

**Racial Disparities  
in  
Minnesota Basic Standards Test Scores,**

*1996-2000*

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Roy Wilkins Center for Human Relations and Social Justice  
257 Humphrey Center, 301-19th Avenue South  
Minneapolis, MN 55455  
612-625-9821

**KEY FINDINGS**

*October 16, 2000*

Roy Wilkins Center for Human Relations and Social Justice  
Hubert H. Humphrey Institute of Public Affairs  
University of Minnesota



## Acknowledgments

Presented here is a summary of key findings from the study *Racial Disparities in Minnesota Basic Standards Test Scores, 1996-2000*. The study is a project of the Roy Wilkins Center for Human Relations and Social Justice, Humphrey Institute of Public Affairs, University of Minnesota, in cooperation with the Office of Teaching & Learning, Minnesota Department of Children, Families, and Learning and SciMathMN. The Wilkins Center is directed by Samuel L. Myers, Jr., who served as principal investigator on the project. The project was funded by the Office of Teaching and Learning at the Minnesota Department of Children, Families & Learning and SciMathMN. The project began in the administration of Kate Foate Trewick, Assistant Commissioner, Office of Teaching and Learning and continued to completion under Assistant Commissioner Jessie Montano and SciMathMN Executive Director Bill Linder-Scholer. A very special thank you for her continuing oversight, valuable assistance, and patient vigilance is due to Nancy Nutting, Mathematics Project Manager, SciMathMN.

Technical assistance was provided by John Comstock, Analyst/Technical Support, Data Management, Office of Information Technologies, State of Minnesota. Programming for the project and technical research assistance was provided with great skill and diligence by Hyeoneui Kim, Graduate Program in Health Informatics, Division of Health Computer Science, Department of Laboratory Medicine and Pathology, University of Minnesota School of Medicine, and Dr. Inhyuck Ha, Research Fellow, Humphrey Institute. Additional research assistance was provided by Wilkins Center staff: Mary Lou Middleton, Tien Tran, Terri Thao, Andrea Ivy, Adepeju Oyesanya, and Holly Pettman. Administrative support was provided by Lawrencina Mason Oramalu and Judith Leahy of the Wilkins Center. Susan Buechler edited the final report.

## Introduction

The Minnesota Basic Skills Test, first implemented in 1996, is now in its fifth year of use in the state. The test is initially administered to eighth graders and measures reading and math skills. In March of 1997, the Roy Wilkins Center released a report examining racial disparities in the test scores for 1996, comparing the reading and mathematics scores of African Americans, American Indians, Asians and Latinos with those of whites. Wide racial disparities were found in mean test scores, in the percentage of high achievers, in the percentage of low achievers and in pass rates.

Now, five years later, we have performed another analysis to determine group test scores and racial gaps in test scores for eighth graders for more recent years. Have the gaps narrowed or widened? To answer this and other questions, we examined the changes in average scores by school and by race, from 1996 to 2000. In addition, we performed a detailed analysis of data covering the years 1996 through 1999. We compared test scores, high achiever rates, low achiever rates and pass rates separately for each year for each race. We also tracked the effects of the following independent factors on test scores: age, gender, attendance, English not spoken at home, program participation (Limited English Proficiency, Special Education/disability, gifted and talented), racial composition of the school, individual poverty and poverty composition of the school, mobility, type of school (middle, junior high or charter) and school ranking.

In the following pages we present a summary of the ten key findings of this study. These findings help us to understand current trends in student achievement, and will be useful for parents, educators, legislators and all stakeholders in public education. The full report, which details the models used in our analysis and provides the technical findings, is available to the public online and from the Roy Wilkins Center.

*The full report and technical findings upon which this summary presentation is based may be found on the Web at <http://www.hhh.umn.edu/centers/wilkins/pubs.htm>. The report may also be obtained from the Roy Wilkins Center for Human Relations and Social Justice at the Humphrey Institute. Please call 612-625-9821 or e-mail us at [wilkins@hhh.umn.edu](mailto:wilkins@hhh.umn.edu) to request a copy.*

# Key Findings

## 1. Reading scores of students of color improved, while math scores did not.

The good news is that real progress has been made in reading skills. Reading scores consistently improved over the past five years. In 1996, the average test scores for reading were 61.99, 66.84, 61.10, 54.54 and 73.75 percent correct for American Indians, Asians, Latinos, African Americans and Caucasians, respectively; in 2000, they were 71.15, 76.48, 70.81, 68.27 and 84.55 percent correct. This represents increases of 14.8 percent for American Indians, 14.4 percent for Asians, 15.9 percent for Latinos and 25.2 percent for African Americans. This positive trend can be seen in the steep slopes in Figure 1.

