



School Superintendents: Vital or Irrelevant?

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Executive Summary

Superintendents are highly visible actors in the American education system. As the highest ranking official in a school district, the superintendent receives a lot of credit when things go well, and just as much blame when they don't. But should they?

Research emerging over the past decade has provided strong evidence of the substantial effects that teachers have on their students' achievement. More recent findings suggest that principals also have meaningful, albeit smaller, effects on student achievement. However, there is almost no quantitative research that addresses the impact of superintendents on student achievement. This report provides some of the first empirical evidence on the topic.

In an earlier report, *Do School Districts Matter*, we found a small but educationally meaningful association between the school district in which a student is educated and learning outcomes. The present report addresses the extent to which these district effects are due to the district leader vs. characteristics of districts that are independent of their superintendents. We do so by examining five specific questions using K-12 student-level administrative data from the states of Florida and North Carolina for the school years 2000-01 to 2009-10:

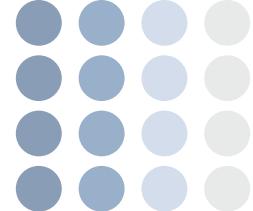
1. What are the observable characteristics of superintendents, with a focus on their length of service?
2. Does student achievement improve when superintendents serve longer?
3. Do school districts improve when they hire a new superintendent?
4. What is the contribution of superintendents to student achievement relative to districts, schools, and teachers?

5. Are there superintendents whose tenure is associated with exceptional changes in student achievement?

We find that:

1. School district superintendent is largely a short-term job. The typical superintendent has been in the job for three to four years.
2. Student achievement does not improve with longevity of superintendent service within their districts.
3. Hiring a new superintendent is not associated with higher student achievement.
4. Superintendents account for a small fraction of a percent (0.3 percent) of student differences in achievement. This effect, while statistically significant, is orders of magnitude smaller than that associated with any other major component of the education system, including: measured and unmeasured student characteristics; teachers; schools; and districts.
5. Individual superintendents who have an exceptional impact on student achievement cannot be reliably identified.

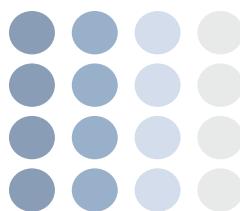
Superintendents whose tenure is associated with sizable, statistically reliable changes in student achievement in the district in which they serve, controlling for the many other factors that affect student achievement, are quite rare. When district academic achievement improves or deteriorates, the superintendent is likely to be playing a part in an ensemble performance in which the superintendent's role could be filled successfully by many others. In the end, it is the system that promotes or hinders student achievement. Superintendents are largely indistinguishable.



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Superintendents may well be as important to student achievement as the popular perception, their portrayal in the media, and their salaries suggest, but there is almost no quantitative research that addresses their impact.

School superintendents receive a lot of credit when things go well and plenty of blame when they don't. This is especially true of the highly visible leaders of large urban school districts. Arlene Ackerman, who served as superintendent in Washington, D.C., San Francisco, and Philadelphia, was credited by the *New York Times* as having "improved students' test scores, including those in the most severely underperforming schools, in each of the three cities in which she presided."¹ The very same Ackerman illustrates the blame side of the equation as well, having been forced out of her position in Philadelphia.²

The perceived importance of school superintendents is often reflected in their compensation packages, which have come under scrutiny in states such as New Jersey and New York for reaching levels upwards of \$500,000 per year.³ High-profile superintendents obtain national prominence, such as former Washington, D.C. chancellor Michelle Rhee, and go on to positions of national leadership, such as current U.S. Education Secretary Arne Duncan (Chicago) and former Secretary Rod Paige (Houston).

Private philanthropy has also bought into the importance of superintendents. The Broad Superintendents Academy was founded in 2002 with the goal of finding leaders from both inside and outside education, training them, and having them fill superintendent positions in a third of the 75 largest school districts in the nation. The foundation has not reached that goal, but it has been remarkably successful in placing its graduates in high-level positions: based on the most recent publicly available data, 21 of the nation's 75 largest districts had superintendents or other highly placed central-office executives who have undergone Broad training.⁴

Superintendents may well be as important to student achievement as the popular perception, their portrayal in the media, and their salaries suggest, but there is almost no quantitative research that addresses their impact. Existing research consists largely of journalistic case studies that tell the story of superintendents who are thought to be successful, and analyses of survey data that attempt to identify characteristics of effective district leadership.⁵ Both lines of research simply assume an answer to the root empirical question of the impact of superintendents on student achievement, and, in some cases, presume effective leadership when, in fact, the district the superintendent leads does not stand out from its peers in terms of performance.⁶

Research made possible in the last decade by the creation of state longitudinal education databases and increases in computing power has led to strong evidence of substantial teacher effects on their students' achievement.⁷ A more recent body of research suggests that principals have meaningful effects too, although they are more difficult to measure.⁸ We are aware of no existing research that similarly systematically examines the impact of superintendents on student achievement.

