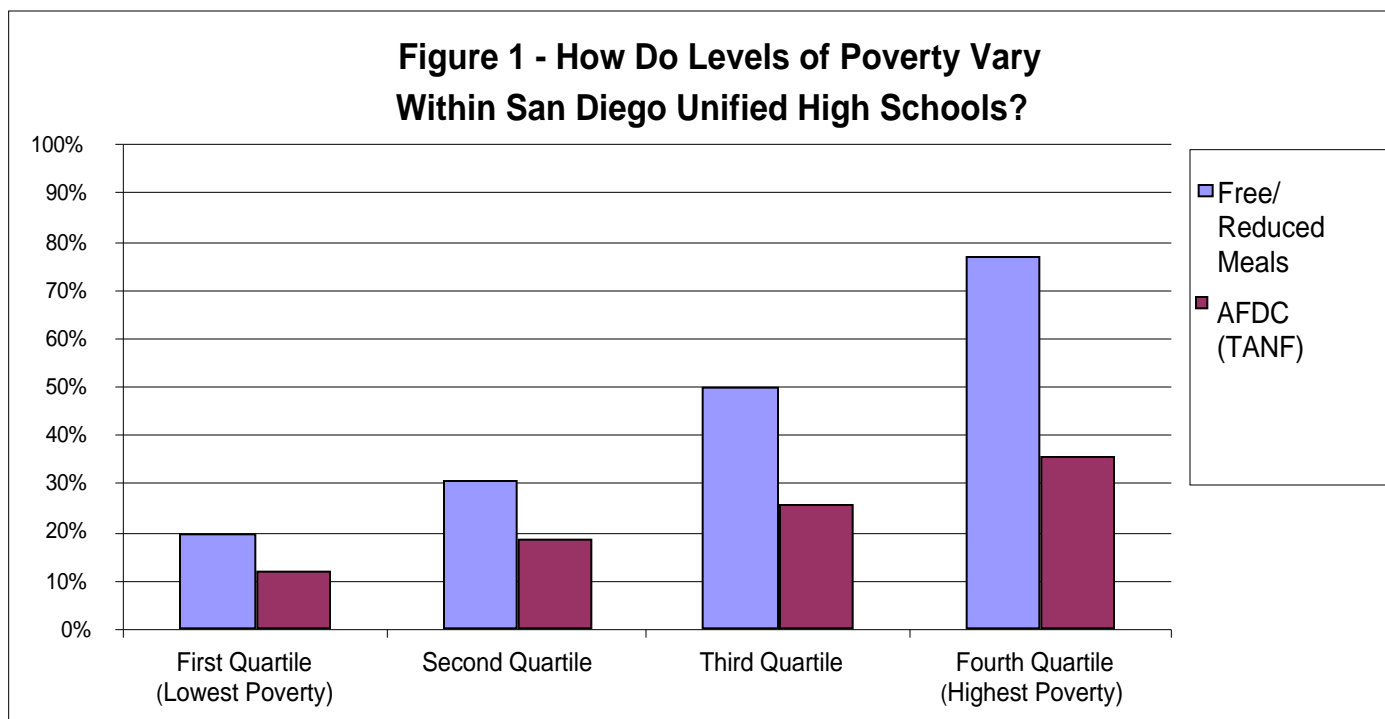
The following findings help to define the nature and scale of the achievement gap in San Diego's high schools.

## **II. High School Characteristics: Poverty, Ethnicity, and Transiency**

**A) Poverty is not evenly distributed in San Diego.** The 16 comprehensive high schools in San Diego Unified vary considerably in terms of their percentage of poor students (defined here as the percentage of students eligible for the free or reduced meals program). The 16 schools cluster neatly into four groups of four; La Jolla, Scripps, Mira Mesa, and University City comprise the first group; Patrick Henry, Madison, Serra, and Point Loma comprise the second set of four; Morse, Clairemont, Mission Bay,

and Kearny comprise the third group; and Lincoln, San Diego, Crawford, and Hoover comprise the fourth group.

Twenty percent of the students attending the first cluster of schools are eligible to receive free or reduced meals and 12% are eligible for Aid For Families with Dependent Children (AFDC). By contrast, 77% of the students attending the fourth cluster of schools are eligible to receive the free and reduced meal benefit and 36% are eligible for AFDC. (See Figure 1).<sup>1</sup>

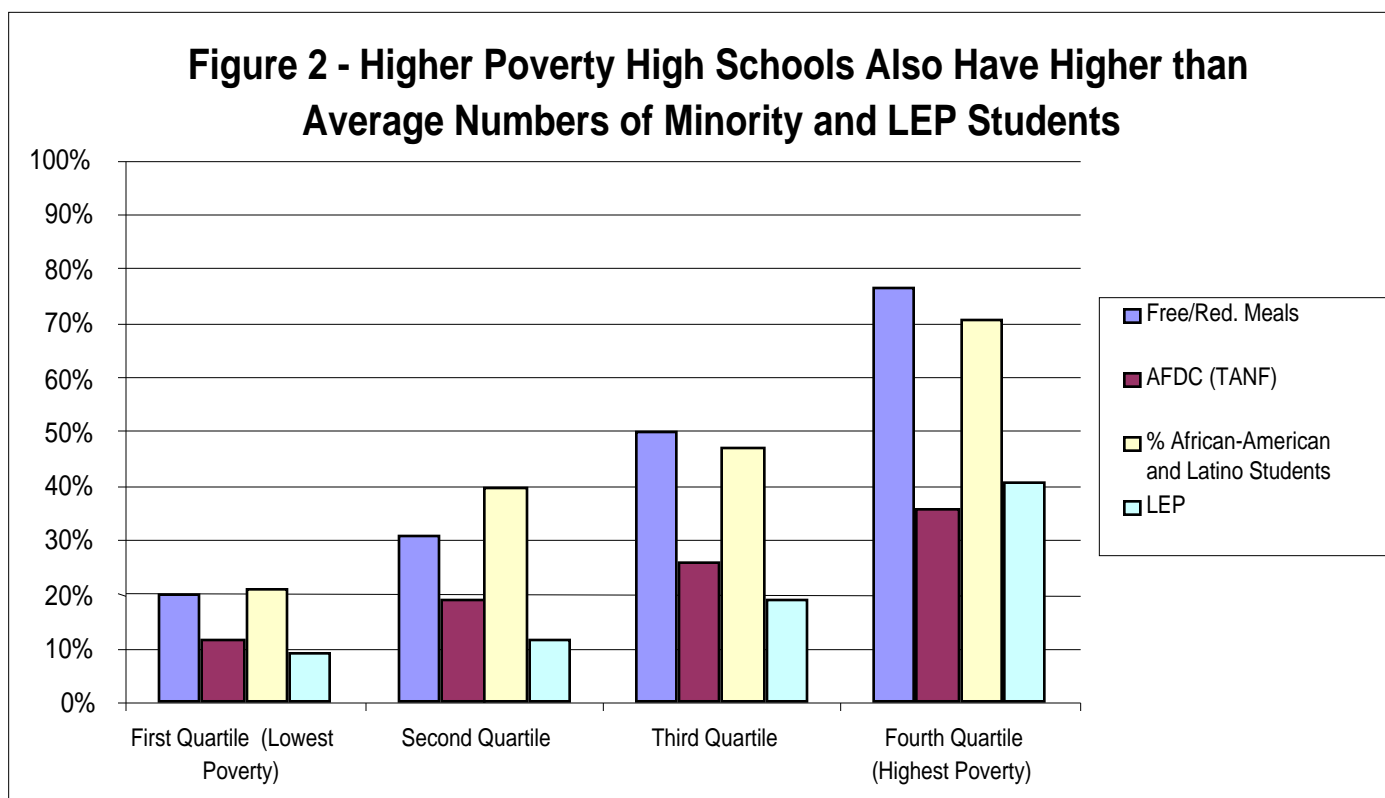


Source: *1997 San Diego School Profile, California Public School Profile, CBEDS*

**B) Poverty has color in San Diego.** The high schools that have the most poor students also have the most underrepresented students (defined here as African American and Latino/Chicano students). Underrepresented students comprise 21% of the school population of the four schools with the

<sup>1</sup> Eligibility for free and reduced lunch programs is based on the reported annual household income of the student's family.

least poor students, while underrepresented students comprise 71% of the school population of the four schools with the most poor students. (See Figure 2). In addition, the order of schools ranked in terms of the percentage of underrepresented students recapitulates the order of schools ranked in terms of the percentage of poor students.



