



ARE KENTUCKY'S DISTRICTS CLOSING THE ACHIEVEMENT GAP?



A RESEARCH BRIEF
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Vision

Ensure each and every student is empowered and equipped to pursue a successful future.

Mission

To partner with districts, schools, families, students, business and industry, and communities to provide leadership and support to ensure success for each and every student.

About

The Kentucky Department of Education is a service agency of the Commonwealth of Kentucky, and part of the Education and Workforce Development Cabinet. The department provides resources and guidance to Kentucky's public schools and districts as they implement the state's P-12 education requirements. The department also serves as the state liaison for federal education requirements and funding opportunities.

INTRODUCTION

The Kentucky Department of Education (KDE) has identified closing the achievement gap as a key priority for the state. To best support districts and their work, it is important that we have a clear understanding of the current achievement gap, as well as the progress being made to close the gap. A growth measure is one tool we can leverage to describe districts' performance over time, allowing us to move from a single snapshot to a broader view of district progress.

The purpose of this study is to investigate the progress being made to close the current achievement gap in Kentucky.

Guiding the study is the following research question: Which districts are closing racial and socioeconomic achievement gaps at rates that exceed expectations? We assess districts' progress in closing racial and socioeconomic achievement gaps in school year 2017-2018 by employing a growth measure—specifically, a residual gain model—to estimate districts' expected achievement gaps from prior years' achievement gaps.

The sections below describe the primary findings of the analysis and next steps for research. An overview of the study's methodology is also given at the end of the brief.

KEY FINDINGS

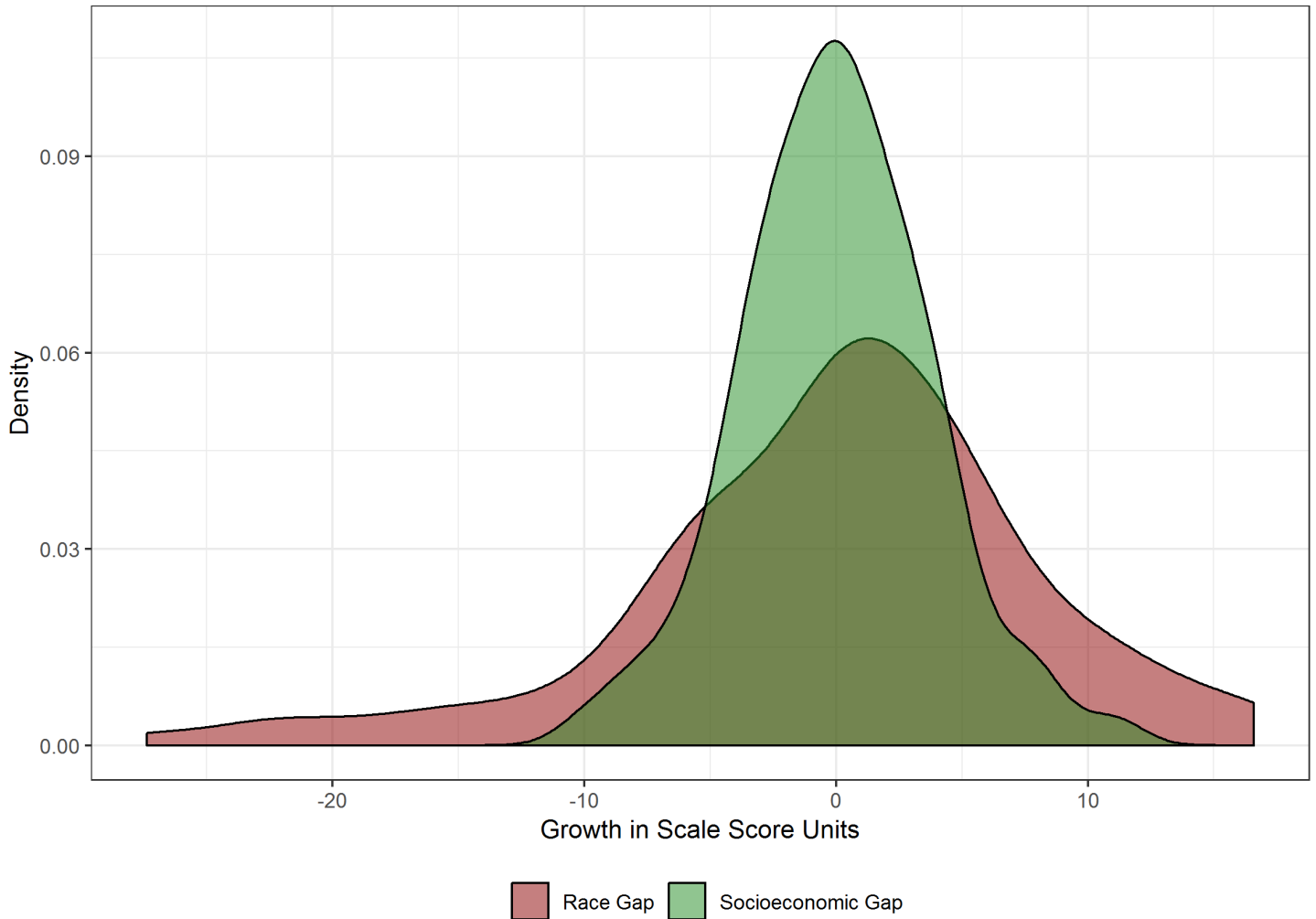
WHILE THE ACHIEVEMENT GAP CONTINUES TO POSE A CHALLENGE TO MOST DISTRICTS, THE DEGREE TO WHICH DISTRICTS ARE MAKING PROGRESS IN CLOSING THEIR RACIAL AND SOCIOECONOMIC GAPS VARIES WIDELY ACROSS THE STATE.

