DOCUMENT RESUME

ED 474 880 UD 035 591

AUTHOR Huggins, Elise M.; Celio, Mary Beth

TITLE Closing the Achievement Gap in Washington State: Holding Schools Accountable for Equity.

INSTITUTION Washington Univ., Seattle. Center on Reinventing Public Education.

PUB DATE 2002-11-05

NOTE 95p.; Produced with Washington State Academic Achievement and Accountability Commission. Supported by Washington Mutual Foundation.

AVAILABLE FROM Center on Reinventing Public Education, Daniel J. Evans School of Public Affairs, University of Washington, Box 353060, Rm. 109K, Parrington Hall, Seattle, WA 98195-3060. Tel: 206-685.2214; Fax: 206-221-7402; e-mail: crpe@u.washington.edu; Web site: http://www.crpe.org.

PUB TYPE Reports - Descriptive (141)

EDRS PRICE EDRS Price MF01/PC04 Plus Postage.

DESCRIPTORS *Academic Achievement; Access to Education; *Accountability; American Indians; Asian American Students; Black Students; Diversity (Student); Educational Finance; Educational Policy; Elementary Secondary Education; *Equal Education; *Low Achievement; Mathematics Achievement; Poverty; Racial Bias; Reading Achievement; Teacher Competencies

IDENTIFIERS *Achievement Gap; Washington; Washington Assessment of Student Learning

ABSTRACT

This report examines data from the Washington Assessment of Student Learning (WASL), focusing on the achievement gap in Washington state public schools. It uses scale scores rather than simply "percentage meeting standard"; analyzes data on both individual and building levels; and displays data in many different ways designed to clarify the nature and direction of achievement gaps and relationship to known demographic characteristics of students and schools. All 4th, 7th, and 10th grade students tested in reading and mathematics between 1998-2001 were included in the study. The topics include the following:(1) "Introduction"; (2) "The Achievement Gap in Washington State" (e.g., differences in distributions and indications of change); (3) "Explaining the Achievement Gap" (home, school, and societal factors); (4) "Strategies for Closing the Achievement Gap" (e.g.; invest in capacity, target low-performing students and schools, expand access to preschool, and fund schools equitably); and (5) "Holding Schools Accountable for Equity: Implications for Policy" (e.g., measure improvement and growth over time, measure gaps in achievement as well as overall achievement, and help educators improve instruction). Four appendixes include overview of WASL scores, indicators of significant change, distribution of students across schools, and building-level achievement gaps. (Contains 75 references.) (SM)

Closing the Achievement Gap in Washington State: Holding Schools Accountable for Equity

Elise M. Huggins
with
Mary Beth Celio

November 5, 2002

This paper was prepared for the Center on Reinventing Public Education at the University of Washington and the Washington State Academic Achievement and Accountability Commission. The opinions expressed are those of the author and do not necessarily reflect the views of these institutional partners.

TABLE OF CONTENTS

Acknowledgements

The author would like to thank several people for their important contributions to this project. Eric Rofes, Elisabeth Woody, Robin Lake, Paul Hill, Jacob Adams and Mary Beth Celio all provided immeasurable feedback, assistance, advice, and consultation on this paper. Their generous offering of time and insights enhanced this paper. The author, however, accepts full responsibility for the content of this paper and any errors contained within it.

EXECUTIVE SUMMARY

The movement to reform education through standards and accountability has the potential to close the achievement gap, but it must be accompanied by a commitment at the state, district and school levels to provide all students with equal access to the opportunity to learn. To close the achievement gap the state must not only hold schools accountable for student outcomes, but for the equitable distribution of requisite resources as well.

The Achievement Gap in Washington State

This report attempts to take a fresh look at the data from the Washington Assessment of Student Learning (WASL) in order to provide practical information for both educators and policy makers.

Specifically, this analysis differs from most previous studies in that it uses scale scores rather than simply "percentage meeting standard;" analyzes data on both individual and building levels, since research has indicated that different groups of students perform quite differently in different educational settings; and displays the data in a number of different ways designed to clarify the nature and direction of the gaps that exist and their relationship to known demographic characteristics of students and their schools.

Most reports of WASL scores only identify what proportion of students meet a standard. They do not distinguish students who are just below the standard from those far below it. Scale scores tell us, for students who did not meet the standard, whether they are close to or far from attaining it.

All 4th, 7th and 10th grade students tested in reading and mathematics between 1998 and 2001 were included in this study of the achievement gap in Washington State public schools. The most significant findings of this study include the following:

- The scores of white and Asian/Pacific Islander students are very similar across grades and subjects, while the scores of American Indian/Alaska Native, African American and Hispanic students follow a similar pattern. There are, in effect, two groups of students in the public schools: white/Asian and nonwhite (American Indian/Alaska Native, African American, and Hispanic.)
- The achievement gap between nonwhite and white/Asian students in Washington's public schools is significant. The difference in scale points on the WASL ranges on average from 24 to 38 points in mathematics and from 12 to 19 points in reading. These are considered medium to large gaps.
- The distribution of scale scores in mathematics and reading indicate that nonwhite students peak at a lower point on the scale; in other words, a disproportionate number earn scores in the lower ranges of the scale.
- Nonwhite scores have increased somewhat more than white/Asian scores since the beginning of testing, but these increases are about half of what would be

necessary to close the gap in the next five years, and only then if white/Asian scores increased at a much slower rate. In fact, it would be necessary for the average scale scores of American Indian/Alaska Native, African American and Hispanic students to increase from 80-109% of a standard deviation to close the gap by 2007. This is a formidable task.

- Students are not evenly distributed across school types in Washington State. Nonwhite students tend to be educated disproportionately in either high poverty rural or small town settings or in high poverty big or midsize city areas. Over 75% of students in Washington public schools are white and most schools in the state are predominantly white, but nonwhite students are more likely than white students to attend either majority nonwhite or mixed race schools. In general, the achievement gaps are more pronounced in these majority nonwhite or mixed race schools. However, there is no clear pattern of cause-and-effect in building type or locale. Additional individual and building-level data are necessary to assess the contribution of various student and school factors to achievement and the achievement gap in Washington.
- Seventh grade test scores in both mathematics and reading evidence anomalies that might have more to do with the test itself than with the students taking it. The pattern of achievement within both white/Asian and nonwhite students is different from (in some cases, radically different from) what would be expected given performance at both the 4^{th} and 10^{th} grade levels. These anomalies should be studied by testing experts to assess the source and effect of these differences.

Explaining the Achievement Gap: A Combination of Factors

A critical review of the national research literature reveals there is no simple explanation for the achievement gap; rather, a complex combination of home, school, and societal factors contribute to the gap.

Home Factors

Family financial attainment can explain some but not the entire achievement gap. More work is required to fully understand the influence of family income on student performance and disentangle the many associated factors. While not the definitive explanation of the achievement gap, the role of poverty should nonetheless not be dismissed.

School Factors

The level and allocation of educational resources impacts student performance, particularly for low-income students and students of color. There are vast inequities in the distribution of educational resources, which result in disparities in student performance.

Funding

Despite efforts since the 1960's to address the financial inequalities inherent in school funding systems by making them less dependent on local wealth, school districts continue to be funded at different rates. Districts with the highest enrollments of low-income students and students of color have less money to spend per student than districts with the lowest enrollments of these student populations. Inequitable patterns of school funding exist both *across* districts and *within* districts.

Teacher Talent

Student achievement is directly affected by the quality of students' classroom teachers. Regardless of initial achievement level, students taught by experienced teachers perform better than those taught by inexperienced teachers. According to research in Tennessee, on average, the least effective teachers produce gains of about 14 percentile points among low-achieving students during a school year whereas the most effective teachers post gains among low-achieving students that average 53 percentile points. The effects of teachers, whether they hinder or promote achievement, are also long-lived and can be measured in subsequent student achievement scores.

The research on the distribution of teachers indicates the following:

- Low-income students and students of color are more likely to be taught by inexperienced, under-trained, and out-of-field teachers. For example,
    - Twenty-two percent of teachers at low-income schools in California are not fully certified compared to 2% at high-income schools.
    - Thirty-three percent of teachers in California hold a Bachelor's degree or less at low-income schools in contrast to the only 9% of teachers at high-income schools.
    - Nationally, almost a third of social studies teachers in high-poverty schools, as opposed to 16% in low-poverty schools, do not have a major or a minor in social studies or a related discipline.
- Inequities in access to experienced and highly trained teachers among disadvantaged students exist *within* districts. Within a given district, schools with particularly disadvantaged students are likely to have less-educated and less-experienced teachers.
- Patterns of unequal access to quality teachers appear *within* schools. Low-income and minority students, when attending affluent schools, also have less access to the best teachers.
- Schools that report difficulty attracting teachers, such as those found in rural and urban areas, are nearly twice as likely to have higher than average rates of teacher turnover. Teachers in schools with minority enrollments of 50% or more migrate at twice the rate of teachers in schools with relatively few minority students.

Academic Rigor

Academic achievement is directly related to challenging coursework. The number of rigorous courses a student takes has a positive effect on learning as measured by test scores. Nonetheless, schools fail to ensure all students, including students of color, English Language Learners (ELL) and low-income students, equal access to rigorous curricula.

Schools that serve low-income students and students of color are, on the whole, academically less rigorous. Nationally, about one-third of high schools do not offer any advanced courses in science and another 28% offer advanced work only in one science subject, most commonly biology.

Even at schools with extensive advanced course offerings, students of color and low-income students are disproportionately under-represented in advanced classes. The mere presence of advanced courses does not guarantee that all students have access to a rigorous academic curriculum. Low-income students and students of color are not afforded access to the educational resources required for success.

Societal Factors

Prejudice and discrimination operate at all levels of our system of public education and have long been significant sources of educational difference among racial and ethnic groups in the United States. Centuries of discrimination have left a "residue of belief" that low-income students and students of color cannot succeed to high levels. Teachers' perceptions, expectations, and behaviors interact with students' beliefs, behaviors, and work habits in ways that help perpetuate the achievement gap.

Administrators, teachers, and students bring a host of ideological beliefs with them to school. These beliefs inform policy, behavior, and practice and impact student academic performance.

Closing the achievement gap necessitates a focus not only on the inequitable distribution of educational resources, but also on the complex ways that prejudice and discrimination infiltrate the learning process.

Washington: Equitable Access to Learning?

According to the limited data and research available, low-income students and students of color in Washington State do not have equal access to the opportunity to learn. The educational resources required for success are not equally distributed.

- Districts with the highest child poverty rates and largest percentages of students of color have fewer state and local dollars to spend per student compared with districts with the lowest poverty rates and percentages of students of color.
- Low-income and minority students in Washington do not have equal access to well-prepared and qualified teachers. Thirty-two percent of classes in secondary schools with high percentages of low-income students are taught by teachers lacking a major in their field compared to 23% in schools with low percentages of

low-income students. In schools with high percentages of students of color, 28% of classes are taught by teachers without a major in their field compared to 24% in schools with low percentages of students of color.

- Not all Washington students have equal access[1] to challenging coursework and effective instructional practices. Only 15% of African Americans, 15% of Native Americans, and 13% of Hispanics completed 8th grade algebra, a class that often functions as a gatekeeper to more advanced coursework. In contrast, 28% of white students and 31% of Asian/Pacific Islander students completed 8th grade algebra.

Closing the Achievement Gap

The achievement gap can be closed, but not with quick fixes. Closing the gap is a complex task that requires multiple, simultaneous, coherent, and long-term efforts that target school and societal issues. Responsibility must be shared by policymakers, educators, community leaders, parents and students. State policy should be designed with educational equity in mind from the start.

The following list identifies promising school strategies for closing the achievement gap.

1. Expand access to preschool.
2. Fund schools equitably by addressing inequities in funding between and within districts.
3. Staff low-performing schools with well-qualified and experienced teachers.
4. Ensure all students equal access to a challenging curriculum.
5. Reduce school and class sizes in low-performing schools.
6. Enhance state, district and school staff capacity for school improvement focused on equity.
7. Support research investigating the causes of and solutions to closing the achievement gap.

Holding Schools Accountable for Equity: Policy Implications

School accountability should be viewed as a reciprocal relationship; the state cannot simply demand performance from its schools and districts, but rather must provide them with the resources and freedom of action to improve instruction. The following recommendations identify key features of an equity-centered system of school accountability.

1. Produce and use data in ways that increase awareness of persistent low achievement.
2. Measure improvement and growth over time.
3. Measure gaps in achievement as well as changes in overall achievement.

[1] As argued by Finn, student course-taking reflects both "opportunities offered" by schools and "opportunities taken." The courses a school offers delimits the courses students can take and thus what students can learn. Additionally, schools can limit the learning of students by discouraging them from enrolling in certain courses. Students may also limit their own learning by not taking advantage of the courses offered.

4. Ensure that the conditions for teaching and learning are present and students have equal opportunity to master high standards.
5. Help educators improve instruction.
6. Design a system of comprehensive support and assistance for low-performing schools.
7. Ensure that assistance builds school capacity and is school-specific.

SECTION I: INTRODUCTION

The movement to reform education by raising academic standards and enhancing school accountability has resulted in an unprecedented national focus on student outcomes. This focus on outcomes has highlighted the fact that many students are performing below expectations and a disproportionate number of these students are low-income students, students of color, and English Language Learners (ELL).[2]

It is widely held that standards-based reform has the potential to enhance educational equity as defined by student performance. The accountability movement assumes that high academic standards and a challenging academic curriculum will be offered to all students. Moreover, because the performance of students is closely monitored, under-achieving students are identified early and therefore may be less likely to fall through the cracks. However, standards-based reform will not result in greater educational equity unless the vast inequities in student access to learning are addressed.

Much of the modern work around standards and accountability has been about establishing higher standards for educational achievement and improving instruments and procedures for assessment. Little attention has been given to specifications for or the actual improvement of the capabilities of schools and their staffs. For Asa Hilliard, a professor at Georgia State University, this discrepancy is worrisome. "What most of us fear is that we will be held responsible for achievement without being given the same quality of treatment on the front end. We're not afraid of standards. We're afraid of hurdles, of obstacles" These obstacles include social and institutional barriers to student success. Academic standards and school accountability are not ends in themselves. Rather, they are tools that can help educators improve student performance.

To ensure educational equity, schools must not only raise the bar, but also provide all students with the means to clear it. Standards should not be substituted for fundamental attention to the inequitable distribution of school resources and the inequitable policies and practices, which handicap some students and result in adverse student performance. This includes ensuring that school and district responses to assessments address the specific needs of students in addition to the vast inequalities in learning opportunities that characterize schooling in this country. Linda Darling-Hammond and Beverly Falk therefore argue for an expanded conception of accountability. "Genuine accountability involves supporting changes in teaching and schooling that can heighten the probability that students meet standards." As the Center on Education Policy warns, the hardest part of standards-based reform is not setting standards or developing tests. It is *translating* those standards and tests into real changes

[2] For the purpose of continuity, this report uses a combination of the racial/ethnic categories used by the Office of the Superintendent of Public Instruction in Washington State. The following categories are used in this report: American Indian/Alaska Native, African American, Hispanic, Asian/Pacific Islander, white, and English Language Learner.

in curriculum, instruction, and learning opportunities.[3] Standards-based reform must address the *institutional conditions* necessary for improved student achievement. Schools must have the *capacity* to respond to incentives for performance.

School accountability therefore should be viewed as a *reciprocal relationship*[4]; the state cannot simply demand performance from its schools and districts, but rather must provide them with the resources and freedom of action so they can improve instruction. Equity-centered accountability targets the achievement gap and marshals the resources required to close it.

Organization of this Report

This report is broken into five primary sections:

- Section I has introduced the promise of state accountability systems and the challenges facing them.
- Section II provides a comprehensive quantitative analysis of the achievement gap in Washington State.
- Section III reviews the national research literature on the achievement gap. It provides a comprehensive discussion of the home, school, and societal factors that contribute to the achievement gap.
- Section IV provides an overview of promising strategies for closing the achievement gap.
- Section V concludes with a discussion of the policy implications of this study for Washington State.

[3] Kober, Nancy. *It Takes More than Testing: Closing the Achievement Gap*, Washington DC: Center on Education Policy, 2001.

[4] Brooks, Sarah. *How States Can Hold Schools Accountable: The Strong Schools Model of Standards-Based Reform.* Washington: University of Washington's Center on Reinventing Public Education, 2000.

SECTION II: THE ACHIEVEMENT GAP IN WASHINGTON STATE

The statistical analysis presented here provides a comprehensive introduction to the study of the achievement gap in Washington State and allows for limited conclusions about where the gaps are, what may account for them in our state, and where schools, districts and the state itself may be making progress in shrinking the gap.

Researchers use a variety of strategies to display the achievement gap and measure change over time. To date, the emphasis in many states, as in Washington, has been to illustrate year-to-year changes in the percentage of students "meeting standard" in mathematics, reading, listening and writing. This report attempts to take a fresh look at the data from the Washington Assessment of Student Learning (WASL) in order to provide practical information for both educators and policy makers. Specifically, this analysis differs from most previous studies in that it:

- combines all four years of available data in looking at the differential performance of racial subgroups of students within the state;[5]

- uses scale scores[6] rather than simply "percentages meeting standard," as providing more complete information about distributions of scores within groups of students;[7]

---

[5] The four years of data used for 4th and 7th graders are for 1998, 1999, 2000 and 2001. Although testing of 4th graders actually began on a voluntary basis in 1997, a number of schools did not participate that year and data are incomplete. Tenth grade testing began in 1999, so three years of testing data are combined for 10th grade students. Year-to-year change in the test scores, though important, is notably unstable because each year those tested are a new cohort. Using four years of data dampens the variability in scores due to either internal (changing demographics) or external (a barking dog on the day of the test, etc.) effects on a given group of test takers within a school.

[6] The WASLs are criterion-referenced tests designed to measure the skills taught in Washington State at various grade levels. The goal is to assess whether students have mastered the material that should be known by students at a particular level. Each student taking a test receives a raw score that indicates the number of items the students answered on that particular test. However, because the number of items varies between tests and because versions of a test may vary in difficulty, raw scores cannot be used to make comparisons between years or between subject areas. It is necessary to convert the raw scores to a common metric so year-to-year and subject-to-subject comparisons can be made. That is the job of the "scale score," which provides a common central point and measures a student's score in standard intervals from that central point. The scale scores can be used to compare a student's achievement across subject matter and to evaluate gains over time, but they do not have much "meaning" unless compared to some standard---either a norm group (like the SAT's, where the mean is known to be 500 and the highest score 800) or to cut-off points. For the WASL, a cutoff score of 400 has been established for all tests as the "standard." Students scoring at or above 400 on any of the tests are considered to have met the standard for that subject at that grade. The single statistic that is usually reported in Washington State for the WASL is the "percentage meeting standard," a phrase that means "percentage scoring at or above 400 scale score points." The scale scores provide more, but not different, information than the "percent meeting standard." Based on "basic testing principles" by Lawrence M. Rudner, ERIC/TM, in *Understanding Achievement Tests: A Guide for School Administrators*. Washington, D.C.: American Institutes for Research, October 1989.

- analyzes data on both individual and building levels, since research has indicated that different groups of students perform quite differently in different educational settings; and

- displays the data in a number of different ways designed to clarify the nature and direction of the gaps that exist and their relationship to known demographic characteristics of students and their schools.

This report concentrates on differences in the achievement of white students and students of color: American Indian/Alaska Natives, African Americans, Asian/Pacific Islanders and Hispanics, as initial analysis revealed no consistent pattern of disparity due to gender. Due to the fact that information about individual student eligibility for free and reduced lunch is not available, the analysis of the WASL does not look at the relationship of student achievement to family income. The school-level measures of socioeconomic status that were available to the researchers include: percentage of students eligible for free and reduced lunch and percentage of children within the school's zip code who live in families below the poverty line. Given the limitations of the data, this study does not explore how low-income students score on the WASL compared to high-income students, only how students in higher poverty schools score in comparison to students in lower poverty schools. Finally, given that the data on ELL students is somewhat unreliable, this report does not analyze the gap in achievement between ELL students and non-ELL students.

This study of the achievement gap in Washington uses four different methods of displaying and analyzing the gaps that all have the promise of creating what the statistician Joseph Berkson calls *interocular traumatic impact* – hitting the reader between the eyes. These methods include:

1. **Cumulative distribution of individual student scores**, recently suggested to the Educational Testing Service for use with data from the National Assessment of Educational Progress.[8] This graphical method for presenting achievement data is

---

[7] Although there is a pleasing simplicity in using a single number to characterize a given school or group of students (i.e., percentage meeting standard), such an approach ignores the fact that scores below the "cut-off" may be distributed in vastly different ways. If most of the "below standard" scores are clustered around the cut-off point, the approach to closing the gap would be quite different than if those lower scores were found primarily at the bottom end of the test-score distribution. Richard Rothstein in the *New York Times* ("Lessons: Testing Reaches a Fork in the Road," May 22, 2002) made an impassioned plea for using scale scores in reporting criterion referenced test performance (the WASL being an example of a criterion referenced test), noting that the cut-points used to determine the standard are simply a point on the scale score distribution, not a magic number. Thus, moving the cut-off point one direction or another could make a radical difference in the percentage "meeting standards." Rothstein noted, "Criterion-referenced reporting can't detect growth except when a student passes one of only a few fixed points on a scale." Using scale scores lets us detect change over the entire range of scores.

[8] Olson, Lynn. "Testing Experts Develop New Method of Presenting Achievement Gap Data." *Education Week*, March 13, 2002. Ms. Olson was reporting on a method of graphical presentation/analysis suggested by Paul W. Holland of the Educational Testing Service. A more thorough discussion of his methods is

based on what is called the cumulative distribution function, a method of presentation often used in medical research, marketing, insurance and other fields. Such graphs display test scores across the entire range of performance and can therefore make achievement gaps visually evident where they exist.

2. **Relative distribution/density analysis for individual student scores**, a particular method of analysis and presentation recently explicated in detail by Handcock and Morris.[9] In particular, Handcock and Morris wanted to provide a full picture of the distribution of different measures, rather than simply summary measures like means, modes, or "percentage meeting standard." The method was specifically developed to show the relationship of one group to another (e.g., Hispanic students to white students) rather than to a hypothetical population as represented by the standard bell-shaped curve.

3. **Rate of change analysis for subgroups of students**, designed to measure the amount of change in test scores over the years since the WASL was introduced in Washington State, with the understanding that changes from year-to-year are likely to be highly unstable but potentially indicative of progress toward academic achievement across the spectrum of students.[10] This analysis also includes an assessment of the significance of the gaps that exist and of the progress being made to close these gaps.[11]

---

presented in Holland, Paul W. "Two Measures of Change in the Gaps between the CDFs of Test-Score Distributions." Center for Statistical Theory and Practice, Educational Testing Service, January 11, 2002.

[9] Handcock, Mark S. and Martina Morris, *Relative Distribution Methods in the Social Sciences*, New York: Springer-Verlag, 1999.

[10] Thomas J. Kane and Douglas O. Staiger, in "Improving School Accountability Measures," (National Bureau of Economic Research Working Paper 8156, March 2001), emphasized the imprecision of school-level test score means. They conducted a complex analysis of 5th grade reading scores and estimated that 28% of the variance in these scores was due to sampling variation (i.e., different students being tested each year) and about 10% due to other non-persistent sources (i.e., a dog barking outside the schools; a coughing student in the class). They thus concluded that less than half of the variance in the mean gain in reading performance between 4th and 5th grade is due to real differences in the quality of different schools. Based on their study, the authors estimate that the confidence interval for the average 5th grade reading score in a school with 60 students per grade level would extend from roughly the 25th to the 75th percentile, meaning that it would be impossible to judge with confidence whether the students in one school were actually achieving at a higher level than those in another. There are simply too many unknowns. If such volatility exists for other grade levels and for the WASL in Washington State, and there is no reason to believe it does not, then relying on a single year or year-to-year data on the school level would be risky at best, and probably misleading.

[11] Paul Holland ("How Big is Big when it Comes to Gaps in Scores?" ETS Occasional Paper, 1-23-02) and James McMillan ("Standards-Based Accountability: Measuring Yearly Progress," CEPI Briefings, 2000) both recommend the use of Cohen's effect size to judge the magnitude of effect (Jacob Cohen, *Statistical Power Analysis for the Behavioral Sciences*. New Jersey: Lawrence Erlbaum Associates, 1988). Most behavioral science journals now require the reporting of such effect scores. Cohen's recommendation is that an effect score of approximately 20% of a standard deviation be considered a small change, effect or gap, while a score at the 50% mark would be considered medium and at the 80% level would be considered large. For example, the standard deviation in scale scores for 7th grade mathematics in 2001 was 51.6 points, so a "large" gap or change would be approximately 41 points. The gap between white and nonwhite students that year in 7th grade mathematics was 38 points and the change in scores from the previous year

4. **Gap analysis at the building level**, designed to provide a visual picture of the gaps between white scores (as the reference point) and American Indian/Alaska Native, African American and Hispanic test scores on a building-by-building level. The advantages of this method of analysis and presentation of results are well documented by Cleveland.[12]

Each class level (4th, 7th and 10th) is covered within each of the concentration areas listed above. The first graphs and discussion present the cumulative distribution of the scores for five subgroups of students: American Indian/Alaska Native (AIAN), Asian/Pacific Islander, African American, Hispanic and white test scores.[13] The second set of graphs presents the density distributions: a comparison of the distribution of American Indian/Alaska Native, Asian/Pacific Islander, African American and Hispanic scores to the distribution of scores for white students. A table presents the changes in scale scores by year over the years the test was administered, compared to the growth that would be needed to close the test score gap. Finally, gaps between each of the four groups of nonwhite students and their white schoolmates were aggregated at the building level and are presented according to the locale (e.g., urban, urban fringe, town and rural), poverty level (high and low percentages of students eligible for free and reduced lunch), and racial make-up of schools (majority white, majority nonwhite, mixed.)

Differences in Distributions: The Gap Illustrated

By displaying how the scores of the entire population of students differ across the complete range of scores, cumulative distribution graphs not only display the achievement gap, but also illustrate the complexity of the relationship among the scores.[14] The achievement gap between nonwhite and white/Asian[15] students in Washington's

---

was less than 1 scale point. In other words, the gap was closer to "large" than to "medium" and the change from one year to the next was nonexistent.

[12] Cleveland, William S. *The Elements of Graphing Data*, Monterey, California: Wadsworth Advanced Books, 1985.

[13] Hispanic/Latino is not a racial designation, and many Hispanics responding to the U.S. Census Bureau question about race in Washington State list themselves as "Caucasian/White" on the census forms. However, in this context Hispanic is a self-designated category that does not overlap with white. Thus, wherever white is used as a racial category, it should be understood to mean non-Hispanic white. As a space-saving measure, the five groups are designated in the tables as AIAN (American Indian or Alaska Native), Asian/Pacific Islander, African American, Hispanic and White. There were also a number of students (averaging about 2.2% in any given year or class) who described themselves as "mixed." These students are not included in the subgroup data, but are included in the totals.

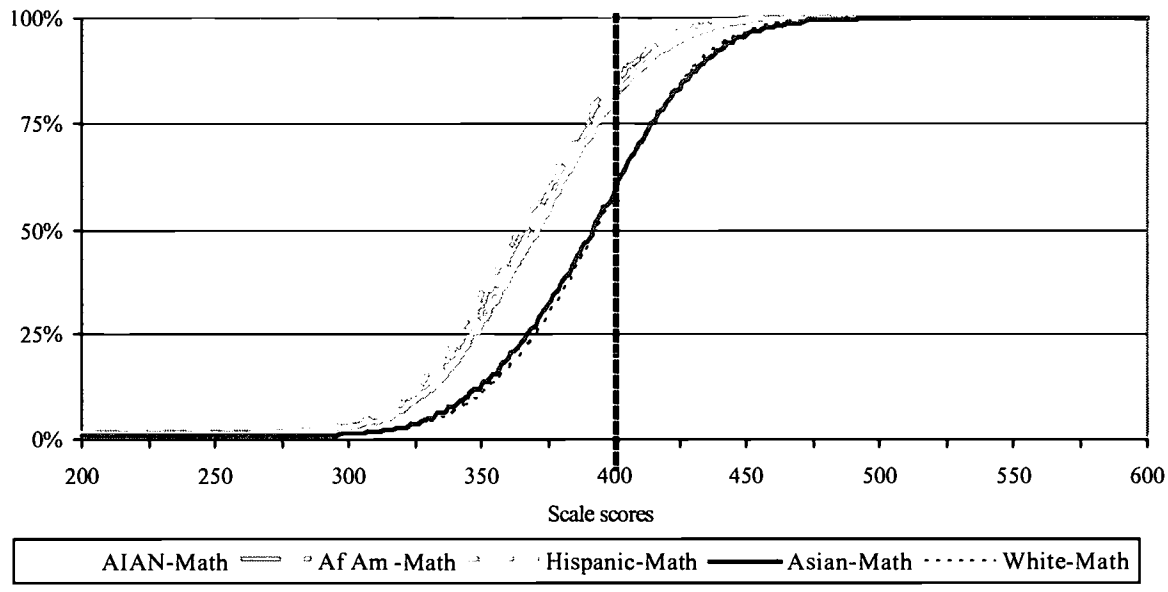
[14] The scale scores are along the bottom of the chart, with a vertical dotted line indicating that cutoff score of 400, at and beyond which students are considered to have met the standard. The left hand axis displays the cumulative percentage of students of different races at each scale point.