Source: *1997 San Diego School Profile, California Public School Profile, CBEDS*

**C) Poverty, ethnicity, and English language skills go together.**

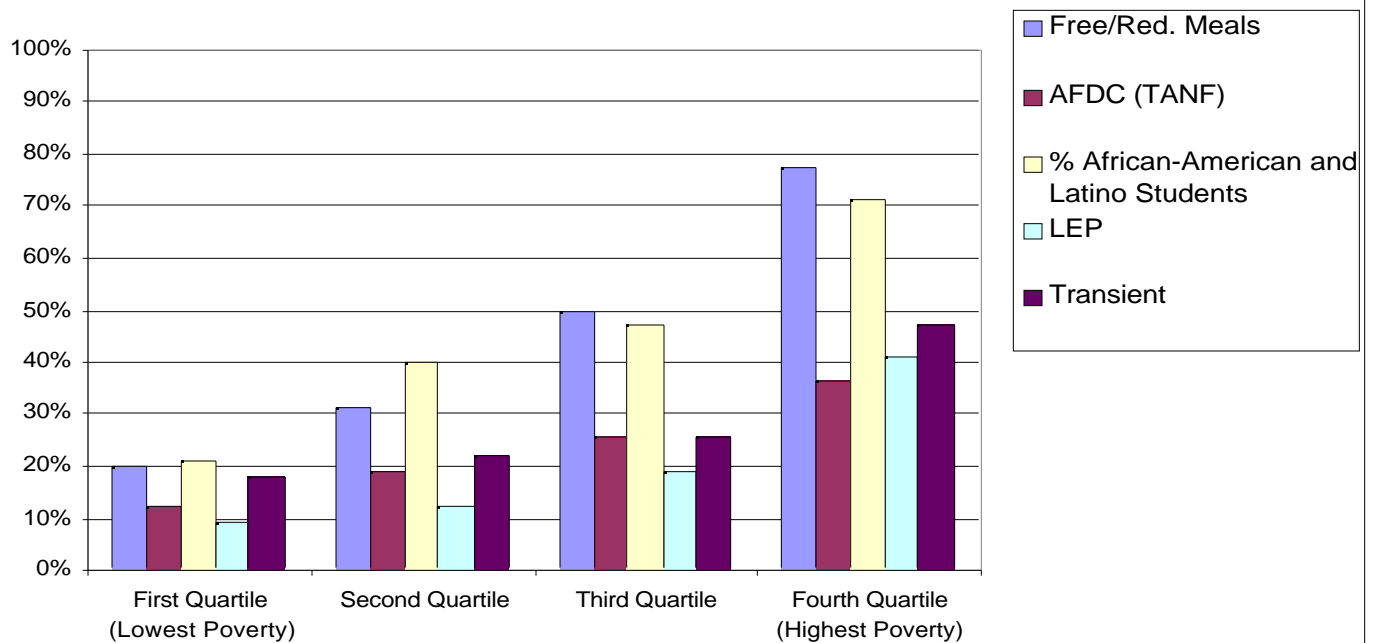
The schools with the most poor students and the most underrepresented students also have the most students with limited proficiency in English. Limited English Proficient (LEP) students comprise 9% of the school population of the four schools with the least poor students, while LEP students comprise 41% of the four schools with the greatest number of poor

students. (See Figure 2). In addition, the rank order of poor schools and schools with underrepresented students correlates exactly with the order of schools ranked in terms of the percentage of LEP students.

**D) Levels of poverty and the percentage of underrepresented students in a school are also associated with the level of “transiency” at the school site.** (See Figure 3). Transiency measures the percentage of students enrolled in a school at the beginning of the academic year who leave the school before the end of the year. A transiency rate differs from a dropout rate in that it only measures the departure and replacement of students. It does not assess whether they enroll in a school in another location after departing.

High rates of transiency create significant challenges for educators, who will see substantial turnover in their classrooms over the course of an academic year. Transiency complicates the development of accountability systems that assess the performance of schools by the degree to which student educational attainment levels advance year by year.

**Figure 3 - Higher Poverty High Schools Also Have Higher Levels of Transiency**



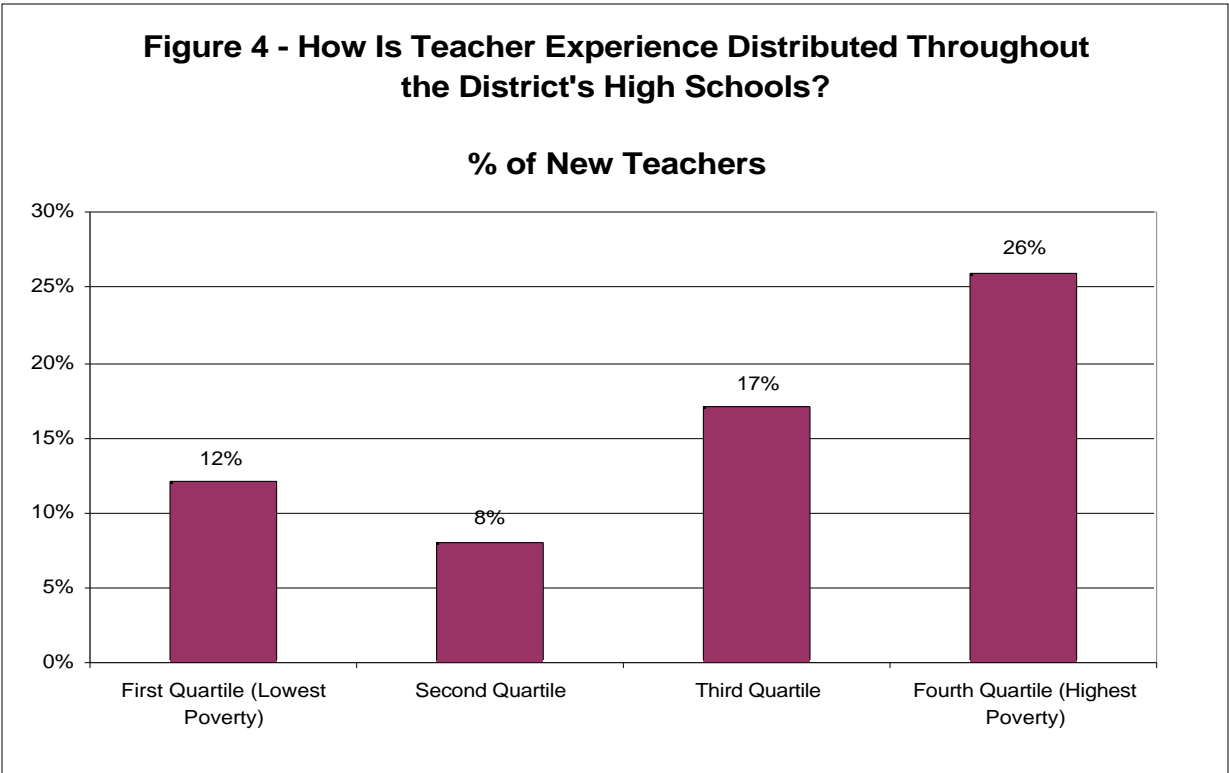
Source: 1997 San Diego School Profile, California Public School Profile, CBEDS

### III. Teacher Qualifications

Schools in poor neighborhoods have fewer experienced and academically prepared teachers. Schools have difficulty in maintaining curricular continuity and integrity from year to year when they experience frequent teacher turnover and have teachers with fewer professional qualifications. This lack of stability particularly impacts students in high poverty schools. Whereas parents in low poverty schools have the resources and knowledge to compensate for inexperienced teachers, parents in high poverty schools often do not have access to this “cultural capital.”

***Teacher Experience***

**A) Students in high poverty schools have more than twice the number of new teachers than low poverty schools.** While low poverty schools have, on average, 12% new teachers, 26% of the teachers in high poverty schools are new to the profession. (See Figure 4).

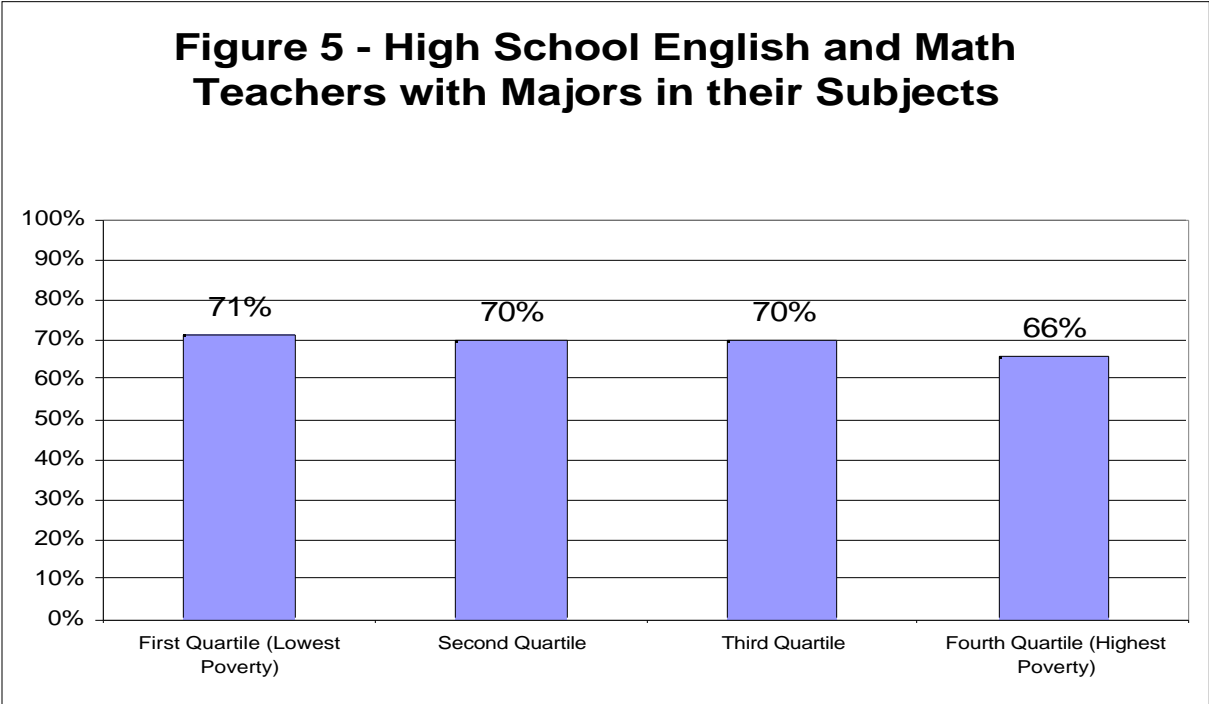


Source: *March 1997 School Accountability Report Card, San Diego Unified*

***Teachers' Academic Preparation***

**B) Many teachers in the District lack a college degree in the subject matter they are teaching.** In particular, teachers in high poverty

schools are somewhat less prepared *academically* than their colleagues in low poverty schools. Whereas 71% of the English and Math teachers in low poverty schools have a major in the subjects they teach, only 66% of the English and Math teachers in high poverty schools have these qualifications. (See Figure 5). While there is only a minor gap between high-poverty and low-poverty schools for this measure, overall there is a substantial number of teachers in the District who are teaching without college degrees in their subject areas.