Figure 1 shows the distribution of districts' progress in closing the achievement gaps in 3rd grade mathematics.¹ Districts whose growth scores were less than zero showed progress in closing their achievement gaps. Pike County, for instance, was predicted to decrease its racial achievement gap in mathematics to 9.8 scale scores. However, its actual gap decreased to 4.3, which represents a difference of -5.5 scale scores in growth. Conversely, districts with growth scores greater than zero had achievement gaps that were larger than predicted. For example, Bullitt County was predicted to slightly increase its racial achievement gap in mathematics from 11.1 to 11.4; however, its actual gap rose to 19.3, representing a difference of 7.9 scale scores in growth.

Looking at the state as a whole, we found considerably more variation in districts' progress in closing the racial achievement gap (sd = 10.7) than the socioeconomic achievement gap (sd = 4.68). This pattern was consistent across all grades and similar to findings in reading. It is worth noting that there were a number of districts (n = 12) that outperformed their predicted racial achievement gap by more than 5 scale scores. However, there were roughly the same number of districts (n = 17) whose racial achievement gap was 5 scale scores larger than their predicted gap. Together, these findings show that some districts are making progress in closing their achievement gaps, whereas others are failing to do so and, in some cases, regressing.

¹ We use 3rd grade mathematics as an example throughout the report. Results for reading and other grade levels are available upon request.

Figure 1. Distribution of Districts' Growth Score, Grade 3, Mathematics



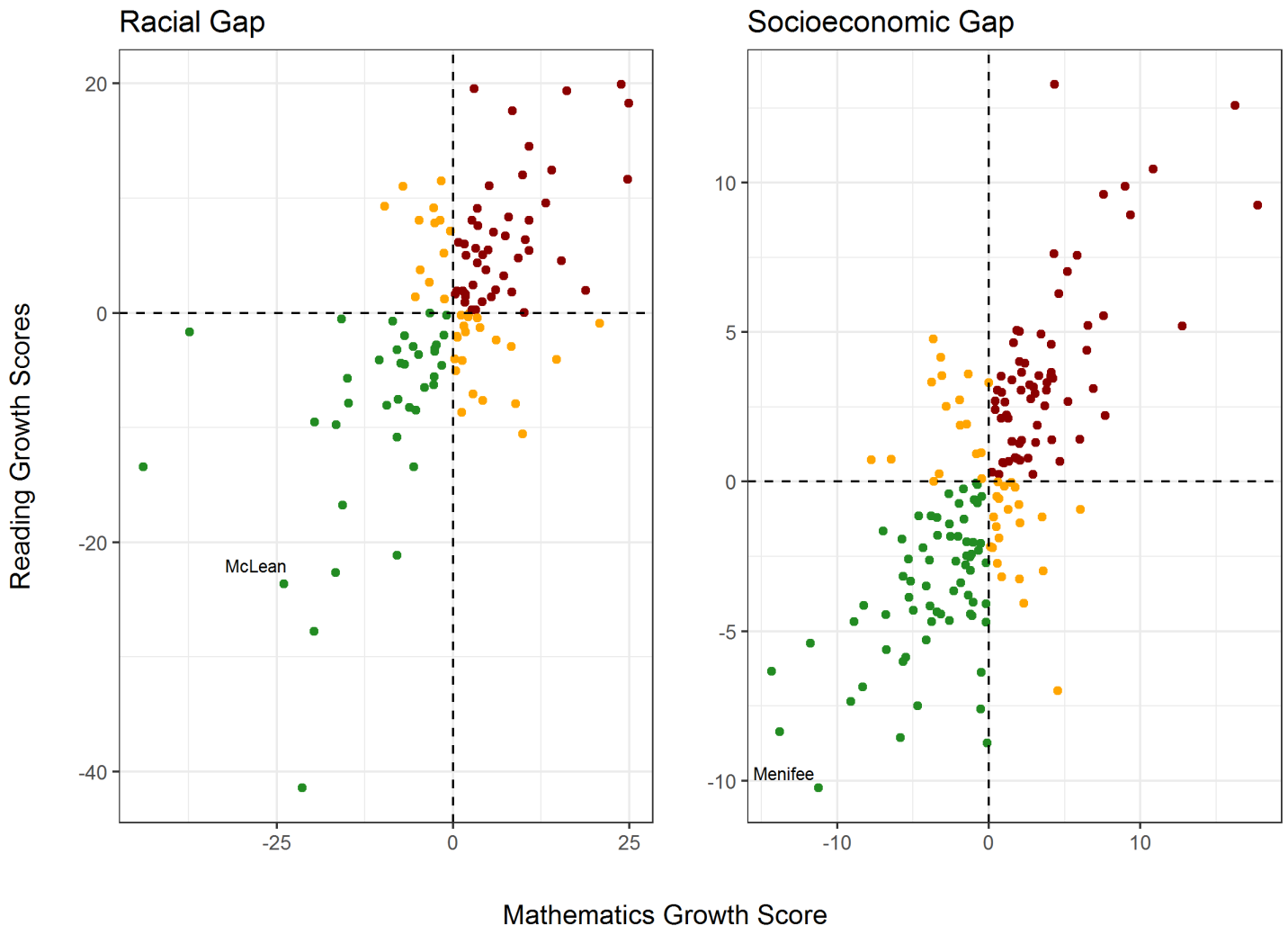
DISTRICTS THAT PROGRESSED IN CLOSING THEIR MATHEMATICS ACHIEVEMENT GAP OFTEN PROGRESSED IN CLOSING THEIR READING GAP TOO.

