

Is the Best Teacher the Best for Everyone?

Variation of Teacher Effectiveness by Student Race

by William Delgado

Students of different races continue to have different academic outcomes—a persistent issue across the United States, and one that contributes to an array of disparities in adult outcomes, including the racial gap in college enrollment and earnings. Teachers play an important role in improving student achievement and later-life outcomes, but there is little understanding about whether teachers have different effects on students from different racial backgrounds.

A teacher who is effective with one group of students but ineffective with another could either reduce or exacerbate educational inequality. Understanding disparate impacts of teachers based on students' race can help design policies and practices to improve the efficiency and equity of education systems.

Findings

How much do [teacher effects on Black students' test scores](#) vary, and are the same teachers effective for non-Black students?

- **Teacher impacts on Black students varied widely.** The difference between a teacher with high effectiveness for Black students' test scores (at about the 80th percentile, or one standard deviation above the mean) relative to a teacher with low effectiveness (at about the 20th percentile, or one standard deviation below the mean) ranged from 0.2 standard deviations in middle school English to 0.5 standard deviations in elementary school math.¹ These estimates of the variability in teacher effectiveness for Black students were within the variability estimates of typical value add from New York City and Los Angeles.²
- **The teachers that were more effective for Black students often were also more effective for non-Black students, but not always.** The correlation between teacher effectiveness for Black students and effectiveness for non-Black students was between 0.28 and 0.67 (on a scale where zero means no relationship and 1.0 means a perfect relationship), depending on the subject and grade level. Thus, just looking at teachers' overall effectiveness might obscure how much more or less effective they were for the test scores of Black students.

What was the [effect for Black and non-Black students](#) of having a teacher who showed strong positive effects on Black students' test scores in prior years?

- **Race-specific value-add scores were predictive of teachers' subsequent effects on students.** After calculating teacher effectiveness for Black and non-Black students, the study examined the test scores of Black and non-Black students when teachers moved from one school to another, or across grades within a school. When a teacher whose prior performance showed they raised Black students' test scores by one standard deviation moved across schools or grades, Black students taught by the teacher in their new school or grade also showed increases in their test scores by one standard deviation. At the same time, there was no detrimental effect on non-Black students from having a teacher with high effectiveness for Black students.

What were the [background characteristics of teachers](#) who were more effective at raising Black students' test scores?

- **Experienced teachers and teachers with a master's degree tended to be highly effective overall, but much less effective for Black than non-Black students.** For example, experienced teachers and those with a master's degree increased everyone's test scores, but much less for Black students. Other teacher characteristics tended to not be strongly related to their differential effectiveness at raising Black students' test scores, including teacher gender, race, and tenure status.

What [efficiency and equity gains could occur](#) if teacher effect disparities were incorporated into policy decisions?

- From the calculations of teacher effectiveness for Black and non-Black students, it is possible to construct a novel measure of teacher quality—called revealed comparative advantage—that estimates teachers' impact on racial achievement differences.
 - A teacher's comparative advantage for Black students is their differential impact on Black students, relative non-Black students, and a positive value means that they closed the existing racial achievement differences.
 - ***This measure can be interpreted as the teacher's contribution to equity.***
 - A teacher who was one standard deviation above the mean in their comparative advantage for Black students' test scores (at about the 80th percentile) would close the Black-non-Black achievement gap by 14-20 percentage points, relative to a teacher that was average.
- **Incorporating teachers' revealed comparative advantage into policy decisions has the potential to increase the efficiency and equity of education systems.** Matching teachers to classrooms based on their comparative advantage could improve average test scores and reduce racial achievement gaps. From an earnings perspective, a hypothetical policy that replaces the lowest 5%-performing teachers with average teachers, based on their traditional value-added, has been estimated to increase students' lifetime earnings by \$250,000 per classroom.³ This policy would generate \$3,000 in additional student lifetime earnings per classroom if teachers' comparative advantage is considered relative to when it is not.

Policy takeaways

- School districts and school principals could incorporate teachers' variation in effectiveness for students of different races into their policy decisions. This new measure complements typical value-added measures of teacher quality.
- Policymakers and researchers could identify teachers who are contributing to equity—those with greater comparative advantage for Black students—to learn more about their teaching practices and characteristics.
- District and school leaders could target professional development to teachers who are not as effective for Black students and are thus widening achievement gaps.
- District and school leaders could better match teachers to students, based on teachers' effectiveness with different groups of students.
- Teacher comparative advantage data would need to be used responsibly:
 - Obtaining the teacher comparative advantage quality measure has no additional cost, is readily available, and requires the same information used to compute value-added measures of teacher quality often used in teacher evaluations.
 - Using the comparative advantage measure, however, must come with caution—the same criticisms that have been raised for teacher value-add measures may apply to teacher comparative advantage.
 - For example, small sample problems are compounded as student-type-specific teacher effects are estimated with small sets of students. This problem could be overcome by using multiple years of data or incorporating other measures of teacher quality to improve precision.

Data & methods

The study used administrative data from Chicago Public Schools from school years 2008–09 to 2016–17 to estimate teacher value-added scores by race in math and English in the elementary and middle grades. The data contain information on student test scores, student demographics, attendance, suspensions, and course transcripts. Test scores come from the Illinois Standards Achievement Test (ISAT) and the Northwest Evaluation Association Measures (NWEA). These data also contain information on teacher characteristics, classroom observation ratings, and student survey reports. Ultimately, these analyses include 1.8 million test scores from 330,000 students and about 10,000 teachers.

Study details

Delgado, W. (2023). *Disparate teacher effects, comparative advantage, and match quality* (Working paper).

Note: Working papers are shared to make technical details publicly available. They have not been peer-reviewed or subject to the full review by Consortium research and communications staff that accompanies official Consortium publications. Working papers do not go through the Consortium editorial process, and all opinions are the responsibility of the author(s).

References

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Chetty, R., Friedman, J.N., & Rockoff, J.E. (2014a). Measuring the impacts of teachers I: Evaluating bias in teacher value-added estimates. *American Economic Review*, 104(9), 2593–2632.

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About the author

William Delgado is a research assistant professor at BU Wheelock College of Education & Human Development in the Educational Leadership & Policy Studies Department. He is an affiliated faculty member with the Wheelock Educational Policy Center. William first joined BU as a senior postdoctoral associate. Prior to BU, he was a postdoctoral scholar at the University of Chicago and an economic consultant to the Inter-American Development Bank and the Colombian Department of Health. His overarching goal is to understand and address inequality in opportunities and to foster human potential. His current research studies teacher quality and human decision-making, with a focus on parents. William completed this work as an affiliated researcher with the UChicago Consortium on School Research.

¹ These numbers come from Table 3, panels C and D, row 4 “Variance-Covariance Matrix of Race-Specific Teacher Value-Added” in the full manuscript, and are computed as twice the reported standard deviation (see Delgado, 2023).

² Chetty, Friedman, & Rockoff (2014a); Bacher-Hicks, Kane, & Staiger (2014).

³ Chetty, Friedman, & Rockoff (2014b).