Source: *San Diego Unified*

The situation in San Diego is reflective of the state of California. California ranks worst among the fifty states in the percentage of teachers teaching outside of their field. On average, 27% of California secondary school classes are taught by teachers lacking a major in their field (The

Education Trust, 1998). Given the other factors that could serve to constrain student achievement, one might expect that the more academically qualified teachers would be targeted as a matter of policy towards high-poverty schools. In fact, the opposite is typically the case. Haycock (1996: 7) reports that fewer than 60% of teachers in high poverty schools across the United States have majors *or minors* in the subjects they teach.

#### **IV. Student Achievement**

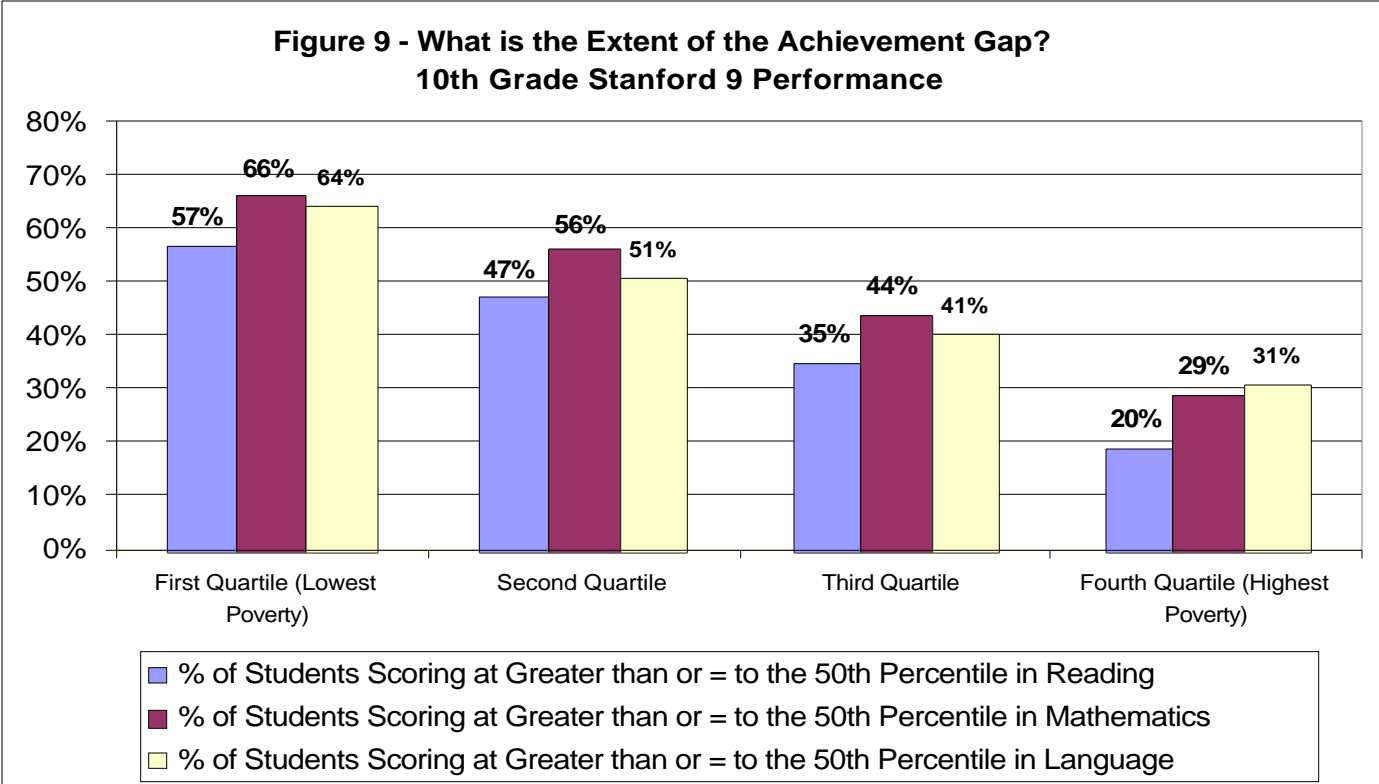
The data collected for this study suggests that there is a substantial achievement gap between low-income and minority students and their peers in San Diego Unified high schools. Students at low-income high schools score lower on standardized tests, take fewer college-preparatory courses, and drop out of school more frequently than their peers in higher-income schools.

##### ***Stanford 9 Scores***

**A) Even when those “English-Learner” students are excluded from the test results, students in high poverty schools score, on average, less than half as well as their peers at low poverty schools on the Stanford 9.**

The “Stanford 9” is the state-mandated test of student achievement intended to give citizens a “report card” of students and schools. The test results are scored against a national sample, which means students receive a score that places them in a percentile ranking based on a national norm.

Figure 6 displays Stanford 9 performance data for Grade 10 in the 16 comprehensive high schools. 57% of students in low poverty schools score, on average, at or above the 50<sup>th</sup> percentile on the reading portion of the test, while only 20% of students exceed the 50<sup>th</sup> percentile at high poverty schools. This same relationship appears in math. 66% of students in low poverty schools attain a 50<sup>th</sup> percentile or higher score on the math test, while 29% of students in high poverty schools score at or above this mark. This linear relationship between socioeconomic circumstances and student achievement also appears on the Language sub-test. More than twice the number of students in low poverty schools, on average, score at or above the 50<sup>th</sup> percentile than in high poverty schools (64% vs. 31%). (See Figure 6). Again, these results exclude the large population of “English Learners” in the District, which at some high poverty schools can exceed 40 percent of the student population.



NOTE: This data excludes “English-Learners” [i.e. designated ESL students].

It is important to emphasize that the Stanford 9 is a “norm-referenced” test that is scored against a national sample. The socioeconomic characteristics of the national sample differ substantially from the student population of San Diego Unified. Generally speaking, students taking the Stanford 9 in San Diego are more likely to come from low-income households and to speak English as a second language than their counterparts in the national Stanford 9 sample. (See Figure 7). While it is not known whether or how these variations from the national norm might effect student outcomes, it is possible that they create a bias that makes the Stanford 9 an unreliable measure of student achievement. On the other hand, since students designated as “English Learners” (i.e. designated ESL students) are excluded from these results, the variations in English proficiency have been

mimimized. It seems reasonable that the resulting data provides at least a reasonably approximate measure of student achievement in the District’s high schools.

