

# When Does Inequality Grow? School Years, Summers, and Achievement Gaps

By Megan Kuhfeld, Dennis Condron, and Douglas Downey

## KEY FINDINGS

- **The academic achievement gap between Black and White students widens when school is in session and shrinks during summers.** This achievement gap expands from fall to spring of each school year from kindergarten to eighth grade, by a total of 30 percent in math and 39 percent by the end of middle school. The gap does not expand during summers. Rather, Black students lose fewer academic skills over summer breaks compared to White students when the economic status of school districts is taken into account.
- **Asian students generally pull ahead of White students at a faster rate during summers than during school years.**
- **Hispanic-White gaps declined minimally overtime and lacked a distinct seasonal pattern.**
- **Non-school environments play a strong role in shaping achievement gaps.** While time in school exacerbated the gap, most of skill disparities seen between Black and White students in this study were present before kindergarten: at kindergarten entry, the math gap was  $-.54$  SD while the reading gap was  $-.41$  SD.

Sixty-five years after the landmark *Brown v. Board of Education* case, access to a high-quality education for all American children, regardless of race or ethnicity, remains an unfulfilled promise. Achievement gaps—the troubling disparities in academic performance between students who are Asian or White who tend to have higher test scores in math and reading than their Black, Hispanic, and Native American peers<sup>i</sup>—persist as a significant social problem. However, children spend much more time outside of schools than in them, and sizeable racial and ethnic disparities in academic skills exist when children enter kindergarten, highlighting the non-school origins of these disparities<sup>ii</sup> and making it challenging to determine how schools shape achievement gaps.

Seasonal learning studies, which allow researchers to compare student learning patterns when school is in versus out of session, provide important evidence on whether schools reduce or exacerbate educational inequalities. However, due to limitations of available data sources, most seasonal studies are restricted to the early grades<sup>iii,ii</sup> limiting our understanding of the relationship between schooling and inequality in later grades. Past studies in this area have faced other challenges as well: many were limited to students in one or two cities, reducing the generalizability of findings, or compared results from different assessments in different grades, or from assessments lacking a vertical scale which can distort estimates of changes in achievement gaps across grades. Because of these limitations in scope and

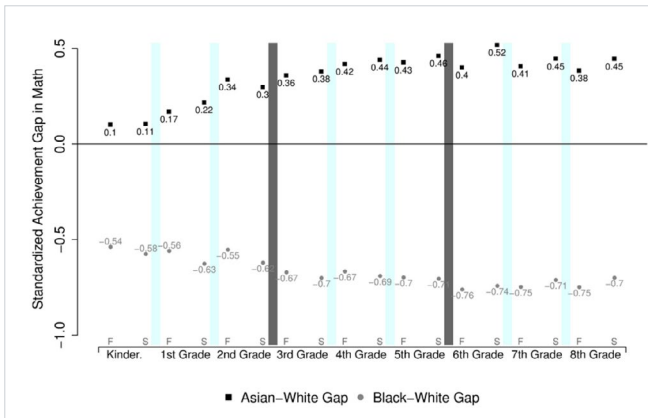
approach, a clear answer has yet to emerge on whether schools widen, maintain, or reduce racial and ethnic achievement gaps in elementary and middle school<sup>iv</sup>.

This study overcomes these shortcomings to provide the most comprehensive seasonal analysis of racial and ethnic achievement gaps to date. We use MAP® Growth™ assessment data from over 2.5 million kindergarten to eighth grade students from almost 21,000 public schools across the United States, weighted by a set of school-level characteristics to create a nationally representative sample, to estimate monthly learning rates, achievement gaps, and changes in these gaps during nine school years and six summers.<sup>1</sup> Specifically, the study examined achievement gaps between White students and Black, Hispanic, and Asian American students. Because MAP Growth has an equal-interval vertical scale built upon a cross-grade item pool, changes in gaps across grades can be more reliably estimated.

