

# RESEARCH BRIEF

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## A New Look at M-DCPS Achievement Gap Data

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*Much of the discussion and the ideas behind this paper have been adapted from an article by Lynn Olson entitled Testing Experts Develop New Method of Presenting Achievement-Gap Data in the March 2002 issue of Education Week.*

It is relatively easy to measure the performance gap between two runners at the end of a marathon. The difference in finishing times can be expressed in minutes, or more likely, fractions of a second.

But how does one compare the performance of groups of runners, like men and women? Should we look at differences in the average times? If we wish to assess changes in the differences over time, would a single representative number tell us enough? Should we consider the slowest or fastest times in each year? This more complicated question is similar to the problem of assessing changes in the achievement gap between groups of students in our school district.

A report by the board that governs the National Assessment of Educational Progress warns us against measuring an achievement gap in terms of a single statistic. If we compare just the average

scores, or the percent above minimum standards on achievement tests, we might miss some important changes and misrepresent what's happening.

For example, while the percentage of students scoring level 3 or higher on the FCAT Reading test may remain unchanged from one year to another, students' scores below level 3 may have risen considerably.

The key idea is to compare whole groups of scores in some fashion. To help visualize changes in test-score gaps over time, we can turn to graphing methods often employed in such fields as medical research, insurance, and engineering. Known as "cumulative-distribution functions," such charts can display test scores across the entire range of performance simultaneously, thus making progress relatively easy to spot.

In Figure 1, for example, the curves show the percent of students who scored below each FCAT SSS 4<sup>th</sup> Grade Reading test score for three groups of students over two time

periods. On this single graph are curves representing Whites, Blacks, and Hispanics tested in both 1999 and again in 2001. By looking at where the curves intersect the line for a score of 300 (the cutoff score for level 3 or higher), we can clearly see that for both time periods more than half of the White students, about half the Hispanics, and less than half of the Blacks are above this cutoff. (Note: these kind of graphs commonly exhibit aberrations at the endmost regions and are not indicative of reliable trends in these extremes.)

It is also clear from the chart that, between the two-year time period, the performance of all three groups improved across the board because the curves have all shifted upward. This new type of graph gives us a picture of the achievement gap throughout the entire breadth of performance.

The chart in Figure 2 zeroes in on the actual size of the achievement gap between Blacks and Whites and whether it has closed over time. In this graph the distributions for each group are superimposed from the lowest to the highest percentiles. The two curves at the top of the graph represent the differences in scores (achievement gap) at each of the two time periods. In 1999, the achievement gap is more pronounced at the lower levels of performance for both groups and diminishes as the curve moves towards the higher percentile students. By 2001, the extent of the gap has somewhat leveled out across the

span of performance, resulting in a decrease of gap at the lower levels and an increase in gap at the higher levels of performance.

The reason for this trend reversal can be observed in the curves on the bottom portion of the graph. These curves represent the gains in scores for both White and Black students. While the gains of Blacks are greater in the lower percentiles (resulting in a reduction in achievement gap in that region), the gains of Whites are greater at the highest percentile levels (resulting in an expansion of the achievement gap at that level).

Taken together, the two charts show that while all groups improved, our attention in reducing the achievement gap at the lower performance levels has paid dividends at the expense of “gap growth” at the higher performance levels. Of course, this is only a look at one kind of test at one grade level. Each separate analysis will tell its own unique story.

If you look at one place along the scale – which is what you do if you look at achievement levels – you don’t see the complete picture. These distributions are typically changing in a variety of ways, including places where achievement levels are not set. This graphical approach gives us much more information than any method we have used in the past, and in some ways, provides a more honest picture of achievement gap changes.