[15] While useful for this study, the grouping of white and Asian/Pacific Islander students comes with several risks. The elision of whites and Asians is a highly charged and currently much-debated occurrence in the fields of ethnic studies, Asian-American studies, and whiteness studies. This approach plays into the "model minority" stereotype, which has been successfully deconstructed over the last decade. Finally, unifying all Asian and Pacific Islanders under the category Asian/Pacific Islander may erase certain Southeast Asian populations that are not finding school or testing success. In some California studies, the poor scores of Southeast Asians – especially Hmong, Vietnmese, Cambodian, and Laotian students – as

public schools is significant.[16] The difference in scale points on the tests for each grade level ranges from 24 to 38 points on average in mathematics and from 12 to 19 points in reading; a gap that experts define as medium to large according to common measures used. A disproportionate number of nonwhite students fail to meet the standard for all grade levels in both mathematics and reading (Figures 1-6).

Tracing from the 50% point on the left-hand axis of each graph, it is possible to locate the scale score achieved by half or more of a given racial group. For example, in 4th grade mathematics half of the American Indian/Alaska Native, African American and Hispanic students are at or above a score of approximately 370, while half of white and Asian/Pacific Islander students are at or above a score of 392, a gap of about 22 points. Looking at the cutoff point (scale score of 400), it is possible to see what percentage of students have met the standard; they are the students to the right of that line. In 4th grade mathematics, only 20% of American Indian/Alaska Native, African American and Hispanic students met the standard compared to about 40% of white and Asian/Pacific Islander students. Conversely, over 80% of American Indian/Alaska Native, African American and Hispanic student did not meet the standard compared to 60% of white and Asian/Pacific Islander students.

Figure 1: Cumulative distribution of scale scores, 4th grade math (Combined years 1998-2001 by race)



well as Filipinos are erased by the high scores of students with roots in South Asia, Japan, China, and Korea. Local school and district leaders should be encouraged to tease out the achievement differences within this category.

[16] Appendix 1 contains detailed data tables displaying the mean scale scores for both mathematics and reading tests for the three-four year period, along with the number of students tested, the standard deviation in the scores, and the percentage of students within each subgroup who met the standard that year, by race.

Figure 2: Cumulative distribution of scale scores, 7th grade math (Combined year 1998-2001, by race)

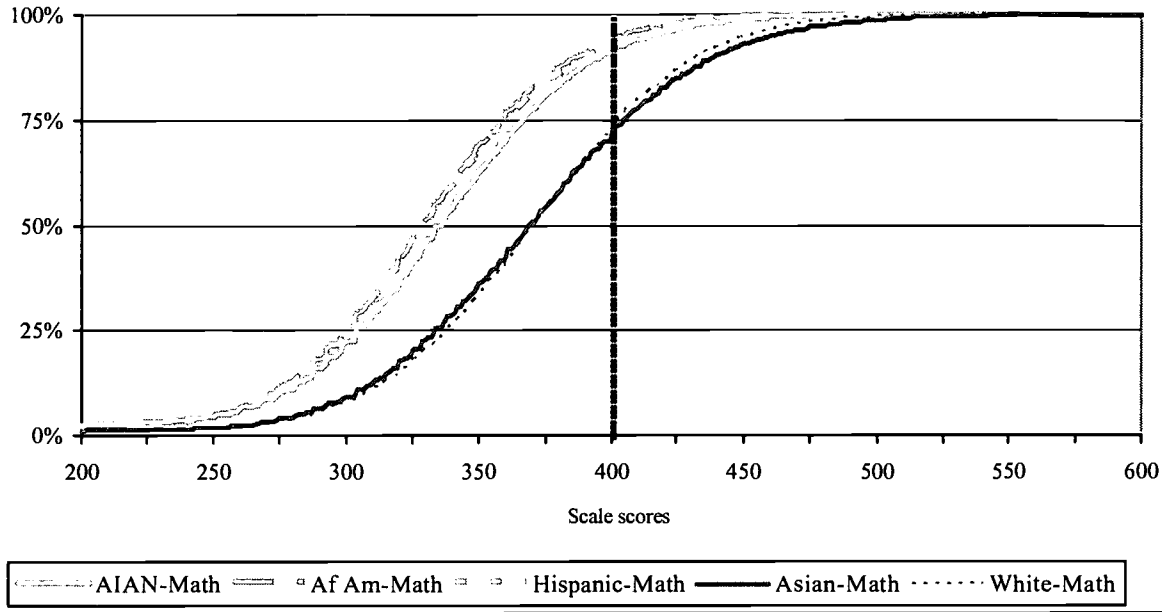
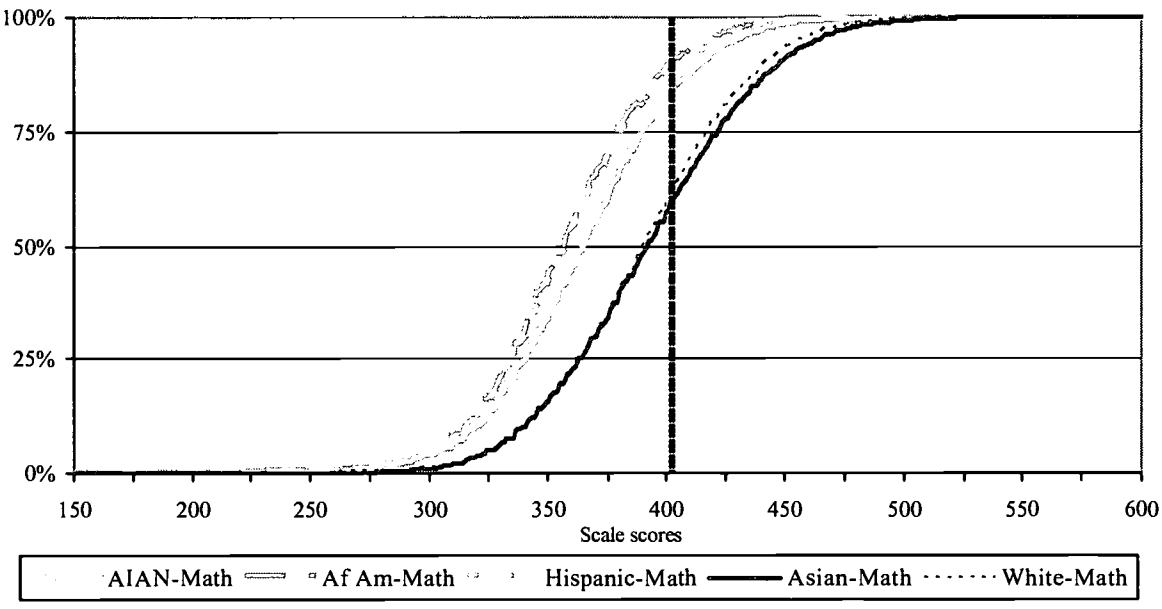


Figure 3: Cumulative distribution of scale scores, 10th grade math (Combined years 1999-2001 by race)



Mathematics

Several things should be noted about the distributions of mathematics scores:

- It is clear from all of these graphs that students are divided into two groups by their scores: the curves for white and for Asian/Pacific Islander students are virtually identical in both mathematics and reading at all grade levels, while the curves for American Indian/Alaska Native, African American and Hispanic students are highly congruent and follow a different pattern from the white/Asian scores. Again, the pattern is consistent across subjects and grades. There are, in effect, two groups of students in Washington public schools.
- In spite of the difference in the curves shown here, the two lines are part of the same distribution: there are numbers of students from both groups at the top and at the bottom of the score distribution; there is considerable overlap of scores, even though the curves are separate.
- Although a sizeable gap exists between nonwhite and white/Asian scores for all grades, the gap is larger for 7^{th} and 10^{th} graders than for 4^{th} graders. It would appear that the disparity between these two groups of students increases over time in school.
- For the 4th grade mathematics test, the two sets of lines (i.e., the African American/Latino/Native American line and the white/Asian line) rise at approximately the same slope, indicating that the distribution of nonwhite student scores is the same as that for white/Asian student scores with the exception of those in the bottom deciles of the distribution (this point is discussed at greater length in the analysis of the density distributions.) However, the distributions of the 7th and 10th grade scores of nonwhite students are visibly different. Even when the lowest scores are factored out, the slopes of the distribution lines for 7th and 10th grade nonwhite students are much steeper than the slopes for the white/Asian students. This means that a proportionally larger group of the nonwhite than white/Asian students is earning scores in the 300-350 range, considerably below the 400 "meets standard" line. Since this is not seen among 4th graders in math, this may indicate that nonwhite students begin to drop even further behind in mathematics after the 4th grade.

Reading

The gap between the two groups of students is visibly narrower in reading than in mathematics for all three grades tested. Again, there are a number of interesting points that can be made about the performance of students based on these graphs of reading scores:

- The slopes of the lines for both groups of students are almost identical for all three grades, indicating that performance of nonwhite students is very similar to, but "lagged" behind, that of white and Asian/Pacific Islander students.

Figure 4: Cumulative distribution of scale scores, 4th grade reading (Combined years 1998-2001, by race)

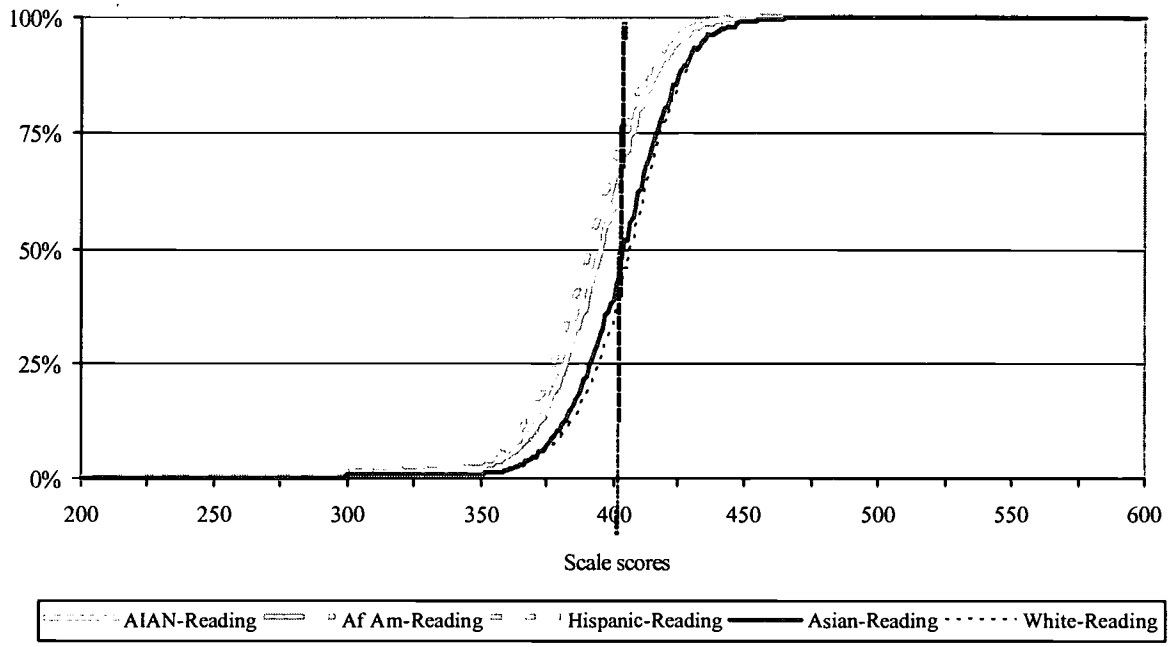


Figure 5: Cumulative distribution of scale scores, 7th grade reading (Combined years 1998-2001, by race)

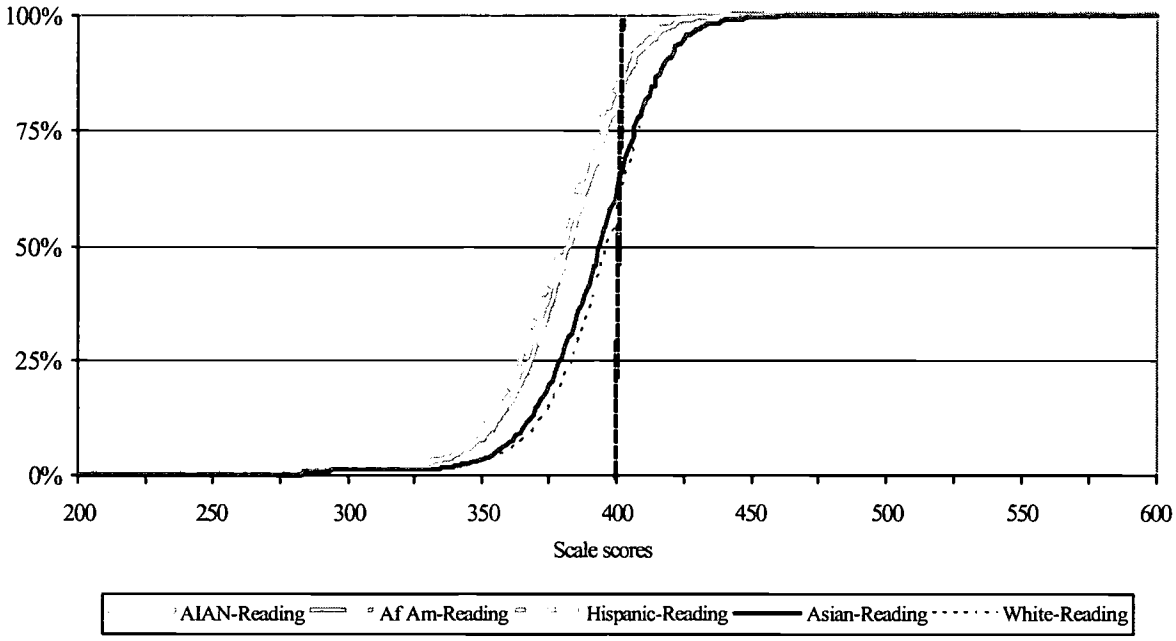
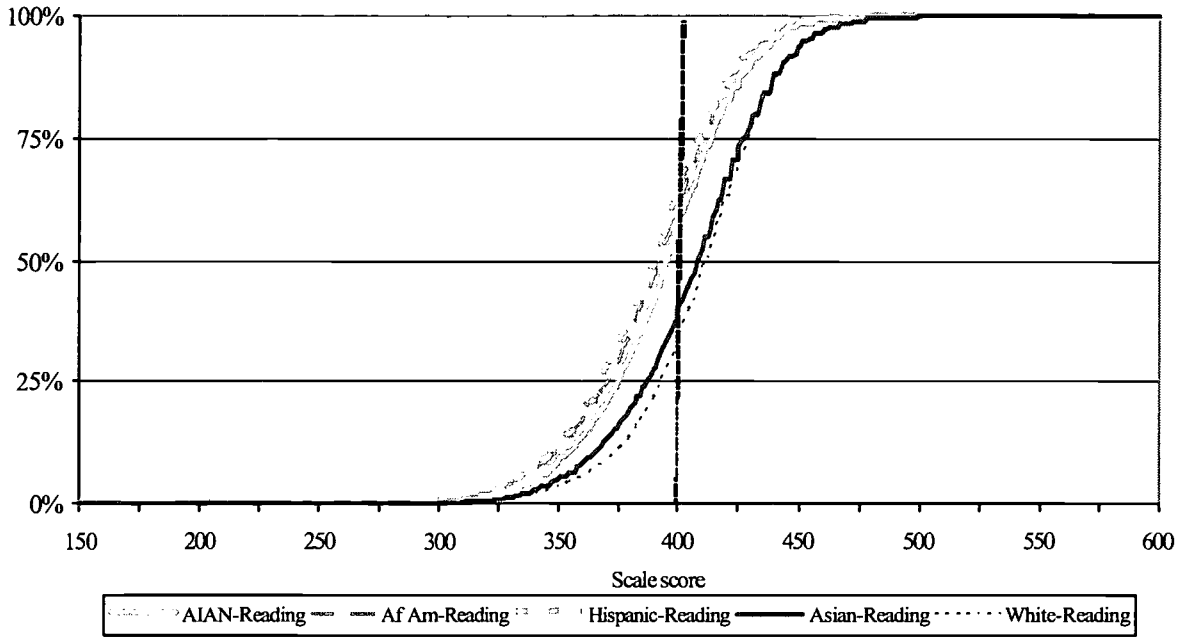


Figure 6: Cumulative distribution of scale scores, 10th grade reading (Combined years 1999-2001, by race)



- The 7th grade curve for reading, although it has a slope similar to those of the 4th and 10th grade scores, is markedly different from either of the other two years. Far fewer 7th graders than 4th or 10th graders of any race met the standard set for that grade level There is a possibility that the difference in achievement is due to problems with the 7th grade reading test. It is also possible the 10th grade scores are artificially high because of early problems with test participation in the 10th grade and loss of those 10th graders who had dropped out of school before testing. However, it is also possible that the curriculum and teaching practices used in the 7th grade and earlier are not aligned with the standards that have been set in this subject for this grade level of students. It is important that the causes for this disparity be investigated so that appropriate steps can be taken to improve 7th grade performance in reading and in math.

Much of the information presented in these graphs is already available in current reports on WASL results; what has not been as clearly illustrated in the past is how the scores are distributed leading up to the cutoff score of 400.

Figures 7 through 12 present exactly the same data in another form. Again, the scale scores are listed on the bottom, but here the graphs display the percent of all students of each group taking the test who received each of the scores. As with the earlier graphs, it is clear that the distributions are not bi-polar; they are part of the same distribution, but the non-white scores are clearly lagging behind the white and Asian/Pacific Islander scores, with the most common score being 50 scale points lower in mathematics and about 15 points lower in reading. There is much greater variance in

scores in mathematics than in reading as shown by the fact that the curves are flatter and wider for mathematics than they are for reading.

Additional information about the distributions can be gleaned from these graphs:

- For mathematics at all three grades, the nonwhite scores peak at a point considerably to the left of the white/Asian scores, reflecting the gap.
- The negative skew in 10^{th} grade mathematics scores appears to be most pronounced for African American and Hispanic students, with the scores concentrating heavily at a point about 20 scale points from the cutoff. There is no similar concentration for white and Asian/Pacific Islander scores, indicating that there may be a difference in preparation among 10^{th} grade students (i.e., that students in the nonwhite group may not have had access to, or may not have taken, the higher mathematics classes that would prepare them for the test.)
- Unlike the skewed distribution of scale scores in math, the distribution of scale scores for 4^{th} and 10^{th} grade reading peak at or beyond the cutoff score for all students. This bell-shaped distribution of reading scores accords with what test scaling theory would predict.
- With reading as with math, 7^{th} grade scores present a distinctly different pattern from those in the 4^{th} and 10^{th} grades. There are several possible explanations for this disparity including poor test design and poor curricular alignment and instructional practices used in the 7^{th} grade and earlier. According to the test-based hypothesis, the distinct negative skew in the 7^{th} grade scores that is not seen in the other grade levels, in addition to a cutoff point significantly to the right of the most common score at that grade level for all racial groups indicates problems with the test itself. The curriculum-based hypothesis rests on the fact that the 7^{th} grade test was developed and pre-tested in the same way as the other grade level tests and aligned with the standards set for 7^{th} grade students. Thus, it is possible that the curriculum and/or instructional practices in the 7^{th} grade and earlier are simply not preparing the students to learn what they need to learn. Further research is needed to determine which of these hypotheses, or which combination of the two, is responsible for the clearly different patterns of achievement as seen in the 7^{th} grade scores.

Figure 7: Scale score distribution, 4th grade math
(Combined years 1998-2001, by race)

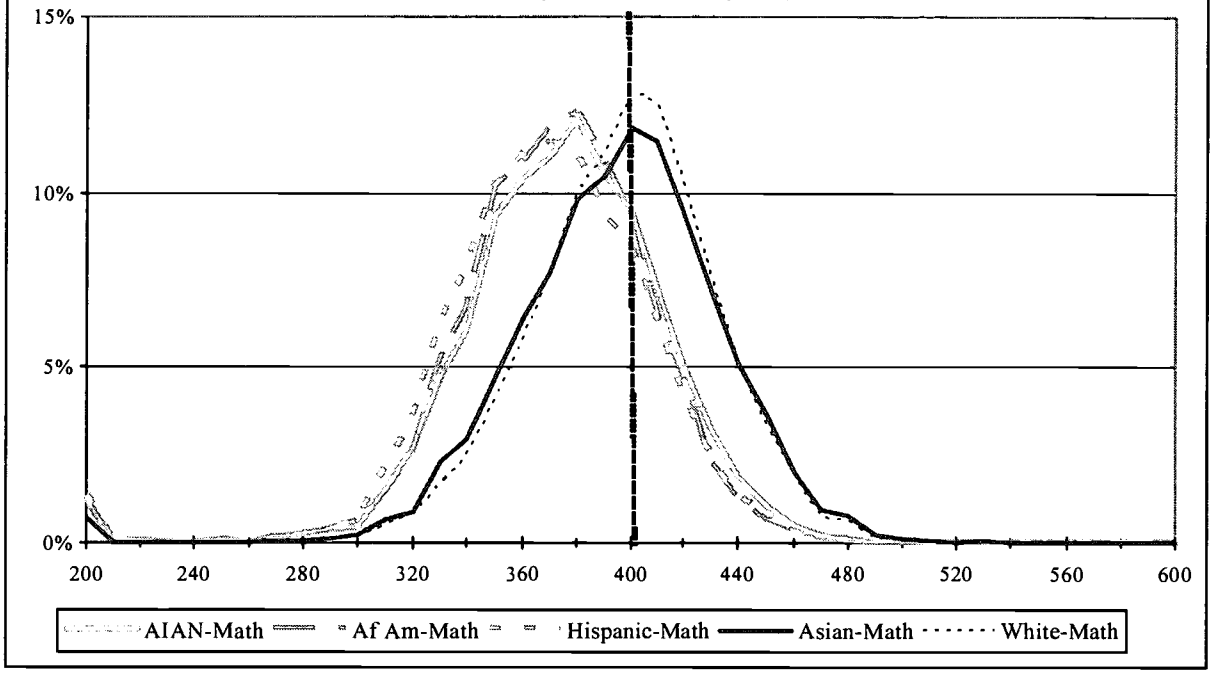


Figure 8: Scale score distribution, 4th grade reading
(Combined years 1998-2001, total State by race)

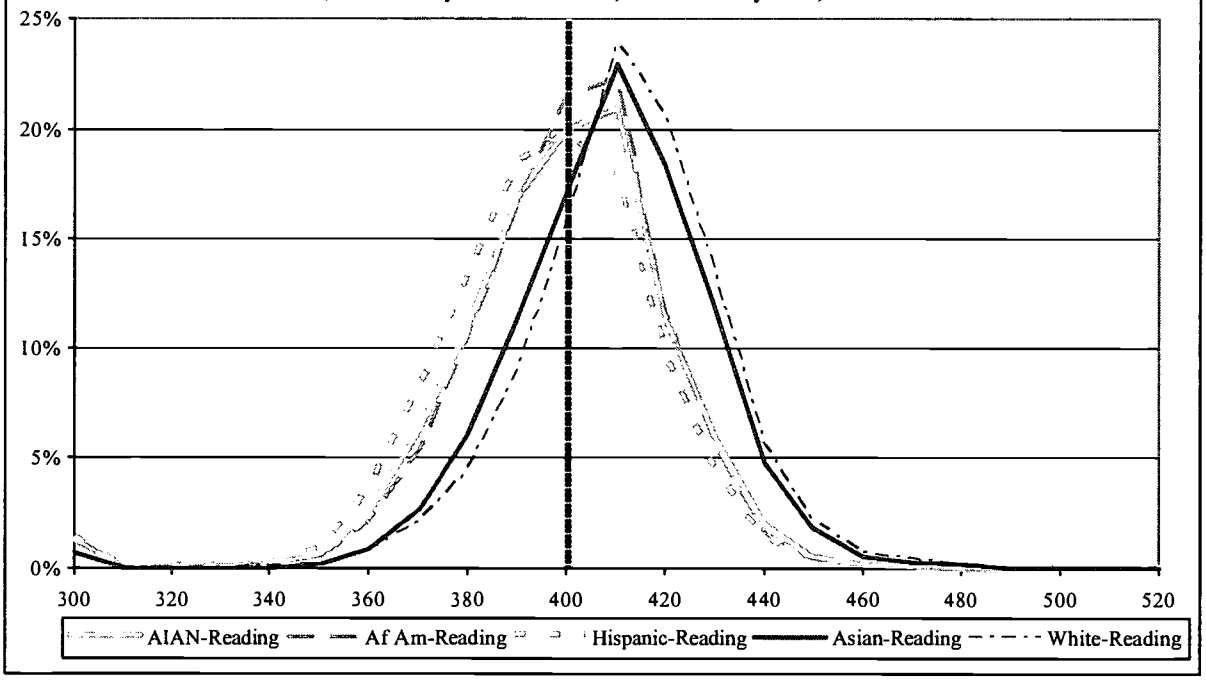


Figure 9: Scale score distribution, 7th grade math
(Combined years 1998-2001, total State by Race)

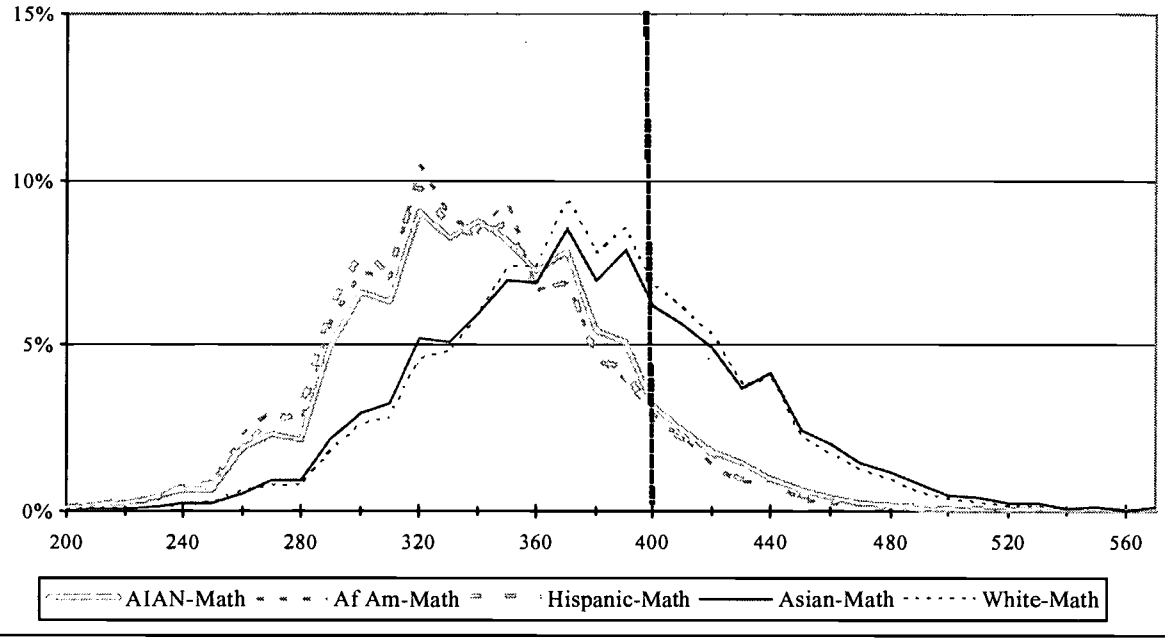


Figure 10: Scale score distribution, 7th grade reading
(Combined years 1998-2001, by race)

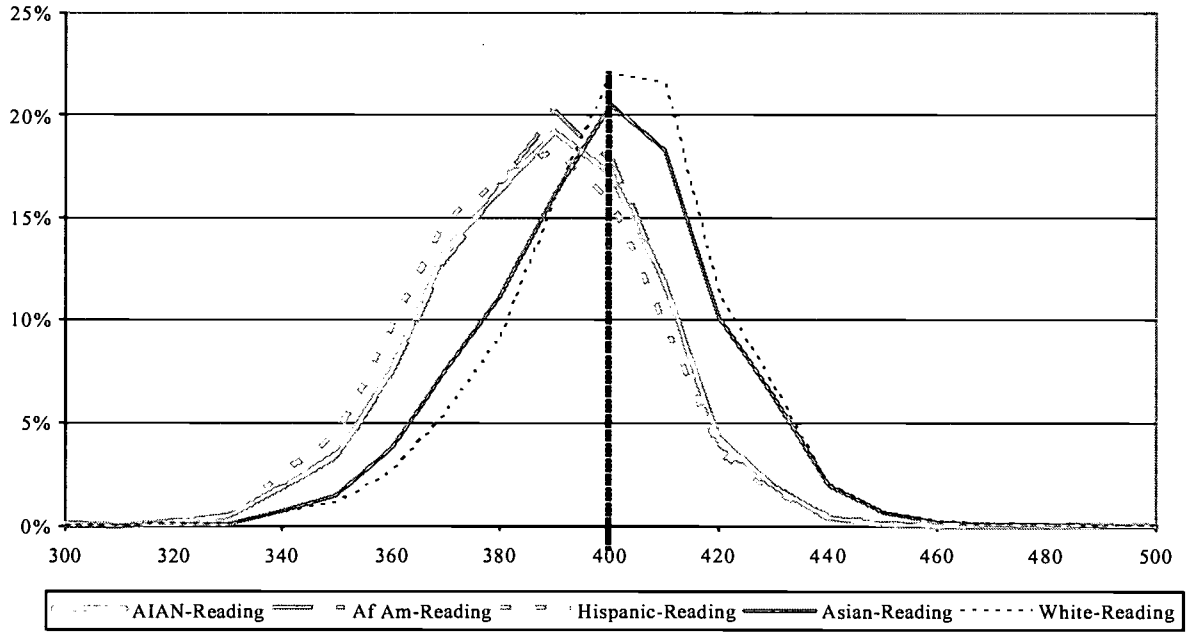


Figure 11: Scale score distribution, 10th grade math
(Combined years 1999-2001, by race)

