



Center for Education Policy Research

HARVARD UNIVERSITY



# Learning About Teacher Effectiveness: The SDP Human Capital Diagnostic

**Fulton County Schools  
February 15, 2011**



# Key Findings

Teacher effectiveness varies substantially in FCS.



Recruit



Place



Develop



Evaluate



Retain/Turnover

- High-poverty schools in FCS have greater proportions of novice and newly-hired teachers than low-poverty schools.

- FCS places less-experienced teachers with lower-performing students both district-wide and within specific schools.
- Although there is little difference in average teacher effectiveness between low- and high-poverty schools, there is considerable variation in effectiveness across schools in the same poverty level.

- FCS teachers become more effective during their first two years in the classroom. After two years, however, returns to experience are generally small and inconsistent across subjects.
- FCS teachers with advanced degrees are no more effective than their colleagues without such degrees.

- Teacher effects for novice FCS teachers are, on average, predictive of future teacher effectiveness.

- FCS retains its most effective novice math teachers at higher rates than its least effective novice math teachers.
- However, the same pattern is not evident among novice ELA teachers or among experienced teachers in either subject.



# *Estimating Teacher Effectiveness: The SDP Approach*

## **What are teacher effects?**

Teacher effects represent one strategy to quantitatively estimate an individual teacher's influence on the amount his or her students learn from one year to the next, as measured by performance on standardized tests.

## **How are teacher effects estimated?**

Conceptually, we measure student achievement growth on the CRCT and isolate the portion of the growth that is attributable to the student's primary teacher (as opposed to other factors such as the home environment, peer groups, etc.).

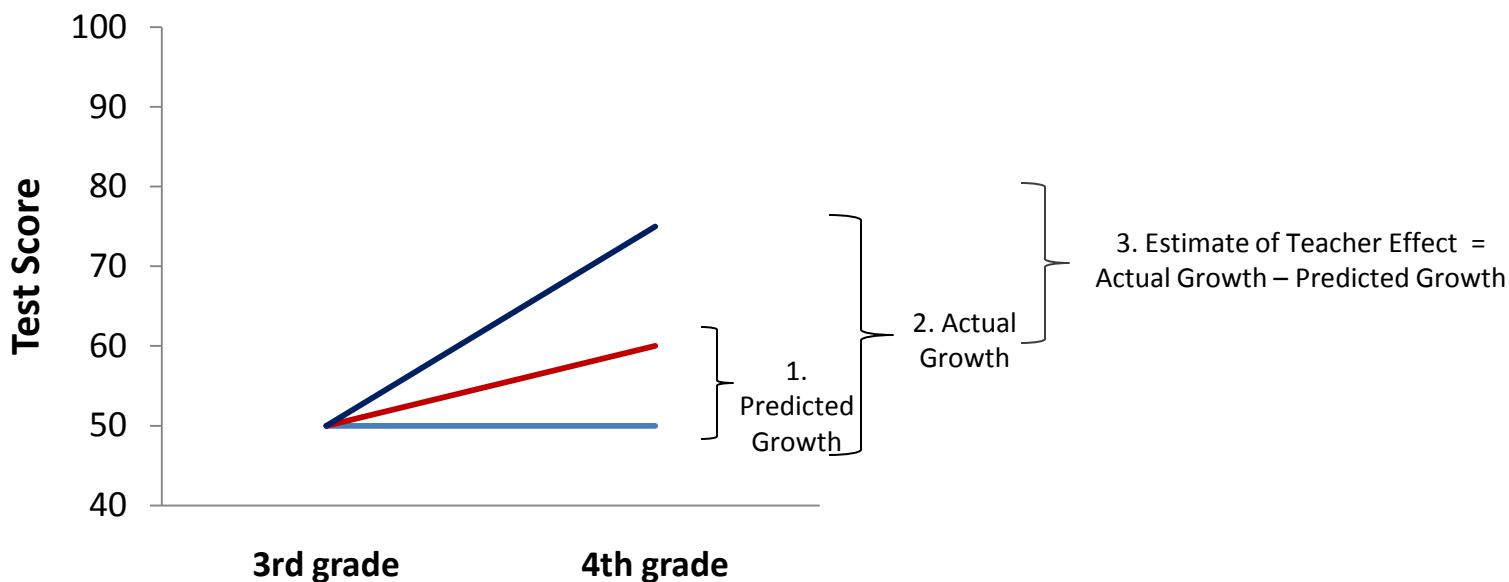


## How are teacher effects estimated?

Step 1: Predict the test score growth of each student, based on factors beyond the teacher's control (i.e., the student's prior achievement, student characteristics, and peer characteristics at the classroom and grade-cohort levels).

Step 2: Calculate actual test score growth for each student (i.e., this year's standardized test score minus last year's standardized test score).