**FIGURE 7 – COMPARING THE STANFORD-9 NORMING POPULATION  
AND SAN DIEGO’S STUDENTS**

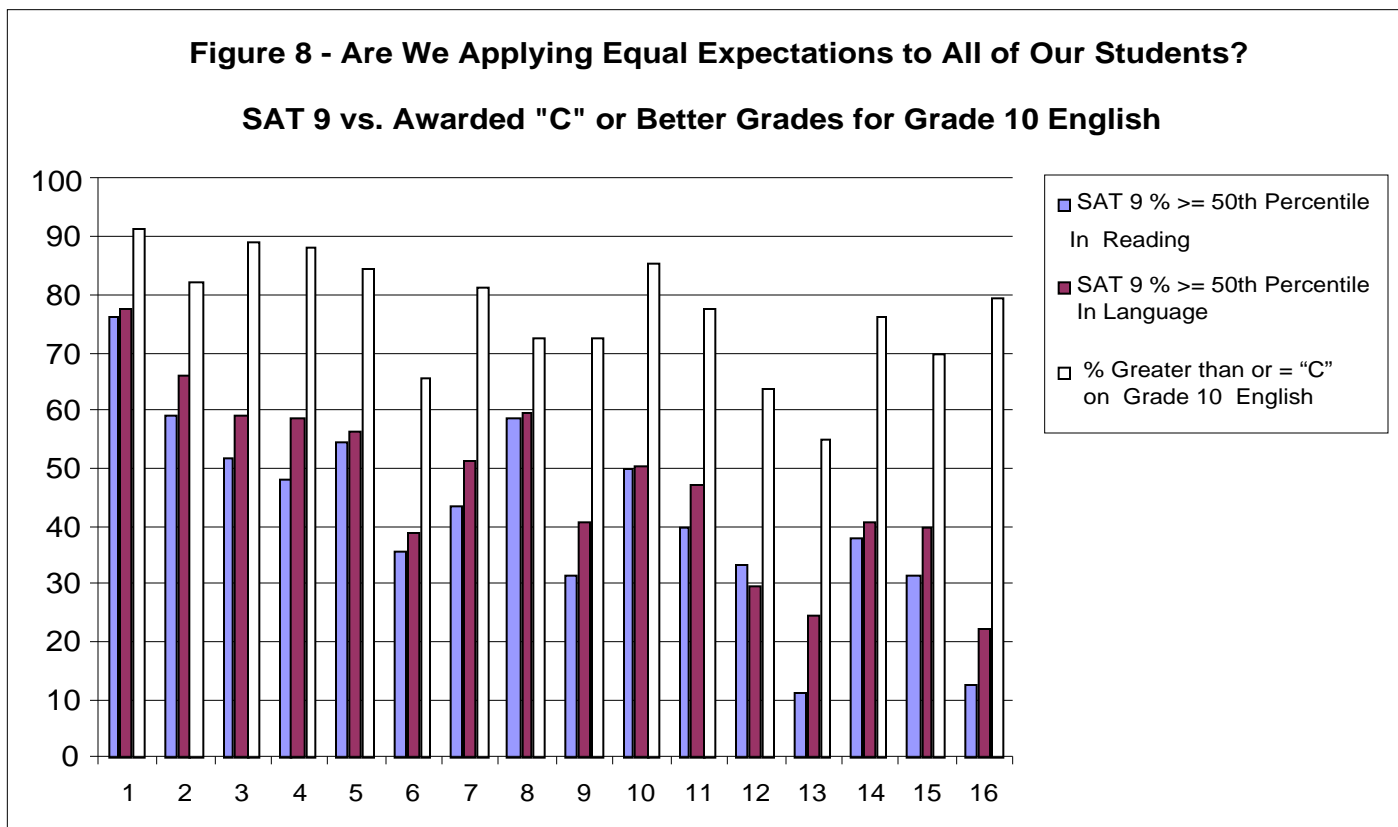
	<b>Student Population Used to Establish Stanford-9 Norms</b>	<b>San Diego County</b>	<b>San Diego Unified</b>
LEP	2%	22%	28%
LOW-INCOME	29%	46%	60%
MINORITY	37%	56%	72%
SPECIAL EDUCATION	4%	8%	9%

Source: *San Diego Unified, San Diego County Office of Education*

**B) Performance on standardized tests does not correlate well with awarded grades in the District’s high schools. This lack of correlation is more pronounced in low-income schools.**

As Figure 8 shows, there is a significant gap in low-income schools between the percentage of students scoring at or above the 50<sup>th</sup> percentile on the Stanford 9 in Reading and Language and the percentage of students being awarded a grade of “C” or higher in the same subject area for the same semester in which the standardized test was administered. This gap tends

to widen the higher the level of poverty in the school. It is important to again note that the Stanford 9 data shown here excludes “English Learners.”

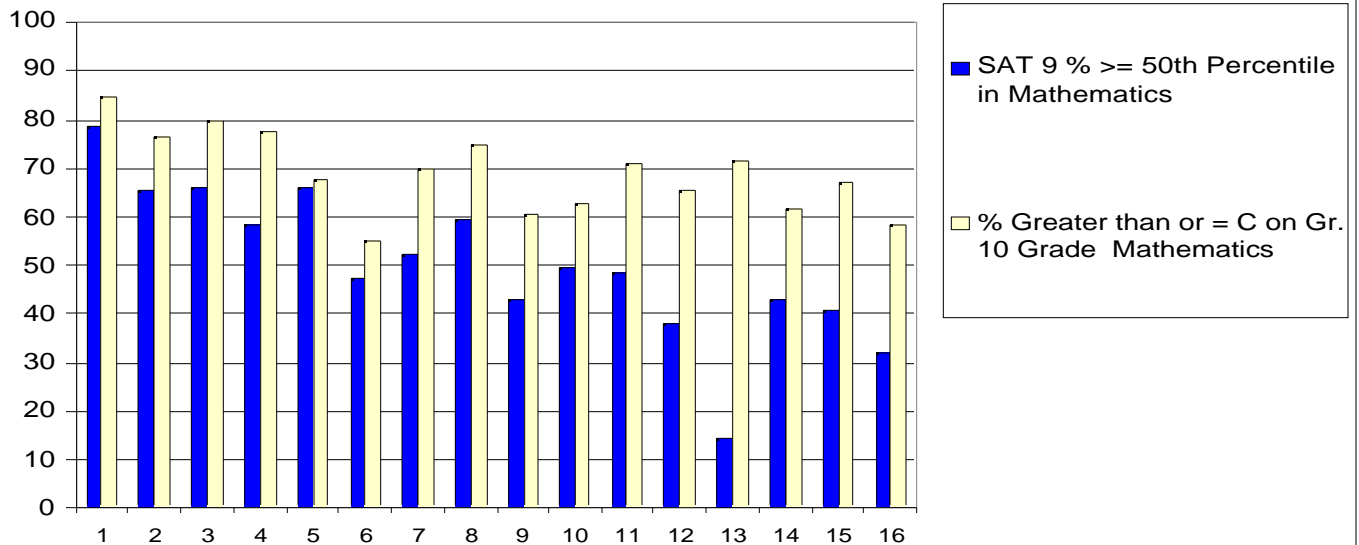


Source: *ACCOUNTABILITY TARGETS SUMMARY, San Diego Unified, Spring, 1998.*  
 NOTE: Schools are listed from lowest poverty level (#1) to highest poverty level (#16). SAT 9 data excludes "English Learners" (i.e. designated ESL students).

As Figure 9 shows, the same pattern is apparent in mathematics, although the gap is not as great.

**Figure 9 - Are We Applying Equal Expectations to All of Our Students?**

**SAT 9 vs. Awarded Grades of "C" or Better for Grade 10 Math**



Source: *ACCOUNTABILITY TARGETS SUMMARY, San Diego Unified, Spring, 1998*  
 NOTE: Schools are listed from lowest poverty level (#1) to highest poverty level (#16). SAT 9 data excludes "English Learners" (i.e. designated ESL students).

This gap indicates that grading and promotion policies do not coincide with performance on standardized tests, yet these are the tests being used to indicate standards of achievement. One reasonable explanation for the gap is that different expectations are being applied to students at different schools. This gap seems to suggest that student performance on class work and homework is not being assessed with the same rigor at all school sites. In particular, educators of students in high poverty schools appear to have lower expectations for their students. Thus an assignment that might score a "D" or below in a low poverty school receives a "C", "B" or even an "A" in a high-poverty school. (Haycock, 1997).

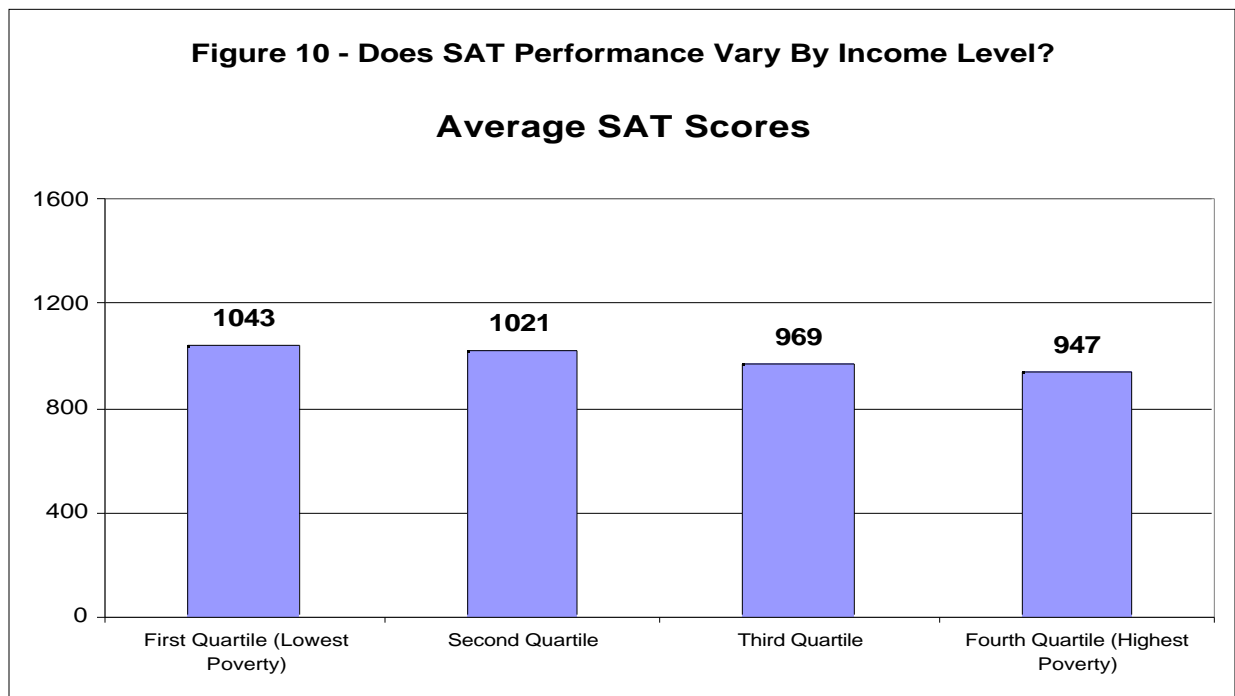
However, other interpretations are possible. It is possible that students might deserve the grades they are receiving and that the Stanford 9 is not measuring what is taught in the District's classrooms. Along this line of thought, it is important to note that the schools in the District are not simply giving grades away. Approximately 20% of the students in high poverty schools received "D's" or "F's" in the spring of 1998, and even in low poverty schools 10% or more of the students were receiving a grade below a "C" in English

Whichever interpretation is accurate --- and it's important to determine which is correct --- the gap between grades and Stanford 9 performance is so wide as to carry an important policy implication. The District's existing accountability system currently has a mismatch between its objectives for awarded grades and the Stanford 9. The District is striving to have 90 percent of its 10<sup>th</sup> grade students receive a grade of "C" or higher on reading and mathematics. However, it wants only 50 percent of its students scoring at the 50<sup>th</sup> percentile or higher on the Stanford 9. Given this mismatch, it is questionable whether the current accountability system is equipped to encourage schools to apply equally rigorous expectations to all of the District's students.