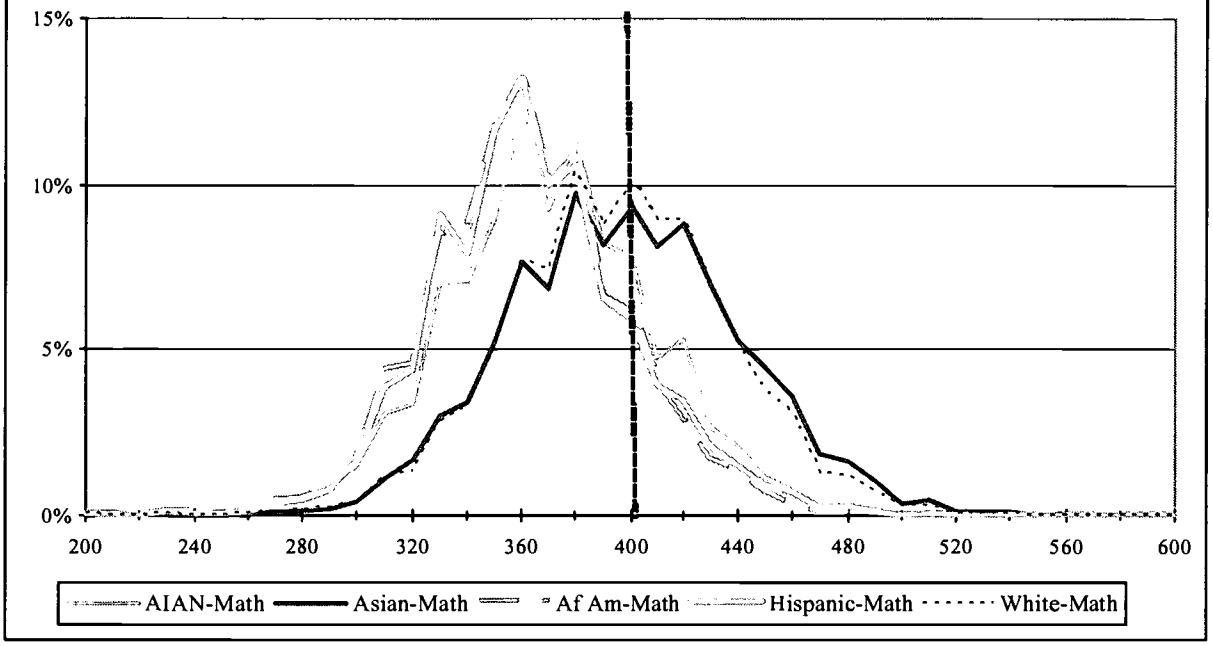
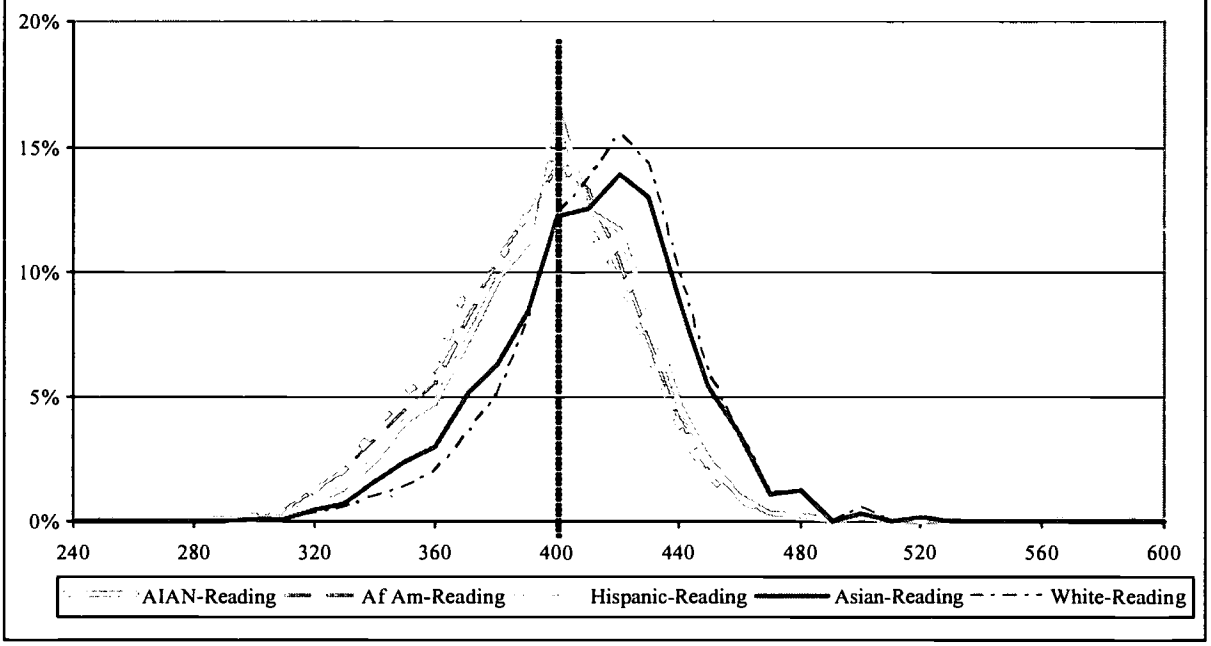


Figure 12: Scale score distribution, 10th grade reading
(Combined years 1999-2001, total State by race)



Density as a Measure of Disparity: Nonwhite Scores Concentrated at the Bottom

It is clear from the previous figures that scores for nonwhite students at all grade levels are lower than those for white and Asian/Pacific Islander students. It is also clear that nonwhite scores are concentrated below the cutoff line. The relative density curves below illustrate where nonwhite scores are concentrated (Figures 13-18).[17] Overall, the relative density curves indicate that nonwhite scores fall disproportionately in the bottom end of each of the score distributions at each grade level. Although some nonwhite students earn scores at the top of the scale ranges, the percentage is far lower than it should be. The goal is a relatively straight line, with approximately the same percentage of each racial group falling into each decile of the white student scores.

Several things can be concluded from these figures:

- For both tests at all grade levels, approximately 10% of Asian/Pacific Islander students fall along the white decile line, reflecting again the similarity of scores between these two groups of students.
- From 25-35% of American Indian/Alaska Native, African American and Hispanic students fall into the first decile of white scores in both reading and mathematics at all grade levels. In other words, the proportion of nonwhite students who score in the bottom tenth of the score distribution is 2.5 to 3.5 times higher among nonwhite students than among white students.
- Almost half of nonwhite students score in the bottom two deciles of the reference group (the bottom 20% of all white student scores). At the other end of the spectrum, less than 3% of nonwhite students get the top scores received by 10% of white and Asian/Pacific Islander students.
- The nonwhite mathematics scores, on the whole, are more concentrated in the lowest deciles than are the reading scores, reflecting again the greater disparity in this area than in reading.
- Hispanic students tend to have a larger proportion of test takers at the very bottom of the scale distribution at all grade levels. There also tend to be a smaller proportion of Hispanic students in the top deciles of the white score distribution.

[17] The relative density graphs provide information on the percentile of nonwhite students who fall within each decile of the white student distribution on mathematics and reading exams and thus allow us to determine where nonwhite scores are concentrated. The horizontal dotted line across the 10% point on the left axis indicates that 10% of white students are in that decile of scores.

Figure 13: Relative density of nonwhite vs. white math scores (combined 4th grades 1998-2001)

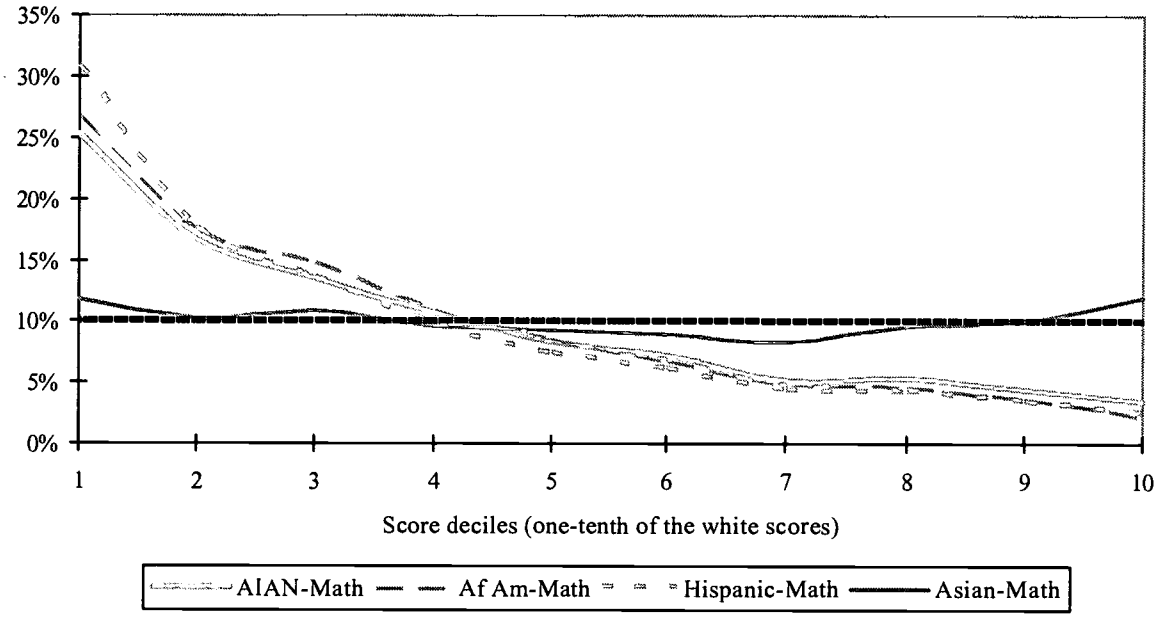


Figure 14: Relative density of nonwhite vs. white math scores (combined 7th grade 1998-2001)

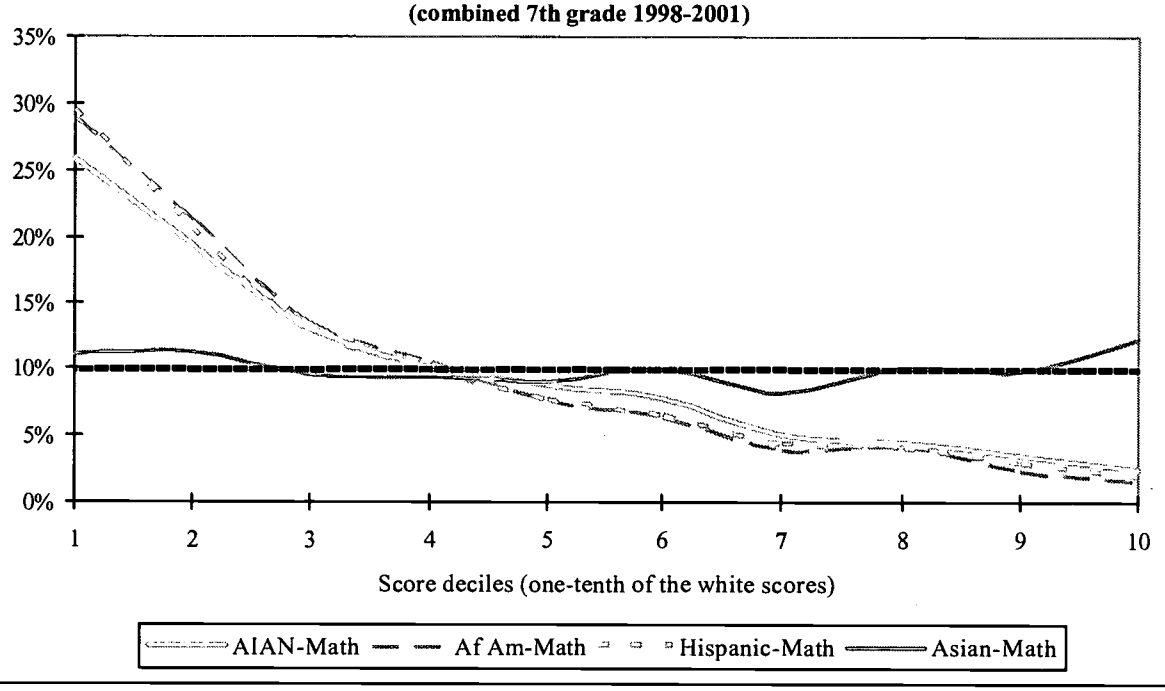


Figure 15: Relative density of nonwhite vs. white math scores (combined 10th grades 1999-2001)

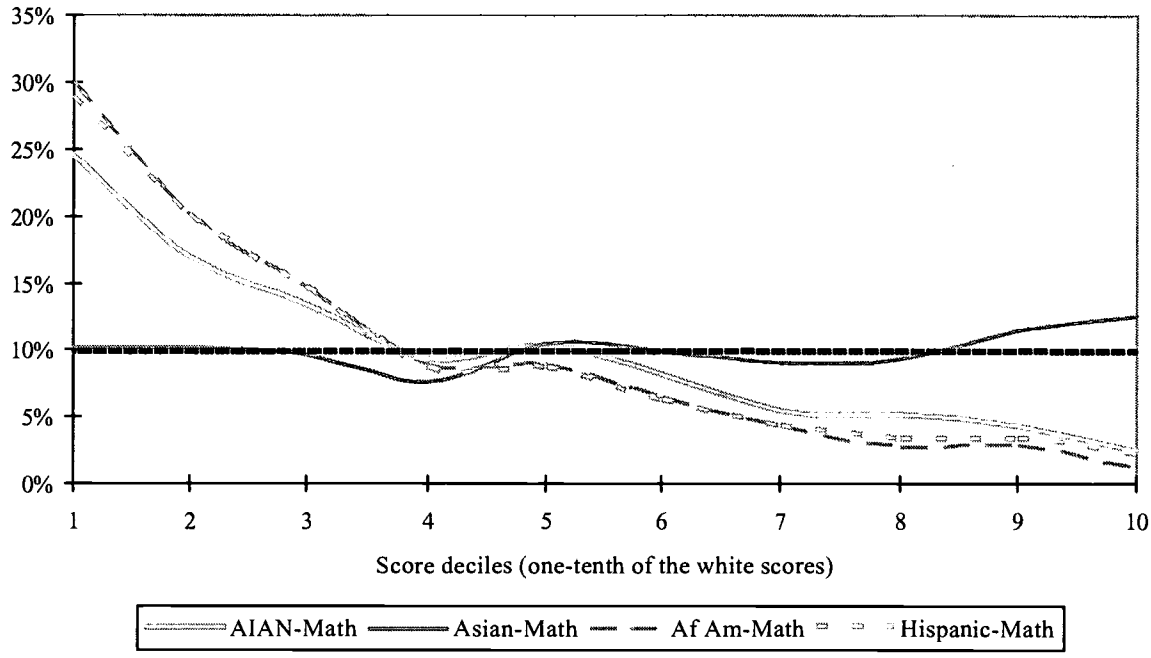


Figure 16: Relative density of nonwhite vs. white reading scores (combined 4th grades 1998-2001)

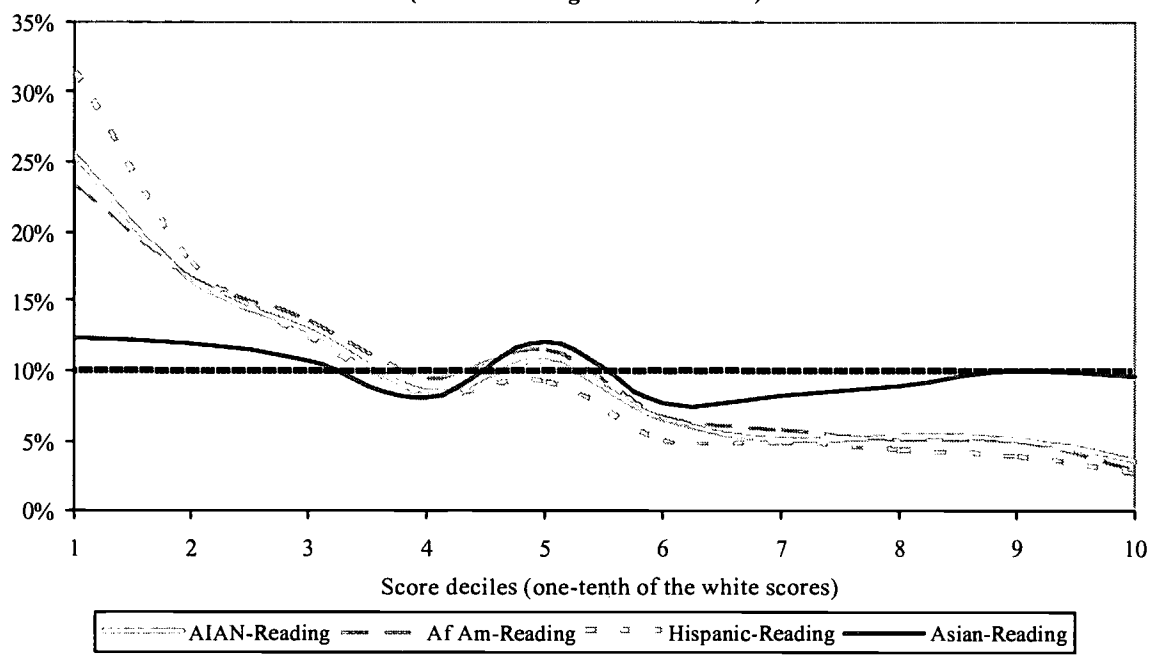


Figure 17: Relative density of nonwhite vs. white reading scores (combined 7th grade 1998-2001)

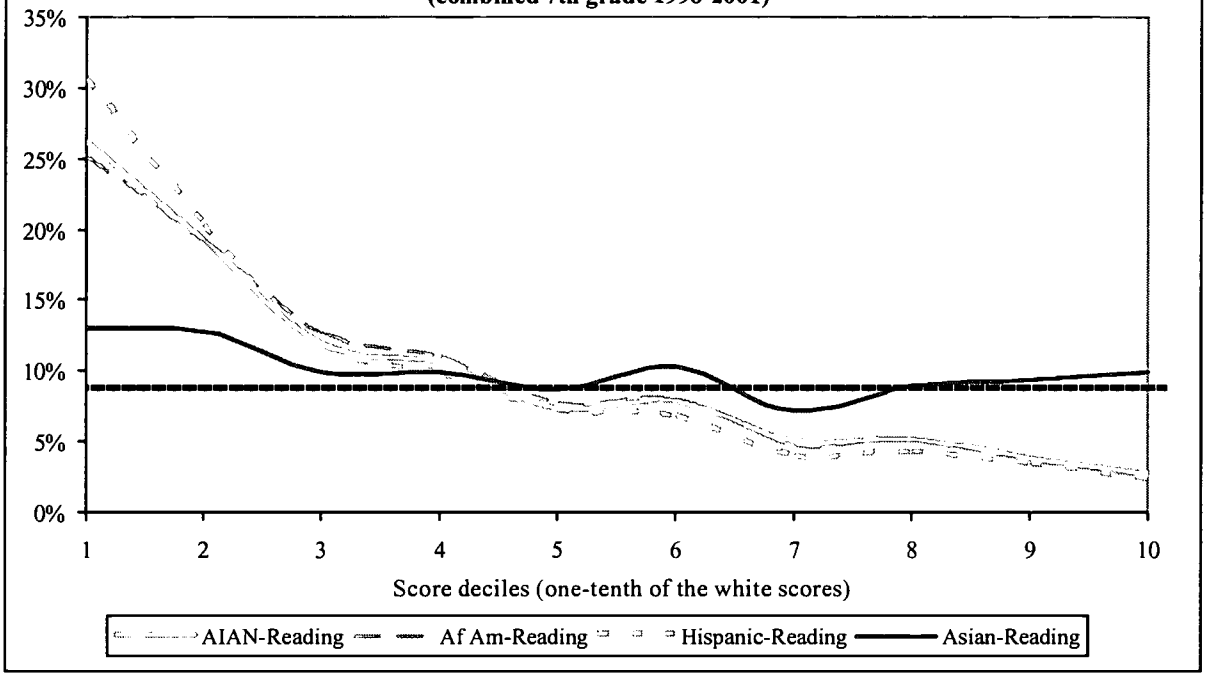
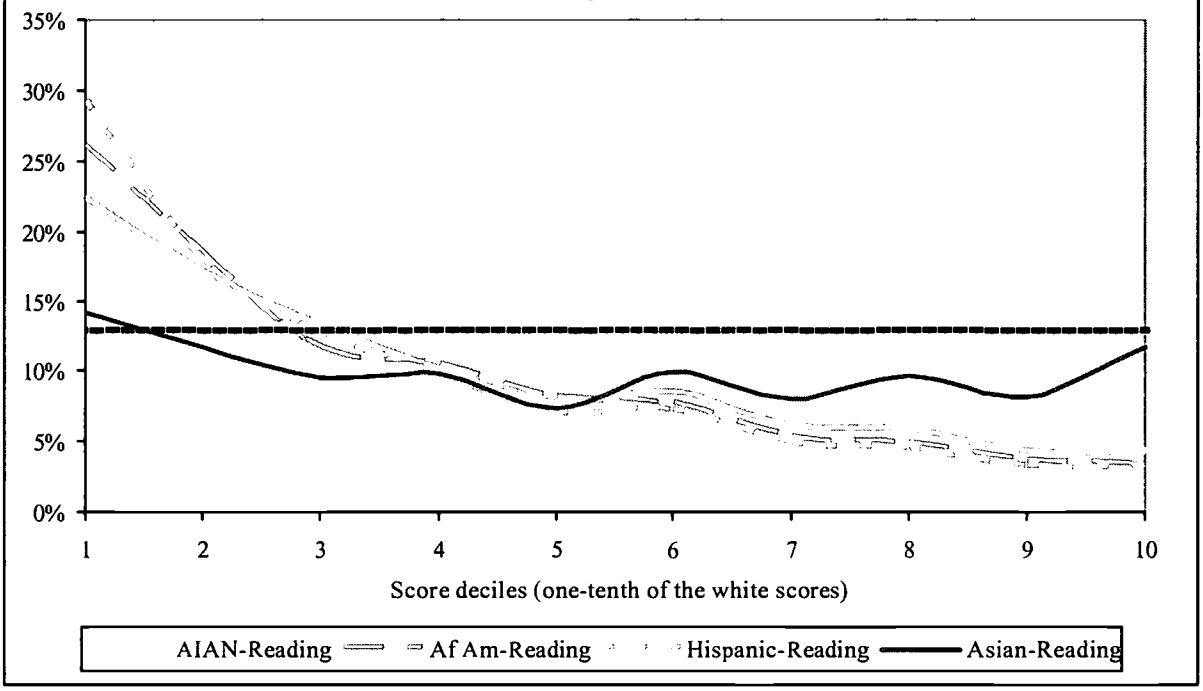


Figure 18: Relative density of nonwhite vs. white reading scores (combined 10th grades 1999-2001)



Indications of Change: Some Progress But Not Enough

The primary goals of education reformers in Washington State are (1) to improve the performance of all students, and (2) to reduce the achievement gap among different subgroups of students. In order to achieve both goals, students of color must improve at a faster rate than white and Asian/Pacific Islander students. However, as Table 1 indicates, while the average nonwhite scale score has increased somewhat faster for nonwhite students than the white/Asian students, scale scores are not rising at a rate that would close the achievement gap any time in the near future.

Table 1 provides an estimate of the scale score improvement each racial group would need to make if the achievement gap between white/Asian and nonwhite students is to be closed in five years. Since the white scores are used here as the reference point, the previously observed increase in white scores was used to project the white score at each grade level and in each subject in 2007. The scale score increases needed to match this score were then calculated for each racial group and the average yearly improvement needed was estimated.

For all racial groups but Asian/Pacific Islander, the improvements required are at least twice what have been experienced over the past several years. In fact, the scale scores of nonwhite students in general would have to increase by 80-109% of a standard deviation to match the white score in 2007. This is a formidable challenge.

According to Cohen's definition of effect sizes[18] the changes experienced so far are, at best, small, while the achievement gap for most grades and subjects is between medium and large. The achievement gap continues to be significant while the changes so far are not. (Appendix 2 presents a summary of the scores and indicators of significant change).

The Significance of the School

Although the information presented here is revealing, it is limited by the fact that very few demographic details are available for individual students taking the test. Race and gender are the only two personal descriptors available; free-or-reduced lunch status is available only as a percentage figure for schools and other resource information is unavailable in the OSPI data files at this time. Thus, it is only possible to see how different demographic factors relate to achievement and the achievement gap by aggregating the individual data to the building level in order to look at building characteristics (locale, percentage free-or-reduced lunch students, racial make-up of the

[18] Cohen, Jacob. *Statistical Power Analysis for the Behavioral Sciences*. New Jersey: Lawrence Erlbaum Associates, 1988. According to Cohen, an effect score of approximately 20% of a standard deviation is considered a small change, effect or gap, while a score at the 50% mark is considered medium and at the 80% level would be considered large. For example, the standard deviation in scale scores for 7th grade mathematics in 2001 was 51.6 points, so a "large" gap or change would be approximately 41 points. The gap between white and nonwhite students that year in 7th grade mathematics was 38 points and the change in scores from the previous year was less than 1 scale point. In other words, the gap was closer to "large" than to "medium" and the change from one year to the next was nonexistent.

Table 1: Growth Experienced and Growth Needed to Close the Achievement Gap in Washington by 2007

	Math						Reading					
4th grade	**First year average scale score**	**2001 average score**	**Average observed yearly change**	**Yearly change needed to close gap in 5 years***	**Scale score addition needed**	**% of SD**	**First year average scale score**	**2001 average score**	**Average yearly change**	**Yearly change needed to close gap in 5 years***	**Scale score addition needed**	**% of SD**
AIAN	358.2	378.4	1.9%	2.7%	31.1	89.2%	386.9	398.0	1.0%	1.3%	15.1	81.0%
Asian/Pacific Islander	379.8	397.3	1.5%	1.5%	12.1	34.7%	398.7	406.5	0.6%	0.7%	6.5	35.2%
African American	357.5	372.6	1.4%	2.7%	37.2	106.5%	387.7	397.5	0.8%	1.3%	15.5	83.3%
Hispanic/Latino	352.3	371.5	1.8%	3.0%	37.9	108.5%	383.2	394.0	0.9%	1.5%	19.1	102.5%
White	382.5	398.2	1.4%				401.5	408.3	0.6%			
7th grade												
AIAN	316.7	343.1	2.8%	4.2%	47.6	92.3%	373.5	384.8	1.0%	1.4%	16.6	80.7%
Asian/Pacific Islander	354.3	375.5	2.0%	2.0%	15.1	29.2%	387.3	395.4	0.7%	0.7%	6.1	29.8%
African American	315.1	334.6	2.1%	4.3%	55.5	107.5%	374.5	384.2	0.9%	1.4%	17.1	83.0%
Hispanic/Latino	316.3	335.3	2.0%	4.2%	54.9	106.3%	372.2	381.0	0.8%	1.5%	20.2	98.1%
White	355.6	375.4	1.9%				390.8	397.2	0.5%			
10th grade												
AIAN	358.5	370.5	1.7%	2.6%	36.7	89.3%	388.1	397.4	1.2%	1.8%	26.4	86.5%
Asian/Pacific Islander	386.7	398.8	1.6%	1.0%	8.3	20.1%	398.8	411.9	1.6%	1.2%	11.5	37.8%
African American	350.5	362.3	1.7%	3.0%	44.9	109.2%	384.6	393.4	1.1%	1.9%	30.0	98.5%
Hispanic/Latino	353.5	364.1	1.5%	2.8%	43.1	105.0%	383.1	391.5	1.1%	2.0%	31.9	104.6%
White	387.2	395.0	1.0%				406.4	413.1	0.8%			

*Assumes change in white scores remains steady as already established.

school as a whole, size of school, etc.) in relation to both the average scale scores and the gaps between white and nonwhite students in that particular school. Such aggregation and analysis reveals not-unexpected differences in the experiences of students in various kinds of schools across the state.

Students are not distributed equally across Washington; with nonwhite students concentrated in high poverty schools in both rural and urban settings and white students found primarily outside these areas (Appendix 3 contains a detailed description of the statewide distribution of students across schools). Of special note are the following facts:

- Most students in the state attend school in what the U.S. Census would consider to be the urban fringe of a large city: 38.2% of 4th grade students, 39.6% of 7th grade students, and 41.7% of 10th grade students.
- Almost 90% of the students who take the WASL go to school in buildings where 51% or more of the students are white. This is not surprising given the fact that 75% of students in Washington public schools are white. In fact, a considerable majority of nonwhite students in the state attend schools that are predominantly white. Hispanic students are less likely than students of other races to attend predominantly white schools, but even here over 55% of Hispanic students at all three levels are in schools where half or more of the students are white.
- Less than 3% of white students attend majority nonwhite or mixed race schools. African American, American Indian/Alaska Native, Asian/Pacific Islander and Hispanic students are more likely than white students to attend majority nonwhite or mixed race schools. In general, achievement gaps are more pronounced in these majority nonwhite and mixed race schools.
- Less than 4% of the schools in the state have truly diverse student bodies; 88% of schools are predominantly white and 6-8% of schools are predominantly nonwhite.
- Less than a third of the schools in the state could be considered high poverty if we used the definition of 51%+ students eligible for free or reduced lunch. The percentage of students eligible for free and reduced lunch drops drastically with year in school.[19]
- Poverty and race are highly correlated. Half or more of all Hispanic, African American and American Indian/Alaska Native students go to high poverty schools (here defined as schools in the top third of all schools in terms of eligibility for free or reduced price lunch). In contrast, 16-23% of white students go to high poverty schools. Hispanic students are those most likely to attend high poverty schools.
- When poverty and locale are considered together, we find that almost one-fourth of American Indian/Alaska Native students attend high poverty schools in rural areas or small towns. A similar percentage of Hispanic students attend schools in such areas. In contrast, only about 12% of white students and 3% of African American students attend school in such settings. At the other end of the spectrum, over 30% of African American students attend high poverty schools in large or midsize cities, while about 16-19% of Asian/Pacific Islander and Hispanic students attend such schools and only about 8% of white students.