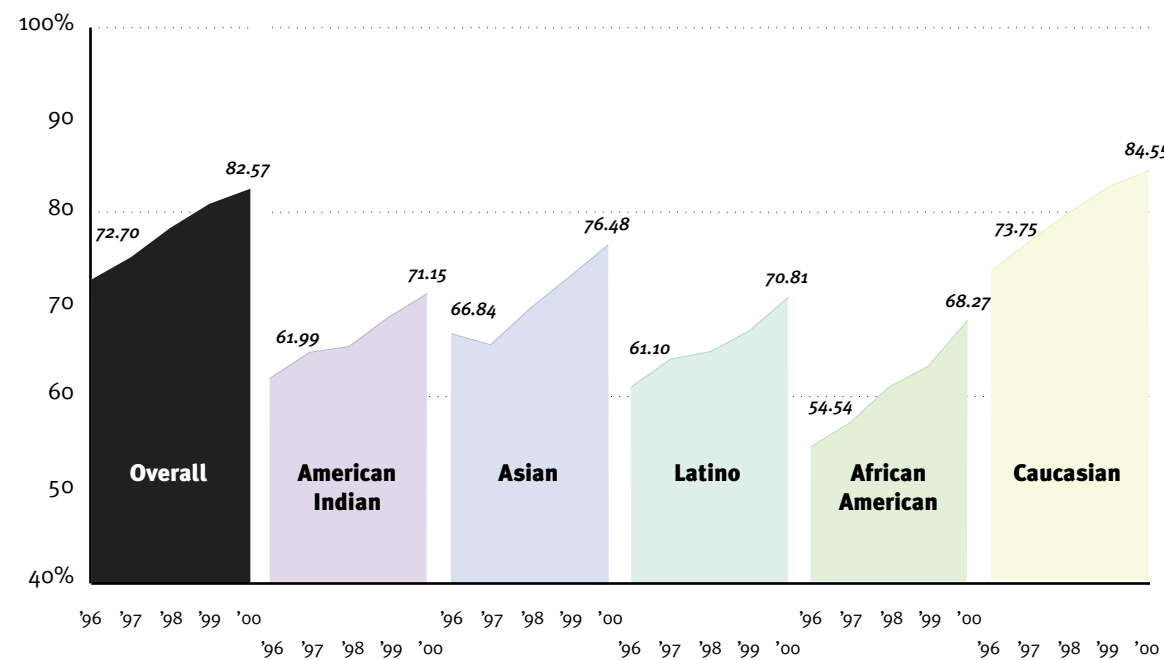
*Reading scores have shown impressive increases in the past half decade for all racial groups.*

Mathematics scores for students of color showed a downward slide from 1996 to 1999, as seen in Figure 2. Whereas in 1996 the average test scores for mathematics were 67.63, 74.85, 67.67 and 59.50 percent correct for American Indians, Asians, Latinos and African Americans respectively, these scores dropped to 64.67, 73.11, 62.88 and 56.93 percent correct in 1999. The white mathematics scores actually improved slightly, from 80.93 in 1996 to 81.47 in 1999. Expressed as percentages, the white scores increased by .66 percent from 1996 to 1999, while American Indian scores declined by 4.38 percent; Asian scores slipped by 2.32 percent; Latino scores nose-dived by 7.09 percent; and black scores dropped by 4.32 percent.

Students of color registered improved mathematics scores from 1999 to 2000. The sobering counterpoint, however, is that the rebounding minority scores in 2000 placed African American and Asian students within a half of a percentage point of where they were in 1996; American Indian and Latino students scored 1.74 to 3 percentage points less in 2000 than they did in 1996.