### ***SAT Scores***

The Scholastic Assessment Test (SAT) is required for entrance at most colleges and universities in the United States. The SAT I tests students' verbal and mathematical reasoning. The lowest score on each section is 200 and the highest score is 800; the highest combined score, therefore, is 1600.

**C) The combined verbal and math SAT scores at high poverty schools lag nearly a hundred points behind the combined scores at low poverty schools.** The combined average math and verbal scores of the San Diego Unified students taking the SAT in 1997 ranged from 1043 to 947. Low poverty schools had a combined average score of 1043 while high poverty schools had a combined average of 947. (See Figure 10).



Source: *California Public School Profiles*

The 1043 average score places students in the 46<sup>th</sup> percentile of all test takers, while the 947 score places students in the 33<sup>rd</sup> percentile of all test takers. Students with this range of SAT scores are not competitive for entrance into most elite universities. For example, the average combined SAT score of students accepted at UCSD, UCLA, and UC Berkeley in 1998 was above 1350. However, students in this range are somewhat more qualified

for four-year state universities such as the California State University system. Most admitted students at such CSU campuses as San Diego State, Fresno State and Cal Poly will have a combined SAT score greater than 900.

**D) Students who attend high poverty schools attempt the SAT less frequently than those in low poverty schools.** While more than two-thirds of the students in low poverty schools take the SAT, just over a third of the students enrolled in high poverty schools take this vitally important test for college entrance.

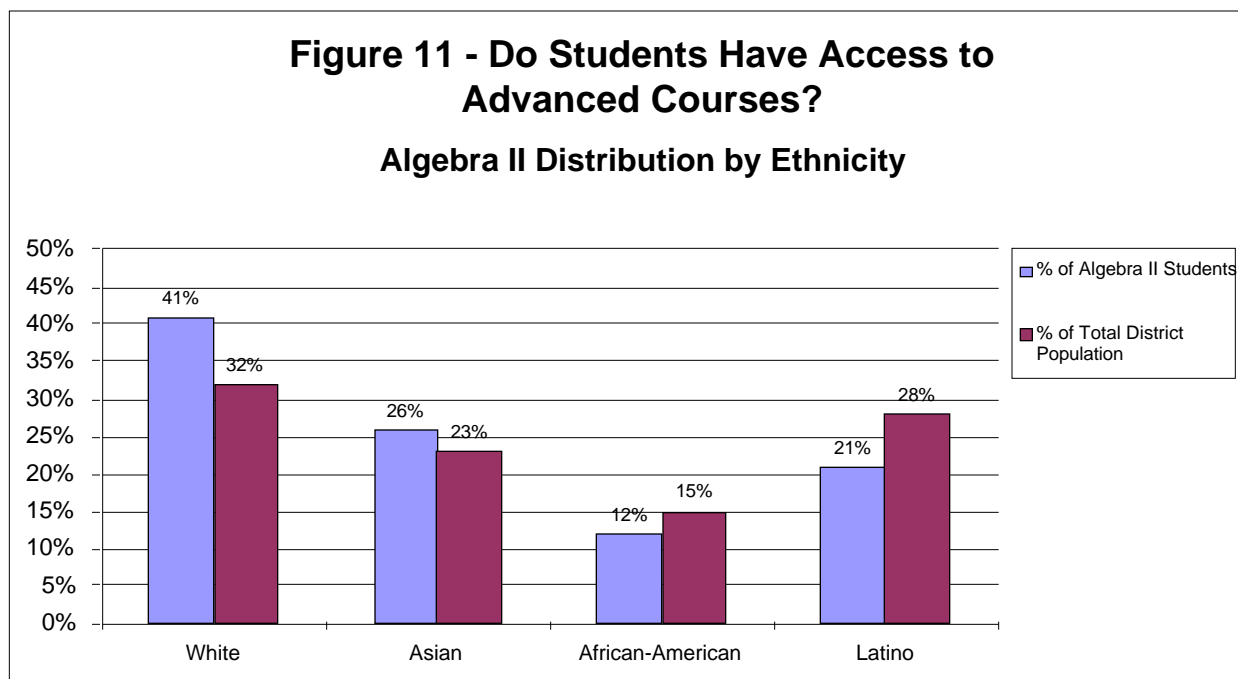
Lower testing rates mean less experience with standardized tests which, in turn, contributes to lower standardized test performance. More importantly perhaps, by not taking the SAT, students in high poverty schools miss an important requirement for four-year college entrance.

### ***Algebra II***

Algebra II is a foundational class for higher mathematics courses as well as science courses such as Biology, Chemistry and Physics. Students who miss this course lack the prerequisites for more advanced courses, which in turn limits their options for college.

**E) Despite its importance, many students do not take Algebra II. In particular, Latino and African American students are less likely to complete Algebra II than their white or Asian peers.** Only 19% of Latino high school students and only 11% of African American high school students in the District take Algebra II. By contrast, 25% of Asian and 36% of white students take this “gate keeping” course.

The lower total completion rates for African American and Latino students for Algebra II are reflected in the fact that they are relatively underrepresented in Algebra II courses. (See Figure 11).



Source: *CBEDS, 1997*

Relative to their numbers in the total school population, Latinos and African Americans are underrepresented in Algebra II courses. There are 7% fewer Latinos enrolled in Algebra II than one would expect given the number of Latinos in the schools. There are 3% fewer African Americans enrolled in Algebra II than one would expect given the number of African Americans in the schools. On the other hand, whites are over represented in Algebra II classes by 9% and Asians by 3%.

**F) The likelihood of being enrolled in Algebra II is influenced by both socioeconomic circumstances and ethnicity.** Whites are overrepresented in Algebra II classes in all schools, from poor to wealthy, at about a 7% rate. The Algebra enrollment pattern for Asians is more varied. Asians in low poverty schools are enrolled at a rate that equals their percentage in the school population (32%-32%), while they are underrepresented in high poverty schools by 3% (18%-21%). African Americans are underrepresented in the entire range of schools, from rich to poor, by approximately 4%. Latinos are more underrepresented in high poverty schools (by 7%) than in low poverty schools (where they are underrepresented by approximately 4%.) (See Figure 12).

**Figure 12 – Comparing Enrollment in Algebra II by Ethnicity Between Low-Poverty and High Poverty High Schools**

	White		Asian		African-American		Latino	
	% Total	%A-II	% Total	%A-II	% Total	%A-II	% Total	%A-II
First Quartile (Lowest Poverty)	47%	53%	32%	32%	7%	4%	14%	10%
Second Quartile	47%	54%	13%	15%	11%	9%	28%	20%
Third Quartile	22%	25%	30%	35%	18%	16%	29%	22%
Fourth Quartile (Highest Poverty)	11%	17%	18%	21%	26%	24%	44%	37%