### **The achievement gap between Black and White students widened during school and decreased during summers.**

The results showed that the achievement gap between Black and White students grew from kindergarten to eighth grade. At the start of kindergarten, Black students trailed White students by  $-0.54$  SD in math and  $-0.41$  SD in reading. By the end of eighth grade, the math gap was 30% larger ( $-0.70$  SD), and the reading gap was 39% larger ( $-0.57$  SD).

<sup>1</sup> The sample included three different cohorts of students (one from kindergarten to the end of second grade; another from third grade to the end of fifth grade; and a third from sixth grade to the end of eighth grade) to minimize issues of student attrition and address some limitations of school calendar data availability.



Standardized Black-White and Asian-White achievement gaps in math for the three cohorts. See [working paper](#) for similar chart for reading. The dark vertical bars represent the switch between Cohorts 1 and 2 and Cohorts 2 and 3, and therefore the estimates between second grade spring and third grade fall and between fifth grade spring and sixth grade fall should not be interpreted.

All groups of students showed positive learning rates in school, and negative learning rates, or losses, during the summers, with the highest rates of gains and losses in early grades and the corresponding summers. However, Black students consistently showed lower monthly learning gains during the school year than their White peers in 16 of the 18 school-year estimates across math and reading, leading to widening of these gaps. In summers, in contrast, White students showed larger summer drops than Black students, decreasing gaps. The results also showed that the math gap grew at a fairly consistent rate across grade levels while the reading gap grew notably faster during the first few school years before the gap expansion slowed beginning in third grade.

### The achievement gap favoring Asian students grew substantially over time but increased more so during summers than during school years.

Achievement gaps between Asian and White students are distinct because, in contrast to Black-White and Hispanic-White gaps, Asian students outperform White students on average.

The results showed that these gaps increased substantially over time: in the fall of kindergarten, Asian students were only slightly ahead of White students (0.10 SD gap in math and 0.09 SD in reading). By the end of eighth grade, Asian students were 0.45 SD ahead in math and 0.21 SD ahead in reading, meaning that the math gap grew by 339% while the reading gap grew by 145%.

Asian students appeared to pull ahead of White students primarily during summers, especially during the early years. While Asian students gained more than White students in 14 of the 18 school years, the monthly rates of those school-year gains were generally modest compared to the rates during 10 of the 12 summers. For this group of students, then, school was related to a relative weakening of the Asian advantage in learning rates, especially in reading.

### Hispanic-White gaps declined slightly over time and lacked a clear seasonal pattern.

The results provided some evidence that Hispanic students narrowed the achievement gap with White students during school years, but this was limited to reading in fifth to eighth grade. As with Black students, summer losses of academic skills also appeared to be lower for Hispanic students than for White students. Overall, Hispanic-White gaps lacked a clear seasonal pattern: they were present at the start of kindergarten, changed little over time, and typically could not be traced to a particular season. The results of this nationally representative study are noteworthy because previous research suggested that school tends to reduce achievement gaps based on socioeconomic status. Given the relationship between race and socioeconomic status in the United States, we might expect schooling also to temper racial/ethnic achievement disparities. Instead, this research adds to a growing body of literature suggesting that schools perpetuate rather than reduce racial/ethnic inequality in math and reading achievement.