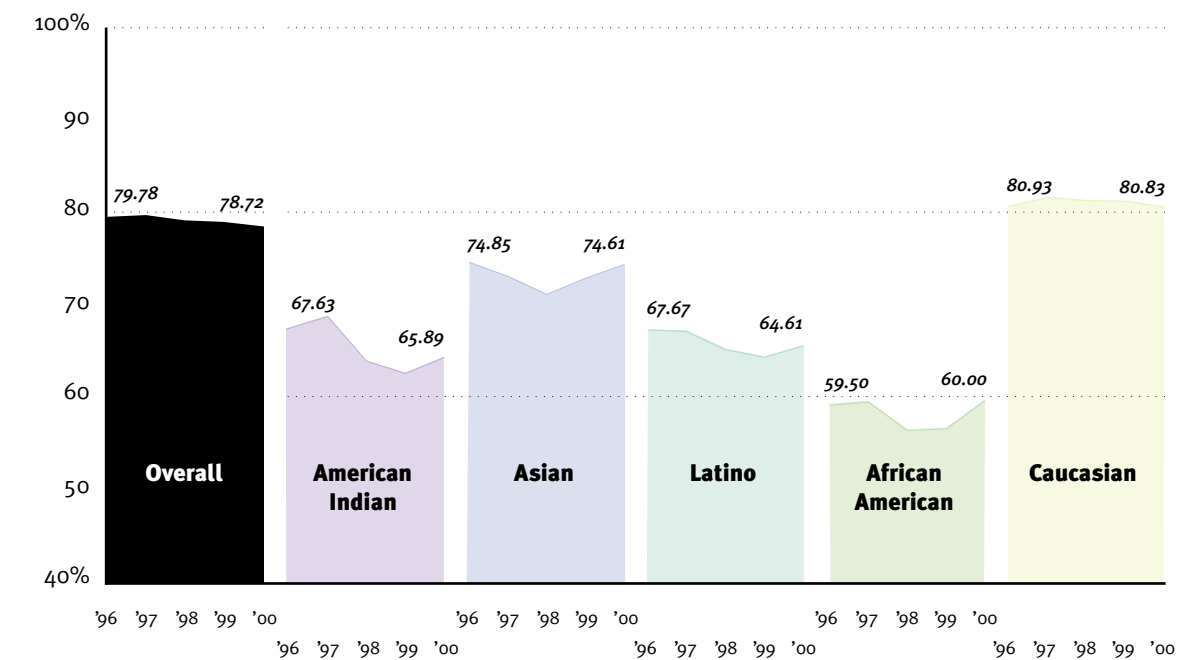
Mean Test Scores, Reading (1996 - 2000)

Figure 1



Mean Test Scores, Math (1996 and 2000)

Figure 2



**2. Racial gaps narrowed for reading test scores, while they widened for math scores.**

The second promising finding is that the black-white gap in reading scores has narrowed considerably, from -26.05 percent in 1996 to -19.26 percent in 2000. The racial gaps in reading scores for American Indians, Asians and Latinos remained about the same, with a less than one-percent change for all.

One of the dire consequences of the uniformly declining mathematics test scores between 1996 and 2000 is that racial gaps in test scores were at least as wide in 2000 as they were in 1996, for all but African Americans. In 1996 there were black-white, Latino-white, Asian-white and American Indian-white gaps in mathematics scores of -26.48, -16.39, -7.52 and -16.44 percent, respectively. In 2000, these gaps were -25.78, -20.08, -7.70 and -18.49 percent. The slim narrowing of the black-white gap, from -26.48 % to -25.78%, offers little consolation, since it represents less than three-quarters of a percent.

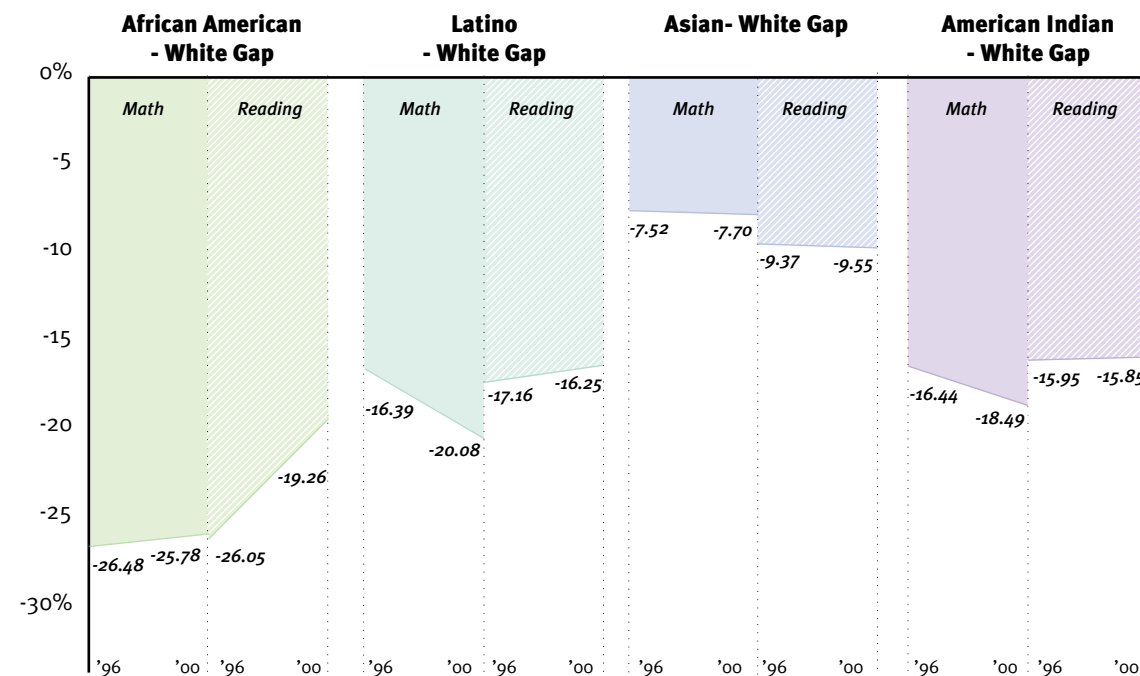
**3. Unexplained racial gaps narrowed in both reading and mathematics scores.**

Using a technique called residual difference analysis, we are able to decompose the racial gaps in test scores into those portions that are explained by a host of possible factors and those portions that cannot be explained by these factors. The result, the unexplained residual, is often interpreted as measuring unequal treatment of identically situated persons.