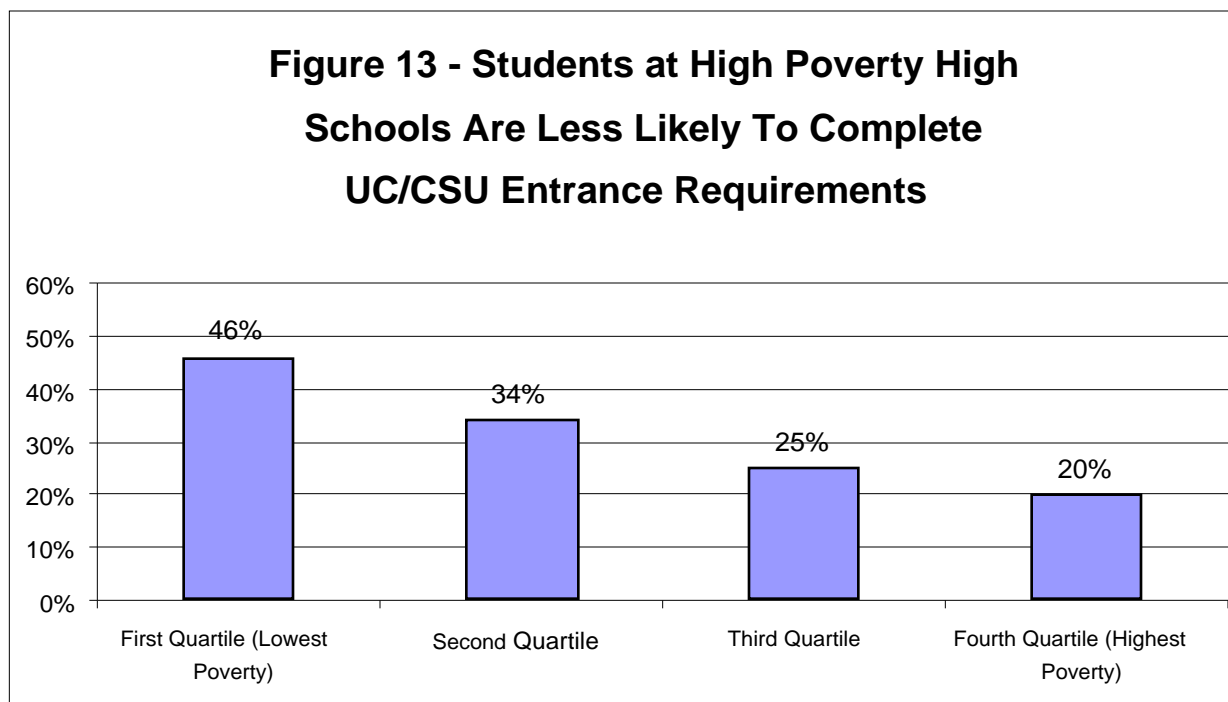
Source: 1997 CBEDS

While this pattern of underrepresentation in Algebra II is consistent, the degrees to which certain groups are underrepresented are relatively

minor in some cases. This fact suggests the importance of future research to build a time series that examines how student enrollment patterns by ethnicity and income level vary over time.

### ***College Entrance Requirements***

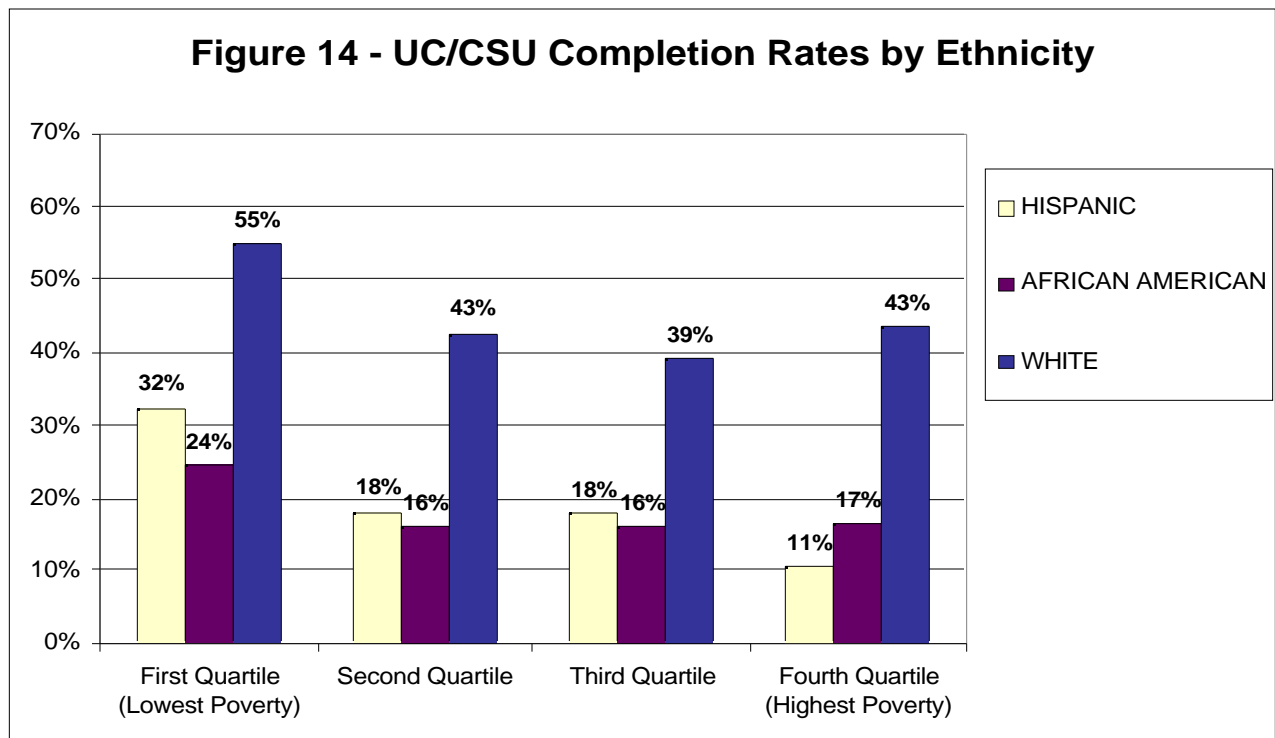
**G) Poor students are less likely to satisfy the entrance requirements necessary to attend universities in the UC and CSU systems.** Whereas only one student in 5 (20%) completes UC/CSU requirements in high poverty schools, nearly half (46%) finish them in low poverty schools. (See Figure 13).



Source: *CBEDS, 1997*

**H) There is substantial variation in the rates with which students from the same ethnic group complete the UC/CSU entrance**

**requirements at different high schools.** As Figure 14 shows, 24% of African-American graduates at low-poverty high schools complete the sequence of required UC/CSU courses, while 17% of African-American graduates complete the sequence at high-poverty high schools. The pattern is even more pronounced for Hispanic students. Hispanic high school graduates from low-poverty high schools are nearly three times more likely to complete the UC/CSU course requirements than their counterparts in high-poverty high schools. These data suggest that school’s “culture of achievement” can play an important role in determining student motivation and performance.



Source: *California Public School Profiles, 1998*

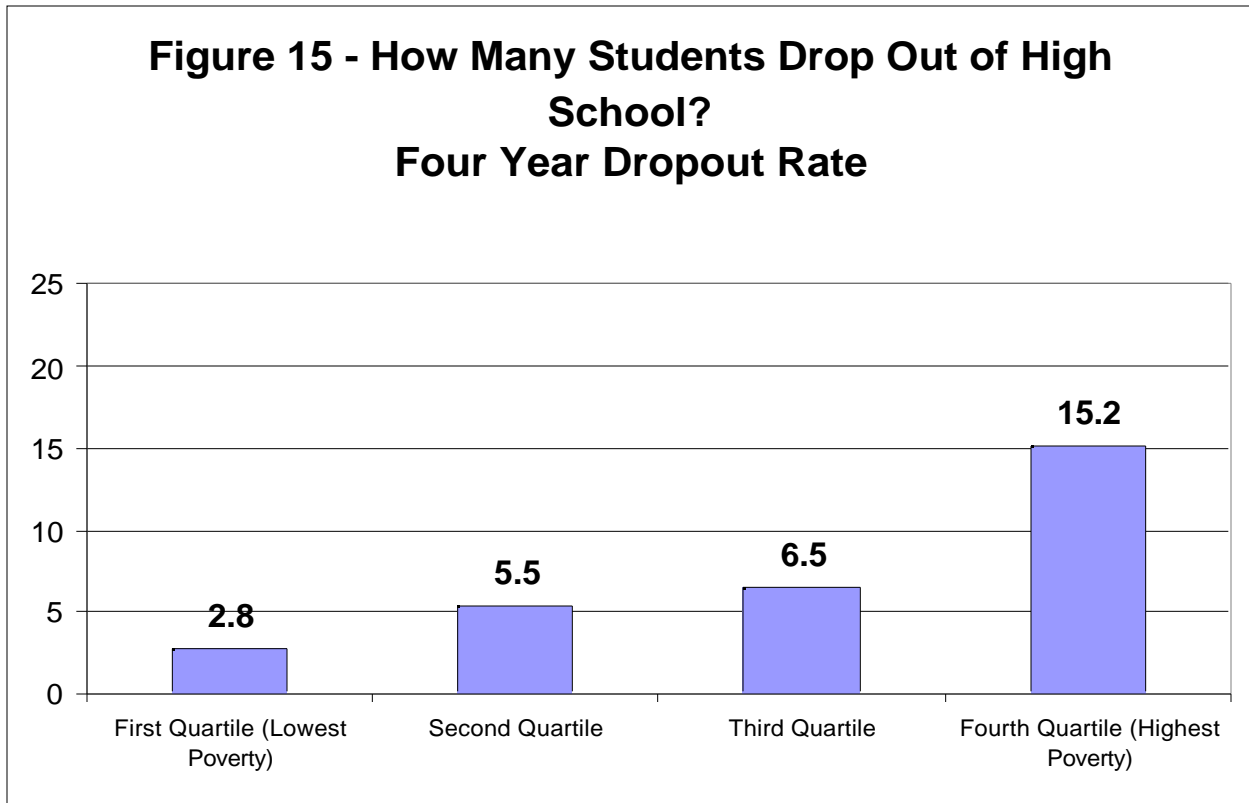
These findings, which suggest ethnic and linguistic minority students achieve better in high performing schools, are consistent with recently

reported findings from national studies at the postsecondary level. For example, Bowen and Bok (1997) found that affirmative action students who attended 25 elite colleges and universities accumulated better academic records than students who attended less demanding schools.

### *Dropping Out*

**I) Over 15 percent of students in high-poverty high schools will drop out over the course of four years, while less than 3 percent will do so in low-poverty high schools.** (See Figure 15.)