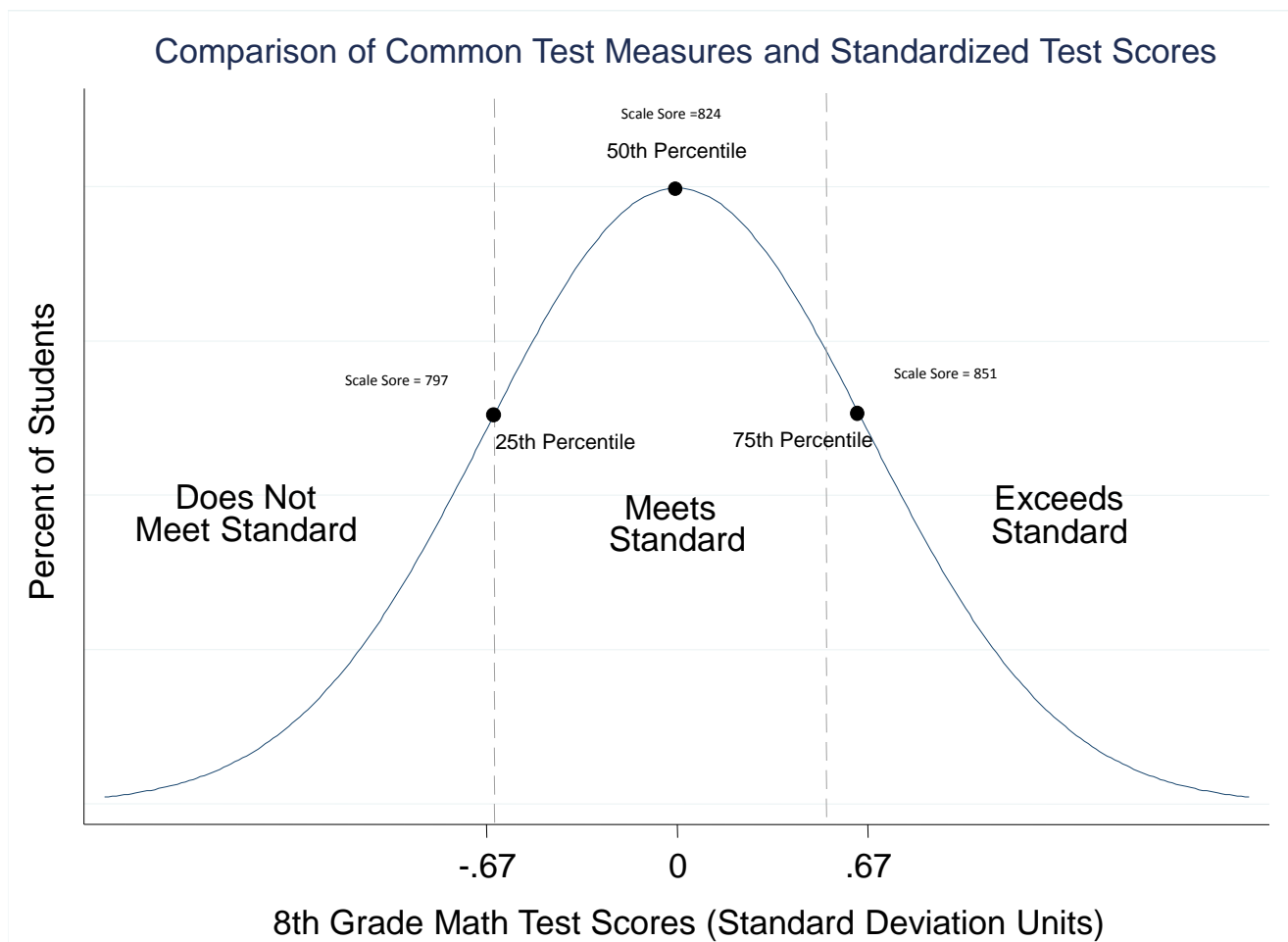
Step 3: Calculate the difference between actual and predicted test score growth for each student. This difference estimates the teacher's contribution to raising each student's achievement. The average difference across all of a teacher's students estimates a teacher's effect on student achievement.





# How to Interpret Teacher Effects

Teacher effects are reported in standard deviations of student test scores. A standard deviation is a measure of the spread of data around its mean.



FCS 8<sup>th</sup> Grade Math CRCT scores in 2008-09. Scaled scores are standardized within Fulton County only.



## *Limitations of teacher effects*

- **Based only on student performance on state-mandated CRCT tests**
  - Effective teachers do more than raise student test scores
  - Validity depends on the quality of the CRCT and its alignment with FCS curriculum
- **Can only be estimated for teachers in tested grades and subjects**
  - Analysis in FCS is limited to math, ELA, and reading teachers in grades 2-8
- **May be influenced by unobserved differences in student characteristics across classrooms and schools or by instruction received outside of the classroom**
  - Diagnostic focuses on group averages, not results for any one teacher
- **Measure effectiveness relative to other FCS teachers, not against an absolute standard**
  - Even if FCS had the most effective teachers in the country, some would be categorized as “least effective”