The results of this analysis provide one of the more important and reassuring findings of our report. Although in some instances the *overall* racial gap may not have narrowed, the *unexplained* portions of the racial gaps did. For example, looking at Figure 3, one can see that from 1996 to 2000 the overall Latino-white gap in math scores increased from -16 percent to -20 percent. Within that gap, however, the unexplained portion decreased, from 67 percent in 1996 to 51 percent in 1999 (Figure 4).

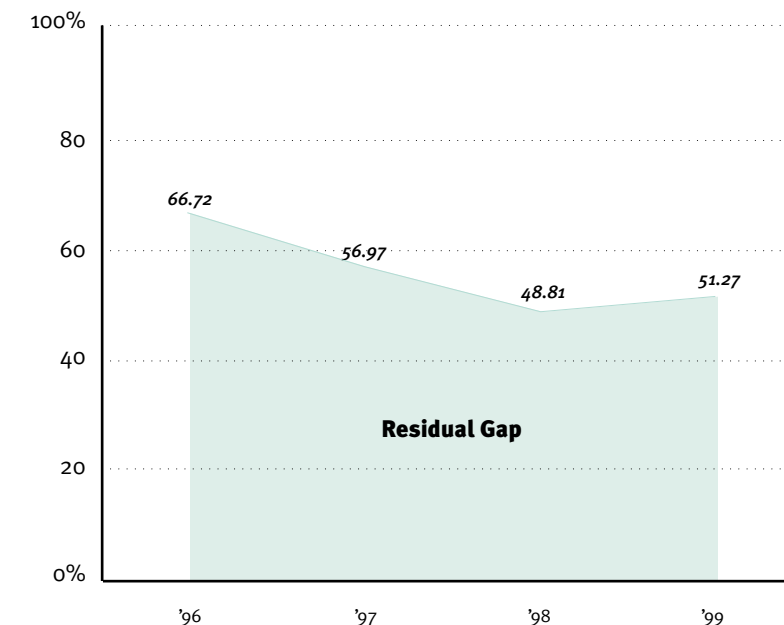
**Racial Gaps in Test Scores (1996 and 2000)**

Figure 3



**Unexplained Racial Disparities in Test Scores (1996 - 1999) Mathematics, Latino**

Figure 4



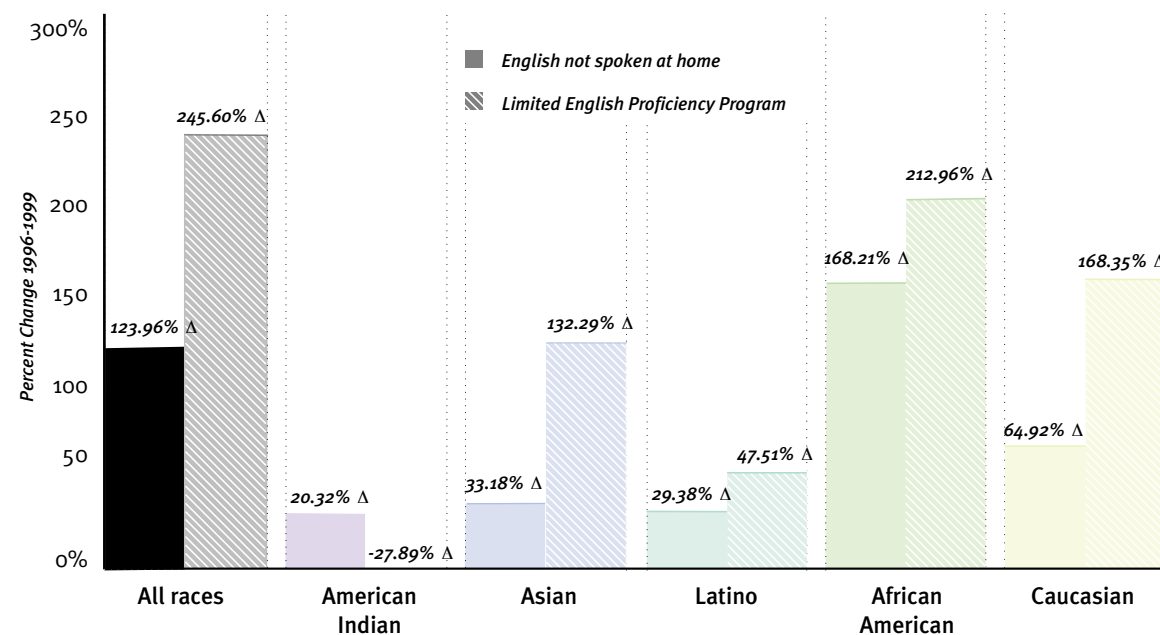
There is also a sizable decline in the unexplained gap in test scores between blacks and whites. In 1996, 73 percent of the racial gaps in mathematics and 75 percent of the gap in reading scores were unexplained by our models' independent variables. In 1999, 62 and 59 percent of the gaps were unexplained. Similar improvements are seen for all minority test gaps. These decreases suggest that since 1996 Minnesota has made concerted efforts, with successful results, not to treat disparately students of color.