- <sup>i</sup> Musu-Gillette, L., de Brey, C., McFarland, J., Hussar, W., Sonnenberg, W., and Wilkinson-Flicker, S. (2017). *Status and Trends in the Education of Racial and Ethnic Groups 2017* (NCES 2017-051). U.S. Department of Education, National Center for Education Statistics. Washington, DC.
- <sup>ii</sup> von Hippel, P. T., Workman, J., & Downey, D. B. (2018). Inequality in reading and math skills forms mainly before kindergarten: A replication, and partial correction, of "Are Schools the Great Equalizer?" *Sociology of Education*, 91, 323-357.
- <sup>iii</sup> Quinn, D. M., Cooc, N., McIntyre, J., & Gomez, C. J. (2016). Seasonal dynamics of academic achievement inequality by socioeconomic status and race/ethnicity: Updating and extending past research with new national data. *Educational Researcher*, 45, 443-453.
- <sup>iv</sup> Downey, D. B., & Condron, D. J. (2016). Fifty years since the Coleman Report: Rethinking the relationship between schools and inequality. *Sociology of Education*, 89, 207-20.
- <sup>v</sup> Lucas, S. R., & Berends, M. (2007). Race and track location in US public schools. *Research in social stratification and mobility*, 25(3), 169-187.
- <sup>vi</sup> Oakes, J., Gamoran, A., & Page, R. N. (1992). Curriculum differentiation: Opportunities, outcomes, and meanings. In P. W. Jackson (Ed.), *Handbook of Research on Curriculum: A project of the American Educational Research Association* (pp. 570-608). New York: Macmillan.
- <sup>vii</sup> Delpit, L. D. (2012). "Multiplication is for white people": *Raising expectations for other people's children*. New York: New Press.
- <sup>viii</sup> Gordon, N. (2018). *Disproportionality in Student Discipline: Connecting Policy to Research*. Washington, DC: Brookings.
- <sup>ix</sup> Horvat, E. M., Weininger, E. B., & Lareau, A. (2003). From social ties to social capital: Class differences in the relations between schools and parent networks. *American Educational Research Journal*, 40(2), 319-351.

# RECOMMENDATIONS

## **Identify education policies and practices that reduce racial achievement gaps in schools.**

This research, coupled with prior studies on tracking<sup>v,vi</sup>, teacher expectations<sup>vii</sup>, disproportionality in discipline<sup>viii</sup> and how schools and teachers interact with parents suggest schools may reproduce and at times, even exacerbate larger structural inequalities. If schools are to be a “great equalizer,” as education leaders have long envisioned, honest and thoughtful reflection, conversation, and action is needed to identify, understand, and promote policies and practices in our education system that combat persistent opportunity gaps in school. Educators and leaders can leverage the assets among diverse students and communities by mobilizing their strengths in ways that will drive growth for all students.

The specific school mechanisms that slow the growth of Asian students’ skill advantages and widen the gap for Black students warrant further attention.

Seasonal studies like this are well-suited for revealing the overall summer and school-year comparisons but cannot identify the season-specific mechanisms that explain those patterns. To understand these, education researchers need both seasonally-collected data and detailed information on students’ summer and school-year environments over an extended period of time.

## **Further exploration is needed to understand differences between mechanisms that promote gaps before kindergarten and during summers.**

This study also raises questions about how racial achievement gaps form during the pre-kindergarten period versus summers. For both the gaps between Black and White students, and between Asian and White students, the patterns observed at the beginning of kindergarten did not persist in the summers after school began.

For example, Black-White skill disparities widened during school years but not summers. The presence of substantial gaps between Black and White students at kindergarten entry, one of the main drivers of efforts to better understand and improve early childhood learning opportunities, suggests that non-school environments generated those initial gaps, which might lead us to believe that out of school, during summers, these gaps would grow. This was not the case.

In the case of Asian students, the faster summertime growth of their skill advantages suggests that non-school environments play a strong role. However, the Asian-White gaps at kindergarten entry are negligible.

Both of these puzzles suggest that the pre-kindergarten and summer time periods may affect racial/ethnic skill gaps in different ways, an issue that merits increased attention as scholars explore the pre-kindergarten mechanisms that promote gaps.

### **This brief describes research documented in:**

Kuhfeld, M., Condrón, D., & Downey, D. (2019) When does inequality grow? A seasonal analysis of racial/ethnic disparities in learning in kindergarten through eighth grade. (NWEA Collaborative for Student Growth Working Paper).

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