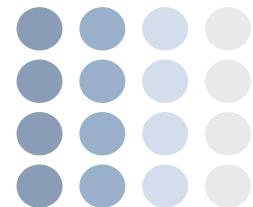
In an earlier Brown Center report, we examined the association between school districts and student achievement using data on public school students and school districts in Florida and North Carolina.⁹ We found that school districts account for a small but non-trivial portion (one to two percent) of the total variation in student achievement relative to the contribution of schools, teachers, measured demographic characteristics of students, and remaining unmeasured individual differences among students. The differences between lower and higher performing districts in our data were large enough to be of practical significance in terms of student academic achievement.

This paper extends our previous analysis of “district effects” to more specifically examine whether there is a relationship between superintendents and student achievement. Do the small but educationally meaningful differences in student achievement across districts documented in our previous work appear to be associated with the superintendent and his or her observable characteristics? Or are district-level effects attributable to characteristics of districts that are not synonymous with their superintendents? These would be characteristics such as the make-up and reform orientation of the school board; the degree of civic focus on the public schools; and the role of other district-level agents of change such as parent groups, the media, philanthropies, the business community, and the mayor.

Take one example of how a “district effect” can encompass many sources of influence: There were demonstrable improvements in student academic achievement and graduation rates in New York City relative to other large cities in New York and the state as a whole during the Bloomberg mayoral administration.¹⁰ Was this due to the leadership of the schools chancellor, Joel Klein, the efforts of Mayor Bloomberg himself, the hundreds of millions of dollars of investment by philanthropies in reform efforts such as smaller schools, competition from the burgeoning charter school sector, or changes in the make-up of the teacher workforce driven by the dramatic growth in non-traditional preparation programs? Was it all of these things, some of these things, or something else entirely?

It is impossible to answer most of these questions empirically with respect to the New York City schools or any single district that has shown improvement in student achievement over time, because many of the possible levers of change are packaged together such that their causal influence cannot be disentangled using the quantitative and methodological tools of modern social science. But with respect to all the school districts in a state, rather than for a single district such as New York City, we can begin to disentangle the effect of the superintendent from other district-wide sources of influence on student achievement. We do so by addressing five related questions:

1. What are the observable characteristics of superintendents, with a focus on their length of service? This question is motivated by the need to understand the characteristics of our sample of superintendents as they relate to the subsequent questions we address and to the statistical characteristics of superintendents across the nation.
2. Does student achievement improve when superintendents serve longer? A consistent refrain in policy narratives about the modern superintendency is that efforts at district reform are often undermined because superintendents typically do not serve long enough to see through their initiatives. To the extent this view is correct we would expect to see a positive association between longevity of service and student achievement, controlling statistically for other variables such as student demographics.
3. Do school districts improve when they hire a new superintendent? One of the reasons that superintendents tend to serve for only a few years in a particular district is that they are replaced by a school board trying to hire someone better. If the replacements are more effective, we would expect to see student achievement rise, controlling for other variables that affect test scores.
4. What is the contribution of superintendents to student achievement relative to districts, schools, and teachers? Our previous report on the impact of school districts did not separate the influence of superintendents from other influences that impact student achievement at the district level. Understanding the unique influence of superintendents is the principal motivation of this report.
5. Are there superintendents whose tenure is associated with exceptional changes in student achievement? Analyses that focus on the average or typical influence



This paper extends our previous analysis of “district effects” to more specifically examine whether there is a relationship between superintendents and student achievement.

of a category of diverse individuals, as is the case for our first four questions, may well mask exceptionality. To use a sports analogy, we could imagine that the typical major league baseball manager has little influence of the win-loss record of his team whereas a few managers are transformative. If this is true of school superintendents, we would expect to find at least a few whose districts performed very much better or worse during their tenure compared to the tenure of other superintendents in the same district, controlling for other factors that influence district performance over time.