**4. The number of students with limited English language skills has increased significantly. Other student characteristics have changed that also adversely affect test scores.**

There has been a major shift in the test-takers' English language skills. By 1999, more than twice as many students as in 1996 come from homes in which English is not spoken. In addition, the number of students who take part in Limited English Proficiency programs has risen 245.60 percent. The highest concentration in LEP programs was found among Asian students, with 43.09 percent enrolled in 1999. When measuring relative change, however, the biggest increase was registered among African Americans, whose numbers in LEP programs rose 213 percent, more than tripling their participation since 1996.

**Changes in Limited Language Proficiency, (1996 - 1999)**

Figure 5



In addition, school mobility and attendance rates, identified in the 1996 analysis as two factors that affect test scores, both changed for the worse. Given these increased negative trends, the sharp rise in reading test scores is impressive. Clearly, a huge effort has been made to implement policies or develop programs that foster achievement in reading. This effort has borne fruit, despite continued or increased problems in other areas.

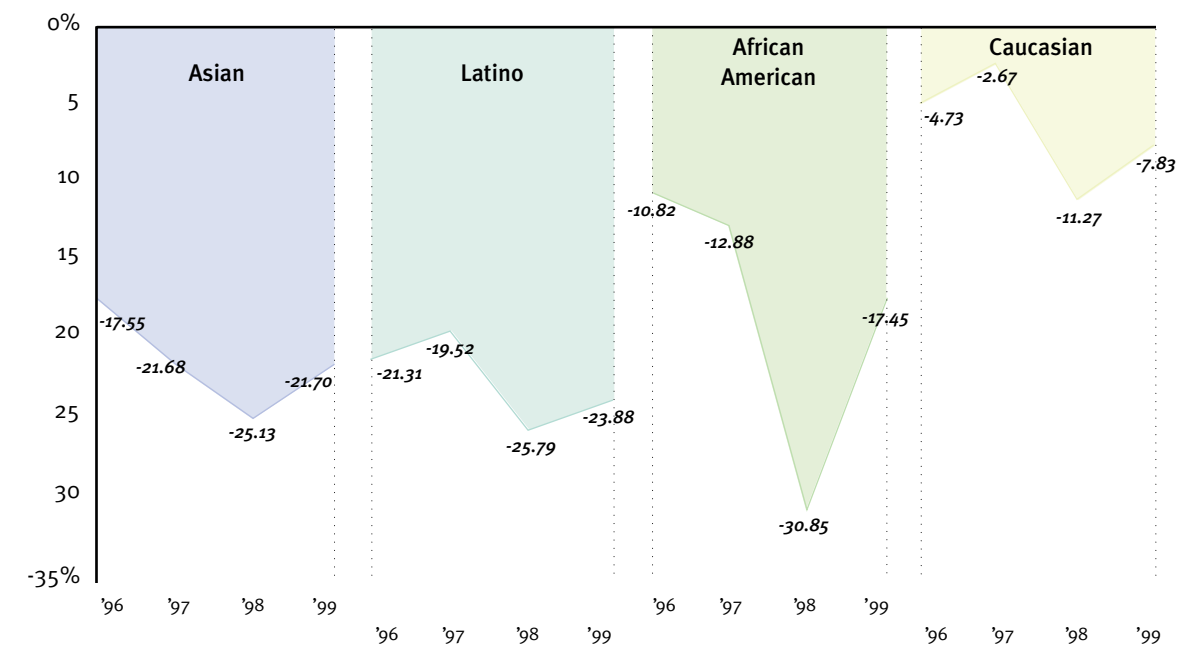
**5. There are large differences in mathematics and reading scores by English proficiency.**

*The number of students who do not speak English at home has doubled, and enrollment in special programs for Limited English Proficiency has tripled.*

The impacts of language proficiency on test scores are substantial. Students whose primary language is not English have reading scores as much as 34 percent lower than students whose first language is English. While that larger difference may be expected in tests that measure reading in English, the math scores show similar differences. Limited English proficiency students' math scores have been as much as 30 percent lower than their English speaking peers'. Additionally, from 1996-98 there is an upward trend in the disparity in mathematics test scores, which underlines the role that language ability plays in learning math.