[19] Older students are less likely to "claim" free and reduced lunch status out of fear of being stigmatized.

Given the differences in distributions of students across school locales and income levels, it is not surprising that the achievement gap also differs by such characteristics. For example, although the average gap between nonwhite and white/Asian students in mathematics is about 40 scale score points, building-level gaps differ radically across the schools in the state. In some schools there is a reverse gap (nonwhite scores are higher than white/Asian scores); in many others the gap is miniscule. At the other end of the spectrum, the gap in a few schools would suggest two different distributions of scores, with little overlap between white and nonwhite scores. In other words, the achievement gap, although seemingly constant and unchanging, actually differs significantly across schools and is clearly related to the location and make-up of the schools attended. However, the proportion of the variance that might be accounted for in this way is unknown as accounting for individual scores from grouped data is notoriously risky and has not been attempted with the limited data available in this study.

In the absence of clear and definitive data on the relationship between building-level variables and the achievement gap in Washington State, dot charts provide a visual measure of some of the relationship (see Appendix 4). The dot charts show the gaps between white scores and those of American Indian/Alaska Native, African American and Hispanic students in schools categorized by locale, poverty and racial mix. Among the findings from these figures are the following:

- The gap for American Indian/Alaska Native students is very stable across school types, although the gap between mathematics scores of American Indian/Alaska Native and white students is somewhat higher in large city schools and predominantly nonwhite schools than in other school types.
- The differences are much more pronounced across school type for African American students. That is, African American students appeared to do much better in some types of schools than others. However, the relationship did not hold across all grade levels. For example, 4^{th} and 7^{th} grade African American students evidenced smaller score gaps in mixed or predominantly nonwhite schools, while the pattern was reversed for 10^{th} grade students.
- The initial analysis did not reveal a consistent relationship between the achievement gap and the poverty level of the schools. Some high poverty schools had relatively small gaps between nonwhite and white/Asian students, while some low poverty schools had relatively large gaps. It was not possible within the parameters of this study to investigate these counterintuitive situations.
- Gaps between white and Hispanic students show the greatest variability. Hispanic students in large and small towns appear to be most vulnerable, along with those in schools with the highest poverty levels. The gap is also largest in schools where the majority of the students are nonwhite (in almost all cases, these are schools where the majority of students are Hispanic.)

Additional work will be needed when more complete data area available on students at the individual level. Without measures of school quality (e.g., experience of teachers, resources available to the school, etc.) and in the absence of case studies of

schools that seem to have "beaten the gap," it is impossible to draw conclusions about how different school types and varying school characteristics affect student achievement. What is illustrated here, however, is tantalizing. There are some schools where there are minimal gaps between the achievement of white/Asian and nonwhite students. Unfortunately, due to the limitations of the data, it is not clear whether this is due to student characteristics, school demographics, school policies, instructional practices, or some combination. Additional research is necessary to identify those school characteristics responsible for the achievement gap in Washington. Until such research can be done, there are elements of hope in the variability and diversity of students and schools in Washington State. Many nonwhite students achieve at high levels and some schools appear to have a particularly large proportion of these students. Why this is so, and what the schools have or have not done to achieve this, has yet to be identified.

Summary of Findings

The entire universe of 4th, 7th and 10th grade students tested in reading and mathematics between 1998 and 2001 were included in this study of gaps in achievement among different groups of students in Washington State public schools. Below is a list of the major findings of this study:

- The scores of white and Asian/Pacific Islander students are very similar across grades and subjects, while the scores of American Indian/Alaska Native, African American and Hispanic students follow much the same pattern. There are, in effect, two groups of students in the public schools: white/Asian and nonwhite (American Indian/Alaska Native, African American, and Hispanic.)
- The achievement gap between nonwhite and white/Asian students in Washington's public schools is significant. The difference in scale points on the WASL ranges on average from 24 to 38 points in mathematics and from 12 to 19 points in reading. These would be considered medium to large gaps according to common measures used.
- The distribution of scale scores in mathematics and reading indicate that nonwhite students peak at a lower point on the scale; in other words, a disproportionate number of nonwhite students earn scores in the lower ranges of the scale. There is some evidence of a plateau effect just short of the cutoff point, especially at the 10th grade levels of testing.
- Nonwhite scores have increased somewhat more than white/Asian scores since the beginning of testing, but these increases are about half of what would be necessary to close the gap in the next five years, and only then if white/Asian scores increased at a much slower rate. In fact, it would be necessary for the average scale scores of American Indian, African American and Hispanic students to increase from 80 to 109% of a standard deviation to close the gap by 2007. This is a formidable task.
- Students are not evenly distributed across school types. Nonwhite students tend to be educated disproportionately in high poverty rural or small town settings or in high poverty big or midsize city areas. Over 75% of students in Washington public schools are white and most schools in the state are predominantly white,

but nonwhite students are more likely than white students to attend either majority nonwhite or mixed schools. In general, the achievement gaps are more pronounced in these majority nonwhite and mixed race schools. However, there is no clear pattern of cause-and-effect in building type or locale. Additional individual and building-level data are necessary to assess the contribution of various student and school factors to achievement and the achievement gap.

- Seventh grade test scores in both mathematics and reading evidence anomalies that might have more to do with the test itself than with the students taking it. The pattern of achievement within both white and nonwhite students is different from (in some cases, radically different from) what would be expected given performance at both the 4^{th} and 10^{th} grade levels. These anomalies should be studied by testing experts to assess the source and effect of these differences.

The data demonstrate that Washington State public schools are under-serving most American Indian/Alaska Native, African American, and Hispanic students. The achievement gap between nonwhite students and white/Asian students is both large and, despite some progress, persistent. Through a review of the national research literature, the next section of this report provides an overview of the myriad of factors that contribute to the achievement gap and, where possible, discusses the state of affairs in Washington with regard to these factors.

SECTION III: EXPLAINING THE ACHIEVEMENT GAP

The literature on the achievement gap is vast and spans many decades. This section distills this extensive literature in an effort to provide policymakers with a comprehensive introduction to the causes of the achievement gap.[20] A critical review of the research reveals there is no simple explanation for the gap; rather, a complex combination of home, school, and societal factors[21] contribute to the achievement gap.[22]

Home Factors

Poverty and Related Factors

Family financial status and educational attainment each can explain some but not the entire achievement gap. Numerous studies have documented a strong relationship between family income and student academic achievement; a relationship that is closely tied to race. However, differences in family income do not fully explain the existence of the achievement gap. When test scores are adjusted to factor out family income, the achievement gap still remains. According to a study of performance on the SAT, African American and Hispanic students scored lower than white students from families with comparable incomes, signifying that factors other than family income may be significant.[23]

Although evidence also indicates that family educational attainment is predictive of student achievement, according to a special tabulation of the 1999 National Association of Educational Progress (NAEP) trend data, the African American-white and Hispanic-white achievement gap is just as wide, or even slightly wider, for students with college-educated parents as it is for the children of less-educated parents. Similarly, the racial gaps on the 1998 SAT were greater among students whose parents had college degrees than among those whose parents had never graduated from high school.[24] Meredith Phillips' finding that the gap narrows, but does not disappear when she controlled for family income and parental education lead her to conclude that family income and parental education probably only explain about one-third of the achievement

---

[20] This report focuses on the structural causes of inequities. The literature on the social and cultural underpinnings of inequality offers a valuable perspective on the achievement gap. Specifically, research and theory on social and cultural capital and its impact on student success, the mismatch between school culture and the home cultures of students of color and students from low-income families and the culture biases in standardized testing offer important insights.

[21] Home, school, and societal factors are of equal import. The ordering of this section does not reflect any bias regarding their relevance.

[22] This section of the report was based on an extensive review of the literature on the achievement gap including newspapers, research journals, and other academic writings and studies.

[23] Camara, Wayne J. and Amy Elizabeth Schmidt. *Group Differences in Standardized Testing and Social Stratification*. New York: College Board, 1999.

[24] The College Board. *Reaching the Top: A Report of the National Task Force on Minority High Achievement.* New York: Author, 1999.

gap. While significant, family educational levels can not account for the achievement gap entirely.

Factors closely associated with family income may contribute to the achievement gap. For example, student achievement may be shaped by accumulated family wealth and assets (rather than income), quality of the schools attended by parents, and grandparent's education.[25] Still other studies note that the achievement gap precedes the K-12 school system and may be rooted in disparities in skills and academic preparedness that exist before children reach the doors of their elementary schools.[26] The average African American child enters schools with substantially lower mathematics, reading, and vocabulary skills than the average white child; disparities that may be rooted in differential access to preschool. Children enrolled in preschool programs enter kindergarten more prepared to learn. According to David Grissmer's analysis of results from the National Assessment of Educational Progress (NAEP) higher levels of participation in preschool programs is one of the major factors in a state's higher scores on mathematics assessments given in the fourth and eighth grades.[27]

More work is required to fully understand the influence of family income on student performance and disentangle the many associated factors. While not the definitive explanation of the achievement gap, the role of poverty should nonetheless not be diminished or dismissed. The experience of the 1970's indicates that programs targeted at eliminating poverty probably help to narrow the gap. Any approach to closing the achievement gap should respect the influence of poverty while resisting the inclination to blame the entire gap on poverty.

School Factors

The level of educational resources impacts student performance. This effect is particularly strong for low-income students and students of color.[28] There are vast

---

[25] Phillips, Meredith, James Crouse, and John Ralph. "Does the Black-White Test Score Gap Widen after Children Enter School?" in C. Jencks and M. Phillips (Eds.), *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press. 1998.

[26] Phillips, Meredith, Jeanne Brooks-Gunn, Grega J. Duncan, Pamela Klebanov, and Jonathan Crane. "Family Background, Parenting Practices, and the Black-White Test Score Gap" in C. Jencks and M. Phillips (Eds.), *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press. 1998

[27] Grissmer, David and Ann Flanagan, Jennifer Kawata, and Stephanie Williamson. *Improving Student Achievement: What State NAEP Scores Tell Us*. Santa Monica: RAND, 2000.

[28] *ibid*. Measurements of the effects of educational resources show quite different results if the measurements are done at the state level rather than the district, school, classroom or individual level. Measurements at lower levels of aggregation are inconsistent. One frequently advanced explanation holds that the inconsistency in measurements reflects inconsistency in the utilization of school resources rather than inconsistency in the measurement process. Grissmer et al propose an explanation that is more consistent with current experimental and non-experimental evidence and historical expenditure and achievement trends. They argue that additional resources have been effective for low-income students and students of color, but resources directed toward more-advantaged students – the majority of students – have had only small effects. They conclude that aggregate-level measurements may, in fact, provide more unbiased effects than less-aggregate models.

inequities in the distribution of educational resources, which result in disparities in student performance.

Funding

Despite efforts since the 1960's to address the financial inequalities inherent in school funding systems by making them less dependent on local wealth, school districts continue to be funded at different rates. Unlike most analyses of state and local dollars which compare high-spending and low-spending districts with no regard to student demographics, the Education Trust analyzed differences in revenues between districts with high- and low-concentrations of low-income students and students of color.[29] The Education Trust found substantial funding inequities in 42 of the 49 states they analyzed. Districts with the highest enrollments of low-income students and students of color had less money to spend per student than districts with the lowest enrollments. Nationally, the average gap between high-income and low-income districts was $1139 per student and between districts with high and low enrollments of students of color was $979 per student.

Analyses of the distribution of school funding and resources typically compare funding/resource levels among states or districts; rarely do they address funding/resources levels among schools *within* a district. In a study of resource allocation in California schools, Betts found that inequities in school resources apparent in the statewide data replicate themselves to some extent within districts. In other words, *within* a given district, schools with particularly disadvantaged students are likely to have fewer resources.

Marguerite Roza's innovative analysis of district funding policies led her to conclude that schools with high proportions of low-income and minority students in effect subsidize schools with high proportions of high-income and white students, even when districts supposedly allocate funds to schools on a per-pupil or weighted student basis. This happens because most districts use a fixed average salary figure to compute the staffing costs in each school, despite the fact that real salaries vary substantially from school to school. The affect of this policy is that schools with less experienced and lower paid teachers and administrators spend fewer real resources than their budgets would

---

[29] "The Other Gap: Poor Students Receive Fewer Dollars," *Education Trust Data Bulletin*, March 6, 2001. The methodology used by school finance expert Greg Orlofsky recognizes that federal education dollars are intended to *supplement*, rather than *supplant* tax revenues raised from state and local sources. Thus, by analyzing revenues raised for education rather than simple expenditures, Orlofsky was able to separate out and exclude federal program funds, which federal tax law forbids states from using to equalize basic education funding. The study also takes into account the higher cost of providing comparable education to students who have special needs and makes adjustments for the higher cost of educating students who live in places where educational supplies and services tend to be more expensive, such as cities. Orlofsky uses weights, including the "Cost of Education Index" developed by the US Department of Education to compensate for high-cost factors. As the Education Trust argues, this approach results in a more powerful measure that captures each district's actual "purchasing power" per student. Orlofsky analyzed a specially-constructed database containing demographic and finance data for over 15,000 school districts in 1996-97.

indicate.[30] The budgeted money is not the same as what it actually costs to operate the school. According to Roza, Low-income students and students of color are most hurt by this funding strategy.

Where Does Washington Stand?

Despite efforts to equalize district funding in Washington, students in districts with the greatest challenges by and large still receive fewer resources. Districts with the highest child poverty rates have $99 fewer state and local dollars to spend per student compared with the lowest-poverty districts, according to the Education Trust; a difference that translates to into a total of $2,475 for a typical classroom of 25 students. Moreover, although the gap between high- and low-poverty districts is shrinking nationally, it is growing in Washington. Between 1997 and 2000 the gap increased by 47%.[31] Similarly, districts with the highest percentages of students of color have $73 fewer state and local dollars to spend per student compared with the districts with low percentages of students of color. This disparity translates into a total of $1,825 for a typical classroom of 25 students.[32]

Marguerite Roza's analysis of funding policies in Seattle Public Schools, the largest district in Washington, indicate that funding patterns within Washington districts may mimic those found across districts. In Seattle, schools with the highest percentages of low-income and minority students receive fewer dollars.

Although analyses of school funding paint a vivid picture of the funding disparities across districts and schools, they tell us little about *how* schools spend their money and thus provide little detail about specific remedies. By looking at the relationship between student achievement and school characteristics, such as teacher education and experience and academic rigor, researchers have identified ways that schools contribute to the achievement gap.

Teacher Talent

Good teaching matters. A compelling body of research makes clear that student achievement is directly affected by the quality of students' classroom teachers. Of the school resource measures analyzed[33] by Betts, teacher experience is the variable most strongly related to student achievement.[34] Similarly Darling-Hammond notes that the proportion of well-qualified teachers (i.e.: fully certified, with a major in their assigned subject) is the strongest and most consistent predictor of state performance

---

[30] Roza, Marguerite and Karen Hawley Miles. *A New Look at Inequities in School Funding.* University of Washington Center on Reinventing Public Education, May 2002.

[31] Brennan, Jeanne (Ed). *The Funding Gap: Low-Income and Minority Students Receive Fewer Dollars.* Washington DC: The Education Trust, 2002.

[32] Education Trust. *State Summary of Washington.* Washington DC: Author, 2002.

[33] Betts et al analyzed the effect of class size, curriculum and teachers' education, credentials, and experience.

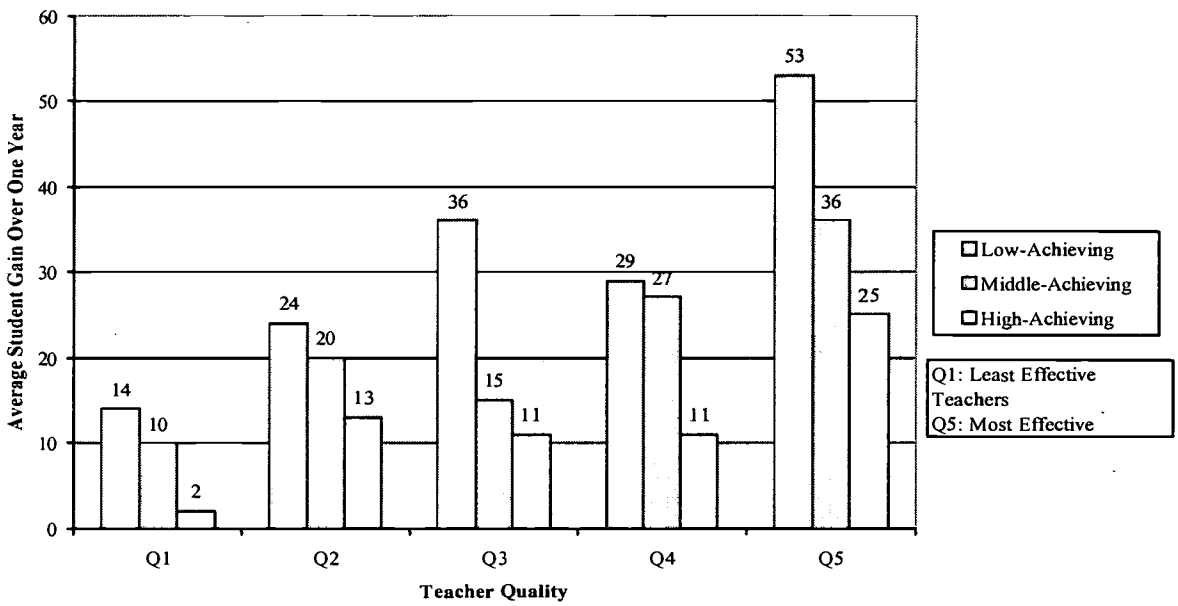
[34] Betts, Julian R. And Kim S. Rueben and Anne Danenberg. *Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California.* San Francisco: Public Policy Institute of California, 2000.

on the NAEP reading and mathematics tests. Conversely, the proportion of uncertified new teachers and the proportion that did not have even a minor in their assigned subject area are the strongest negative predictors of a state's student achievement.[35] Finally, Ferguson argues that teacher expertise[36] accounts for roughly 40% of the variance in student achievement on standardized tests in reading and mathematics in Texas. According to Ferguson, when controlling for the income level of students, the effects of teacher expertise are so strong that the achievement gap between African American and white students is almost entirely explained by differences in teacher qualifications.[37]

Students taught by experienced teachers perform better than those taught by inexperienced teachers, regardless of initial achievement level (Figure 19).[38] In their analysis of Tennessee, Sanders and Rivers found that 5th grade mathematics students of the same prior level of achievement who had three consecutive years of an effective teacher scored in the 83rd percentile while those who had three consecutive years with an ineffective teacher scored in the 29th percentile; a difference of 54 percentile points. The least effective teachers produce gains of about 14 percentile points on average among low-achieving students during the school year whereas the most effective teachers post gains among low-achieving students that average 53 percentile points.[39] Moreover, regardless of the level of teacher effectiveness (Q1 or Q5), the effect of teachers is stronger for low-achieving students than it is for high achieving students. The most effective teachers (Q5) produce gains of 25 points for high-achieving students compared to over 50 points for low-achieving students.

[35] Darling-Hammond, Linda. *Teacher Quality and Student Achievement: A Review of State Policy Evidence*, Seattle: University of Washington, Center for the Study of Teaching and Policy, 1999.
[36] As measured by performance on state teacher assessments, years of teaching experience, and completion of an advanced degree.
[37] Ingersoll, Richard M. "Paying for Public Education: New Evidence on How and Why Money Matters," *Harvard Journal of Legislation*, 28.
[38] Sanders, William L. and June C. Rivers. "Cumulative and Residual Effects of Teachers on Future Academic Achievement," Research Progress Report. Knoxville: University of Tennessee Value-Added Research and Assessment Center, 1996.
[39] Sanders and Rivers grouped teachers into quintiles based on their effectiveness in producing student learning gains to assess the effects of quality teachers on student achievement.

Figure 19: The Effect of Different Teachers on Student Achievement

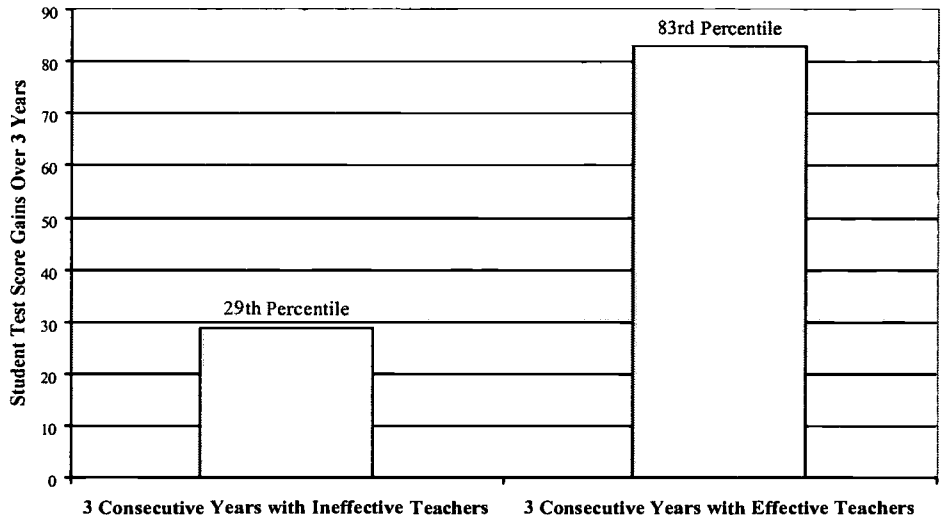


Source: Sanders, William L. and Rivers, Joan C. *Cumulative and Residual Effects of Teachers on Future Student Academic Achievement*, 1996.

The effects of teachers, whether they hinder or promote achievement, are also long-lived and can be measured in subsequent student achievement scores (Figure 20).[40] The residual effects of poor teachers are evident by comparing sequences of teachers. For example, a comparison of Low-Low-High with the High-High-High sequences reveals a difference of 24 percentile points. Thus, while an effective teacher receiving students from a relatively ineffective teacher can facilitate excellent academic gains for his/her students, the residual effects of ineffective teachers from prior years can be measured in subsequent student achievement scores. Thus, as Sanders points out, "groups of students with comparable abilities and initial achievement levels may have vastly different academic outcomes as a result of the sequence of teachers to which they are assigned."[41] Some argue the consequences of poor teaching are almost impossible to reverse. According to Hanushek, even when one year of instruction from a weak teacher is followed by several years of instruction from an average teacher, students may never make up the difference.[42]

[40] Sanders, William L. and June C. Rivers. *op cit.*
[41] Sanders, William and June C. Rivers, p. 6
[42] Hanushek, E.A. "The Trade-Off between Child Quantity and Quality," *The Journal of Political Economy*, 1992.

Figure 20: Cumulative Effects of Teachers on Student Achievement



Source: Sanders, William L. and Rivers, Joan C. *Cumulative and Residual Effects of Teachers on Future Student Academic Achievement*, 1996.

In light of the research indicating the profound impact of teachers on student achievement it is particularly striking that low-income students and students of color are more likely to be taught by under-qualified and less-experienced teachers.[43] The more impoverished and racially isolated the school, the greater the likelihood that students in the school will be taught by inexperienced teachers, uncertified teachers, and out-of-field teachers who do not hold a degree in the subject area they are assigned to teach. Schools with these characteristics are invariably low-performing schools whose students do not achieve to their potential.

Disparities in Teacher Experience

Inexperienced teachers[44] are more likely to teach in schools with high percentages of low-income students and students of color. In California the median percentage of teachers with two or less years of experience is 24% in low-income schools and 17% in high-income schools.[45] In four of the five largest districts in Maryland,

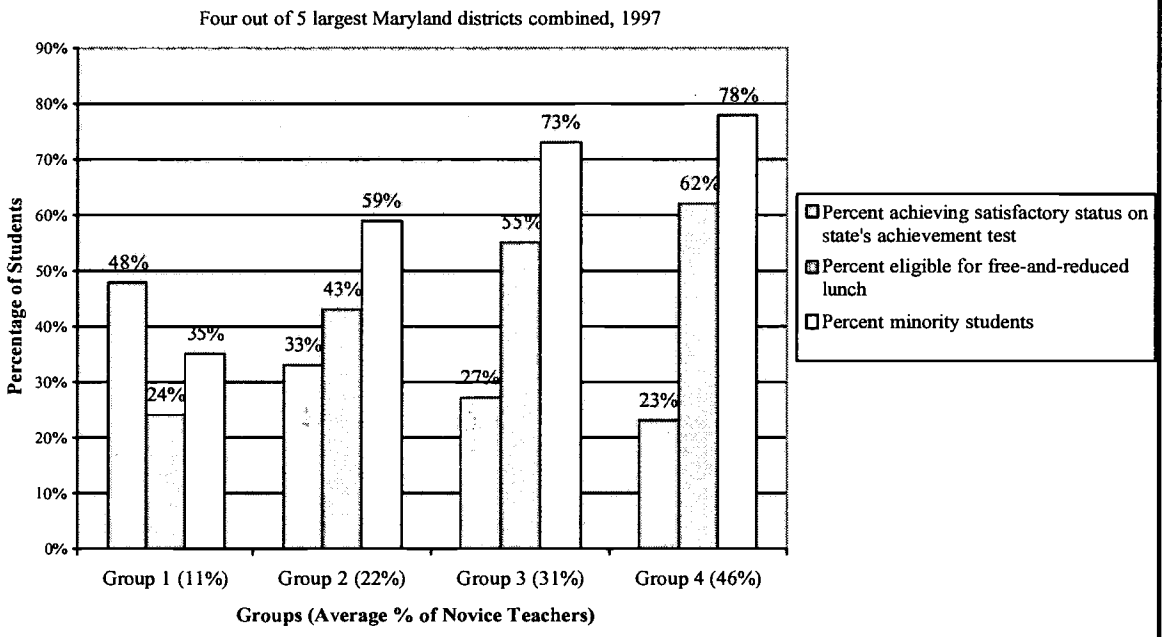
[43] See the California Commission on the Teaching Profession, 1985; Darling-Hammond 1987; Kopp 1992; Kozol 1991; Oakes 1990, Dreeben & Gamoran, 1986; Stevens 1993; Elmore & Fuhrman 1995; Haycock 1998; Urban League 1999.

[44] Experience is measured by number of years teaching in the classroom.

[45] Betts et al, *op cit.* Betts and colleagues used the proportion of students at a school who receive lunch assistance as their primary measure of SES. They divided schools into five socioeconomic status groups based on the proportion of students receiving free and reduced lunch. They found systemic differences between the level of experience and education of teachers in these different schools.

schools with the highest average percentage of novice teachers (46%) were compared to schools with the lowest average percentage of novice teachers (11%) (Figure 21).

Figure 21: Distribution of Novice Teachers in Four Maryland Districts



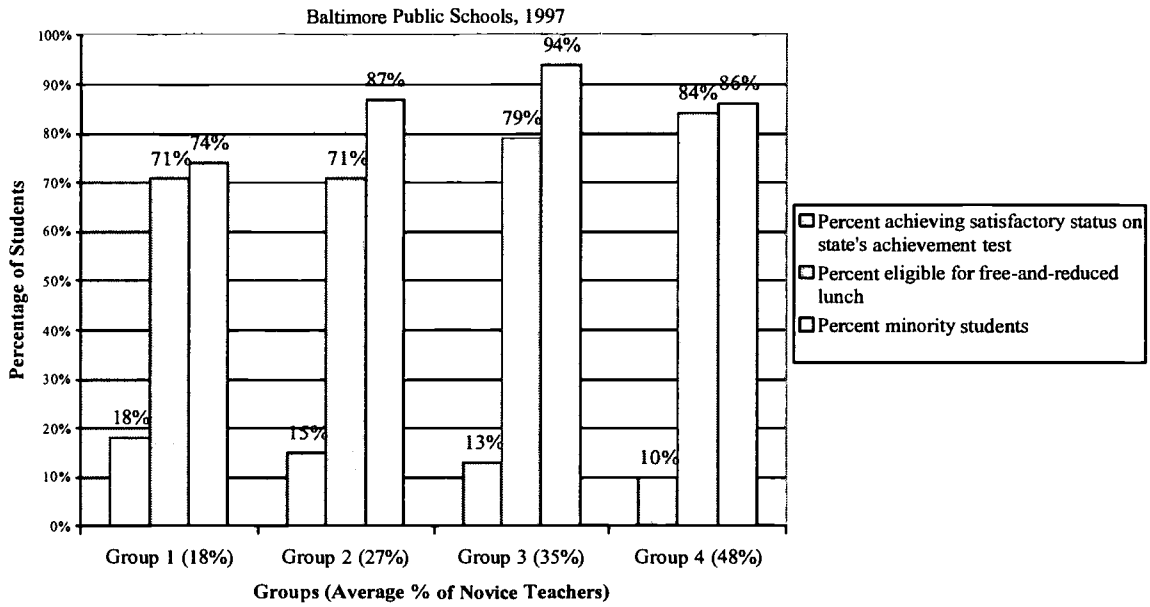
Source: Lee, J "Teacher Staffing and Distribution Patterns for 1997 in Four Maryland LEAs." Cited in Prince, Cynthia. *The Challenge of Attracting Good Teachers and Principals to Struggling Schools*. Washington DC: American Association of School Administrators, 2002.