The methods we deploy to address all except the first, purely descriptive, question are capable of reducing the substantial zone of empirical uncertainty around these previously unexplored questions. However, our methods do not support strong causal conclusions because they depend on statistical controls that are only as good as

the data available to us. For example, should we find that school districts perform better in terms of student academic achievement under some superintendents compared to others, controlling for the set of other variables that impact student achievement in our database, we are still left with the possibility that variables that are not in our models account for some or all of the superintendent effect. If, for instance, superintendents who appear to be miracle workers tend to be hired when there has been a turnover in a school board that, newly constituted, pushes a reform agenda (none of which we measure), then what would appear in our analysis as a superintendent effect would be in whole or in part a school board effect. In this case, our estimate of the superintendent effect would be at the upper bound of the possible true effect. Our methods are capable of getting closer to the truth than heretofore, but incapable of eliminating some alternative explanations for statistical associations that are revealed.

Data and Methods

To address the first three questions described above, we use K-12 student-level administrative data from the states of Florida and North Carolina spanning the decade from 2000-01 to 2009-10. Every student in grades 3-8 in North Carolina and 3-10 in Florida who participated in the state assessments of reading or mathematics is represented in our data. There are roughly 2.3 million student observations for each year of data (600,000 for North Carolina and 1.7 million for Florida), which leads to about 23 million student data points in our dataset for all years. The data include: individual student scores on the state tests, which we standardize by state, grade, subject, and year; the schools (and associated districts) where students were enrolled; and demographic information on individual students.

The analyses required for our fourth and fifth questions, as outlined above and described in greater detail subsequently, required (in addition to the data elements just described) data on individual teachers linked to students, as well as simultaneous consideration of variation across district, school, teacher, student, and year. These analyses are so computationally demanding that we had to restrict our dataset to grades four and five in North Carolina.

For questions two through five, we link the student achievement, enrollment, and demographic data in all analyses to information identifying who the superintendent is in each year covered by our data. For Florida, this information is included in the extract provided to us by the state's Education Data Warehouse, and dates back to 1998-99.¹¹ Florida superintendents are appointed by the school board in 26 districts (39 percent) and publicly elected in 41 districts (61 percent).¹²

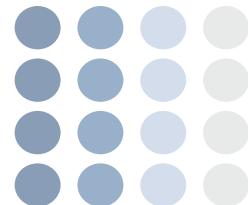
North Carolina does not have information on superintendents in the state student achievement dataset made available to us. We addressed

this limitation by gathering information on superintendents from two sources. For 2006-07 through 2009-10, the name of the superintendent in each district and year was collected from the North Carolina Department of Public Instruction's School Report Cards.¹³ For the earlier years (2000-01 through 2005-06), superintendent names were collected from directories maintained by the North Carolina Association of School Administrators.¹⁴ All North Carolina superintendents are appointed by local school boards.

The Florida data contain demographic information on superintendents' age, race/ethnicity, and gender. The North Carolina data do not contain demographic information on superintendents, but we were able to impute each superintendent's gender using first names. We did not find meaningful relationships between student achievement and superintendent age, race/ethnicity, or gender (all else equal) in preliminary data analyses, so we do not make extensive use of these variables in the analyses we describe below.

We calculate each superintendent's longevity in their district (for each year they are observed in the data). We have no record of the length of prior service of superintendents who hold their position in the first year of the data (1998-99 for Florida and 2000-01 for North Carolina). Thus, we calculate experience only for superintendents who enter a district at some point beyond the first year in our data series.¹⁵

We conduct five sets of analyses that address the questions previously posed. First, we describe the characteristics of superintendents in these two states, with a focus on their experience levels.



We did not find meaningful relationships between student achievement and superintendent age, race/ethnicity, or gender.

Second, we examine the relationship between student achievement and the limited set of superintendent characteristics that we observe, with a focus on the amount of experience the superintendent has as superintendent in the district in which he or she serves. We also conduct analyses that compare student achievement within the same districts over time, which allows us to measure how achievement changes as superintendents gain experience in their districts. Third, we examine the impact of a change of superintendent within districts, asking whether, on average, districts get better or worse when they bring on board a new superintendent.