**Difference in Mathematics Test Scores between English and Non-English Speakers (1996 - 1999)**

Figure 6



**6. School and individual poverty impacts are small and explain little of the racial gap in test scores.**

Because of the widespread belief that poverty causes poor test performance and because our earlier report failed to find any measurable adverse impacts of poverty on test scores, we examined poverty in greater detail than we did in 1996. We analyzed the effects of both school poverty and individual poverty on test scores.

As in 1996, we found that school poverty does not have much of an impact on test scores. For instance, our data shows that blacks who attend schools with larger shares of poor students have higher, not lower, test scores.

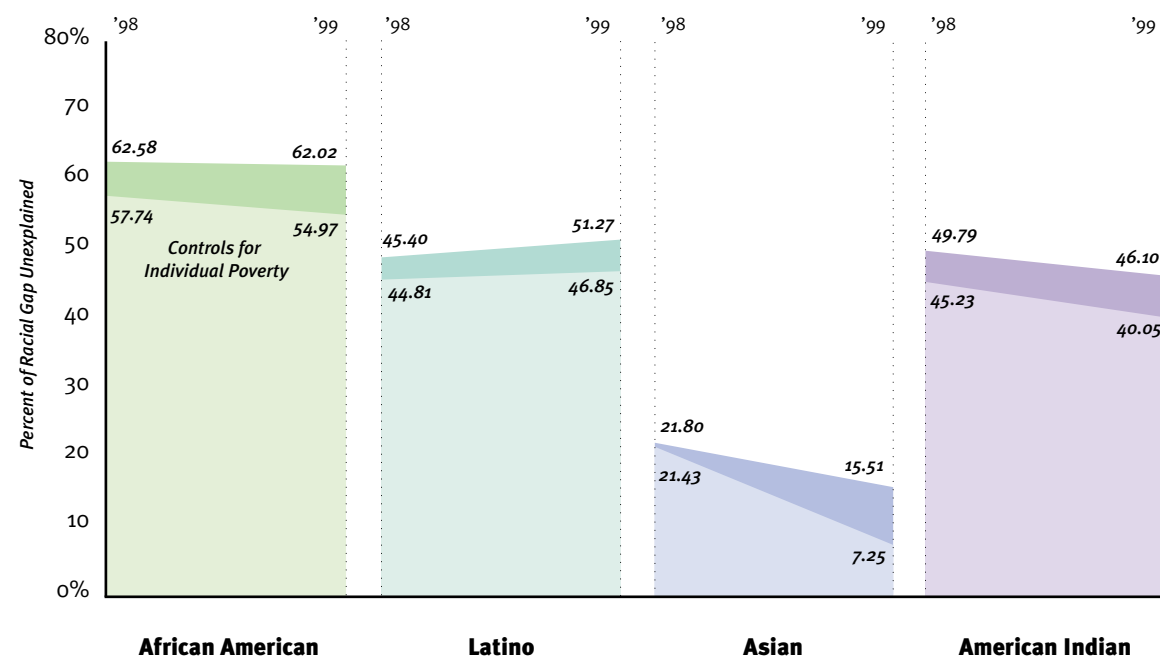
Additionally, our analysis confirmed our 1996 finding that school poverty is not at the root of racial gaps in test scores. If school poverty were to explain the racial gap in test scores, it would have to lower test scores for students of color as well as for whites, and perhaps lower them more for students of color than for whites. We did not find this to be the case.

Using individual poverty measures for 1998 and 1999 (data that was not available earlier), we ran a second analysis of how poverty may affect test scores. We found that individual student poverty does have a statistically significant impact on test scores. This impact, however, is small and does not reduce the unexplained racial gaps by much. In 1998, when controlling for individual poverty, the unexplained racial gap was reduced by no more than five percent for all minorities. By 1999, there is a slightly larger difference for blacks, Asians, Latinos and American Indians.