Schools with the largest proportions of novice teachers had more than twice as many students of color, almost three times as many low-income students, and less than half as many students achieving at satisfactory levels on state achievement tests.[46]

The pattern within districts is the same. For example, in Baltimore, schools with the highest concentrations of novice teachers (48%) had higher percentages of minority students (86% versus 74%), higher percentages of low-income students (84% versus 71%) and lower percentages of students achieving at satisfactory levels (10% versus 18%) than schools with the lowest percentages of novices (18%) (Figure 22).[47] Schools with high percentages of low-income students and students of color tend to be disproportionately staffed by inexperienced teachers.

[46] Lee, J. *Minority Achievement in Maryland: The State of the State.* Baltimore: Maryland State Department of Education, 1998. In Cynthia Prince, *The Challenge of Attracting Good Teachers and Principals to Struggling Schools*, Arlington: American Association of School Board Administrators. 2002.
[47] *ibid.*

Figure 22: Distribution of Novice Teachers in Baltimore



Source: Lee, J "Teacher Staffing and Distribution Patterns for 1997 in Four Maryland LEAs". Cited in Prince, Cynthia. *The Challenge of Attracting Good Teachers and Principals to Struggling Schools*. Washington DC: American Association of School Administrators, 2002.

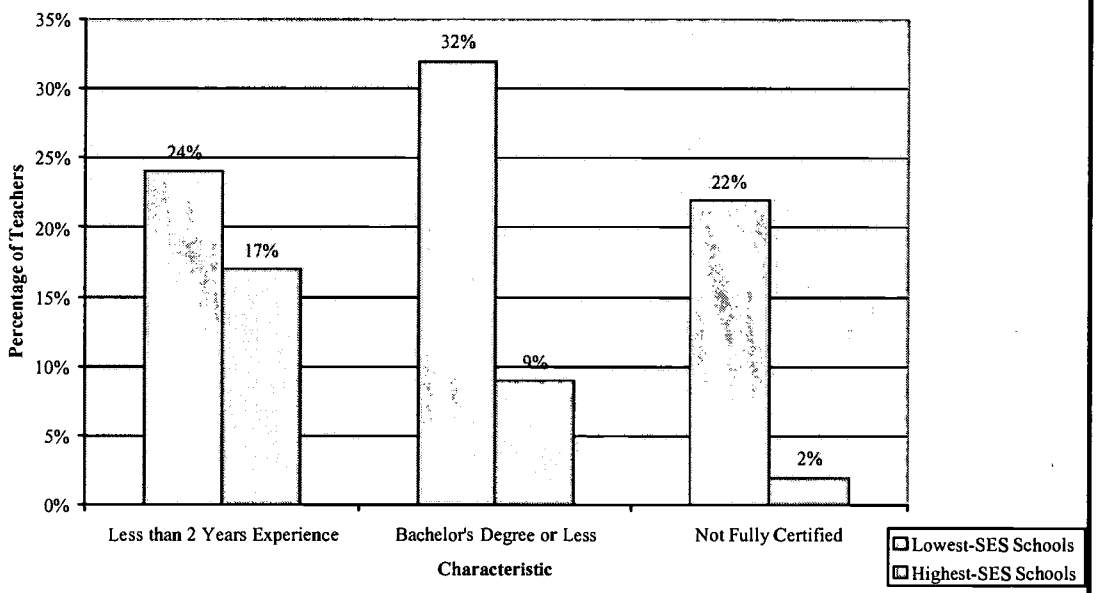
Disparities in Teacher Preparation, Knowledge, and Skills

Despite compelling evidence that teachers' knowledge of subject matter, teaching, and learning are strongly associated with ratings of teacher effectiveness, low-income students and students of color disproportionately are taught by teachers with weak preparation and training. Twenty-two percent of teachers at low-income schools in California were not fully certified compared to only 2% at high-income schools.[48] Similarly, 33% of teachers held a Bachelor's degree or less at low-income schools in contrast to the only 9% of teachers at high-income schools (Figure 23).

As is the case with low-income students, schools with high enrollments of students of color tend to be staffed by under-qualified teachers. In their analysis of Texas schools, Kain and Singleton found teacher skill, as measured by verbal and written proficiency scores, decreased as the campus percentage of African American and Hispanic students increased. Similarly, teachers employed in schools with high percentages of students of color had fewer years of education in addition to the

[48] Betts and colleagues used the proportion of students at a school who receive lunch assistance as their primary measure of SES. They divided schools into five socioeconomic status groups based on the proportion of students receiving free and reduced lunch. They found systemic differences between the level of experience and education of teachers in these different schools.

Figure 23: Distribution of Teachers by SES in California



Source: Betts, Julian R. and Kim S. Rueben and Anne Danenberg. *Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California*. San Francisco: Public Policy Institute of California, 2000

aforementioned lack of experience.[49] Measured teacher ability increased with the campus percentage of high-income students.

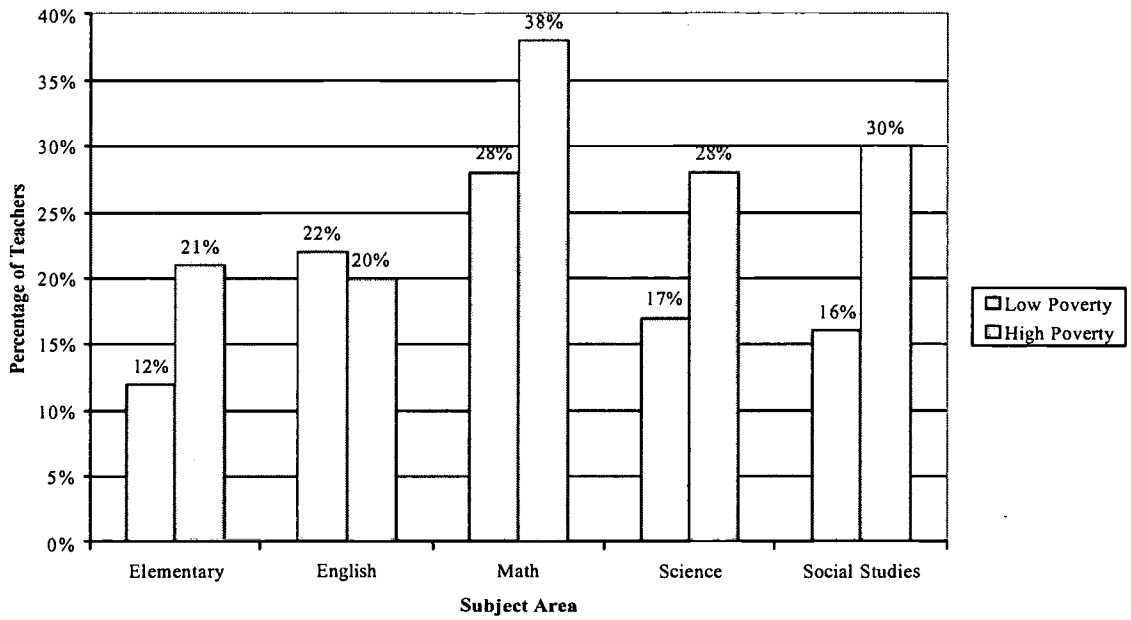
Using a different measure to assess students' access to high quality teachers and methods, Richard Ingersoll found that there are distinct inequalities in the extent of out-of-field teaching in American secondary schools.[50] The premise underlying his analysis is that adequately qualified staffing requires teachers at the secondary school level to hold, as a minimum prerequisite, at least a college minor in the fields they teach. While knowledge of subject matter does not guarantee qualified teachers, or high quality teaching, the premise is that basic subject knowledge is a necessary prerequisite for both. Ingersoll found that low-income schools had higher levels of out-of-field teaching in several of the core academic fields than did more affluent schools.[51]

[49] Kain, John F. and Kraig Singleton. "Equality of Educational Opportunity Revisited," *New England Economic Review*, May/June 1996.

[50] Ingersoll, Richard M. *Out-of-Field Teaching and Educational Equality*. Washington DC: US Department of Education, National Center for Education Statistics, 1996. Ingersoll analyzed the nationally representative 1990-91 Schools and Staffing Survey.

[51] In contrast, Ingersoll found that schools serving predominantly students of color did not have higher levels of out-of-field teaching than did schools serving predominantly white students' nor did classrooms with high levels of students of color. However, as Ingersoll points out, this does not mean that there are no inequalities in access to quality teaching and quality teachers, according to the race or ethnicity of the students. He argues that other kinds of differences in access may not revealed by the data and measures used in his analysis.

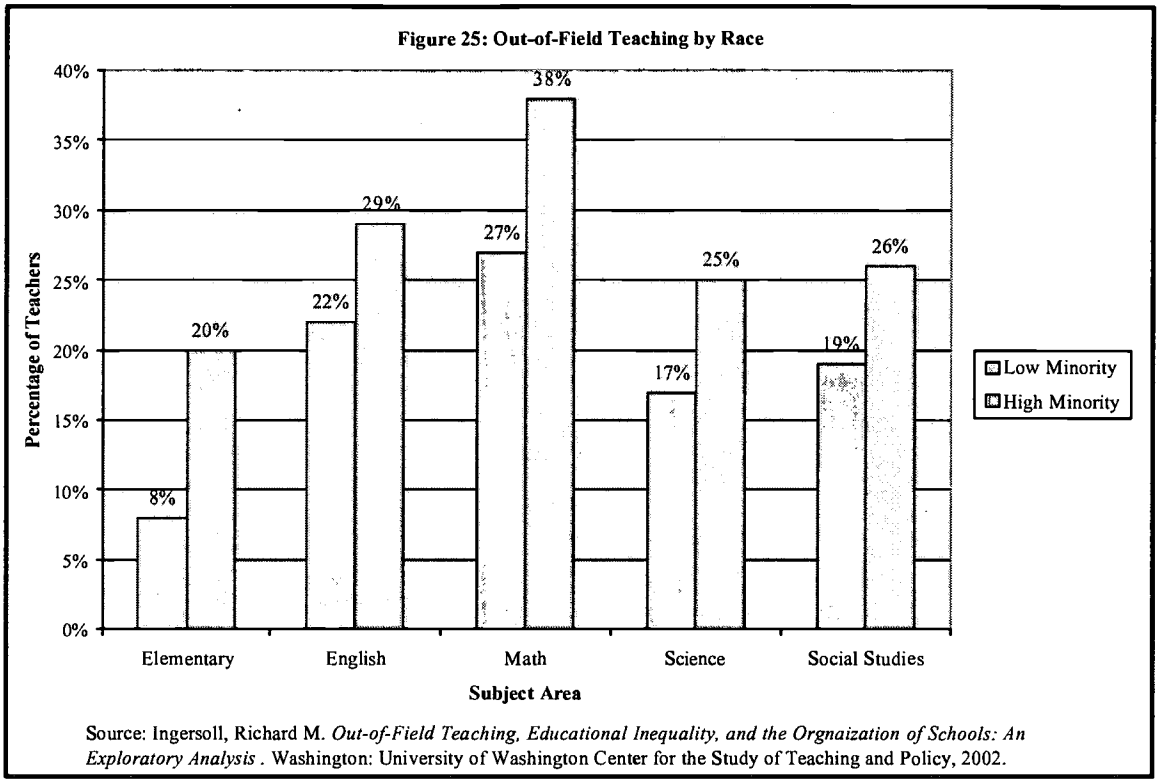
Figure 24: Out-of-Field Teachers by Poverty



Source: Ingersoll, Richard M. *Out-of-Field Teaching, Educational Inequality, and the Orgnaization of Schools: An Exploratory Analysis*. Washington: University of Washington Center for the Study of Teaching and Policy, 2002.

For example, almost a third of social studies teachers in high-poverty schools, as opposed to 16% in low-poverty schools, do not have a major or a minor in social studies or a related discipline (Figure 24). Similarly, high minority schools had higher levels of out-of-field teaching than low minority schools (Figure 25). According to the study, the out-of-field teaching was not due to a lack of basic education or training on the part of the teachers.[52] Rather, it was the result of an inappropriate allocation of teachers' fields of training to their teaching assignments. In several disciplines, teachers in low-income schools were more often assigned to teach courses in fields that did not match their formal background preparation.

[52] Almost all public secondary school teachers held bachelor's degrees, about half had graduate degrees, and over 90% were certified.



Source: Ingersoll, Richard M. *Out-of-Field Teaching, Educational Inequality, and the Orgnaization of Schools: An Exploratory Analysis* . Washington: University of Washington Center for the Study of Teaching and Policy, 2002.

Patterns of unequal access to quality teachers appear *within* schools as well as *across* schools. Not only to do students in low-income and minority schools have less access to qualified teachers, but low-income and minority students, when in affluent schools, also have less access to the best teachers. Ingersoll found distinct variations across different kinds of classrooms in schools in the extent of out-of-field teaching. In several core academic fields, students in both low-track and low-performing classes were more often taught by out-of-field teachers than students in high-track, and high-performing classes. Again, out-of-field teaching was the result of a poor fit between teachers' fields of training and their teaching assignments not necessarily a lack of basic training or education on the part of the teachers.

Disparities in Teacher Turnover

Low-income and minority schools suffer from higher rates of teacher turnover. High rates of teacher turnover are disruptive and can adversely affect staff morale, community relationships, and school performance. Schools that report difficulty attracting teachers are nearly twice as likely to have higher than average rates of teacher turnover.[53] According to Ingersoll, half of the overall turnover of teachers is, in fact, migration from one school to another. Teachers in schools with

[53] Ingersoll, Richard M. *Teacher Turnover, Teacher Shortages, and the Organization of Schools*. Seattle: University of Washington, Center for the Study of Teaching, 2001 in Cynthia Prince *The Challenge of Attracking Good Teachers and Principals to Struggling Schools*, Arlington: American Association of School Administrators, 2002.

minority enrollments of 50% or more migrate at twice the rate of teachers in schools with relatively few minority students.[54] Schools are significantly handicapped by this revolving door as it severely impairs the staff's ability to effectively implement reforms to improve student performance and close the achievement gap.

There is, as Kati Haycock, director of the Education Trust, contends, a "gross maldistribution of teacher talent" in the United States.[55] Low-income students and students of color do not have equal access to quality teachers or quality teaching. Given that such access has been shown to be directly related to student performance, this trend should cause serious concern to policy makers committed to addressing the achievement gap.

Where Does Washington Stand?

Low-income and minority students in Washington do not have equal access to well-prepared and qualified teachers. Thirty-two percent of classes in secondary schools with high percentages of low-income students are taught by teachers lacking a major in their field compared to 23% in schools with low percentages of low-income students. In schools with high percentages of students of color, 28% of classes are taught by teachers without a major in their field compared to 24% in schools with low percentages of students of color.[56] African American and Native American students are the least likely to be taught 8th grade mathematics by a teacher with a major in mathematics. Twenty-three percent of African American students and 28% of Native American students were taught 8th grade mathematics by a teacher with a mathematics major compared to 40% of Asian/Pacific Islander students, 35% of Hispanic students, and 32% of white students.[57]

Academic Rigor

Research on the value of a rigorous academic curriculum and its relationship to student performance is unambiguous; academic achievement is directly related to challenging coursework. The number of rigorous courses students take has a positive effect on learning as measured by test scores. This effect is particularly strong at the high school level where, for example, students who complete a full sequence of college preparatory mathematics courses score higher on the NAEP than those who complete only one or two courses (Figure 26).[58] Moreover, the impact of less academically rigorous course taking has the reverse effect on student achievement. Students with more vocational credits have lower mathematics, science, and reading NAEP scores. [59]

---

[54] *ibid.*

[55] Haycock, Kati. "Good Teaching Matters...A Lot." *Thinking K-16*, 3 (2), 3-15. Washington DC: The Education Trust, Summer 1998.

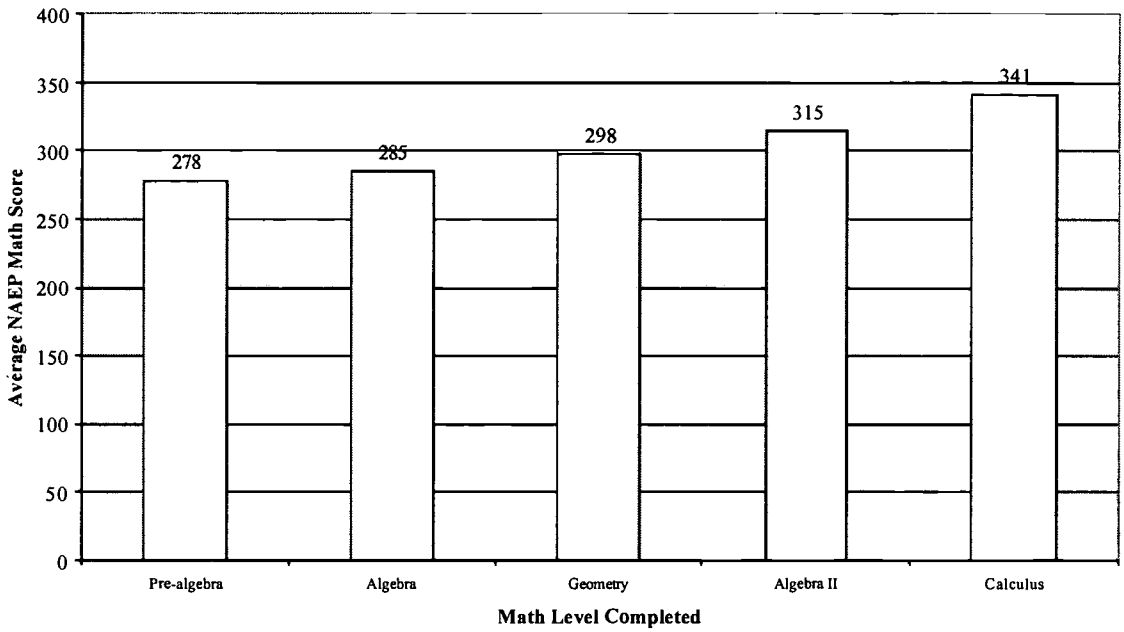
[56] Staffing data is based on the 1993-94 school year.

[57] Education Trust, *State Summary of Washington*. Washington DC: Author, 2002.

[58] National Center for Education Statistics, *NAEP1999 Long-Term Trends*, Washington DC: U.S. Department of Education, 2000. In Kati Haycock et al, "Closing the Gap: Done in a Decade," *Thinking K-16*. Washington DC: The Education Trust, 2001.

[59] National Center for Educational Statistics. *Vocational Course Taking and Achievement: An Analysis of High School Transcripts and 1990 NAEP Assessment Scores*. Washington DC: U.S. Department of

Figure 26: The Effect of a Rigorous Math Curriculum



Souce: National Center for Education Statistics, *NAEP 1999 Trends in Academic Progress.* Cited in Haycock, Kati and Craig Jerald and Sandra Huang, "Closing the Gap: Done in a Decade", *Thinking K-16*. Washington: Education Trust. Spring 2001.

In addition to influencing learning as measured by test scores, academic rigor is also a powerful predictor of college success, especially for students of color. Using the sophomore cohort of the High School and Beyond data, Adelman found that academic intensity and the quality of one's high school curriculum (41%) contributes more to college success than test scores (30%) and academic GPA (29%).[60] The adverse impact of limited access to challenging coursework is stronger for African American and Hispanic students than white students. If colleges admitted the top 40% of African American students according to curriculum intensity, the college graduation rate for African American students would rise from 45% to 73% and the gap between African American and white degree attainment rates would shrink from 30% to 13%. Hispanic students exhibit a similar pattern (Figure 27).

Access to rigorous coursework is directly linked to academic achievement, whether measured by test scores or college success.[61] Nonetheless, our schools fail to

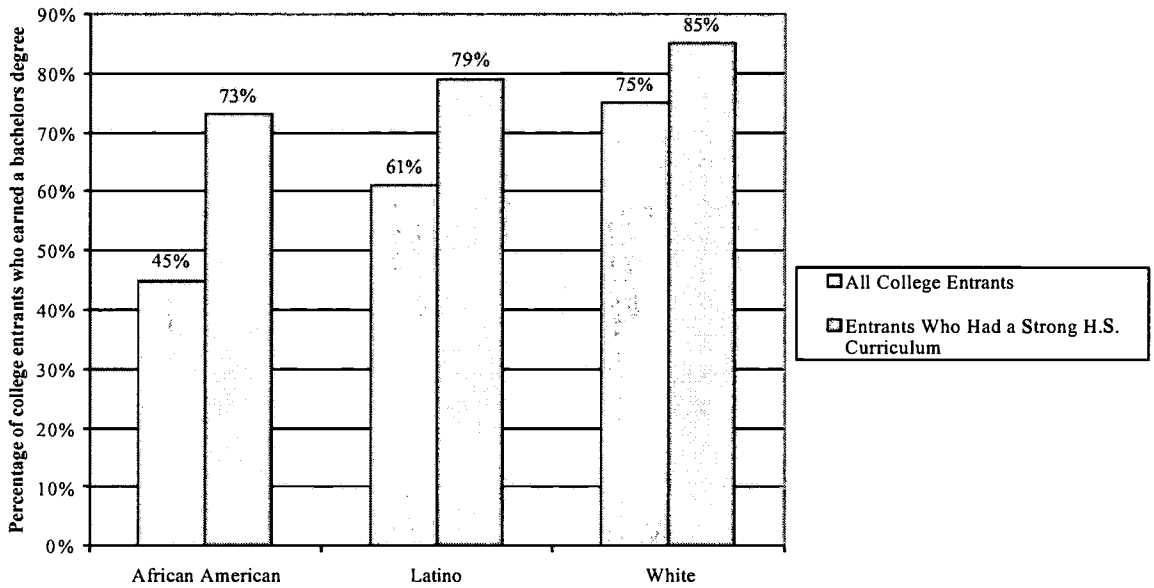
---

Education, 1995. In Kati Haycock et al, "Closing the Gap: Done in a Decade," *Thinking K-16*. Washington DC: The Education Trust, 2001. Because there is a limit to the number of courses a student can take, a plausible explanation for the lower scores among students who take several vocational courses is that they spend less time in the academic courses that develop the skills assessed on the NAEP.

[60] Adelman, Clifford. *Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment.* Washington DC: U.S. Department of Education, 1999.

[61] As argued by Finn, student course-taking reflects both "opportunities offered" by schools and "opportunities taken." The courses a school offers delimits the courses students can take and thus what

Figure 27: The Effects of a Rigorous Curriculum on College Completion



Source: Adapted from Adelman, Clifford. *Answers in the Toolbox* . Washington: US Department of Education, 1999. Cited in Haycock, Kati and Craig Jerald and Sandra Huang "Closing the Gap: Done in a Decade," *Thinking K-16*, Spring 2001.

ensure that all students, including students of color, English language learners and low-income students, equal access.

Disparities in Course Offerings

Despite persuasive evidence about the value of a rigorous curriculum, not all high schools offer advanced courses. About one-third of high schools do not offer any advanced courses in science and another 28% offer advanced work only in one science subject, most commonly biology.[62] Schools with high proportions of low-income students offer fewer and less-advanced mathematics courses than offered by schools with high proportions of high-income students. Similarly, the average number of science areas offered declines as the percentage of low-income students increases. Only about 1% of low-income schools offer courses in five science areas, and the average number of advanced science courses offered in these schools is less than one. Almost half of low-income schools offer no advanced science courses.

---

students can learn. Additionally, schools can limit the learning of students by discouraging them from enrolling in certain courses. Students may also limit their own learning by not taking advantage of the courses offered. See Finn, Jeremy D. "Opportunity Offered-Opportunity Taken: Course Taking in American High Schools." *ETS Policy Notes* 9 (1). Princeton: Educational Testing Service, 1999.

[62] Finn, Jeremy D. *op cit.* Finn's research is based on the High School Transcript Study, a component of the National Assessment of Educational Progress, and on a national sample of students who graduated from high school in 1994.

In California, the overall level of "a-f" course offerings, those courses that satisfy entrance requirements at the University of California, increases as the percentage of low-income students declines. [63] High schools with the highest proportion of high-income students offer about 10% more "a-f" courses than high schools with high proportions of low-income students. Similarly, the average high-income school has over 50% more AP classes than the average low-income school.[64] Schools that serve low-income students and students of color are, on the whole, academically less rigorous.

Disparities in Course-Taking

Even at schools with extensive advanced course offerings, students of color and low-income students are disproportionately under-represented in advanced classes. The mere presence of advanced courses does not guarantee that all students have access to a rigorous academic curriculum.

As argued by Finn, student course-taking reflects both "opportunities offered" by schools and "opportunities taken." The courses a school offers delimits the courses students can take and thus what students can learn. Additionally, schools can limit the learning of students by discouraging them from enrolling in certain courses. Students may also limit their own learning by not taking advantage of the courses offered.

Evidence indicates that race may play a strong role in course-taking patterns. According to Finn, African American and Hispanic students take fewer mathematics, science and foreign language courses than white students.[65] While students from families with higher levels of education are more likely to complete more years of science and mathematics across all racial groups, Camara and Schmidt found that race-based differences in years of mathematics and science completed exist even when parental income and education are held constant.[66] For example, only one-third of African American and Hispanic students from families where one parent has a high school degree or less are likely to complete four years of science in high school compared to 50% of Asian American students and 44% of white students with similarly educated parents. Substituting family income for parental education does not alter these trends, according to Camara and Schmidt.

School policies and practices play an important role in student course-taking patterns. Academic tracking, the practice of placing students in different classes based on perceived differences in their abilities, has a strong and consistent impact on the rigor and intensity of courses completed in high school. According to Finn, minority students, in general, and African American students in particular, gained an advantage in course-taking by attending a suburban public school, which may indicate that an overall climate

[63] A-F courses are distinct from AP courses.

[64] Betts et al use regression analyses to explore whether schools fail to supply advanced courses or students do not demand them. They acknowledge that it is most likely a combination of both factors.

[65] Finn, Jeremy D., *op cit.*

[66] Camara and Schmidt, *op cit.*

of high standards may have a positive effect on course-taking patterns of students of color.[67]

It is widely held that children will rise to the standards we set for them, yet our schools systematically limit student achievement by failing to provide and ensure all students access to a rigorous curriculum. Taken in combination with poor access to quality teachers, the inevitability of the achievement gap is painfully obvious. Low-income students and students of color are not afforded access to the educational resources required for success. Any attempt to close the achievement gap must first level the playing field by ensuring that low-income and minority students have access to the requisite educational resources.

Where Does Washington Stand?

Not all Washington students have equal access to challenging coursework and effective instructional practices. Only 15% of African Americans, 15% of Native Americans, and 13% of Hispanics took 8th grade algebra, a class that often functions as a gatekeeper to more advanced coursework. In contrast, 28% of white students and 31% of Asian/Pacific Islander students enrolled in 8th grade algebra. African American, Native American and Hispanic students are also less likely to take Advanced Placement exams. In a system where all students have equal access to high level curricular opportunities, the percentage of test-takers by race and ethnicity should be proportional to their representation in public K-12 enrollment.

Similarly, The Education Trust argues that student placement in school programs is equitable when the percentage of students by race and ethnicity is proportional to public K-12 enrollment. In Washington African American and Latino students are over-represented in Special Education and under-represented in Gifted and Talented Education. Additionally, a disproportionate number of African American and Hispanic students are suspended.[68]

Table 2: Advanced Placement Test-Takers
Washington, 2000

	Public K-12 Enrollment	English/Composition	Calculus AB	Biology
African American	4.9%	2.8%	1.3%	1.7%
Asian/Pacific Islander	6.9%	15.9%	20.7%	15.1%
Hispanic	8.6%	2.5%	1.9%	1.7%
American Indian/Alaska Native	2.8%	Low reliability	Low reliability	Low reliability
White	76.8%	78.8%	76.1%	81.4%
Total	100%	100%	100%	100%
Number	991,235	1,927	2,565	915

Source: Education Trust, *State Summary of Washington.*

[67] Finn, Jeremy D., *op cit.*

[68] Although suspensions are not an academic program, they are a valuable indicator of equality of opportunity as they represent a placement out of the system altogether.

Evidence indicates that students whose teachers emphasize mathematic problem solving and hands-on science perform better on the NAEP. The frequency at which students experience these practices is therefore another indicator of opportunity to learn. African American (32%) and Native American (30%) students were least likely to report experiencing a lot of complex problem solving. Similarly, only 76% of African

Table 3: Student Placements
Washington, 2000

	Public K-12 Enrollment	Gifted and Talented	Special Education	Suspensions
African American	4.9%	1.5%	8.2%	7.1%
Asian/Pacific Islander	6.9%	8.9%	3.1%	3.8%
Hispanic	8.6%	8.7%	10.7%	10.4%
American Indian/Alaskan Native	2.8%	0.8%	3.6%	2.9%
White	76.8%	80.2%	74.2%	75.8%
Total	100%	100%	100%	100%
Number	991,235	44,122	63,601	61,922

Source: Education Trust, *State Summary of Washington*

Americans and 62% of Native American students reported experiencing hands-on science assignments at least once a week compared to 85% of Asian/Pacific Islander students, 84% of Hispanic students and 83% of white students.[69]

Societal Factors

While extremely significant, disparities in access to educational resources alone do not explain the achievement gap. Societal factors stemming from a long history of prejudice and discrimination operate in complex and nuanced ways within schools impacting student performance.

Prejudice and Discrimination

Prejudice and discrimination have long been significant sources of educational difference among racial and ethnic groups in the United States. These differences can be traced to a deeply ingrained and widely held belief that students of color are less able to succeed in school for either innate or cultural reasons. As Robert Rothman writes, despite the prevailing rhetoric that "all students can learn," centuries of discrimination have left a "residue of belief" that students of color cannot succeed to high levels.[70] While this belief is less pervasive than in the past, it is by no means dead.