Fourth, we use a statistical technique called hierarchical linear modeling to address the influence of superintendents on student achievement relative to the influence of districts, schools, teachers, and student demographics. This is similar to the question addressed and the approach used in our previous report on district effects. But in this case we add superintendents as a separate level in our analysis, whereas in our previous report, any effect of superintendents was embedded within our estimate of the district effect. We also use 10 years of data in our present analysis, whereas the parallel analysis in our previous report used only one year of data.

Fifth, and finally, we use the multilevel approach applied to the fourth question to generate an

estimate of impact for each superintendent relative to his or her immediate predecessor. We want to know whether there are superintendents who are notable outliers with respect to what happened to student achievement on their watch.

All of our analyses account for student characteristics, including: gender; race/ethnicity; cognitive and physical disability status; intellectually gifted status; free and reduced lunch program status; and limited English proficiency status, as well as the grade and year in which each student was tested. With one exception, described subsequently, we do not control for students' prior-year test scores, as doing so would eliminate any effect the superintendent had in prior years. However, most of our analyses take into account the overall level of student achievement in each district by comparing the same districts as they evolve over time (i.e., under different superintendents).

Even though we have millions of student observations, we observe a much smaller number of superintendents. There are a total of 67 districts in Florida and 115 in North Carolina, giving us 1,820 district-year observations over our years of data. There are a total of 434 unique superintendents that worked in these two states over this time period.

Findings

1. The typical superintendent has been in the job for three to four years.

School district superintendent is largely a short-term job in Florida and North Carolina. Figure 1 shows that more than one-fifth of the superintendents we examined were in their first year on the job, and more than half were in their first three years. At the same time, a significant minority of superintendents—nearly one-quarter—had been on the job seven or more years.¹⁶ In the last year of our data, 2009-10, the average superintendent had been on the job for 3.3 years.¹⁷ These numbers are closer to the average of 3.6 years reported by the Council of Great City Schools than the average of 5-6 years reported by the School Superintendents Association.¹⁸

Eighty-three percent of superintendents in these two states were men, and 93 percent of Florida superintendents were white. Non-white superintendents were concentrated in larger districts in Florida, so even though only seven percent of superintendents were black or Hispanic, nearly 20 percent of students were enrolled in districts with a black or Hispanic superintendent over the 10 years represented in our data.

The short-term superintendent is not only a creature of large, urban districts. In fact, superintendents tend to stay longer in larger districts than in smaller districts. In the last year of our data, the average superintendent in the largest 10 percent of districts in Florida and North Carolina had 4.6 years of experience, as compared to 3.3 years in the smallest 10 percent, and 3.4 years in the middle 80 percent.

Figure 1. Superintendent Longevity in District, Florida and North Carolina, 2006-07 to 2009-10