## ***Limitations of teacher effects*** (continued)

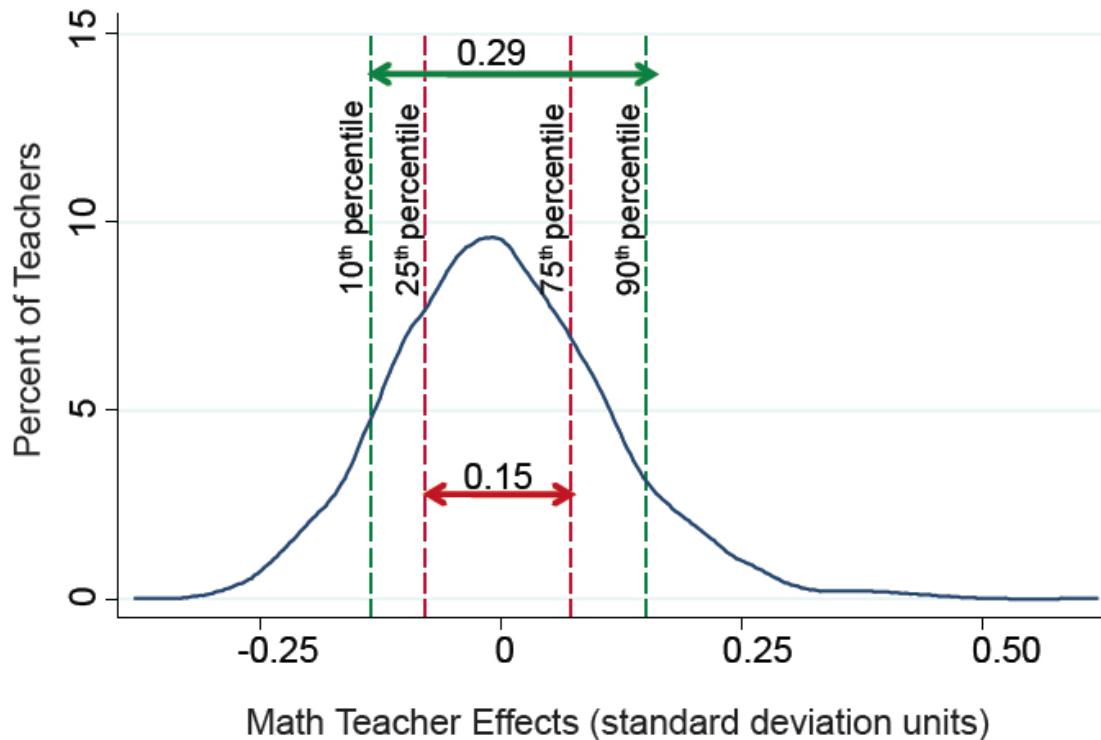
- **Differences in group averages require careful interpretation**
  - There is often far more variation in effectiveness within groups than between them
  - For example, while novice teachers tend to perform less well than more experienced teachers, some novice teachers outperform their more experienced colleagues

**None of the results presented should be used to make any conclusions about individual teachers.**



## Teacher effectiveness varies substantially in FCS

Distribution of Math Teacher Effects  
All Teachers, 2007-08 through 2009-10

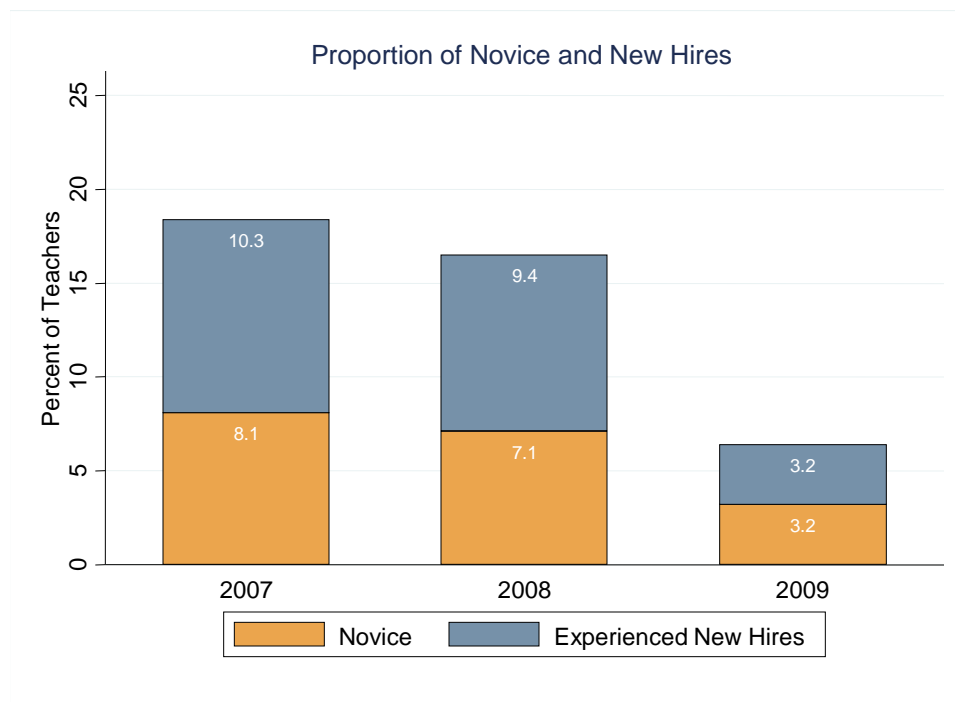


In FCS, the difference between a 75<sup>th</sup> and a 25<sup>th</sup> percentile math teacher is 0.15 standard deviations. The difference between a 90<sup>th</sup> and a 10<sup>th</sup> percentile math teacher is 0.29 standard deviations. The latter difference is roughly equivalent to an additional year of learning for students in the upper elementary grades.