For Kati Haycock, prejudice is the source of an enduring myth about the educability of certain student populations.[71] According to the myth, student achievement has more to do with a child's background than with the quality of instruction a child

[69] Education Trust, *op cit.*
[70] Rothman, Robert, "Closing the Achievement Gap: How Schools Make it Happen," *Challenge Journal.* Providence: Brown University, 2001/2002.
[71] Haycock, Kati, *op cit.*

receives, rural and urban schools face insurmountable obstacles caused by poverty and racism, and "at risk" or "disadvantaged" students might be able to master some basic skills, but their home lives and communities are just too deprived to allow them to attain the same levels of learning as their affluent suburban contemporaries. Prejudice and discrimination operate at all levels of our system of public education.

While it is difficult to quantify the impact of prejudice and discrimination on the educational outcomes of students, many believe that it is significant.[72] Prejudice contributes to educators' low academic expectations for students of color as well as students' own expectations of themselves. There is growing evidence that students of color internalize notions of intellectual inferiority causing them to reject school and perform less well than their abilities would otherwise indicate. When students believe that society does not expect them to succeed, or when they themselves believe they cannot succeed, they meet those expectations.

Teachers' Expectations

There is strong evidence that teachers treat students of color and white students differently. Teachers tend to be less supportive of African American students than white students. In her experimental study, Taylor found that African American students receive briefer feedback after mistakes, less positive feedback after correct responses, and less unauthorized coaching from teachers.[73] This is particularly troubling given that African American students respond more strongly to teachers' beliefs. When asked who they are most interested in pleasing, 81% of African American females and 62% of African American males chose teachers compared to 28% of white females and 32% of white males.[74]

Based on his extensive review of the literature, Ferguson concludes that teachers' perceptions, expectations, and behaviors interact with students' beliefs, behaviors, and work habits in ways that help perpetuate the achievement gap. He notes,

> [Schoolchildren] spend their days in social interaction with teachers and other students. As students and teachers immerse themselves in the routines of schooling, perceptions and expectations both reflect and determine the goals that they set for achievement; the strategies they use to pursue the goals; the skills, energy, and other resources they use to implement the strategies; and the rewards they expect from making the effort.

---

[72] See, for example, The College Board, *Reaching the Top: A Report of the National Task Force on Minority Achievement*. New York: Author, 1999.

[73] Taylor, Marylee C. "Race, Sex, and the Expression of Self-Fulfilling Prophecies in a Laboratory Teaching Situation." *Personality and Social Psychology* 6: p897-912. Cited in Ronald Ferguson "Teachers' Expectations and the Test Score Gap" in Jencks and Phillips (Eds) *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press, 2000.

[74] Clifton and Casteel cited in Ronald Ferguson "Teachers' Expectations and the Test Score Gap" in Jencks and Phillips (Eds) *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press, 2000.

Ferguson draws the following conclusions from the research on teacher expectations: (1) teachers have lower expectations for African American students, (2) teacher's expectations have a stronger impact on the performance of African American students, (3) teachers tend to expect less of African American students than of white students largely because the past performance and behavior of African American students has been worse, and (4) by basing their expectations on children's past performance, teachers perpetuate racial disparities in achievement. While the magnitude of the effect of teachers' expectations on student achievement is uncertain, it maybe quite substantial if effects accumulate from kindergarten through high school.

Students' Expectations

How students view their own academic abilities is also significant and may contribute to the achievement gap. Students who view themselves as scholars are more motivated to succeed and persist longer in the face of failure because their self-esteem is more strongly influenced by academic performance.[75] Researchers argue that factors inherent in American society prevent children of color from viewing themselves as scholars and thereby valuing academics personally.

In a series of experiments conducted with students at Stanford University, Claude Steele found that anxiety about racial stereotypes and intellectual competence impede the performance of African American students on standardized tests, a condition he called "stereotype threat."[76] Steele argues that academically successful African American students worry that poor achievement on a test will confirm the stereotype that African Americans are intellectually inferior. As a self-protective measure, these students devalue or reduce their identification with academics and consequently impair their performance. When African American students were told that the standardized test was a measure of their ability, they performed significantly poorer than when they were told the tests were laboratory experiments to explore how students solve problems. Steele concludes that when students identify a test as a measure of their abilities a racial stereotype is activated which provokes self-doubt among test takers. Similarly, test performance of African American students declines when they are asked to identify their race in a preliminary questionnaire. In contrast, African American students outperformed white students when they are not asked to identify their race. Steele contends that the question about race promotes stereotype threat, which may help explain why so many African American students disidentify with school.

Signithia Fordham and John Ogbu identified a similar phenomenon. Fordham and Ogbu found that some African American students do not pursue academic achievement

---

[75] Newmann, F.M. "Reducing Student Alienation in High Schools: Implications for Theory," *Harvard Educational Review*, 51, 546-564, 1981. In J. Osborne "Unraveling Underachievement Among African American Boys from an Identification with Academics Perspective," *Journal of Negro Education*, 68(4), 1999.

[76] Steele, Claude M. "Thin Ice: "Stereotype Threat" and Black College Students," *Atlantic Monthly*, 284 (2), 1999.

because of the perception that achievement means "acting white."[77] These attitudes lead some African American students to take on an oppositional stance and reject school. [78] Expanding on her work with Ogbu, Fordham found that even the most academically successful African American students expressed profound ambivalence toward schooling and uncertainty that they will reap the rewards of school success. Fordham's analysis highlights the cumulative emotional effects of prejudice and discrimination and suggests that students' perceptions of the opportunities available to them, or lack there of, greatly impair their commitment to schooling and result in poor academic performance.

Administrators, teachers, and students bring a host of ideological beliefs with them to school. These beliefs inform policy, behavior, and practice which in turn impact student performance. Closing the achievement gap necessitates a focus both on the inequitable distribution of educational resources and the complex ways that prejudice and discrimination infiltrate the learning process.[79] The next section outlines some strategies for closing the achievement gap.

[77] Fordham, Signithia and John Ogbu. "Black Students' School Success: Coping with the Burden of Acting White." *Urban Review* 18 (3), 1986.

[78] In contrast to Fordham, Cook and Ludwig contend that African American students are no more likely than whites to lose peer status for excelling in school. However, as Ferguson points out, while the evidence on the impact of peer pressure is inconclusive, negative peer pressure may make the achievement gap harder to close even if it is not a dominant factor in explaining the gap.

[79] Huggins, Elise. *Powerful Learning for All Students: Whole-School Reform and the Pursuit of Equity*. UMI, 2000.

SECTION IV: STRATEGIES FOR CLOSING THE ACHIEVEMENT GAP

The quantitative analysis presented here demonstrates that the achievement gap in Washington State is significant. Moreover, research on the causes of the achievement gap indicate that the gap will not be addressed adequately until we attend to both the inequitable distribution of educational resources and the complex ways that prejudice and discrimination effect teaching and learning.

State demographic trends indicate that the problem may only get more challenging as Washington schools are growing racially, ethnically and linguistically more diverse. While the total percentage of students of color is below the national average, the rate of growth is greater. During the period from 1976 to 1996, the proportion of minority enrollment increased nationally by half from 24% to 36%. In Washington it more than doubled from 10% to 22%. The number of English Language Learners (ELL) is also increasing rapidly. ELL enrollment increased at a rate of 7% a year over the past three years. While not evenly distributed across Washington's 2,100 schools, students of color are found throughout the state from remote rural to central city settings.[80] The achievement gap is a statewide concern that requires a state-level response.

Narrowing the achievement gap is feasible. As the Washington data presented here indicate, school-level gaps are not consistent across schools; there are schools where the gap is small and schools where it is non-existent. Additionally, the research literature is replete with success stories about schools with high proportions of low-income students and students of color that are succeeding in educating their students to high levels.[81] According to the literature, these schools have a shared vision of excellence and equity; develop a challenging curriculum with high expectations for all students and instruction that engages; organize students and time to afford quality learning opportunities for staff and students alike; create a participatory school culture that enables the school to be a community of learners; and actively involve parents and the community in student learning.[82] Finally, decades of lessons learned from school reform efforts have resulted in an extensive literature on the change process. Policymakers, practitioners, parents and students have ample reason to be optimistic.

---

[80] Thirty-five percent of students of color are found in city settings; 23% are found in suburban settings; and 18% are found in small towns or rural areas.

[81] See, for example, Samuel Casey Carter, *No Excuses: Lessons from 21 High-Performing, High Poverty Schools*; Craig D. Jarald, *Dispelling the Myth Revisited: Preliminary Findings of a Nationwide Analysis of "High Flying" Schools*; and Joseph H. Johnson and Rose Asera, *Hope for Urban Education: A Study of Nine High-Performing, High-Poverty Urban Elementary Schools*. Also, Education Trust maintains and online database of high-performing, high-poverty and high-minority schools.

[82] Berman, Paul and David Chambliss and Kristin Donaldson Gaiser. *Making the Case for a Focus on Equity in School Reform*. Emeryville: RPP International, 1999.

Drawing from studies of states, districts and schools that have succeeded in narrowing the gap, this paper identifies the following list of promising strategies and policies that grow from an approach to policy that is guided by a focus on educational equity.

Strategies

Design and Implement Policy with Educational Equity in Mind

The achievement gap can be closed, but not with quick fixes. Closing the gap is a complex task that requires multiple, simultaneous, coherent, and long-term efforts that are designed with educational equity in mind from the start. According to Laurie Olsen of California Tomorrow,[83] the major reforms of the last few decades have largely bypassed the achievement gap and, in some cases, have actually resulted in exacerbating it.

> Reforms fail because of ignorance about what is known about effective schooling for language minority and culturally diverse student populations. It happens because reforms are being implemented on an already uneven playing field without addressing fundamental disparities. It happens because we aren't sufficiently asking questions about the likely equity impacts of new reforms.[84]

Responsibility must be shared by policymakers, educators, community leaders, parents and students. The state must set the stage by designing and implementing policies, including school accountability, in ways that address educational equity from the start. The state should create a policy context in which local schools and districts are both held responsible for educational equity but have the latitude to design reform strategies that effectively meet the needs of their changing student population for it is the teachers, parents and administrators who know and understand their students' needs best, not state legislators. Without an equity-centered policy context at the state, district, and school level, closing the achievement gap will prove elusive. The solution requires a vision for equity that guides future policy choices and is implemented over a protracted period of time.

Invest in Capacity

Schools require the capacity - material and intellectual - to educate all students to high levels. Without the requisite educational resources, schools are handicapped in their efforts to change inequitable patterns of achievement. Investing in capacity means providing all schools, including schools in low-income communities and communities of color, with the resources that result in equitable student outcomes.

Additionally, schools' require the capacity to both identify and change patterns of achievement along lines of race, ethnicity, and income level. Schools must be encouraged

[83] California Tomorrow works with schools, communities, and other groups to facilitate change in the areas of equity and access.

[84] Olsen, Laurie. "Holding Schools Accountable for Equity," *Leadership*, March/April 2001, p.29.

to explore the institutional and individual practices, assumptions, and processes that contribute to inequitable patterns of resource distribution and student achievement. Without more specific analysis and more creative models for responding to student differences, schools are unable to act in ways that effectively interrupt patterns of student achievement.[85]

Target Low-Performing Students and Schools

Policy makers and practitioners must "drop beneath the rhetoric of *all students*" by focusing specifically in the very students and schools that are achieving at the lowest levels.[86] Despite countless well-intended reform efforts during the past two decades, there is still a wide gap in achievement between low-income, African American, American Indian, and Hispanic students and other students. In many cases, reforms have failed to make significant gains in the achievement of the lowest-achieving students because they have relied on models and generic reform strategies targeted at "all students" as opposed to specific groups of students who are performing at lower levels. There is often confusion and disagreement about which students are achieving at the lowest levels, why they are achieving at the lowest levels, and what can be done to improve their achievement. Most schools explore in only limited ways whether students who share certain characteristics perform similarly and fail to adequately investigate the full range of causes of low achievement – causes that are often located within institutional and individual practices that perpetuate inequities. Consequently, the diagnosis is weak and incomplete and leads to improvement efforts that have little effect.

The quantitative analysis presented in this report supports an approach targeted at the lowest performing schools. Nonwhite scores on the WASL are not only concentrated below the cutoff of 400 for meeting standard, they are concentrated at the bottom of the scale score distribution. Additionally, under-achieving students are not improving at a rate that will close of the gap.

Policies

Expand Access to Preschool

Provide universal access to high-quality preschool programs. Children enrolled in preschools programs enter kindergarten better prepared to learn. According to David Grissmer, higher levels of participation in preschool programs is one of the major factors in a state's higher scores on mathematics assessments given in the fourth and eighth grades.[87]

---

[85] California Tomorrow, *The Unfinished Journey: Restructuring Schools in a Diverse Society*, San Francisco: Author 1994, Judith Warren Little and Rena Dorph, *Lessons About Comprehensive School Reform: California's School Restructuring Demonstration Program.* Berkeley: SB 1274 School Restructuring Study, 1998.

[86] Berman, Paul and David Chambliss and Kristin Donaldson Geiser, *op cit.*

[87] Grissmer, David. *op cit.*

Fund Schools Equitably

Through the creation of the Basic Education Fund and the establishment of levy lids, Washington State has successfully reduced disparities in funding between districts. However, because equalization funds do not take inequitable intra-district funding patterns into account, equalization funds can not guarantee that low-income students and students of color will benefit from as much public spending as students in affluent districts. Efforts to equalize funding must address funding inequities *within* districts as well as across districts. The state should hold districts accountable for equalizing the distribution of core resources across schools. Additionally, the state should continue to target additional funding to schools with the greatest need.

Districts should monitor variations in funding levels among schools in their districts. Funding inequities can be hidden in specific kinds of schools, among certain populations or in certain sectors of the district.[88] In order to identify and address intra-district disparities in school funding, districts should create an equity profile that charts district funding inequities and analyzes the district's horizontal and vertical equity.[89]

To eliminate unknown inequities districts should move more resources to school budgets and commit to a student based budget strategy that allocates resources based on students and not schools. Additionally, because teacher compensation policies are central to the inequitable patterns in school funding, districts should investigate new policies for compensating teachers and budgeting their salaries, so as to have a more equitable distribution of teacher talent.[90]

Staff Low-Performing Schools with Well-Qualified and Experienced Teachers

The dearth of qualified teachers in high-minority, high-poverty schools is not a problem of quantity, but of distribution. High-achieving, affluent school districts seldom encounter problems filling teacher vacancies. In contrast, school systems with high concentrations of poor and minority students must generally make do with much smaller pools of qualified teachers.[91]

Several policies contribute to the inequitable distribution of teachers found within districts, including:

---

[88] Roza, Marguerite, *op cit.*

[89] Horizontal equity addresses the extent to which students with similar characteristics receive equal resources, while vertical equity addresses the extent to which students with dissimilar characteristics receive appropriately dissimilar resources.

[90] *ibid.*

[91] In 1996-97, for example, the Baltimore City Public Schools (the poorest schools system in Maryland) received 1,800 applications for 826 vacancies, and average of 2 applications per job opening. In comparison, Montgomery County Public Schools (the wealthiest district in Maryland) received 6,109 applications for 655 teacher vacancies, and average of 9 applications per job opening. Even though Montgomery County had 20% fewer vacancies than Baltimore, the district received more than 3 times as many applications. Baltimore would have had to hire 46% of those who applied in order to fill all of its vacancies; whereas Montgomery County needed only to cream the top 11% from its considerably larger pool of teacher applicants. For a discussion, see Cynthia Prince *The Challenge of Attracting Good Teachers and Principals to Struggling Schools*. Arlington: American Association of School Administrators, 2002.

- seniority clauses in union contracts that allow veteran teachers to choose where and whom they will teach;
- state policies that prevent principals and other hiring authorities from obtaining information on teachers' failure rates on certification tests;
- district policies that grant central office staff, rather than principals, the authority to select teachers from applicant pools; and
- cumbersome internal district procedures that hinder qualified veteran teachers from transferring to low-achieving schools.[92]

Changing these kinds of dysfunctional policies and procedures will not be easy and will undoubtedly result in some resistance from unions, school boards, parent organizations, and staff.

One tactic to correct the uneven distribution of highly qualified teachers is to change dysfunctional state and local policies. For example, easing seniority rules, granting authority to principals for determining teacher placements, eliminating residency rules, abolishing state policies that prevent hiring authorities from knowing how many times teachers failed state licensing tests, and eliminating certification loopholes that allow substitute teachers to teach indefinitely without passing the state certification exams.

A second tactic to get well-qualified teachers into the neediest schools is to offer monetary incentives in the form of higher salaries or bonuses, support to cover home loans, and relocation expenses for teachers willing to take on difficult assignments. Several states and districts are experimenting with various incentive strategies to encourage exemplary teachers to work in low-performing, hard-to-staff schools. However, according to a study of teacher turnover in Texas, salary increases and bonuses needed to deter teachers from leaving schools serving high concentrations of poor and minority students will have to be substantial to be effective. Districts may have to pay an additional 20, 30 or even 50% more in salary.[93]

A third tactic is to improve working conditions in schools. Districts and schools could minimize teacher turnover by addressing the organizational sources of low teacher retention.[94] According to Ingersoll, lower turnover levels were found in schools that provide more administrative support to teachers, have lower levels of discipline problems, and offer higher levels of faculty decision-making influence and autonomy. Researchers at RAND contend that districts and schools can improve the productivity of the current teaching force by improving teachers' working conditions.[95] According to the study, smaller student-teacher ratios and higher levels of discretionary resources appear to make teachers more productive.

---

[92] Prince, Cynthia, *op cit.*

[93] See Carolyn Kelley, *Financial Incentives in State Accountability Systems: Performance Pay for Teachers*, for a more detailed discussion of this strategy.

[94] Ingersoll, Richard M. "Teacher Shortages: Myth or Reality. Imbalance of Teacher Supply and Demand Requires Fresh Look at School Characteristics and Organizational Conditions," *American Educational Research Journal*, Fall 2001.

[95] Grissmer, David and Ann Flanagan, Jennifer Kawata, and Stephanie Williamson, *op cit.*

Ensure All Students Equal Access To A Challenging Curriculum

Ensure that advanced courses taught by well-qualified teachers are available in all secondary schools and that all students are encouraged to enroll in them. Ensure that curriculum and instruction are challenging and coherent in elementary schools. Strengthen school policies, counseling, and academic support to encourage low-income students, students of color, and ELL students to take rigorous academic courses, beginning in elementary and middle schools. Train teachers in ways to help students succeed in rigorous courses.

Tracking, the practice of placing students in academic tracks based on perceived differences in their abilities, limits students' access to challenging courses. Schools should be encouraged to detrack students. Meeting the academic needs of a broader range of students may prove challenging for some students. Therefore, efforts to detrack schools should be accompanied by professional development for teachers. Smaller class sizes will likely enhance teachers' abilities to meet their students' needs.

Enrolling students in advanced courses may not in and of itself result in higher levels of achievement and a narrowing of the achievement gap. Rather, in some cases, it may simply set some students up for failure and thus further maintain the gap. Students bring with them different levels of preparation and skill and thus may require academic support to meet the higher expectations found in advanced courses. If schools raise the bar, they must also provide students with the means to clear it.

Variations in teacher education, certification, and experience account in part for variations in course offerings between schools. Inequalities in teacher quality across schools are large and have significant implications for student outcomes. Mandating that schools statewide offer advanced courses will not succeed unless the inequitable distribution of quality teachers is also addressed.

Reduce School and Class Sizes in Low-Performing Schools

Emerging research indicates that smaller is better for low-income students and students of color, whether it is schools or classes. According to a study sponsored by the Rural School and Community Trust, the negative effects of poverty on student achievement increases as schools become larger.[96] The correlation between poverty and low achievement is as much as ten times stronger in larger schools than in smaller ones. According to the study, Montana, a state that has consistently sustained a small school structure, smaller schools and districts outperform larger ones, even though they serve poorer communities.

---

[96] Rural School and Community Trust. *Results of a Four-State Study: Smaller Schools Reduce Harmful Impact of Poverty on Student Achievement.* Washington DC: Author, 2000. In Lewis, Anne and Sandra Paik. *Add It Up: Using Research to Improve Education for Low-Income and Minority Students.* Washington DC: Poverty and Race Research Action Council.

The Consortium on Chicago Research found that schools with fewer than 350 students showed greater gains in reading and mathematics achievement than larger schools.[97] According to the study, this held true even when controlling for student and school composition effects, including racial composition, concentration of poverty, and the percentage of low-income students in the school. However, as the study emphasizes, being small is not sufficient. Rather, it is what smallness allows teacher and administrators to do differently that in turn can foster high achievement.

Studies have also found that low-income students and students of color benefit from smaller class sizes. Initial findings from a study of Tennessee's Project STAR by David Grissmer at RAND indicates that classes of 13 to 17 students can make a difference in student achievement that is long-lived, even until high school graduation.[98] The beneficial effects of smaller class sizes were especially strong for low-income and minority students. Students assigned to small classes in the primary grades were more likely to graduate in the top quarter of their class and apply to college. The average scores of African American students on standardized tests increased 7 to 10% age points while the scores for whites in smaller classes increased only 3 to 4 points. African American students who started out in the smaller classes were 10% more likely to take the SAT or ACT college entrance exams, compared to an increase of less than 2% for white students in smaller classes. Similarly, according to Wenglinsky's study of fourth and eighth grade class sizes and student scores on the NAEP, students in classes of fewer than 20 students performed better on the assessment.[99] Wenglinsky found that this was especially true in inner-city schools and therefore concludes that creating smaller class sizes for low-income student and students of color in the early grades is the more efficient use of resources to improve student achievement.

Enhance State, District, and School Staff Capacity for School Improvement Focused on Equity

Increasingly, educational researchers and school change experts argue that closing the achievement gap requires reform efforts that are both comprehensive in scope and guided by principles of educational equity.[100] The state should invest in developing the in-house knowledge and capacity for equitable school improvement by adopting research-based school reform models for high-minority and low-income schools, training district and school staff, and creating reform networks to share information about effective practices and foster support among low-performing schools.

---

[97] Consortium on Chicago Research. Elementary School Size and Its Effect on Academic Productivity in Chicago Elementary Schools. Unpublished paper. Chicago, IL: Author cited in Lewis, Anne and Sandra Paik , *op cit.*

[98] Grissmer, David and Ann Flanagan, Jennifer Kawata, and Stephanie Williamson, *op cit.*

[99] Wenglinsky, Harold. *When Money Matters: How Educational Expenditures Improve Student Performance and How they Don't.* Princeton: Policy Information Center, Educational Testing Service, 1997 cited in Lewis, Anne and Sandra Paik, *op cit.*

[100] Equity is an essential component of the following models of school change: RPP International, Bay Area School Reform Collaborative, California Tomorrow, Coalition of Essential Schools, The Achievement Council.

Support Research

Support additional state-based research to learn more about possible causes of and effective strategies for closing the achievement gap in Washington. Conduct research on important unanswered questions about the gap. By conducting in-depth case studies of schools, researchers not only can analyze data at the individual level thereby enhancing our understanding of the home- and school-related factors that contribute to the gap, they can also begin to identify schools that have successfully narrowed the gap. The expertise in these schools may prove to be a vital resource in state's effort to close the achievement gap.

The next section identifies some important policy implications of this study for the design and implementation of a system of state school accountability.

SECTION V: HOLDING SCHOOLS ACCOUNTABLE FOR EQUITY – IMPLICATIONS FOR POLICY

The present environment of school accountability and standards-based reform has resulted in an unprecedented focus on the achievement gap. Instead of simply explaining away the persistent under-achievement of low-income students, students of color, and English Language Learners, states are designing systems of accountability that place the locus of responsibility for student performance squarely on the school. Holding schools accountable for disparities in performance is essential, but entirely inadequate absent a commitment to ensuring that schools have the capacity to address such disparities. For systems of school accountability to remedy disparities in student achievement, they must also identify and address disparities in school capacity. School accountability should be viewed as a reciprocal relationship;[101] schools must be equipped to respond to new standards and accountability. This requires that the state design and implement school accountability with equity in mind from the start. This paper identifies several key elements of an equity-centered accountability system.[102] The promise of school accountability will not be realized unless policymakers invest in capacity-building at all levels.

Produce and Use Data in Ways that Increase Awareness of Persistent Low Achievement

Our understanding of the achievement gap in Washington State is severely limited by the data available. Strong data on student performance and school climate and resources allow researchers and practitioners to better identify, explain, and design remedies for persistent disparities in student achievement. A data system that tracks academic performance at the individual student level reduces the chance that unobserved past school experiences are responsible for the measure of student performance. A student-level database that follows student progress over time will allow the state to better track the progress of schools and districts in closing the gap and assist researchers in pinpointing more exactly the factors that contribute to the achievement gap in Washington.

As evidenced by this report, using scale scores to display the achievement gap results in a much more detailed and complex analysis. Unlike most presentations of the achievement gap that only identify what proportion of students meet a standard and do not distinguish students who are just below the standard from those far below it, scale scores tell us, for students who did not meet the standard, whether they are close to or far from attaining it. As such, progress in closing the gap, or lack there of, is more visible.

---

[101] Brooks, Sarah. *How States Can Hold Schools Accountable: The Strong Schools Model of Standards-Based Reform*, Washington: University of Washington's Center on Reinventing Public Education, 2000.
[102] This list is adapted from that articulated by Laurie Olsen in "Holding Schools Accountable for Equity," *Leadership*, March/April 2001.

Measure Improvement and Growth Over Time

By measuring improvement and growth over time the state can better understand whether school improvement efforts are working. Locally, historical data by school that allow comparisons over an extended period are helpful to battle complacency and trigger celebration.

Many states are experimenting with a "value-added" approach to school accountability. Critics of school accountability argue that the strong correlation between test scores and socioeconomic background results in school rankings that have more to do with the characteristics of students who attend a school than with how well its educators are doing their jobs. Instead, they argue that a much fairer way to assess the productivity of individual schools is to look at how much "value" the school adds by focusing on gains in its students' test scores. Other researchers take the notion a step further to argue that states and districts should actually attempt to weed out the influence of non-school factors such as poverty and race, by adjusting test scores statistically.[103] By balancing measurements of a school's absolute academic performance with measurements of the schools contribution to student growth the accountability system acknowledges factors that are beyond the schools control while maintaining high standards for all students.[104]

Measure Gaps in Achievement As Well As Overall Achievement

A growing number of states are setting performance targets for subgroups of students in addition to students overall. States have used two basic strategies for incorporating racial subgroups into school accountability systems. Some states, including Texas, have set a single performance standard for the *absolute* level of performance that applies to schools overall and to subgroups of students within schools. An alternate approach, adopted in California is to set a uniform standard for the *growth* in performance and apply the standard to the school overall as well as to all subgroups in the school. Subgroup targets draw attention to the persistent under-achievement of racial and ethnic subgroups of students and thus result in more concerted efforts to raise such achievement.

Ensure That Students Have Equal Access to Opportunities to Learn

We need to know how important curricular and instructional assets are distributed to different students in order to assess the equality of access to knowledge within classrooms and schools. Closing the achievement gap demands that the state, districts, and schools attend to the vast inequities in student access to learning opportunities; they

---

[103] Tennessee, for example focuses on gains in student achievement to help judge the effectiveness of both schools and teachers. Districts such as Dallas and Minneapolis provide financial rewards to schools based, in part, on how much test scores improve. Researchers have also used value-added techniques to identify schools or teachers that do an exceptionally good job of educating their students and to analyze what they do differently.

[104] Critics of the value-added approach argue that controlling for factors such as race, for instance, translates into a system of different standards for different groups of students.

must create the *institutional conditions* that result in high levels of learning for all students including low-income students and students of color.

The state should collect, analyze and publish data on school quality, in particular, those factors that research indicates contribute to the achievement gap. Indicators of school climate may include, but are not limited to, teacher qualifications and experience, teacher turnover, number of out-of-field teachers, number of and disaggregated enrollments in Advanced Placement courses, average class size and student-teacher ratios, and disaggregated school discipline data. Data should be used to assess the level of resource equity and devise school improvement plans.

The state might consider designing and publishing school-level *equity report cards* that not only highlight student performance and school progress in closing the gap, but the distribution of educational resources required to close the gap. In so doing, the state increases public awareness about both the gap in student performance and school capacity.

Help Educators Improve Instruction

Accountability systems should not only measure student performance but also trigger the necessary improvements in instructional practice at the classroom level. Assessments and measures must allow teachers to identify whether students are mastering state standards. Assessments and the curriculum should be aligned to state standards so that teachers can assess their teaching performance and adjust their instructional strategies accordingly. Assessments must occur frequently enough so that teachers can use them to transform their practice. The kind of regular assessment data and accountability systems, and the processes and habits for using data to inform instruction should be created at the local level.

Design a System of Comprehensive Support and Assistance for Low-Performing Schools

A school accountability system that is reciprocal in nature provides schools with the tools to improve student achievement. The Consortium for Policy Research in Education (CPRE) identifies four primary types of assistance utilized by states.

- Support in school improvement or corrective action planning. State departments of education provide needs-assessments, on-site evaluations, assistance, and training in data analysis, and other forms of technical assistance to help schools and districts create school improvement plans that identify weaknesses and strategies for improvement.
- Financial assistance. Some states offer additional funding for the school improvement planning process and other school improvement initiatives.
- Expert assistance in planning and instruction. State and local education officials and teachers provide technical assistance on best practices, staff development, and school change processes at school or district sites.

- State- or regionally-sponsored professional development: States create professional development programs for administrators and staff from low-performing schools.