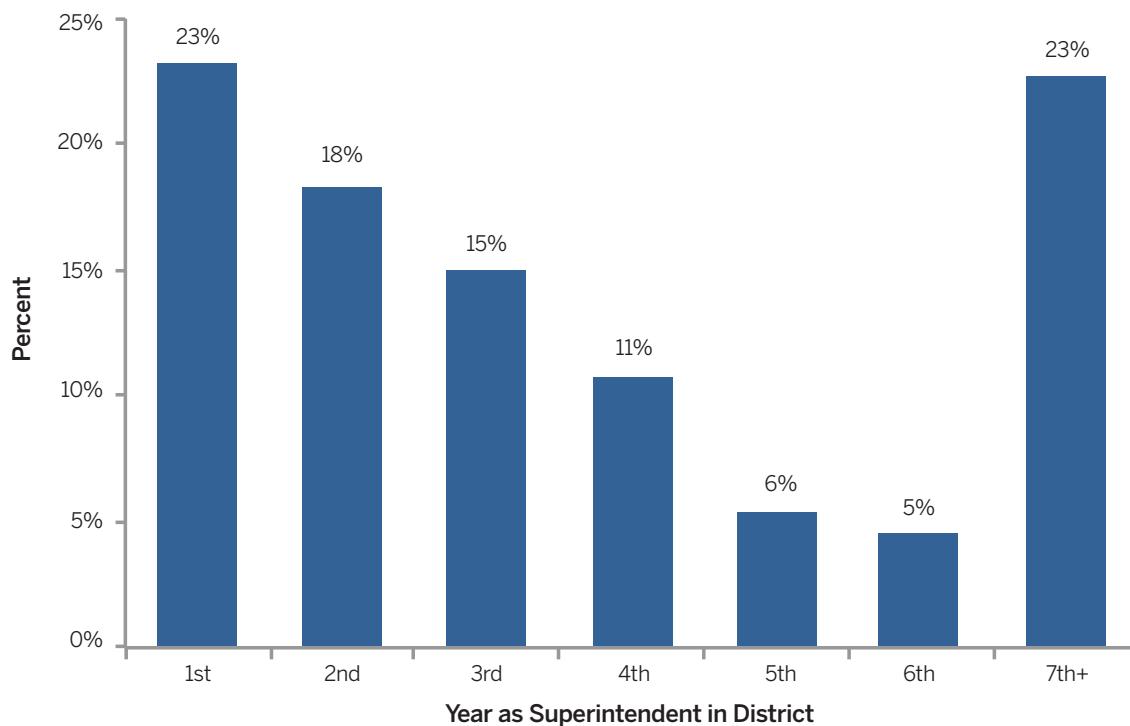
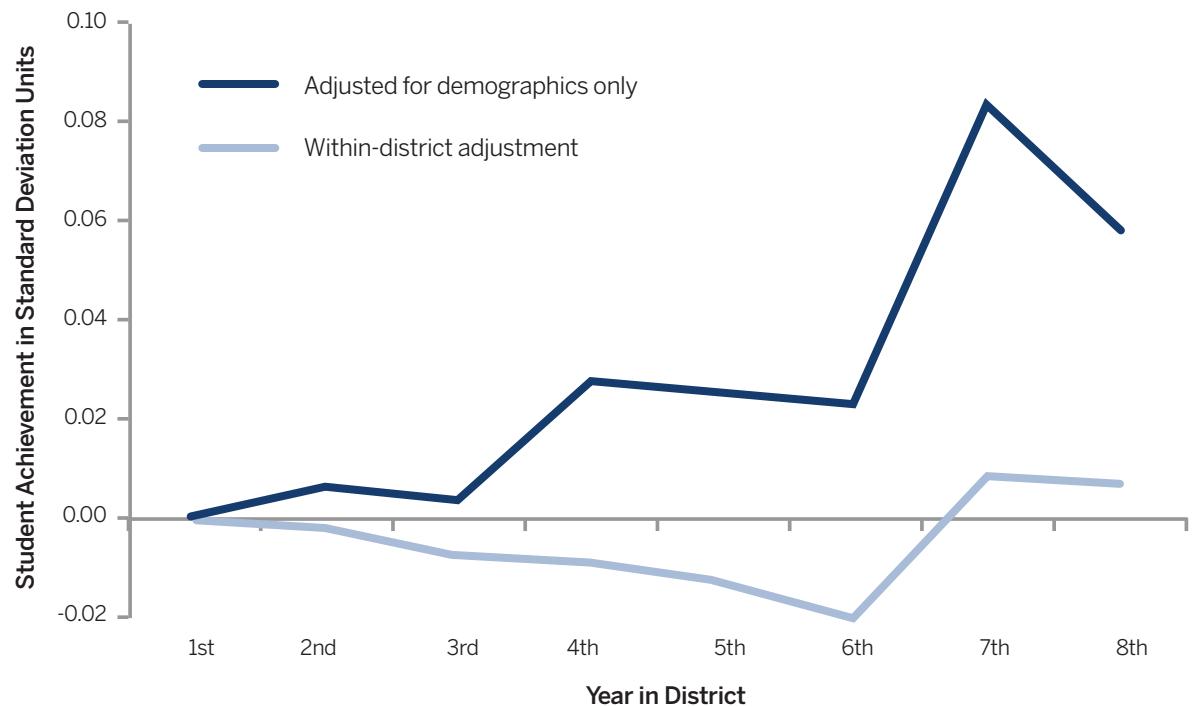


Figure 2. Student Achievement in Mathematics (Measured in Student Standard Deviation Units on State Tests) by Longevity of Superintendent, Florida and North Carolina, 2000-01 to 2009-10



2. Student achievement does not improve with longevity of superintendent service within their districts.

The data reported above show that superintendents vary significantly in how long they have been on the job in the districts and years we observe, with many newcomers but also a substantial number of longer-serving leaders. Is longevity of service associated with higher student achievement, perhaps because the superintendent gains greater traction on the levers of change with more time on the job within a district? We tackled this question with three approaches.