# Recruitment Definitions

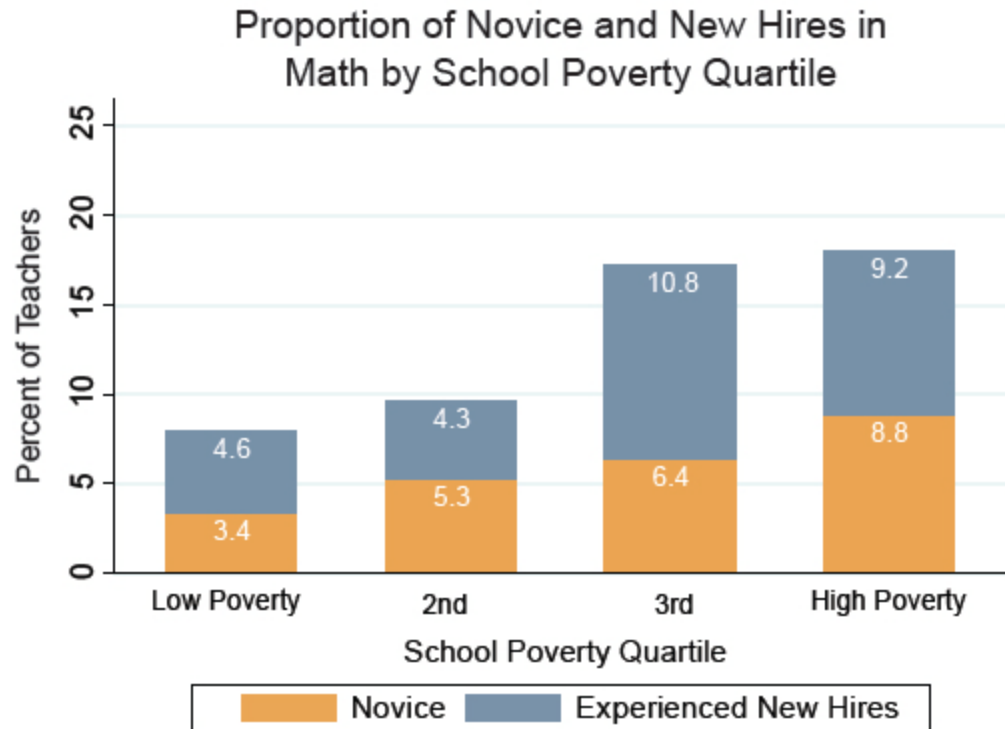
Novice	Teachers with 0 years of teaching experience who do not appear in course table in earlier years
Experienced New Hires	Teachers with any teaching experience who do not appear in course table in earlier years





# ***High-poverty schools in FCS have greater proportions of novice math teachers than low-poverty schools.***

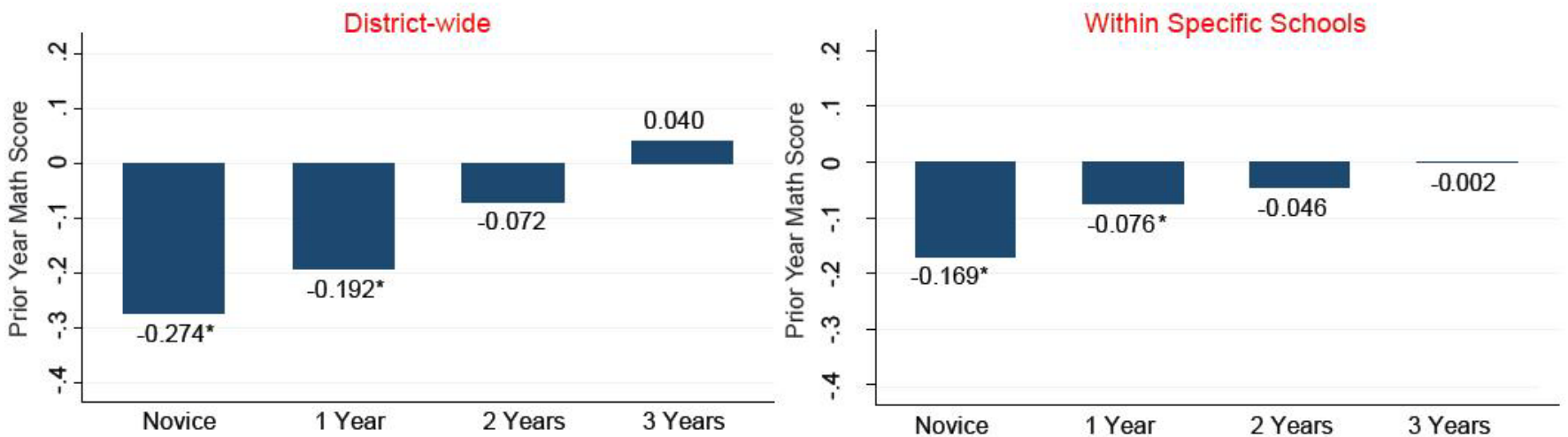
High-poverty schools have approximately 2.5 times as many novice math teachers and twice as many new experienced math teachers relative to schools in the low-poverty quartile.





# Less-experienced teachers are placed with lower-performing students

Average Prior Elementary Student Performance for Teachers with 3 or Fewer Years of Experience Relative to Teachers with 4 or More Years of Experience