The rate at which students drop out of school varies substantially between schools of different income levels. This fact is demonstrated by four-year dropout rates for the District's high schools. This measure shows the number of students who dropped out over the previous four years per 100 students at a given school.



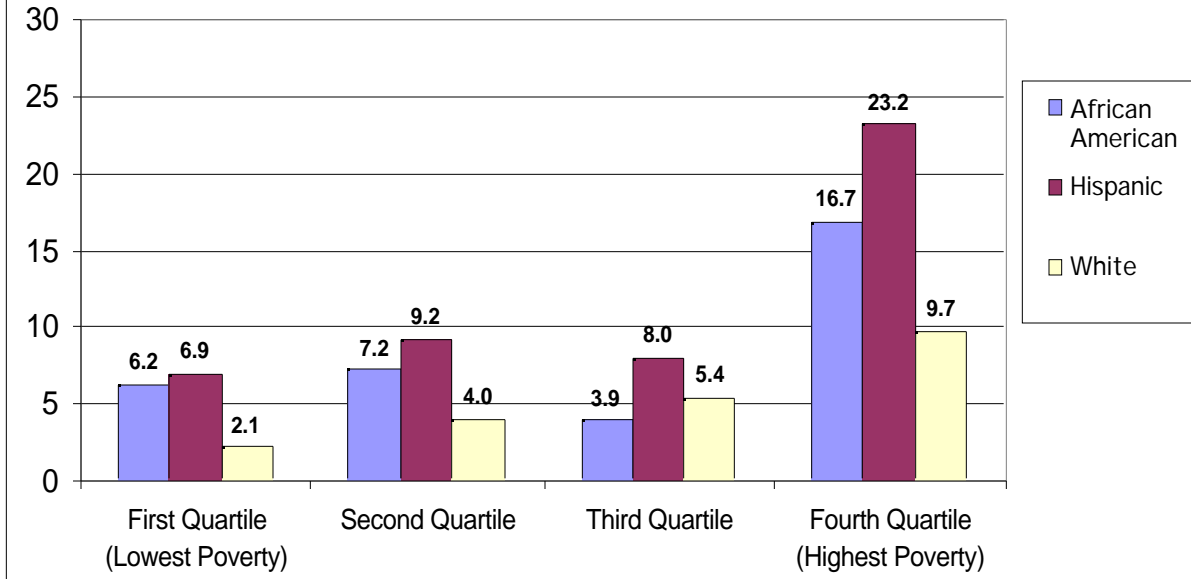
Source: *Executive Profile, Office of Research and Reporting, San Diego Unified, 1997*

**J) There is substantial variation by ethnicity for dropout rates within the same school.** While the four-year dropout rates for the District’s high-poverty schools are substantial in aggregate, the rate at which students from different ethnic groups within those schools drop out is even more significant. In the District’s highest-poverty high schools nearly 17 percent of African-American students and over 23 percent of Hispanic students will drop out over a four-year time period. (See Figure 16).<sup>2</sup>

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<sup>2</sup> It is worth noting that significant resources are expended by the school district to “find” students who drop out – in other words, to see whether they appear in another K-12 school system, in adult education or in alternative educational environments. Students who are “found” do not appear in this data.

**Figure 16 - How Do Dropout Rates Vary by Ethnicity Within the District's High Schools?**



Source: *Executive Profile, Office of Research and Reporting, San Diego Unified, 1997*

***Advanced Placement and International Baccalaureate***

Participation in Advanced Placement (AP) and International Baccalaureate (IB) Courses provides an additional point of comparison for the performance of high-performing students at the District's high schools. AP/IB classes are designed to offer rigorous, college-level curricula to students, who have the opportunity to earn college credit by passing a standardized test for the course at the end of the academic year.

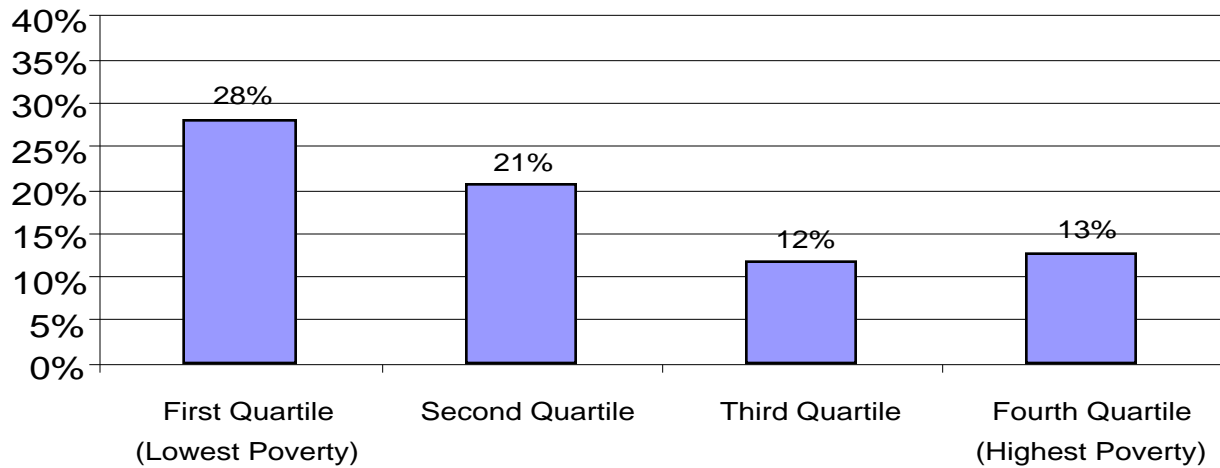
**J) Low-poverty high schools have nearly twice as many enrollments in AP/IB courses than high-poverty high schools.**

By examining the total number of course “enrollments” per school in comparison to the total school enrollment, an estimate can be made of the degree to which students at the school participate in this advanced curriculum. Student participation in AP and IB courses varies by income level between the District’s high schools. (See Figure 17). Note that an individual student can take more than one AP/IB course during a given semester.

**K) More than 90% of enrolled students in low-poverty high schools elect to take their respective AP/IB tests at the end of academic year. By contrast, just over half of AP/IB students in high-poverty high schools attempt the tests.**

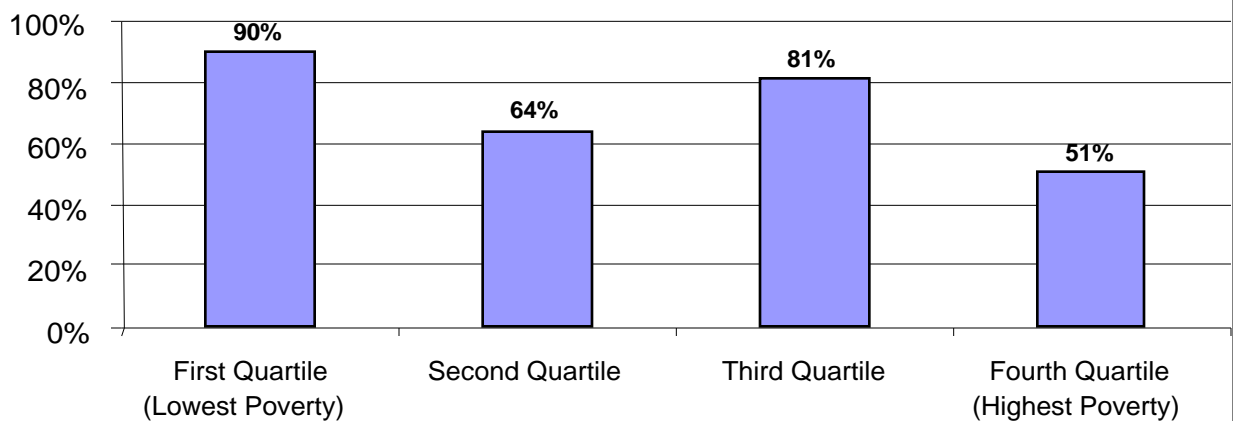
There is also substantial variation in the percentage of students enrolled in AP/IB courses who elect to take the optional standardized test at the end of academic year. (See Figure 18). Tests are given by subject area for each AP/IB class. However, like the SAT these tests are administered by an independent testing service and a fee is charged for each test attempted.

**Figure 17 - Do Significant Numbers of Students  
Take AP/IB Classes?**



NOTE: This Indicator Measures the Number of "Enrollments" in AP/IB Courses as a Percentage of Total School Enrollment.