*Poverty is not at the root of racial gaps in test scores.*

**Change in Unexplained Racial Gaps in Test Scores When Accounting for Individual Poverty, Mathematics (1998 and 1999)**

Figure 7



**7. Attendance effects are much larger on math scores than on reading scores.**

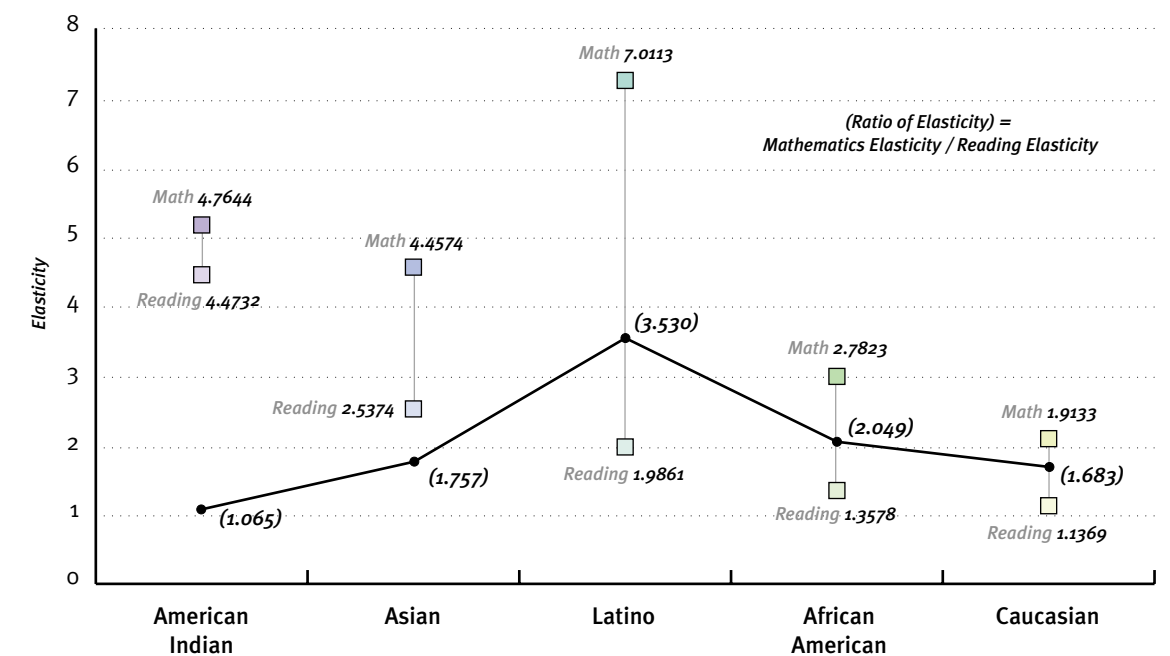
There is a continuing debate about the relative effects of attendance on student performance when controlling for various factors. We felt that the important issue is how large of an impact attendance has on test scores, however that impact may occur.

Our previous report found, and the current analysis confirms, that attendance has a statistically significant impact on both reading and math test scores. In this study, we compared how even a small change in attendance – one percent – affects the two scores. Interestingly, math scores are affected at much higher rates than are reading scores, across the board.

For instance, Figure 8 shows the rate of effects of attendance (called “elasticity”) on high achievers’ scores. Elasticity measures the responsiveness of test scores to changes in other factors. An elasticity greater than one means a very responsive result. A one-percent increase in attendance yields more than a one-percent increase in test scores. Latinos had an elasticity rate of 7.01 for their math scores, but only a 1.98 elasticity rate for their reading scores. Thus, math scores were affected three-and-a-half times as much as reading scores were when attendance levels changed (3.53 ratio of elasticity).

**Effects of Attendance on Individual Test Scores 1999, High Achiever**

Figure 8



**8. There are larger impacts of attendance on high achievement than on low achievement.**

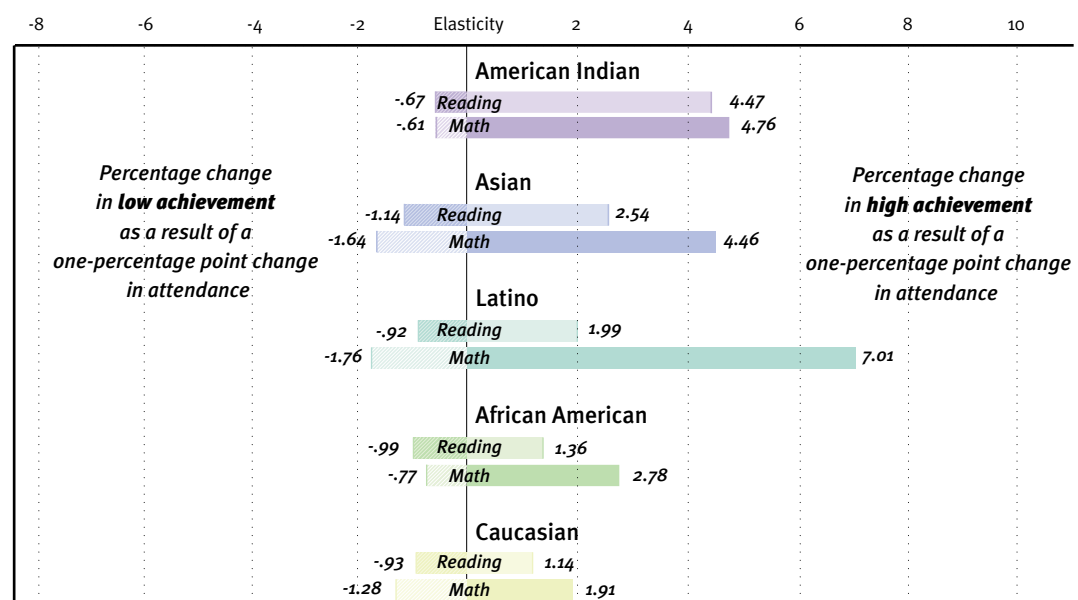
Improvements in attendance also have dramatically large impacts on increasing the odds that children will score in the top 20 percent of test-takers. At higher levels of achievement, attendance produces large effects on both reading and mathematics scores. When one focuses on the lower end of the achievement distribution, attendance matters much less. Latinos registered the largest attendance effects on mathematics high achievement and American Indians revealed the largest attendance effects on reading high achievement.