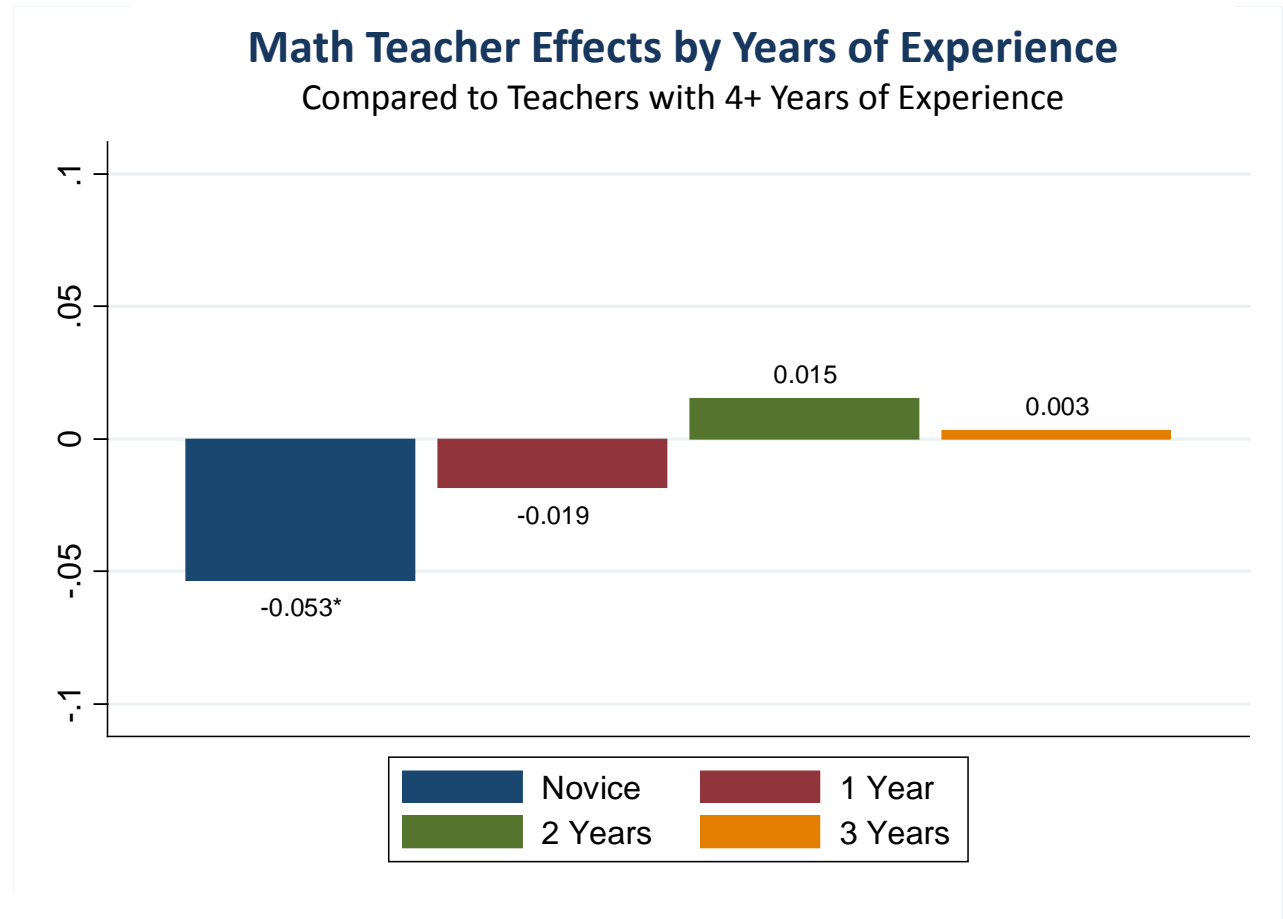
FCS places less experienced teachers with lower performing students both across the district and within schools. The same pattern is evident at the middle school level.





# *Novice teachers are less effective than their more experienced peers*

Novice math teachers are, on average, 0.053 standard deviations less effective than their peers with four or more years of experience.

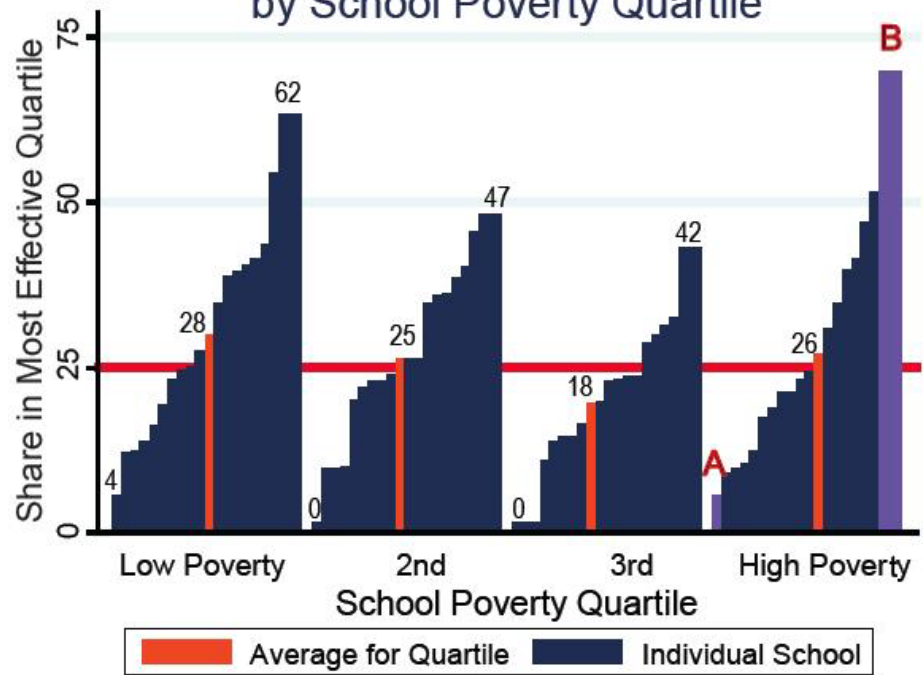




# There is little difference in the average share of most effective teachers between low- and high-poverty schools

However, there is considerable variation in the share of highly-effective teachers among schools within each poverty quartile.