First, we examined whether student achievement adjusted for student demographics is higher in districts with longer-serving superintendents than

in districts with newer leaders. The upper line in Figure 2 gives the impression that districts with longer-serving superintendents tend to have higher math scores, on average, after adjusting for student demographics. However, none of the data points differ from those in the first year at a statistically significant (five percent) level.

Even if the differences depicted in the upper line were statistically significant, it would be difficult to know what to make of them. They might reflect an impact of superintendents' experience on student achievement, but they could just as easily be due to higher turnover in lower performing districts.

Our second approach, the results of which are depicted by the lower line in Figure 2, deals with this issue by making a within-district adjustment,

so that achievement in the same districts with the same superintendents is tracked over time as the superintendent gains experience in that district. This method isolates changes that occur under a specific superintendent during their tenure. As can be seen, the relationship is essentially non-existent, which is consistent with the finding of no statistically significant differences in the upper line. We find similar results for reading scores (which we do not present graphically), i.e., no statistically significant differences in student academic achievement between one year of superintendent experience in a district and each additional year of experience in that district.

Our third approach to estimating the relationship between superintendent longevity and student achievement is to calculate value-added models that control for students' prior-year test scores. Unlike the previous two approaches, the value-added

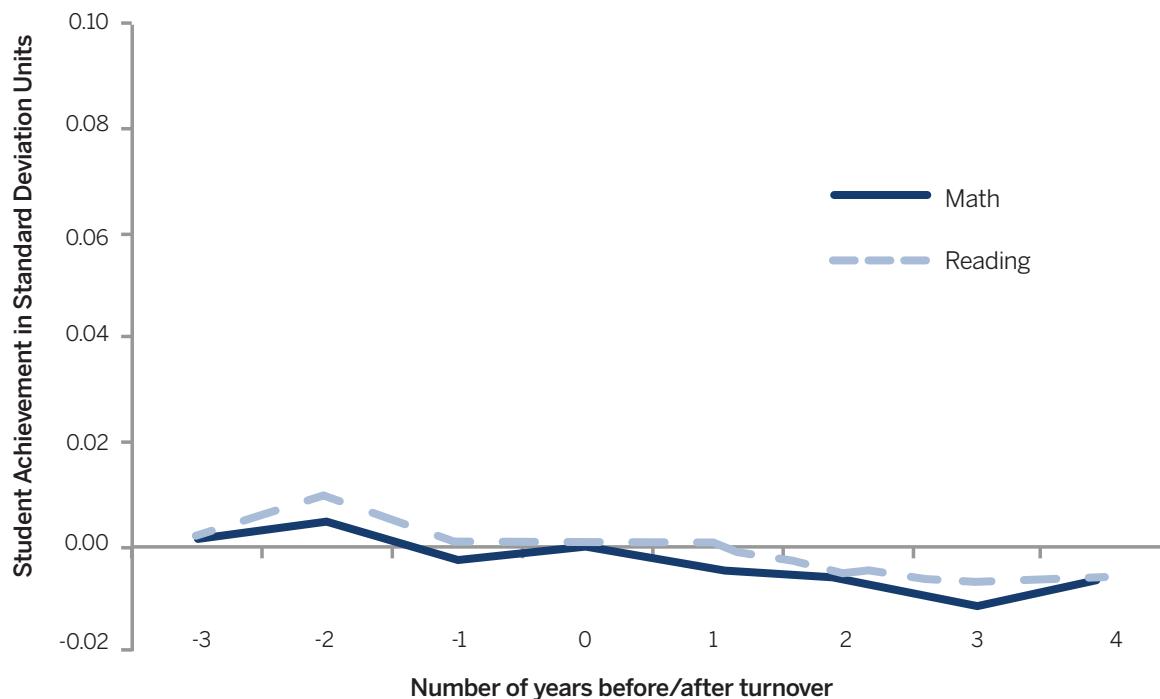
approach generates a positive score for a particular superintendent in a particular year only if students in the superintendent's district made larger than average gains on state achievement tests. We once again find no statistically significant relationship between superintendent experience and student achievement within districts over time for either math or reading.