**9. Few factors explain why some schools improved their math and/or reading scores.**

If we could pinpoint why some schools were able to improve their scores we'd be a long way towards solving the problem of poor test results. There are many differences between the schools that improved and those that did not. Schools that did not improve reading scores for three consecutive years (from 1996-1999) had higher poverty rates than those that did improve. Black poverty rates, however, were higher at schools that improved than at schools that did not. Schools that did not improve reading scores were more likely to be charter schools, although there is no difference for blacks. Although there are observed differences between schools with improved scores and those without improvement, few of these statistically explain why some schools improved and others did not.

We also analyzed the probability that a school's scores would improve, using the variables of school poverty, racial concentration, level of school performance, and type of school (charter, middle or junior high, rural or urban). While we found one or two factors that had statistically significant impacts on a particular group's test scores (for instance, schoolwide math test scores for Asians were more likely to improve in top reading schools), these models generally do not explain well the differences in school performance.

**Elasticities of Low and High Achievement with Respect to Attendance** Figure 9



## Policy Implications

Our findings suggest the following policy actions:

- **Focus on improving language and math skills.**

While gains in students' reading scores are impressive, attention still needs to be paid to improving math scores and addressing the language proficiency problem. Our analysis thus calls for a continued or renewed focus on improving attendance rates of students of color in order both to improve math test scores and to reduce the racial gap in these scores. Current reading improvements can be sustained while new initiatives designed to improve mathematics performance are developed and implemented.

In addition, future policy measures must address the growing language problem. More and more students are enrolled in LEP programs. Limited English language skills clearly have a very large impact on test scores, not only in reading but also in math.

- **Identify qualitative factors that helped some schools improve.**

Clearly, a momentum has been established that seems to assure that reading test scores among students of color will continue to improve. It is difficult to know, however, whether minority test score improvements are due to the programmatic efforts, heightened teacher and administrator incentives to improve test scores, or perhaps parents working more closely with their children. Further study as to why schools improved their scores will enable us to implement targeted programs.

- **Enhance efforts to improve equal treatment of students.**

The positive progress Minnesota has made in improving reading test scores should be the impetus for further narrowing the racial gaps in both mathematics and reading test scores. The implication of the reduction in the unexplained portion of the racial gap is that more conscious efforts have been made not to disadvantage students of color. For instance, there may be a proliferation of targeted out-of-school programs designed to improve minority students' test scores, or more focused school-based initiatives where there are large concentrations of students of color. Such trends should be identified and encouraged.

### 10. **There is no adverse impact of improved reading scores on schoolwide math scores.**

Interestingly, in 1996 math scores for all students were higher than reading scores. In the later years this is reversed, with reading scores outpacing math scores. It may be tempting to speculate that school resources were shifted from math to reading during these years. This conclusion, however, cannot be reached from our data.

To answer the question, *Do school reading improvements come at the expense of better mathematics scores?* that the data raises, however, we performed a probability analysis. We estimated the odds by which mathematics scores would improve if a school's reading scores had improved, as opposed to if they had not.

Our results showed no adverse effects of improved reading scores on mathematics scores. In fact, as Figure 10 details, schools with improved reading scores had higher odds of improved math scores. For instance, in the years 1996-1999, the odds of Latino schoolwide math score improvements were 43 to 46 times more than schools that did not improve reading scores during that period.

This figure thus refutes the hypothesis that the significant improvements in reading test scores have come at the expense of deteriorating math scores. Instead, we find a strong and persuasive positive effect of reading improvements on math improvements.

*Improving reading skills improves math skills as well.*

**Reading Enhances Mathematics**

Figure 10