### Share of Math Teachers in Most Effective Quartile by School Poverty Quartile

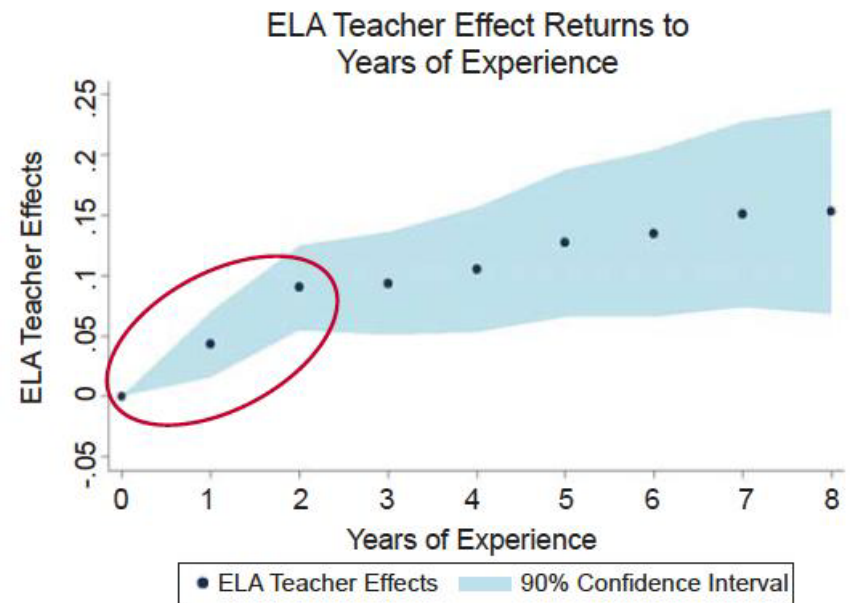
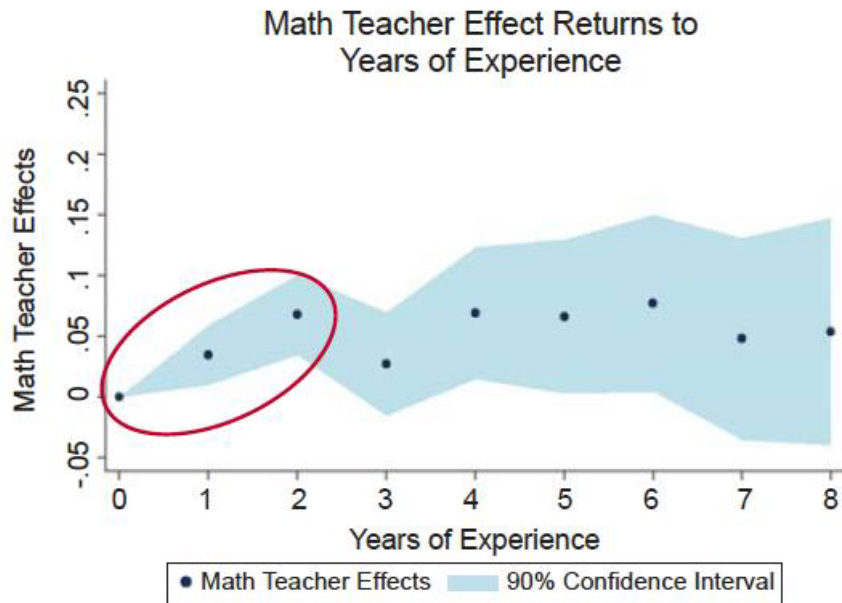


**A:** 4% of the teachers in school A are in the most effective quartile.  
**B:** 68% of the teachers in school B are in the most effective quartile.





# *The effectiveness of individual teachers improves most during the first two years in the classroom*

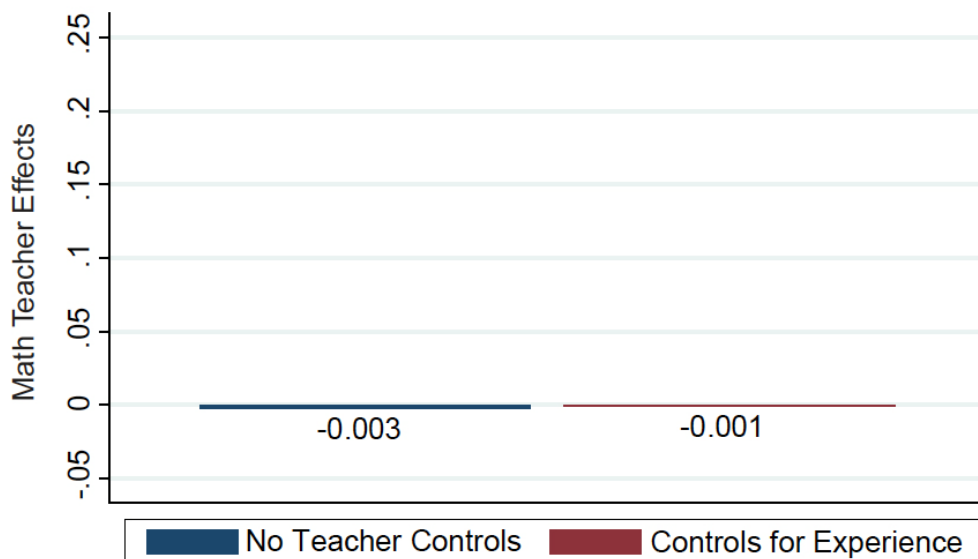


After two years, the returns to experience are generally small and inconsistent across subjects.