Figure 1: FCAT SSS 4th Grade Reading

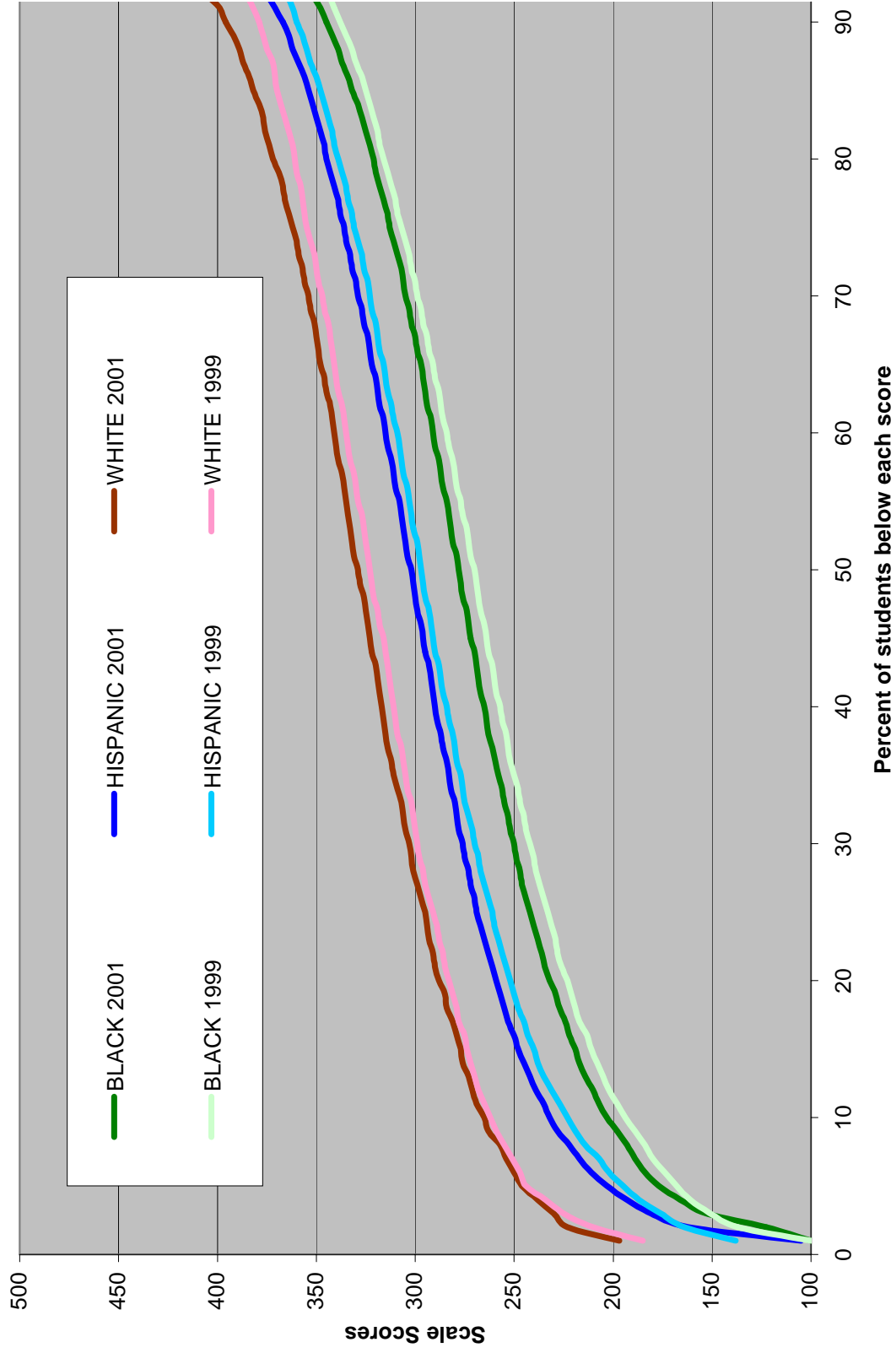


Figure 2: Gains and Differences between Whites and Blacks 4th Grade Reading