The state should support and sustain a variety of assistance providers including the use of school improvement or support teams, distinguished educators who serve as school coaches, state department of education staff members who make regular monitoring visits and provide assistance, and regional and external service providers.

Ensure that Assistance Builds School Capacity and is School-Specific

As argued throughout this report, schools require the capacity to respond to incentives for performance. Closing the achievement gap entails more than quick fixes and generic "assistance." Building real school capacity to close the achievement gap requires true engagement of school staff in the transformation process, school-level flexibility to make changes, and resources and expertise to support the improvement process.

Building school capacity requires on-site, school-specific assistance. As the data in this report demonstrate, every school is different, as are the challenges and problems they face. The type of assistance and capacity-building they need, therefore, will also vary. The accountability system should provide schools and districts the opportunity to tailor assistance to the needs of the school.

Concluding Thoughts

The gap in achievement in Washington State between nonwhite students (American Indian/Alaska Native, African American, and Hispanic) and white/Asian students (white and Asian/Pacific Islander) is significant. Moreover, low-income students and nonwhite do not have equitable access to opportunities to learn in Washington. Policy makers must act boldly by designing a system of accountability that sets high standards for educational equity and provides districts and schools with the means to achieve those standards. The vast disparities in access to educational resources and opportunities to learn across the state must be addressed.

APPENDIX 1: OVERVIEW OF WASL SCORES

This appendix provides basic information about the changes in WASL scores across years and the differences in scores among the different racial groups. Tables 4.1, 7.1 and 10.1 below provide an overview of the numbers of students in each grade who took the WASL in each of the study years, along with the average scale scores for mathematics and reading, the standard deviation for those scores, and the percent meeting standard each year in each subject.

Table 4: Summary of 4th Grade Data											
		Math					Reading				
		1998	1999	2000	2001	Summary	1998	1999	2000	2001	Summary
American Indian/Alaska Native (AIAN)	Number tested	2,085	2,040	1,996	2,006	8,127	2,085	2,000	1,973	1,990	8,051
	Mean scale score	358.2	367.1	375.8	378.4	369.8	386.9	394.2	398.1	398.0	394.2
	sd for scale score	47.5	34.1	35.0	33.1	38.8	27.4	18.6	19.4	18.1	21.8
	% meeting standard	13.2%	17.4%	24.6%	25.5%	20.1%	31.8%	37.3%	46.9%	48.7%	41.1%
Asian/Pacific Islander (Asian)	Number tested	5,270	4,832	5,183	5,403	20,688	5,270	4,826	5,171	5,399	20,666
	Mean scale score	379.8	389.9	394.9	397.3	390.5	398.7	404.3	407.3	406.5	404.2
	sd for scale score	45.7	34.1	34.9	35.4	38.5	25.4	19.0	18.7	18.7	21.0
	% meeting standard	32.7%	41.7%	46.0%	47.7%	42.1%	52.9%	59.5%	66.7%	66.4%	61.5%
African American	Number tested	3,717	3,641	3,822	4,221	15,041	3,717	3,601	3,800	4,197	15,315
	Mean scale score	357.5	366.7	371.1	372.6	367.2	387.7	395.0	398.2	397.5	394.7
	sd for scale score	47.5	31.9	33.1	31.5	36.9	27.9	17.7	18.0	17.8	21.1
	% meeting standard	12.5%	15.3%	18.7%	19.5%	16.6%	34.1%	39.3%	47.7%	48.2%	42.6%
Hispanic	Number tested	6,659	6,399	7,169	7,869	28,096	6,659	6,330	7,122	7,818	27,929
	Mean scale score	352.3	363.9	368.3	371.5	364.4	383.2	391.2	394.7	394.0	391.0
	sd for scale score	48.7	32.9	34.2	33.3	38.3	28.1	18.8	19.3	18.5	21.9
	% meeting standard	10.9%	14.2%	18.2%	20.0%	16.1%	26.4%	31.3%	39.3%	40.4%	34.8%
White	Number tested	56,484	54,944	56,220	54,722	222,370	56,484	54,645	55,993	54,525	221,647
	Mean scale score	382.5	391.0	395.8	398.2	391.8	401.5	406.8	409.9	408.3	406.6
	sd for scale score	43.4	32.4	33.3	33.5	36.5	25.2	18.8	18.9	17.8	20.7
	% meeting standard	34.7%	42.5%	47.1%	49.1%	43.3%	60.4%	65.2%	71.7%	72.1%	67.4%
Multiracial	Number tested	858	1,805	859	748	4,270	858	1,796	857	749	4,260
	Mean scale score	374.8	393.9	385.8	389.9	383.5	396.9	404.1	404.7	404.0	402.8
	sd for scale score	38.9	31.9	35.2	33.9	34.8	23.5	18.2	18.1	18.1	19.6
	% meeting standard	24.4%	33.0%	36.5%	37.1%	32.7%	49.8%	59.8%	62.0%	63.0%	58.8%
Total	Number tested	75,073	73,661	75,249	74,969	298,952	75,073	73,198	74,919	74,678	297,868
	Mean scale score	377.6	386.6	391.2	393.3	387.2	398.5	404.3	407.3	405.7	403.9
	sd for scale score	45.5	33.9	34.9	34.9	38.1	26.4	19.5	19.6	18.6	21.5
	% meeting standard	30.6%	37.7%	42.1%	43.5%	38.5%	54.7%	59.7%	66.3%	66.3%	61.8%

Table 5: Summary of 7th Grade Data

		Math					Reading				
		1998	1999	2000	2001	Summary	1998	1999	2000	2001	Summary
American Indian/Alaska Native (AIAN)	Number tested	2,040	1,982	1,857	1,832	7,711	2,040	1,923	1,811	1,823	7,711
	Mean scale score	316.7	333.7	341.2	343.1	333.2	373.5	381.2	382.9	384.8	380.4
	sd for scale score	71.5	47.9	48.2	47.6	56.1	33.1	19.6	19.2	20.2	24.4
	% meeting standard	5.5%	8.5%	10.6%	11.9%	9.0%	18.5%	19.2%	20.5%	21.8%	20.0%
Asian/Pacific Islander (Asian)	Number tested	5,304	4,794	5,020	5,497	20,616	5,305	4,769	4,980	5,485	20,539
	Mean scale score	354.3	371.0	377.1	375.5	369.4	387.3	393.1	394.0	395.4	392.4
	sd for scale score	67.5	53.3	55.6	55.0	58.9	29.3	20.0	21.5	20.5	23.4
	% meeting standard	24.2%	28.4%	33.8%	32.1%	29.6%	35.7%	40.6%	42.0%	41.3%	39.9%
African American	Number tested	3,364	3,156	3,442	3,594	13,556	3,364	3,093	3,400	3,578	13,435
	Mean scale score	315.1	331.0	332.2	334.6	328.3	374.5	382.5	382.2	384.2	380.9
	sd for scale score	67.3	45.0	46.6	43.2	52.0	31.0	19.3	20.2	19.9	23.4
	% meeting standard	4.7%	6.8%	8.7%	7.8%	7.0%	17.0%	19.5%	20.3%	20.3%	19.3%
Hispanic	Number tested	5,928	5,523	6,028	6,339	23,818	2,928	5,416	5,963	6,330	23,637
	Mean scale score	316.3	330.4	335.6	335.3	329.5	372.2	380.1	379.6	381.0	378.2
	sd for scale score	66.7	47.4	46.7	44.6	52.7	31.3	20.3	20.4	20.6	23.9
	% meeting standard	5.3%	7.2%	9.7%	8.3%	7.7%	14.0%	17.8%	17.6%	17.0%	16.5%
White	Number tested	57,845	53,435	53,993	54,230	219,143	57,485	52,966	53,678	54,094	218,223
	Mean scale score	355.6	371.7	375.9	375.4	369.4	390.8	395.7	396.6	397.2	395.0
	sd for scale score	64.2	50.3	52.0	50.0	55.2	28.6	19.4	19.9	19.6	22.5
	% meeting standard	26.6%	28.1%	32.4%	31.5%	28.5%	42.4%	46.3%	47.1%	44.9%	45.1%
Multiracial	Number tested	1,391	2,728	1,355	933	6,407	1,391	2,697	1,334	935	6,357
	Mean scale score	336.6	353.5	356.7	356.8	351.7	384.2	390.5	390.6	390.3	389.1
	sd for scale score	61.4	48.1	48.5	46.8	51.6	27.8	19.3	20.2	18.9	21.7
	% meeting standard	10.9%	16.1%	18.6%	17.9%	15.8%	27.5%	35.3%	32.7%	29.6%	32.2%
Total	Number tested	75,513	71,618	71,695	72,425	291,251	75,513	70,864	71,166	72,245	289,788
	Mean scale score	349.3	364.9	369.3	368.8	362.9	387.8	393.2	393.8	394.6	392.3
	sd for scale score	66.4	52.0	53.5	51.6	57.0	29.8	20.2	20.9	20.6	23.5
	% meeting standard	19.6%	24.6%	28.6%	27.6%	25.1%	37.6%	41.3%	42.0%	40.1%	40.2%

Table 6: Summary of 10th Grade Data									
		Math				Reading			
		1999	2000	2001	Summary	1999	2000	2001	Summary
American Indian/Alaska Native (AIAN)	Number tested	1,300	1,386	1,443	4,129	1,216	1,340	1,444	4,000
	Mean scale score	358.5	367.6	370.5	365.8	388.1	394.2	397.4	393.5
	sd for scale score	41.3	37.8	36.3	38.8	29.1	29.2	30.0	29.7
	% meeting standard	14.3%	17.3%	19.7%	17.2%	29.5%	40.9%	44.1%	38.4%
Asian/Pacific Islander (Asian)	Number tested	4,707	5,283	5,404	15,394	4,583	5,192	5,394	15,169
	Mean scale score	386.7	394.1	398.8	393.5	398.8	406.9	411.9	406.2
	sd for scale score	43.3	40.2	42.7	42.3	29.9	31.0	30.9	31.1
	% meeting standard	37.3%	42.0%	47.5%	42.5%	48.4%	60.9%	65.8%	58.8%
African American	Number tested	2,417	2,782	2,799	7,998	2,223	2,666	2,783	7,672
	Mean scale score	350.5	360.5	362.3	358.1	384.6	390.4	393.4	389.8
	sd for scale score	37.4	34.8	33.3	35.5	29.0	31.0	30.7	30.5
	% meeting standard	9.5%	11.7%	11.9%	11.1%	26.0%	38.1%	40.5%	35.3%
Hispanic	Number tested	4,250	4,725	5,007	13,982	4,018	4,564	5,036	13,618
	Mean scale score	353.5	361.8	364.1	360.1	383.1	388.4	391.5	388.0
	sd for scale score	38.9	35.3	35.5	36.8	29.4	30.8	30.6	30.5
	% meeting standard	11.5%	12.6%	14.6%	13.0%	25.9%	35.8%	38.3%	33.6%
White	Number tested	49,121	51,500	52,031	152,652	47,679	50,596	52,150	150,425
	Mean scale score	387.2	391.6	395.0	391.3	406.4	410.4	413.1	410.1
	sd for scale score	41.5	39.1	40.1	40.3	28.4	29.0	29.4	29.1
	% meeting standard	38.0%	39.9%	43.6%	40.6%	58.2%	65.9%	67.7%	64.0%
Multiracial	Number tested	2,545	1,057	842	4,444	2,449	1,059	841	4,349
	Mean scale score	374.6	377.2	377.9	375.8	400.0	402.1	403.3	401.1
	sd for scale score	41.1	37.6	38.0	39.7	28.0	28.3	30.0	28.5
	% meeting standard	26.5%	23.5%	27.3%	25.9%	50.4%	56.4%	53.1%	52.4%
Total	Number tested	64,340	66,733	67,526	198,599	62,168	65,417	67,648	195,233
	Mean scale score	382.5	387.6	390.9	387.1	402.9	407.3	410.1	406.9
	sd for scale score	42.8	40.0	41.0	41.4	29.5	30.2	30.5	30.2
	% meeting standard	34.0%	36.1%	39.5%	36.6%	53.0%	61.4%	63.4%	59.4%

APPENDIX 2: INDICATORS OF SIGNIFICANT CHANGE

This table presents a summary of the scores and indicators of significant change. According to Cohen's recommendation, an effect score of approximately 20% of a standard deviation would be considered a small change, while a score at the 50% mark would be considered medium and at the 80% level would be considered large.[105] The table provides an estimate of the number of scale score points of difference (or change) that could be considered small, medium or large for each grade level and subject. The average scale score and standard deviation are for the entire cohort of students taking the test in that year. The observed yearly change for all students combined is given in the "observed yearly change" column and the final column gives the white-nonwhite scale score gap.

Table 7: Indicators of Significant Change

Subject, Grade	Year	Average scal score	Standard deviation	Cohen's effec sizes S,M,L	Observed yearly chang	Observed white-nonwhi gap
Math						
4	1998	377.4	45.9	9, 23, 37		26.2
4	1999	386.5	33.9	7, 17, 27	9.1	23.2
4	2000	391.2	34.9	7, 17, 28	4.7	24.5
4	2001	393.3	34.9	7, 17, 28	2.0	24.5
7	1998	348.7	67.5	13, 34, 54		36.9
7	1999	364.7	52.0	10, 26, 42	16.0	35.9
7	2000	369.2	53.6	11, 27, 43	4.5	38.3
7	2001	368.7	51.6	10, 26, 41	-0.5	37.6
10	1999	382.2	42.8	9, 21, 34		28.6
10	2000	387.6	40.0	8, 20, 32	5.3	27.9
10	2001	390.8	41.1	8, 21, 33	3.2	29.7
Reading						
4	1998	398.3	26.6	5, 13, 21		15.3
4	1999	404.2	19.5	4, 10, 16	5.9	12.3
4	2000	407.3	19.6	4, 10, 16	3.0	12.9
4	2001	405.7	18.6	4, 9, 15	-1.6	12.1
7	1998	387.5	30.3	6, 15, 24		16.2
7	1999	393.1	20.2	4, 10, 16	5.7	12.6
7	2000	393.8	20.9	4, 10, 17	0.6	14.4
7	2001	394.5	20.6	4, 10, 16	0.8	13.9
10	1999	402.8	29.5	6, 15, 24		17.5
10	2000	407.3	30.2	6, 15, 24	4.5	18.8
10	2001	410.0	30.5	6, 15, 24	2.8	19.2

[105] Cohen, Jacob. *op cit.*

APPENDIX 3: THE DISTRIBUTION OF STUDENTS ACROSS SCHOOLS

These tables provide information on the number of 4th, 7th and 10th grade students attending schools in Washington State, organized according to locale, proportion of free and reduced lunch eligible students,[106] and primary racial group within the school.[107]

Locale designation is provided in the National Center for Educational Statistics (NCES) Common Core of Data (CCD) for each school building. Locale code assignments are based on the school building mailing address. The eight codes provided in the CCD were recoded into four categories for this research. The eight categories are as follows:

1. Urban: Large city of a metropolitan statistical area, with a population of at least 250,000. Seattle schools fall into this category;
2. Mid-size central city: a city of an MSA with a population less than 250,000. Schools in Tacoma, Spokane, Vancouver, Yakima and Olympia all fall into this category;
3. Urban fringe of large city: Any incorporated place, Census-designated place (CDP) or non-place territory within a CMSA or MSA of a large city and defined as urban by the U.S. Census Bureau. Bellevue, Kirkland and Lynnwood are examples of schools that fall into this category;
4. Urban fringe of midsize central city: Schools in such areas as Nine Mile Falls, North Kitsap, and Fife all fall into this category;
5. Large town: An incorporated place with a population of at least 25,000 and located outside a CMSA or MSA or an incorporated place. Schools in such areas as Walla Walla and Longview fall into this category.
6. Small town: CDP with a population between 2,500 and 24,999 and located outside a CMSA or MSA. This category includes schools in places such as Moses Lake, Burlington, Colfax and Port Townsend;
7. Rural (inside MSA; urban fringe of city or large town.) Schools in such areas as Ferndale and Battleground fall into this category.
8. Rural (outside MSA): Schools in areas such as Skamania, Coulee City and Tekoa all fall within this category. This could be considered the "true rural" designation;

[106] A three-year average of percent students eligible for free or reduced lunch was calculated and then divided into three equal groups: < 24% FRL eligible students; 25-42% FRL eligible students; 43%+ FRL eligible students.

[107] Racial make-up of schools was determined using the proportion of each race tested over the four-year period in each school. Schools where 50% of more of students were white were categorized as "majority white;" those where 50% or more of students were African American, American Indian/Alaska Native or Hispanic were categorized as "majority nonwhite." It should be noted that there are no schools where Asians made up half or more of the student body at the 7th grade. Finally, schools where no one race had a majority of students were categorized as "mixed."

Table 8: Distribution of 4th Grade Students

Schools by location, poverty level (number free-reduced lunch) and majority race	Schools		Total students		Total 4th grade students tested 1998-2001 in these buildings: American Indian/Alaska Native		Asian/Pacific Islander		African American		Hispanic		White	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total	**1,081**		**303,353**		**8,385**		**21,285**		**16,165**		**29,644**		**226,793**	
Large city	71	6.6%	15,476	5.1%	451	5.4%	3,575	16.8%	3,551	22.0%	1,441	4.9%	6,387	2.8%
Mid-size city	182	16.8%	53,941	17.8%	1,188	14.2%	3,848	18.1%	3,819	23.6%	6,758	22.8%	38,146	16.8%
Urban fringe of large city	373	34.5%	115,982	38.2%	2,247	26.8%	11,277	53.0%	7,382	45.7%	6,134	20.7%	88,569	39.1%
Urban fringe of mid-size city	59	5.5%	16,921	5.6%	738	8.8%	268	1.3%	295	1.8%	4,212	14.2%	11,349	5.0%
Large town	13	1.2%	3,661	1.2%	87	1.0%	87	0.4%	54	0.3%	483	1.6%	2,937	1.3%
Small town	78	7.2%	23,335	7.7%	878	10.5%	463	2.2%	215	1.3%	4,136	14.0%	17,565	7.7%
Rural, urban fringe	147	13.6%	25,345	8.4%	1,361	16.2%	293	1.4%	163	1.0%	3,213	10.8%	20,168	8.9%
Rural, (true rural)	158	14.6%	48692	16.1%	1435	17.1%	1474	6.9%	686	4.2%	3267	11.0%	41672	18.4%
Bottom 3rd FRL (<26%)	364	33.7%	109665	36.2%	1487	17.7%	8061	37.9%	3067	19.0%	3770	12.7%	92916	41.0%
Middle 3rd FRL (26-48%)	355	32.8%	101526	33.5%	2487	29.7%	6443	30.3%	4710	29.1%	6222	21.0%	81309	35.9%
Top 3rd FRL (48%+)	362	33.5%	92,162	30.4%	4,411	52.6%	6,781	31.9%	8,388	51.9%	19,652	66.3%	52,568	23.2%
Predominantly white	971	89.8%	275,189	90.7%	6,641	79.2%	18,712	87.9%	12,027	74.4%	17,678	59.6%	219,160	96.6%
Predominantly nonwhite	68	6.3%	17,606	5.8%	1,476	17.6%	523	2.5%	1,630	10.1%	10,068	34.0%	3,841	1.7%
Mixed	42	3.9%	10,558	3.5%	268	3.2%	2,050	9.6%	2,508	15.5%	1,898	6.4%	3,792	1.7%
Large city, low FRL	39	3.6%	8,650	2.9%	292	3.5%	1,487	7.0%	994	6.1%	737	2.5%	5,101	2.2%
Midsize city, low FRL	94	8.7%	28,334	9.3%	381	4.5%	2,254	10.6%	1,205	7.5%	1,534	5.2%	22,866	10.1%
Urban fringe large city, low FRL	304	28.1%	97,641	32.2%	1,619	19.3%	8,739	41.1%	4,619	28.6%	4,138	14.0%	78,223	34.5%
Urban fringe midside city, low FRL	32	3.0%	8,294	2.7%	231	2.8%	138	0.6%	115	0.7%	341	1.2%	7,437	3.3%
Town, low FRL	5	0.5%	1,620	0.5%	33	0.4%	42	0.2%	17	0.1%	68	0.2%	1,455	0.6%
Rural, low FRL	74	6.8%	13,146	4.3%	250	3.0%	197	0.9%	86	0.5%	720	2.4%	11,819	5.2%
Urban fringe of rural, low FRL	139	12.9%	43,745	14.4%	922	11.0%	1,414	6.6%	656	4.1%	1,666	5.6%	38,948	17.2%
Large city, high FRL	32	3.0%	6,826	2.3%	159	1.9%	2,088	9.8%	2,557	15.8%	704	2.4%	1,286	0.6%
Midsize city, high FRL	88	8.1%	25,607	8.4%	807	9.6%	1,594	7.5%	2,614	16.2%	5,224	17.6%	15,280	6.7%
Urban fringe of large city, high FRL	69	6.4%	18,341	6.0%	628	7.5%	2,538	11.9%	2,763	17.1%	1,996	6.7%	10,347	4.6%
Urban fringe of midsize city, high FRL	27	2.5%	8,627	2.8%	507	6.0%	130	0.6%	180	1.1%	3,871	13.1%	3,912	1.7%
Town, high FRL	86	8.0%	25,376	8.4%	932	11.1%	508	2.4%	252	1.6%	4,551	15.4%	19,047	8.4%
Rural, high FRL	73	6.8%	12,199	4.0%	1,111	13.2%	96	0.5%	77	0.5%	2,493	8.4%	8,349	3.7%
Urban fringe of rural, high FRL	19	1.8%	4,947	1.6%	513	6.1%	60	0.3%	30	0.2%	1,601	5.4%	2,724	1.2%

Table 9: Distribution of 7th Grade Students

Schools by location, poverty level (number free-reduced lunch) and majority race	Schools		Total students		Total 7th grade students tested 1998-2001 in these buildings: American Indian/Alaska Native		Asian/Pacific Islander		African American		Hispanic		White	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total	460		292,817		7,999		21,196		14,331		25,303		223,988	
Large city	21	4.6%	12,999	4.4%	369	4.6%	3,203	15.1%	2,934	20.5%	1,128	4.5%	5,365	2.4%
Mid-size city	59	12.8%	51,652	17.6%	1,126	14.1%	3,842	18.1%	3,393	23.7%	6,024	23.8%	37,267	16.6%
Urban fringe of large city	127	27.6%	115,837	39.6%	2,198	27.5%	11,565	54.6%	6,949	48.5%	5,421	21.4%	89,704	40.0%
Urban fringe of mid-size city	27	5.9%	19,844	6.8%	1,133	14.2%	311	1.5%	196	1.4%	3,928	15.5%	14,276	6.4%
Large town	4	0.9%	3,994	1.4%	75	0.9%	111	0.5%	45	0.3%	508	2.0%	3,255	1.5%
Small town	40	8.7%	25,708	8.8%	906	11.3%	616	2.9%	205	1.4%	3,837	15.2%	20,144	9.0%
Rural, urban fringe	65	14.1%	39,623	13.5%	806	10.1%	1,269	6.0%	480	3.3%	2,041	8.1%	35,027	15.6%
Rural, (true rural)	117	25.4%	23,160	7.9%	1,386	17.3%	279	1.3%	129	0.9%	2,416	9.5%	18,950	8.5%
Bottom 3rd FRL (<24%)	151	32.8%	109384	37.4%	1,587	19.8%	8,167	38.5%	2,841	19.8%	3,426	13.5%	93,363	41.7%
Middle 3rd FRL (24-42%)	152	33.0%	103177	35.2%	2,829	35.4%	6,795	32.1%	4,796	33.5%	5,863	23.2%	82,894	37.0%
Top 3rd FRL (42%+)	151	32.8%	79282	27.1%	3,570	44.6%	6,172	29.1%	6,684	46.6%	15,993	63.2%	46,863	20.9%
Predominantly white	403	87.6%	257,524	87.9%	6,136	76.7%	16,566	78.2%	9,146	63.8%	14,379	56.8%	211,297	94.3%
Predominantly nonwhite	40	8.7%	20,136	6.9%	1,459	18.2%	1,123	5.3%	1,699	11.9%	8,798	34.8%	7,057	3.2%
Mixed	17	3.7%	15,157	5.2%	404	5.1%	3,507	16.5%	3,486	24.3%	2,126	8.4%		0.0%
Large city, low FRL	11	2.4%	7,024	2.4%	217	2.7%	1,482	7.0%	1,057	7.4%	554	2.2%	3,714	1.7%
Midsize city, low FRL	34	7.5%	28,814	9.9%	432	5.4%	2,182	10.3%	1,074	7.5%	1,339	5.3%	23,787	10.7%
Urban fringe large city, low FRL	108	23.7%	101,608	34.8%	1,817	22.7%	9,328	44.1%	4,696	32.8%	4,090	16.2%	81,677	36.6%
Urban fringe midside city, low FRL	15	3.3%	11,734	4.0%	391	4.9%	230	1.1%	156	1.1%	505	2.0%	10,452	4.7%
Rural, low FRL	60	13.2%	13,306	4.6%	405	5.1%	176	0.8%	93	0.6%	739	2.9%	11,893	5.3%
Urban fringe of rural, low FRL	53	11.6%	34,906	12.0%	680	8.5%	1,206	5.7%	449	3.1%	1,091	4.3%	31,480	14.1%
Large city, high FRL	10	2.2%	5,975	2.0%	152	1.9%	1,721	8.1%	1,877	13.1%	574	2.3%	1,651	0.7%
Midsize city, high FRL	25	5.5%	22,838	7.8%	694	8.7%	1,660	7.9%	2,319	16.2%	4,685	18.5%	13,480	6.0%
Urban fringe of large city, high FRL	14	3.1%	13,468	4.6%	375	4.7%	2,177	10.3%	2,244	15.7%	1,315	5.2%	7,357	3.3%
Urban fringe of midsize city, high FRL	12	2.6%	8,110	2.8%	742	9.3%	81	0.4%	40	0.3%	3,423	13.5%	3,824	1.7%
Town, high FRL	44	9.7%	29,702	10.2%	981	12.3%	727	3.4%	250	1.7%	4,345	17.2%	23,399	10.5%
Rural, high FRL	57	12.5%	9,854	3.4%	981	12.3%	103	0.5%	36	0.3%	1,677	6.6%	7,057	3.2%
Urban fringe of rural, high FRL	12	2.6%	4,717	1.6%	126	1.6%	63	0.3%	31	0.2%	950	3.8%	3,547	1.6%

Table 10: Distribution of 10th Grade Students

Schools by location, poverty level (number free-reduced lunch) and majority race	Total students tested 1999-2001 in these schools													
	Schools		Total students		American Indian/Alaska Native		Asian/Pacific Islander		African American		Hispanic		White	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total	**383**		**213,130**		**4,836**		**16,806**		**9,558**		**16,416**		**165,514**	
Large city	14	3.7%	9,066	4.3%	237	4.9%	2,465	14.7%	2,034	21.3%	723	4.4%	3,607	2.2%
Mid-size city	52	13.6%	40,747	19.1%	637	13.2%	3,548	21.1%	2,336	24.4%	3,712	22.6%	30,514	18.4%
Urban fringe of large city	105	27.4%	88,895	41.7%	1,506	31.1%	9,262	55.1%	4,605	48.2%	3,794	23.1%	69,728	42.1%
Urban fringe of mid-size city	23	6.0%	9,199	4.3%	448	9.3%	146	0.9%	88	0.9%	1,896	11.5%	6,621	4.0%
Large town	3	0.8%	1,744	0.8%	40	0.8%	77	0.5%	14	0.1%	106	0.6%	1,507	0.9%
Small town	38	9.9%	20,635	9.7%	707	14.6%	457	2.7%	148	1.5%	2,386	14.5%	16,937	10.2%
Rural, urban fringe	96	25.1%	16,803	7.9%	749	15.5%	227	1.4%	87	0.9%	1,778	10.8%	13,962	8.4%
Rural, (true rural)	52	13.6%	26,041	12.2%	512	10.6%	624	3.7%	246	2.6%	2,021	12.3%	22,638	13.7%
Bottom 3rd FRL (<17%)	126	32.9%	97,642	45.8%	1,370	28.3%	7,191	42.8%	2,141	22.4%	3,272	19.9%	83,668	50.6%
Middle 3rd FRL (17-30%)	125	32.6%	70,396	33.0%	1,881	38.9%	5,099	30.3%	3,570	37.4%	4,716	28.7%	55,130	33.3%
Top 3rd FRL (30%+)	132	34.5%	45,092	21.2%	1,585	32.8%	4,516	26.9%	3,847	40.2%	8,428	51.3%	26,716	16.1%
Predominantly white	348	90.9%	197,954	92.9%	4,011	82.9%	14,415	85.8%	7,426	77.7%	11,229	68.4%	160,873	97.2%
Predominantly nonwhite	24	6.3%	6,988	3.3%	673	13.9%	116	0.7%	134	1.4%	4,084	24.9%	1,981	1.2%
Mixed	11	2.9%	8,188	3.8%	152	3.1%	2,275	13.5%	1,998	20.9%	1,103	6.7%	2,660	1.6%
Large city, low FRL	6	1.6%	4,527	2.1%	151	3.1%	824	4.9%	729	7.6%	315	1.9%	2,508	1.5%
Midsize city, low FRL	31	8.1%	26,178	12.3%	293	6.1%	2,328	13.9%	1,053	11.0%	1,163	7.1%	21,341	12.9%
Urban fringe large city, low FRL	94	24.5%	82,349	38.6%	1,344	27.8%	7,940	47.2%	3,441	36.0%	3,215	19.6%	66,409	40.1%
Urban fringe midside city, low FRL	13	3.4%	6,286	2.9%	204	4.2%	117	0.7%	80	0.8%	207	1.3%	5,678	3.4%
Town, low FRL	1	0.3%	821	0.4%	12	0.2%	34	0.2%	4	0.0%	25	0.2%	746	0.5%
Rural, low FRL	36	9.4%	9,275	4.4%	287	5.9%	147	0.9%	48	0.5%	768	4.7%	8,025	4.8%
Urban fringe of rural, low FRL	43	11.2%	22,366	10.5%	377	7.8%	538	3.2%	229	2.4%	910	5.5%	20,312	12.3%
Large city, high FRL	8	2.1%	4,539	2.1%	86	1.8%	1,641	9.8%	1,305	13.7%	408	2.5%	1,099	0.7%
Midsize city, high FRL	21	5.5%	14,569	6.8%	344	7.1%	1,220	7.3%	1,283	13.4%	2,549	15.5%	9,173	5.5%
Urban fringe of large city, high FRL	11	2.9%	6,546	3.1%	162	3.3%	1,323	7.9%	1,164	12.2%	579	3.5%	3,319	2.0%
Urban fringe of midsize city, high FRL	10	2.6%	2,913	1.4%	244	5.0%	29	0.2%	8	0.1%	1,689	10.3%	943	0.6%
Town, high FRL	40	10.4%	21,558	10.1%	735	15.2%	500	3.0%	158	1.7%	2,467	15.0%	17,698	10.7%
Rural, high FRL	60	15.7%	7,528	3.5%	462	9.6%	80	0.5%	39	0.4%	1,010	6.2%	5,937	3.6%
Urban fringe of rural, high FRL	9	2.3%	3,675	1.7%	135	2.8%	86	0.5%	17	0.2%	1,111	6.8%	2,326	1.4%

APPENDIX 4: BUILDING-LEVEL ACHIEVEMENT GAPS

In the absence of clear and definitive data on the relationship between building-level variables and the achievement gap, these tables provide a visual measure of some of the relationship. These dot charts show the gaps between white scores and those of American Indian/Alaska Native, African American and Hispanic students in schools categorized by locale, poverty and racial mix. The categories are ordered from biggest gap to smallest within each category of schools. If fewer than 20 students of a particular race were tested in a given type of school in a single year, then the gap was not included.