# *Teachers with advanced degrees are no more effective than teachers without them*

Math Teacher Effect Returns to Advanced Degrees



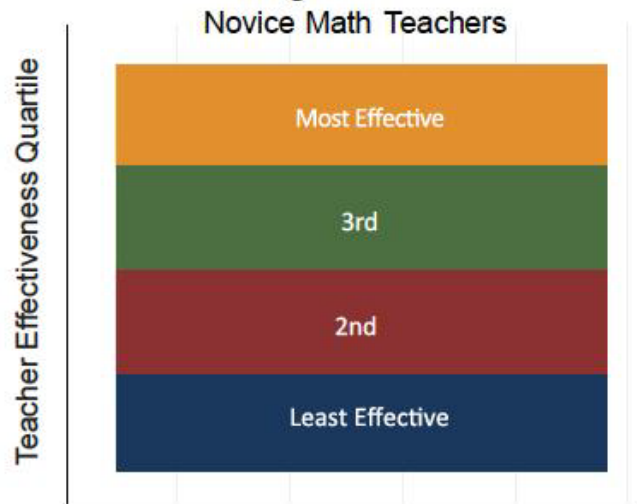
Georgia's salary schedule pays teachers with advanced degrees more, although they are no more effective than teachers without such degrees.



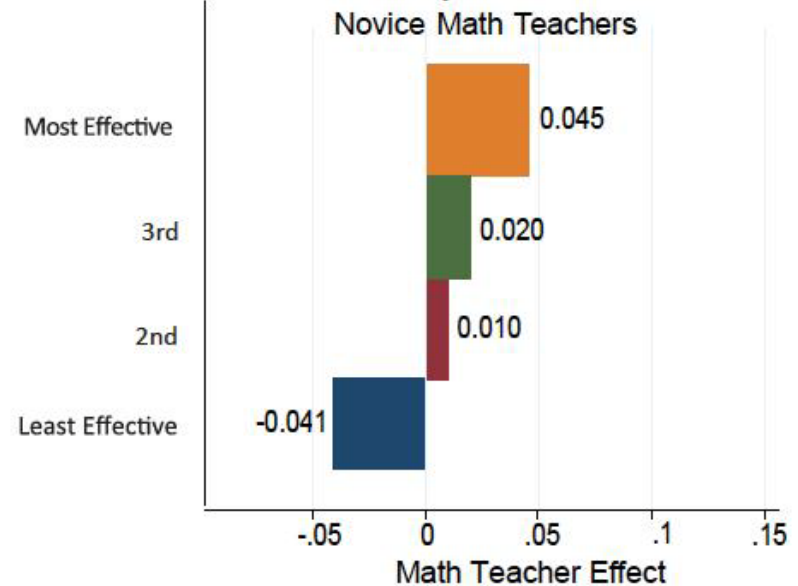


# Estimates of teacher effectiveness among novice teachers are predictive of future performance

Rank Math Teachers Using Teacher Effects from First 2 Years



How Do They Perform in Year 3?



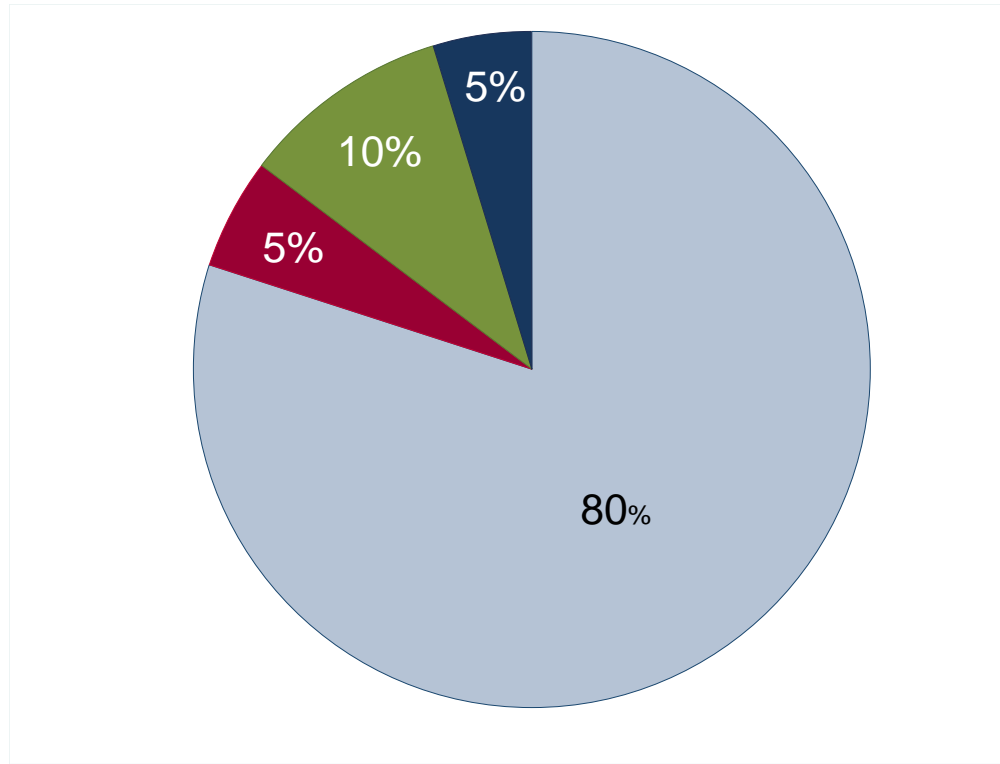
After ranking novice teachers in quartiles using two years of math teacher effectiveness data, these teachers, on average, perform similarly in their third year.