**Figure 18 - Do Students Enrolled in AP/IB Courses  
Attempt the AP/IB Tests?**

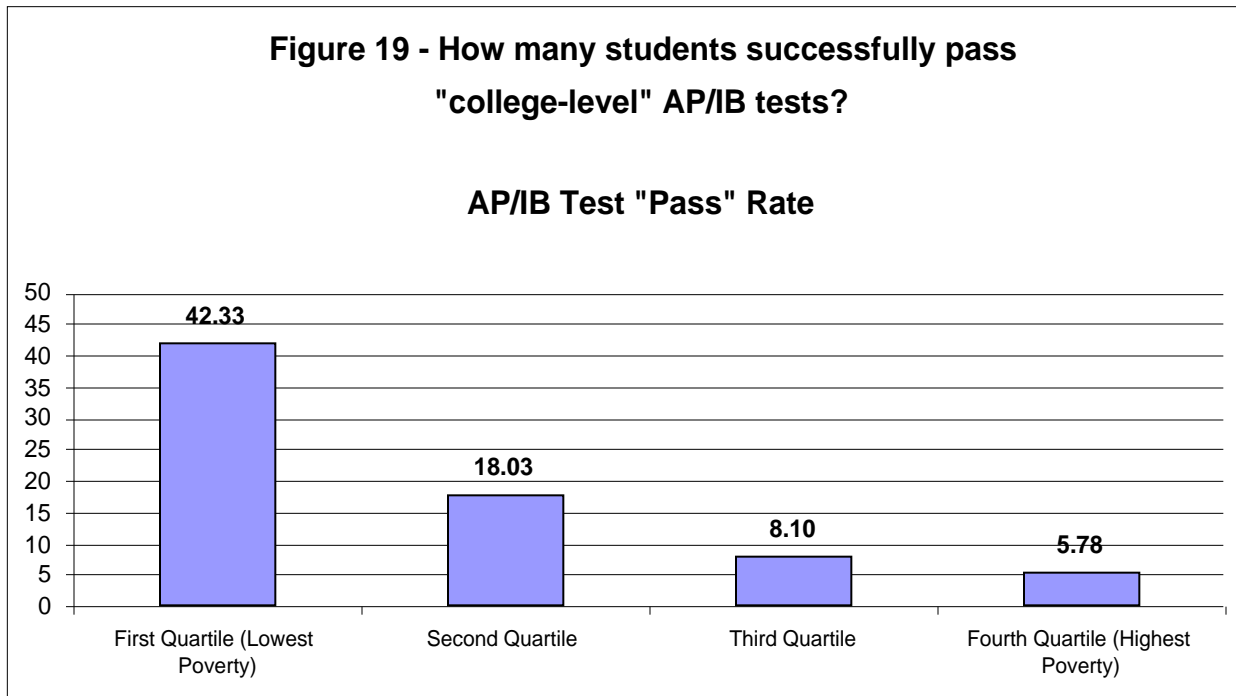


SOURCE: "1997-1998 ADVANCED PLACEMENT," SAN DIEGO UNIFIED

Despite the fact that a lower percentage of enrolled students in low-income schools attempt the AP/IB tests, those students who do elect to take the exams still score lower, on average, than their counterparts from more affluent schools. Only 27% of the exams from the District's four highest-poverty comprehensive high schools received a qualifying score in 1998. In the same year nearly 60 percent of AP/IB exams from students enrolled in the District's four lowest-poverty comprehensive high schools received a qualifying score.

**M) Lower-income high schools have a substantially lower AP/IB “pass” rate than higher-income high schools.** (See Figure 19).

The combination of these factors (fewer students taking AP/IB courses, fewer students attempting the tests and fewer students passing the exams) results in the varying levels of AP/IB “pass rates” among the District's high schools. This measure reports the total number of qualifying AP/IB exams per 100 juniors and seniors at the school.



SOURCE: "1997-1998 ADVANCED PLACEMENT," SAN DIEGO UNIFIED

## V. Policy Implications

Low student performance and the achievement gap impact the lives of children and families in low-income communities and overall regional prosperity. If the traditional American belief that education can provide opportunities for social mobility is to hold true for San Diego, the achievement gap must be narrowed. Recent research has demonstrated that San Diego has much more substantial rates of poverty than it tends to recognize. In particular, nearly 30% of the region's children live below the poverty line. [Marcelli and Joassart, 1998]. Educational attainment can be a pathway out of poverty in San Diego, provided that public school systems

offer equal opportunities for learning to all of their students. Our data, unfortunately, suggests that students in San Diego Unified from low-income and linguistic- and ethnic-minority backgrounds are not succeeding in public education at anywhere near the same rates as their peers.

These educational inequalities are also critical because students from these backgrounds will compose an increasing percentage of San Diego's population in the coming decades (Arnaiz, et al., 1995). Simultaneously, jobs that require analytic skills, problem solving, and higher education are expected to increase in number both nationally and regionally (Commission on the Skills of the American Workforce, 1990). The undereducation of significant segments of San Diego's population is particularly serious given the region's economic development strategy, which focuses on high technology, high value-added industrial clusters. To help these companies and their employees prosper, San Diego must provide students with the highest quality education.

Raising student achievement and closing the achievement gap are objectives that are predicated on accurate data. In order to reach these objectives, we need to reach a regional consensus on what it means to "achieve" and how we propose to measure it. Educators and the public need to grapple with inconsistencies that exist within the data on student achievement, such as the gap between high and low poverty schools in students' performance on the Stanford 9 and the levels of awarded grades. Are we willing to accept lower academic performance from students just because they live in low-income neighborhoods? Despite the socioeconomic circumstances present in our public schools, do we want our students to perform only at or significantly above national averages? And are we confident

that teachers are applying the same expectations, and awarding grades on basically the same scale, at all of our schools?

In order to answer these and similar questions, school systems in the region need to construct and use data systems that are flexible, consistent and transparent. Such systems should be tied to, and in fact should drive, an accountability system in which performance standards, curricula and assessments are aligned and applied consistently throughout the public schools. In addition, data systems need to be created that can help schools to measure their performance and realize their potential. Such systems must draw data from throughout California's public schools in order to provide local educators and the public with a variety of examples of similar schools that face the same socioeconomic conditions and educational challenges. By comparing student performance in schools with similar characteristics, educators can better understand the possibility resident within their own schools. Such systems can help to turn the achievement gap into an "opportunity gap" in which communities begin to conceptualize just how high their schools can potentially climb.

Data systems that measure student performance against a standard criterion are preferable to data systems that plot students' scores against a norm. Criterion-referenced systems enable schools to measure their improvement from year to year, rather than just placing them in a rank ordering of schools. They can also better reflect demographic factors such as poverty, transience, limited English proficiency and other variables that can depress student achievement. This richer, more complete picture would, for instance, allow better analysis of why low-income students achieve at one campus while similar students fail at another campus in the same neighborhood.

Research on effective school systems has shown that success in having all students meet high standards is likely to require dramatic, system-altering changes in instructional practices, professional development, and personnel policies. For example, students who come to school unprepared to meet a district's high academic standards will typically require additional academic and social supports. Enriching instructional time during the school day and extending instruction to after-school and during the summer are examples of supports that can assist previously unprepared students meet high academic standards (Mehan, et al, 1996).

Research has demonstrated that developing the professional capacity of teachers is highly productive for schools working to meet high academic standards (Darling-Hammond, 1998; Elmore & Burney, 1997a, 1997b; Greenwald et al 1996; Haycock, 1997; The Education Trust, 1998). Urban school systems that have made substantial progress in closing the achievement gap have modified their personnel policies to ensure that low-income schools have the highest quality teachers. When these human resource changes are linked to an effective system of ongoing data collection and analysis, substantial progress can be made in raising student achievement.

Dramatic, system-altering changes, as opposed to incremental steps, are challenging and difficult to achieve. However, given the evidence from regions around the country where data- and standards-based strategies (often driven by collaborations among educators, parents, businessmen and universities) are closing the achievement gap, such reforms seem to be more than worth their cost and effort.

## **VI. Future Research: What More Needs To Be Done**

We have illuminated some of the important challenges facing the San Diego City Schools. Further questions about school quality in San Diego remain to be answered, however. First, the study of resource allocation and the achievement gap in San Diego needs to be deepened, to include primary and middle schools, and widened, to include all school districts in the region.

Moreover, detailed answers to questions about school quality will require a closer examination of the educational policies, practices, and "cultures" of the schools. For example, we found one or two high poverty schools that had attracted more experienced teachers and had relatively good academic performance. Clearly something important is happening at these schools which cannot be discerned from demographic information, school, and student characteristics. Researchers need to make ethnographic observations and conduct interviews with educators and parents at these schools in order to determine the practices and procedures that enable these schools to break the mold.

Access to educational opportunities needs to be examined in greater detail as well--for example, the quantity and the quality of college preparatory classes. Do the schools serving poor populations offer all the courses needed for students to meet college entrance requirements such as AP courses?

Counseling is yet another important area of inquiry. High school counselors have strong discretionary power for assigning students to

classes. We need to know if counselors in high poverty schools direct students towards or away from college preparatory courses.

Finally, high schools do not operate independently of colleges and universities. Curriculum and instruction in the K-12 sector are influenced by guidelines established by the University of California (for example, the "a-f requirements"). Formal articulation agreements between high schools and universities have been written. However, the expectations that college professors have for students' course preparation has seldom been articulated with the expectations that high school teachers have for their courses and students. Investigations of the ways in which high school and college courses can be more closely aligned will contribute to students' academic achievement and closing the achievement gap.

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## ABOUT THE AUTHORS

**Dr. Hugh Mehan** is Professor of Sociology at the University of California, San Diego and Coordinator of the University's Teacher Education Program. He is also Associate Director of the Center for Research in Educational Equity, Assessment and Teaching Excellence (CREATE) at UCSD. Dr. Mehan is the author of multiple books and articles on enhancing student performance in K-12 education, including *Constructing School Success: The Consequences of Placing Low Achieving Students in High-Track Classes* (Cambridge University Press, 1996).

**Scott Grimes** is Director of Research and Program Development at San Diego Dialogue, a regional public policy center based at the University of California, San Diego. The Dialogue focuses on major issues affecting the future of San Diego and the San Diego-Tijuana region.