Figure 2 highlights the relationship between 3rd grade mathematics and reading growth scores for racial and socioeconomic achievement gaps. There were 37 (21.4%) districts that progressed in closing both the racial achievement gaps in mathematics and reading and 68 (39.3%) districts closed the socioeconomic gaps in both subjects.² For example, McLean County outperformed its

predicted racial achievement gap with growth scores of -24.0 and -23.7 in mathematics and reading, respectively. Similarly, Menifee County performed better than expected in closing its socioeconomic gap in both mathematics and reading by -11.2 and -10.2 growth scores, respectively. On the other hand, 46 (26.6%) districts regressed in their progress toward closing the racial achievement gaps and 66 (38.2%) saw worse than expected socioeconomic gaps in both mathematics and reading. Similar results were found in 5th and 8th grades.

² In calculating percentages, we excluded districts with missing information.

Figure 2. Relationship between Mathematics and Reading Achievement Gaps



CONCLUSIONS AND FUTURE RESEARCH

In summary, a number of districts show progress in achievement gap closure. However, decreasing the racial and socioeconomic achievement gaps continue to be a challenge for many districts. It is important to note a growth measure is one way of examining the achievement gap. While a growth measure describes districts' movement toward gap closure, it does not necessarily highlight districts that saw an actual decrease in their achievement gap. Such information may be more pertinent to policymakers. Currently, we are developing research in this area. Other future research topics include:

- Expanding the model to include additional years of achievement gap data and continuing to tune model performance.
- Investigating historical growth trends and proposing benchmarks for adequate growth.
- Modeling racial and socioeconomic achievement gaps at the school level.
- Constructing an interactive dashboard for KDE leadership to monitor achievement gaps across schools and districts.

SUMMARY OF METHODOLOGY

To facilitate this analysis, we used student-level assessment data from KDE's Office of Standards, Assessment, and Accountability data files for schools years 2016-2017 and 2017-2018. Data files contained scale scores for the K-PREP mathematics and reading tests as well as demographic and program information for all 3rd, 5th, and 8th grade students attending a public school in the state.³ We aggregated these data by grade and district using information about the school and district that the student attended, and estimated within-year achievement gaps for districts' racial/ethnic and socioeconomic groups.⁴ The subsequent district-level dataset was then supplemented with district characteristics (i.e., program information, attendance, Title I, etc.) from the School Report Card.

In order to examine districts' progress on closing racial and socioeconomic achievement gaps, we estimated a series of residual gain models. All models included variables that controlled for student and district characteristics.⁵ It is

important to note that the decision to include district-level variables in the model significantly decreased the precision of our estimates. For example, we found districts' prior year racial and socioeconomic achievement gaps to be weakly correlated to their current year gap ($r = .18$ and $r = .35$, respectively). While we recognize this limitation to our study, we believe an approach that takes multiple years of data into account to estimate the achievement gap to be an improvement over an approach that compares district achievement from one school year.

³ We limited our study to students who are transitioning to the next education level.

⁴ A number of districts ($n = 61$) did not have any black students enrolled in 3rd, 5th, or 8th grade. In turn, we were unable to calculate an achievement gap for those districts.

⁵ The full model specification and performance metrics are available upon request.



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