# Retention Definitions

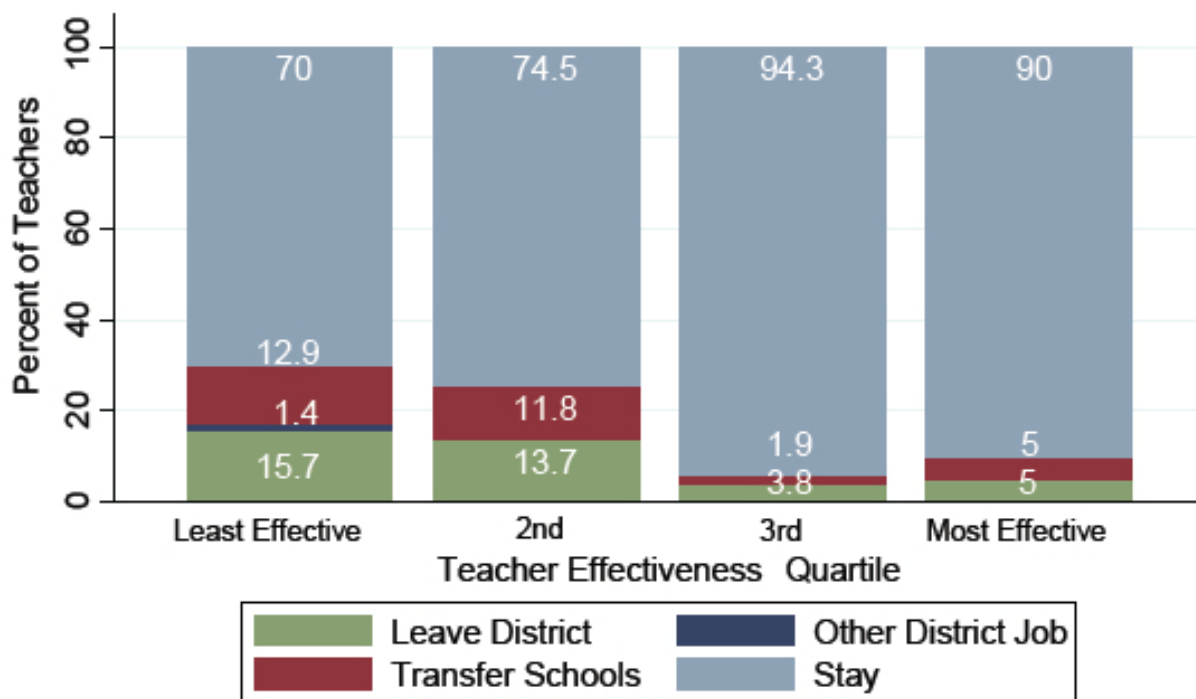
Outcome	Definition
Stay	Teacher remains teaching (appears in course table) at the same school
Transfer	Teacher remains teaching (appears in course table) at a different school
Other District Job	Teacher receives FCS salary but no longer appears in course table
Leave District	Teacher no longer receives FCS salary





# FCS retains its most effective math teachers at higher rates than its less effective novice math teachers

### Average Teacher Turnover by Teacher Effectiveness Quartile Among Novice Math Teachers



This pattern is not evident in ELA.

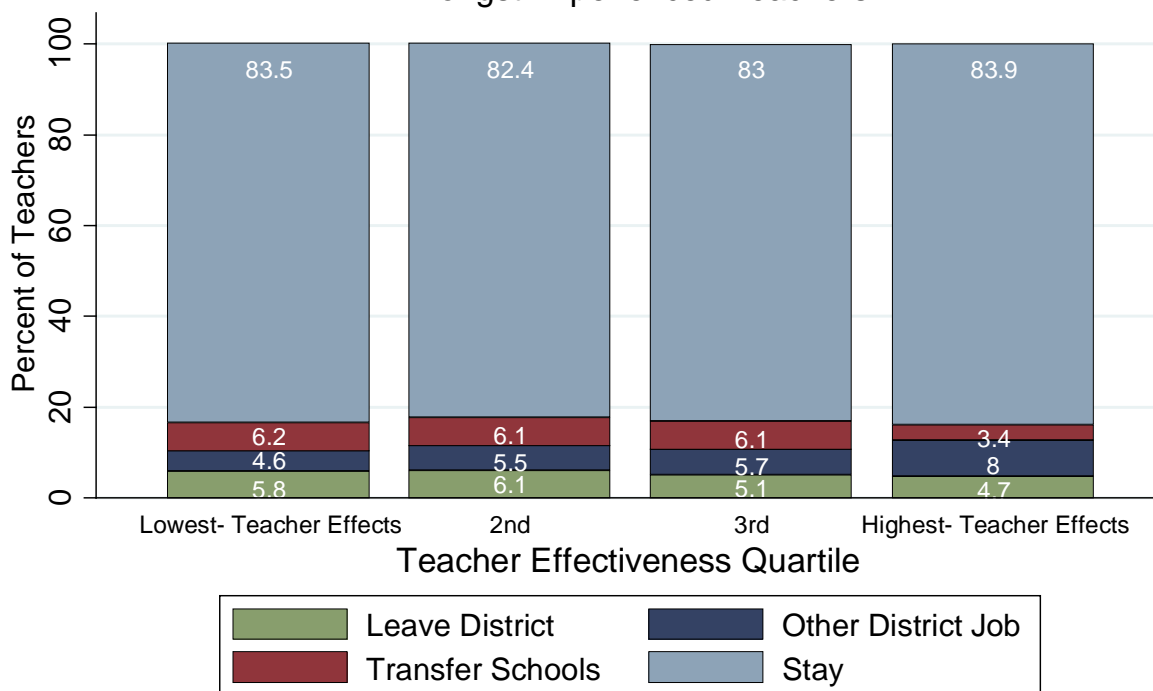




# The least effective experienced math teachers in FCS stay in the classroom at the same rate as their more effective colleagues

However, the most effective teachers take other jobs in the district at higher rates (8%) than their less effective peers (4.6-5.7%).

### Average Teacher Turnover by Math Teacher Effectiveness Quartile Amongst Experienced Teachers





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