Figure 28: Gap between 4th grade nonwhite and white scores in schools by location, free/reduced lunch status and racial make-up of school

Average tested per year	Locale, poverty level	Gap in 4th grade Math scores	Gap in 4th grade Reading scores
	American Indian/Alaskan Native	5 10 15 20 25 30 35	5 10 15 20
2,096	**Total gap**	....?	..... .?
356	Rural	....?	....?
115	Large city	.... ?	....?
219	Small town	.... ?	....?
22	Large town	....?	....?
297	Midsize city	....?	....?
562	Urban fringe large city	....?	..... ?
185	Urban fringe midsize city	.... ?	....?
340	Rural, urban fringe	....?	..... .?
622	Middle third FRL (26-48%)	....?	....?
372	Bottom third FRL (<26%)	....?	....?
1,103	Top third FRL (48%+)	....?	..... .?
67	Mixed	.... ?	....?
369	Predominantly nonwhite	....?	....?
1,680	Predominantly white	....?	..... .?
128	Urban fringe rural, high FRL	....?	....?
231	Urban fringe rural, low FRL	....?	....?
73	Large city, low FRL	.... ?	....?
95	Midsize city, low FRL	.... ?	.... ?
40	Large city, high FRL	.... ?	....?
233	Town, high FRL	.... ?	....?
405	Urban fringe large city, low FRL	....?	..... ?
62	Rural, low FRL	....?	....?
202	Midsize city, high FRL	....?	..... .?
127	Urban fringe midsize city, high FRL	.... ?	..... .?
58	Urban fringe midsize city, low FRL	.... ?	....?
157	Urban fringe large city, high FRL	....?	...?
278	Rural, high FRL	....?	..... ?
8	Town, low FRL	N.A.	N.A.
		5 10 15 20 25 30 35	5 10 15 20

Average tested per year	Locale, poverty level	Gap in 4th grade Math scores	Gap in 4th grade Reading scores
	African American	5 10 15 20 25 30 35	5 10 15 20
4,041	Total gap	....?	....?
888	Large city	....?	....?
1,846	Urban fringe large city	....?	....?
955	Midsize city	....?	....?
74	Urban fringe midsize city	....?	....?
171	Rural	.... ?	..... .?
41	Rural, urban fringe	.... ?	..... ?
54	Small town	....?	...?
13	Large town	N.A.	N.A.
767	Bottom third FRL (<26%)	....?	.... ?
1,177	Middle third FRL (26-48%)	.... ?	....?
2,097	Top third FRL (48%+)	.... ?	....?
627	Mixed	.... ?	.... ?
3,007	Predominantly white	....?	....?
407	Predominantly nonwhite	....?	....?
249	Large city, low FRL	.... ?	.... ?
301	Midsize city, low FRL	....?	.... ?
644	Large city, high FRL	....?	.... ?
1,155	Urban fringe large city, low FRL	....?	....?
45	Urban fringe midsize city, high FRL	....?	.... ?
29	Urban fringe midsize city, low FRL	.... ?	..... ?
164	Urban fringe rural, low FRL	.... ?	..... .?
691	Urban fringe large city, high FRL	.... ?	.....?
654	Midsize city, high FRL	....?	..... ?
22	Rural, low FRL	....?	..... ?
63	Town, high FRL	..... .?	..... ?
19	Rural, high FRL	N.A.	N.A.
4	Town, low FRL	N.A.	N.A.
8	Urban fringe rural, high FRL	N.A.	N.A.
		5 10 15 20 25 30 35	5 10 15 20

Average tested per year	Locale, poverty level	Gap in 4th grade Math scores	Gap in 4th grade Reading scores
	Hispanic	5 10 15 20 25 30 35 40	5 10 15 20
7,411	**Total gap**	....?	....?
803	Rural, urban fringe	....?	....?
1,034	Small town	.... ?	....?
1,053	Urban fringe midsize city	....?	....?
817	Rural	....?	....?
360	Large city	....?	.... ?
1,689	Midsize city	....?.	....?
1,533	Urban fringe large city	.... ?	....?
121	Large town	.... ?	....?
942	Bottom third FRL (<26%)	....?	....?
1,555	Middle third FRL (26-48%)	....?	....?
4,913	Top third FRL (48%+)	....?	.... ?
2,517	Predominantly nonwhite	....?	....?
4,419	Predominantly white	....?	....?
473	Mixed	....?	.... ?
400	Urban fringe rural, high FRL	.... ?	....?
180	Rural, low FRL	....?	....?
1,138	Town, high FRL	.... ?	....?
623	Rural, high FRL	.... ?	....?
384	Midsize city, low FRL	....?	.... ?
968	Urban fringe midsize city, high FRL	....?	....?
85	Urban fringe midsize city, low FRL	....?	.... ?
416	Urban fringe rural, low FRL	....?	....?
176	Large city, high FRL	....?	.... ?
184	Large city, low FRL	....?	....?
1,034	Urban fringe large city, low FRL	....?	....?
1,306	Midsize city, high FRL	.... ?	....?
499	Urban fringe large city, high FRL	.... ?	....?
17	Town, low FRL	N.A.	N.A.
		5 10 15 20 25 30 35 40	5 10 15 20

Figure 29: Gap between 7th grade nonwhite and white scores in schools by location, free/reduced lunch status and racial make-up of school

Average tested per year	Locale, poverty level	Gap in 7th grade Math scores	Gap in 7th grade Reading scores
	American Indian/Alaska Native	5 10 15 20 25 30 35	5 10 15 20
2,000	**Total gap**	....?	.... ?
92	Large city	....?	.... ?
227	Small town	.... ?	.... ?
282	Midsize city	....?	.... ?
347	Rural	....?	.... ?
283	Urban fringe midsize city	....?	.... ?
550	Urban fringe large city	.... ?	.... ?
202	Rural, urban fringe	.... ?	.... ?
19	Large town	N.A.	N.A.
89	Top third FRL (48%+)	....?	.... ?
707	Middle third FRL (26-48%)	....?	.... ?
397	Bottom third FRL (<26%)	....?	....?
365	Predominantly nonwhite	....?	....?
101	Mixed	....?	....?
1,534	Predominantly white	....?	.... ?
38	Large city, high FRL	....?	....?
108	Midsize city, low FRL	....?	....?
32	Urban fringe rural, high FRL	....?	....?
186	Urban fringe midsize city, high FRL	....?	....?
245	Town, high FRL	.... ?	.... ?
101	Rural, low FRL	....?	....?
54	Large city, low FRL	....?	....?
94	Urban fringe large city, high FRL	.... ?	....?
170	Urban fringe rural, low FRL	.... ?	.... ?
454	Urban fringe large city, low FRL	.... ?	....?
245	Rural, high FRL	....?	....?
174	Midsize city, high FRL	.... ?	....?
98	Urban fringe midsize city, low FRL	....?	....?
0	Town, low FRL	N.A.	N.A.
		5 10 15 20 25 30 35	5 10 15 20

Average tested per year	Locale, poverty level	Gap in 7th grade Math scores	Gap in 7th grade Reading scores
	African American	5 10 15 20 25 30 35	5 10 15 20
3,583	Total gap	....?	.... ?
734	Large city	....?	....?
51	Small town	....?	....?
49	Urban fringe midsize city	.... ?	....?
1,737	Urban fringe large city	....?	....?
848	Midsize city	....?	....?
120	Rural, urban fringe	....?	....?
32	Rural	....?	..?
11	Large town	N.A.	N.A.
710	Bottom third FRL (<26%)	....?	.... ?
1,199	Middle third FRL (26-48%)	....?	.... ?
1,671	Top third FRL (48%+)	.... ?	.... ?
872	Mixed	....?	....?
2,287	Predominantly white	....?	....?
425	Predominantly nonwhite	....?	.... ?
264	Large city, low FRL	....?	....?
63	Town, high FRL	....?	....?
269	Midsize city, low FRL	....?	....?
1,174	Urban fringe large city, low FRL	....?	.... ?
39	Urban fringe midsize city, low FRL	....?	....?
469	Large city, high FRL	....?	.... ?
561	Urban fringe large city, high FRL	....?	....?
580	Midsize city, high FRL	....?	....?
23	Rural, low FRL	....?	....?
112	Urban fringe rural, low FRL	....?	...?
0	Town, low FRL	N.A.	N.A.
10	Urban fringe midsize city, high FRL	N.A.	N.A.
9	Rural, high FRL	N.A.	N.A.
8	Urban fringe rural, high FRL	N.A.	N.A.
		5 10 15 20 25 30 35	5 10 15 20

Average tested per year	Locale, poverty level	Gap in 7th grade Math scores	Gap in 7th grade Reading scores
	Hispanic	5 10 15 20 25 30 35 40	5 10 15 20
6,326	**Total gap**	....?	.... ?
127	Large town	.... ?	.... ?
959	Small town	....?	....?
510	Rural, urban fringe	.... ?	....?
282	Large city	....?	....?
1,506	Midsize city	....?	.... ?
982	Urban fringe midsize city	.... ?	....?
1,355	Urban fringe large city	....?	....?
604	Rural	....?	....?
3,998	Top third FRL (48%+)	....?	....?
1,466	Middle third FRL (26-48%)	.... ?	....?
857	Bottom third FRL (<26%)	....?	....?
2,200	Predominantly nonwhite	.... ?	....?
532	Mixed	....?	....?
3,595	Predominantly white	.... ?	....?
419	Rural, high FRL	....?	....?
1,086	Town, high FRL	....?	....?
144	Large city, high FRL	....?	....?
856	Urban fringe midsize city, high FRL	.... ?	....?
335	Midsize city, low FRL	.... ?	.... ?
238	Urban fringe rural, high FRL	....?	....?
139	Large city, low FRL	....?	....?
1,171	Midsize city, high FRL	....?	.... ?
329	Urban fringe large city, high FRL	.... ?	.... ?
1,023	Urban fringe large city, low FRL	....?	....?
185	Rural, low FRL	.... ?	....?
126	Urban fringe midsize city, low FRL	....?	....?
273	Urban fringe rural, low FRL	....?	....?
0	Town, low FRL	N.A.	N.A.
		5 10 15 20 25 30 35 40	5 10 15 20

Figure 30: Gap between 10th grade nonwhite and white scores in schools by location, free/reduced lunch status and racial make-up of school

Average tested per year	Locale, poverty level	Gap in 10th grade Math scores	Gap in 10th grade Reading scores
	American Indian/Alaska Native	5 10 15 20 25 30 35	5 10 15 20
1,612	Total gap	....?	....?
171	Rural (true rural)	....?	....?
149	Urban fringe midsize city	.... ?	....?
212	Midsize city	....?	....?
502	Urban fringe large city	....?	.... ?
236	Small town	....?	....?
250	Rural, urban fringe	....?	....?
79	Large city	....?	....?
13	Large town	N.A.	N.A.
457	Bottom third FRL (<17%)	.... ?	....?
627	Middle third FRL (17-31%)	....?	....?
528	Top third FRL (31%+)	....?	....?
224	Predominantly nonwhite	.... ?	.... ?
1,337	Predominantly white	....?	....?
51	Mixed	....?	.... ?
81	Urban fringe midsize city, high FRL	.... ?	.... ?
45	Rural, urban fringe, high FRL	....?	....?
96	Rural, low FRL	....?	....?
98	Midsize city, low FRL	....?	....?
126	Rural, urban fringe, low FRL	....?	....?
50	Large city, low FRL	.... ?	.... ?
448	Urban fringe large city, low FRL	....?	....?
68	Urban fringe midsize city, low FRL	....?	....?
245	Town, high FRL	....?	....?
115	Midsize city, high FRL	.... ?	....?
54	Urban fringe large city, high FRL	....?	....?
154	Rural, high FRL	....?	..... .?
29	Large city, high FRL	..... ?	....?
4	Town, low FRL	N.A.	N.A.
		5 10 15 20 25 30 35	5 10 15 20

Average tested per year	Locale, poverty level	Gap in 10th grade Math scores	Gap in 10th grade Reading scores
	African American	5 10 15 20 25 30 35 40	5 10 15 20
3,186	Total gap	....?	.... ?
678	Large city	....?	....?
49	Small town	....?	.... ?
779	Midsize city	....?	.... ?
1,535	Urban fringe large city	....?	....?
29	Urban fringe midsize city	....?	....?
82	Rural (true rural)	....?	....?
29	Rural, urban fringe	.... ?	....?
5	Large town	N.A.	N.A.
1,190	Middle third FRL (17-31%)	....?	....?
714	Bottom third FRL (<17%)	....?	.... ?
1,282	Top third FRL (31%+)	....?	....?
665	Mixed	....?	....?
45	Predominantly nonwhite	....?	....?
2,475	Predominantly white	....?	....?
243	Large city, low FRL	....?	....?
53	Town, high FRL	....?	.... ?
435	Large city, high FRL	....?	....?
351	Midsize city, low FRL	....?	....?
1,147	Urban fringe large city, low FRL	....?	....?
27	Urban fringe midsize city, low FRL	....?	....?
388	Urban fringe large city, high FRL	....?	....?
76	Rural, urban fringe, low FRL	....?	....?
428	Midsize city, high FRL	....?	....?
3	Urban fringe midsize city, high FRL	N.A.	N.A.
1	Town, low FRL	N.A.	N.A.
16	Rural, low FRL	N.A.	N.A.
13	Rural, high FRL	N.A.	N.A.
6	Rural, urban fringe, high FRL	N.A.	N.A.
		5 10 15 20 25 30 35	5 10 15 20

Average tested per year	Locale, poverty level	Gap in 10th grade Math scores	Gap in 10th grade Reading scores
	Hispanic	5 10 15 20 25 30 35 40	5 10 15 20
5,472	**Total gap**	....?	.... ?
593	Rural, urban fringe	....?	....?
1,237	Midsize city	....?	.... ?
795	Small town	....?	....?
241	Large city	....?	....?
674	Rural (true rural)	....?	.... ?
1,265	Urban fringe large city	....?	....?
35	Large town	....?	....?
632	Urban fringe midsize city	....?	.... ?
2,809	Top third FRL (31%+)	....?	....?
1,572	Middle third FRL (17-31%)	....?	....?
1,091	Bottom third FRL (<17%)	....?	....?
1,361	Predominantly nonwhite	....?	....?
368	Mixed	....?	....?
3,743	Predominantly white	....?	.... ?
105	Large city, low FRL	....?	.... ?
337	Rural, high FRL	....?	....?
370	Rural, urban fringe, high FRL	....?	....?
256	Rural, low FRL	....?	....?
388	Midsize city, low FRL	....?	....?
822	Town, high FRL	....?	....?
850	Midsize city, high FRL	....?	.... ?
193	Urban fringe large city, high FRL	....?	....?
563	Urban fringe midsize city, high FRL	....?	....?
303	Rural, urban fringe, low FRL	....?	....?
1,072	Urban fringe large city, low FRL	....?	....?
69	Urban fringe midsize city, low FRL	....?	....?
8	Town, low FRL	N.A.	N.A.
		5 10 15 20 25 30 35 40	5 10 15 20

REFERENCES

"In the Academic and Think Tank World, Pondering Achievement Gap Remedies Takes Center Stage," *Black Issues in Higher Education*, March 1, 2001.

"The Other Gap: Poor Students Receive Fewer Dollars," *Education Trust Data Bulletin*, March 6, 2001.

Adelman, Clifford. *Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment*. Washington DC: U.S. Department of Education, 1999

Berman, Paul and David Chambliss and Kristin Donaldson Gaiser. *Making the Case for a Focus on Equity in School Reform*. Emeryville: RPP International, 1999.

Betts, Julian R. and Kim S. Rueben and Anne Danenberg. *Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California*. San Francisco: Public Policy Institute of California, 2000.

Brennan, Jeanne (Ed). *The Funding Gap: Low-Income and Minority Students Receive Fewer Dollars*. Washington DC: The Education Trust, 2002.

Brooks, Sarah. *How States Can Hold Schools Accountable: The Strong Schools Model of Standards-Based Reform.* Seattle: University of Washington, Center on Reinventing Public Education, 2000.

California Commission on the Teaching Profession. "Who Will Teach Our Children?" Sacramento: Author, 1985.

California Tomorrow, *The Unfinished Journey: Restructuring Schools in a Diverse Society.* San Francisco: Author 1994.

Camara, Wayne J. and Amy Elizabeth Schmidt. *Group Differences in Standardized Testing and Social Stratification.* New York: College Board, 1999.

Carter, Samuel Casey. *No Excuses: Lessons from 21 High-Performing, High Poverty Schools.* Washington DC: The Heritage Foundation, 2000.

Cleveland, William S. *The Elements of Graphing Data*, Monterey, California: Wadsworth Advanced Books, 1985.

Cohen, Jacob. *Statistical Power Analysis for the Behavioral Sciences*. New Jersey: Lawrence Erlbaum Associates, 1988.

Darling-Hammond, Linda. "Doing What Matters Most: Investing in Quality Teaching," New York: National Commission on Teaching and America's Future, 1997.

Darling-Hammond, Linda. "Teacher Quality and Equality" in P. Keating and J. Goodlad, *Access to Knowledge*. New York: College Entrance Examination Board, 1987.

Darling-Hammond, Linda. "What Matters Most: A Competent Teacher for Every Child," *Phi Delta Kappan*, 78 (3), 193-200, November, 1996.

Darling-Hammond, Linda. *Teacher Quality and Student Achievement: A Review of State Policy Evidence*, Seattle: University of Washington, Center for the Study of Teaching and Policy, 1999.

Dreeben, R and Gamoran A. "Race, Instruction and Learning," *American Sociological Review*, 51, 660-669, 1986.

Education Trust. *State Summary of Washington*. Washington DC: Author, 2002.

Elmore, Richard and Fuhrman, S. "Opportunity to Learn and the State Role in Education," *Teachers College Record*, 96(3), 433-458, 1995.

Ferguson, Ronald F. "A Diagnostic Analysis of Black and White GPA Disparities in Shaker Heights Ohio." *Brookings Papers on Education Policy: 2001*. Washington DC: Brookings Institution. 2001.

Ferguson, Ronald F. "Can Schools Narrow the Black-White Test Score Gap" in C. Jencks and M. Phillips (Eds). *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press, 1998.

Ferguson, Ronald F. "Teachers' Perceptions and Expectations and the Black-White Test Score Gap" in C. Jencks and M. Phillips (Eds). *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press, 1998.

Finn, Jeremy D. "Opportunity Offered-Opportunity Taken: Course-Taking in American High Schools," *ETS Policy Notes* 9(1). Princeton: Educational Testing Service, 1999.

Fordham, Signithia, and John Ogbu. "Black Students' School Success: Coping with the Burden of 'Acting White.'" *The Urban Review* 18 (3): 176-206.

Grissmer, David W. and Ann Flanagan, Jennifer Kawata, and Stephanie Williamson. *Improving Student Achievement: What State NAEP Test Scores Tell Us*. Santa Monica: RAND Corporation, 2000.

Handcock, Mark S. and Martina Morris. *Relative Distribution Methods in the Social Sciences*, New York: Springer-Verlag, 1999.

Hanushek, E.A. "The Trade-Off Between Child Quantity and Quality," *The Journal of Political Economy*, 1992.

Haycock, Kati and Greg Jerald and Sandra Huang. "Closing the Gap: Done in a Decade." *Thinking K-16*, 5 (2), 3-21. Washington DC: The Education Trust, 2001.

Haycock, Kati. "Good Teaching Matters...A Lot," *Thinking K-16*, 3 (2), 3-15. Washington DC: The Education Trust, Summer 1998.

Holland, Paul W. *Two Measures of Change in the Gaps between the CDFs of Test-Score Distributions.* Center for Statistical Theory and Practice, Educational Testing Service, January 11, 2002

Holland, Paul W. "How Big is Big When it Comes to Gaps in Scores?" *ETS Occasional Paper*, January 23, 2002.

Huggins, Elise. *Powerful Learning for All Students: Whole-School Reform and the Pursuit of Equity.* Ann Arbor: UMI Dissertation Services, 2000.

Ingersoll, Richard M. "Paying for Public Education: New Evidence on How and Why Money Matters," *Harvard Journal of Legislation*, 28. Summer, 1991.

Ingersoll, Richard M. *Out-of-Field Teaching and Educational Equality.* Washington DC: US Department of Education, National Center for Education Statistics, 1996.

Ingersoll, Richard M. "The Problem of Out-of-Field Teaching," *Phi Delta Kappan*, June 1998.

Ingersoll, Richard M. "Teacher Shortages: Myth or Reality. Imbalance of Teacher Supply and Demand Requires Fresh Look at School Characteristics and Organizational Conditions," *American Educational Research Journal*, Fall 2001.

James, Donna Walker and Sonia Juich and Steve Estes. *Raising Minority Academic Achievement: A Compendium of Education Programs and Practices.* Washington DC: American Youth Policy Forum, 2001.

Jencks, Christopher and Meredith Phillips (Eds). *The Black-White Test Score Gap.* Washington DC: Brookings Institution Press, 1998.

Jarald, Craig D. *Dispelling the Myth Revisited: Preliminary Findings of a Nationwide Analysis of "High Flying" Schools.* Washington DC: Education Trust, 1999.

Johnson, Joseph H. and Rose Asera. *Hope for Urban Education: A Study of Nine High-Performing, High-Poverty Urban Elementary Schools.* Austin: University of Texas, Charles A. Dana Center, 1999.

Johnson, Ruth. *Setting Our Sights: Measuring Equity in School Change.* Los Angeles: The Achievement Council, 1996.

Kain, John F. and Kraig Singleton. "Equality of Educational Opportunity Revisited," *New England Economic Review*, May/June 1996.

Kane, Thomas J. and Douglas O. Staiger. "Improving School Accountability Measures," *National Bureau of Economic Research Working Paper 8156*, March 2001

Kelley, Carolyn. *Financial Incentives in State Accountability Systems: Performance Pay for Teachers.* Seattle: University of Washington, Center on Reinventing Public Education, 2002.

Kopp, Wendy. "Reforming Schools of Education Will Not Be Enough," *Yale Law and Policy Review*, 10, 58-68, 1992.

Kozol, Jonathan. *Savage Inequalities*, New York: Harper Collins, 1990.

Kober, Nancy. *It Takes More than Testing: Closing the Achievement Gap.* Washington DC: Center on Education Policy, 2001.

Lewis, Anne and Sandra Paik. *Add It Up: Using Research to Improve Education for Low-Income and Minority Students.* Washington DC: Poverty & Race Research Action Council, 2001.

Little, Judith Warren and Rena Dorph. *Lessons About Comprehensive School Reform: California's Schools Restructuring Demonstration Program.* Berkeley: SB 1274 School Restructuring Study, 1998.

Lucas, Samuel R. "Hope, Anguish, and the Problem of Our Time: An Essay on the Publication of the *Black-White Test Score Gap.*" *Teachers College Record*, 102 (2), 461-473.

McMillan, James. "Standards-Based Accountability: Measuring Yearly Progress," *CEPI Briefings*, 2000.

National Black Caucus of State Legislators. *Improving Educational Outcomes for African American Children.* Washington DC: Author, 2001.

National Coalition of Equity Advocates. *Educate America: A Call for Equity in School Reform.* Chevy Chase: The Mid-Atlantic Equity Consortium, 1994.

Oakes, Jeannie. *Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science.* Santa Monica: The RAND Corporation, 1992.

Olsen, Laurie. "Holding Schools Accountable for Equity," *Leadership*, March/April 2001.

Olson, Lynn. "Testing Experts Develop New Method of Presenting Achievement-Gap Data." *Education Week*, March 13, 2002.

Osborne, J. "Unraveling Underachievement Among African American Boys from an Identification with Academics Perspective," *Journal of Negro Education* 68 (4), 1999.

Phillips, Meredith and James Crouse, and John Ralph. "Does the Black-White Test Score Gap Widen after Children Enter School?" In C Jencks and M. Phillips (Eds.), *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press. 1998.

Phillips, Meredith, Jeanne Brooks-Gunn, Greg J. Duncan, Pamela Klebanov, and Jonathan Crane. "Family Background, Parenting Practices, and the Black-White Test Score Gap" in C. Jencks and M. Phillips (Eds.), *The Black-White Test Score Gap*. Washington DC: Brookings Institution Press, 1998.

Price, Hugh B. "The Preparation Gap." *Education Week*, November 28, 2001.

Prince, Cynthia D. *The Challenge of Attracting Good Teachers and Principals to Struggling Schools*. Arlington: American Association of School Administrators, 2002.

Reeves, Douglas. "The 90/90/90 Schools: A Case Study." *In Accountability in Action*, Denver, CO: Advanced Learning Press. 2000.

Rothman, Robert. "Closing the Achievement Gap: How Schools are Making It Happen." *Challenge Journal* 5 (2). Brown University, 2001/2002.

Rothstein, Richard. "Investing in Family Capital," *American School Board Journal*, February, 2001.

Rothstein, Richard. "Lessons: Testing Reaches a Fork in the Road," *New York Times.* May 22, 2002)

Roza, Marguerite and Karen Hawley Miles. *A New Look at Inequities in School Funding.* Seattle: University of Washington, Center on Reinventing Public Education, May, 2002.

Sanders, William L. and June C. Rivers. "Cumulative and Residual Effects of Teachers on Future Student Academic Achievement," Research Progress Report. Knoxville: University of Tennessee Value-Added Research and Assessment Center, 1996.

Smrekar, Claire, James Guthrie, Debra Owens, and Paul Sims. *March Toward Excellence: School Success and Minority Achievement in Department of Defense Schools*. Nashville: Vanderbilt University, Peabody Center for Education Policy. 2001.

Steele, Claude M. "Thin Ice: "Stereotype Threat" and Black College Students," *Atlantic Monthly*, 284(2), 1999.

Stevens, R. "Applying an Opportunity-to-Learn Conceptual Framework to the Investigation fo the Effects of Teaching Practices," *Journal of Negro Education*, 62(3), 232-259, 1993.

Stevenson, Harold W. "Why Asian Students Still Outdistance Americans," *Educational Leadership*, February, 1993.

The College Board. *Reaching the Top: A Report of the National Task Force on Minority High Achievement*. New York: Author, 1999.

Urban League. *The State of Black America*. NewYork: Author, 1999.

Wenglinsky, Harold. "Finance Equalization and Within-School Equity: The Relationship Between Education Spending and the Social Distribution of Achievement," *Education Evaluation and Policy Analysis*, 20 (4), Winter 1998.

This study was funded with support from the Washington Mutual Foundation.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

UD 035 591

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Closing the Achievement Gap in Washington State: Holding Schools Accountable	
Author(s): Elise M. Huggins, with Mary Beth Celio	
Corporate Source: Center on Reinventing Public Education	Publication Date: 11/2002

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 1	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2A	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2B
Level 1 ☒	Level 2A ☐	Level 2B ☐
Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.	Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, please

Signature: DBritt	Printed Name/Position/Title: Debra Britt / Program Assistant
Organization/Address: CRPE, Evans School, U of W, Box 353060 Seattle, WA 98195	Telephone: 206-685-2214 FAX: 206-221-7402
	E-Mail Address: crpe@u.washington.edu Date: 3/28/03

(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor: Center on Reinventing Public Education
Address: http://www.k12.wa.us/accountability/reports/FINALAchievementGapReport.pdf
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC Clearinghouse on Urban Education
Box 40, Teachers College, Columbia University
New York, NY 10027

Telephone: 212-678-3433
Toll Free: 800-601-4868
Fax: 212-678-4012

WWW: http://eric-web.tc.columbia.edu

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com

EFF-088 (Rev. 2/2000)