Thus, we obtain the same finding with three different approaches to estimating the impact of the longevity of superintendent service within a district on student achievement: there is no association.

3. Hiring a superintendent is not associated with higher student achievement.

Superintendent churn is pervasive in the districts we observe, as indicated in Figure 1 and by our finding of

Figure 3. Student Achievement in Years Before and After Superintendent Turnover, Florida and North Carolina, 2000-01 to 2009-10



a mean within-district tenure of roughly four years. We are interested in the question of whether student achievement tends to improve with the hiring of a new superintendent, because an unknown but presumably significant proportion of superintendent vacancies are a result of the existing superintendent being pushed out because the school board believes they can hire someone who will do a better job.

Figure 3 on the previous page depicts the association between superintendent turnover and district-level student achievement, using the same scale as in Figure 2 for ease of comparison. The zero point on the graph is the year prior to turnover. The data points ranging from 1 to 4 represent test scores from the end of the first, second, third, and fourth years of the new superintendent's tenure, whereas the data points ranging from -1 to -3 represent the district performance two, three, and four years prior to the previous incumbent's departure. There

appears to be a downward trend, suggesting that district performance deteriorates after turnover, but the effect size estimates are very small in any year, as are the differences from the highest to the lowest points in the trend lines. Only one of the effect size estimates (math three years after turnover) is significantly different from zero at the five percent level. We conclude that superintendent turnover has little or no meaningful impact on student achievement, and certainly is not associated with improvements in student test scores.

4. **The percentage of the variance in student achievement (a measure of the differences among individual students in test scores) that is associated with superintendents is smaller than that associated with any and all other major components of the education system.**

Figure 4. Variance in Fourth and Fifth Grade Student Achievement in Mathematics Associated with Differences among Districts, Superintendents, Schools, Teachers, Students, Demographic Controls, and Years, North Carolina, 2000-01 to 2009-10

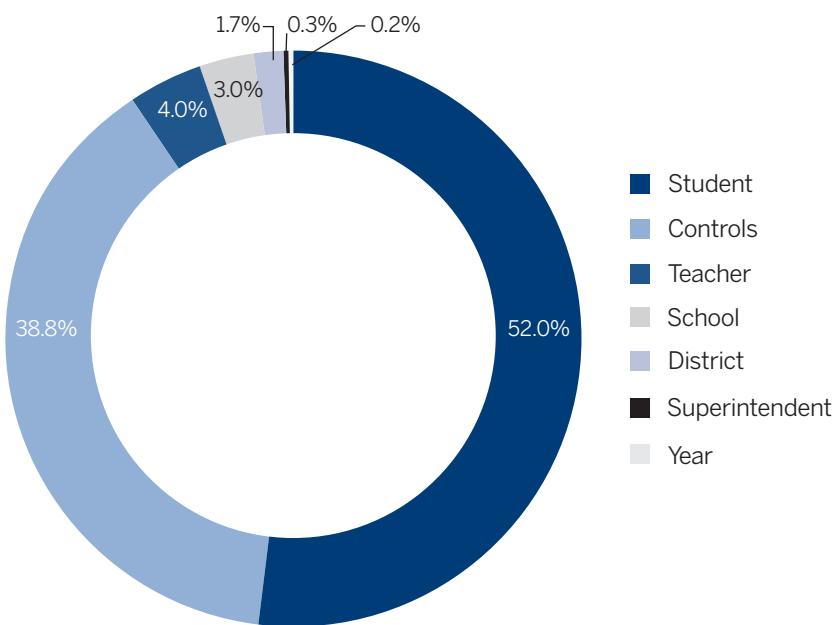


Figure 4 represents the results of our decomposition of the variance in student achievement associated with superintendents vs. students, teachers, schools, districts, and year of observation. The results are based on mathematics test scores for fourth and fifth grade students in North Carolina. We do not present the results for reading, but they are similar.

Superintendents account for only a small fraction of a percent (0.3 percent) of student differences in achievement. Consistent with the related analysis in our previous report, most differences in student achievement are attributable to student characteristics, both measured ("controls" in the figure, e.g., race/ethnicity), and unmeasured ("students" in the figure, which reflects all unexplained variance including measurement error). Teachers, who account for four percent of the variance in student achievement, are the most important influences on student achievement among the hierarchy of the other variables we measure (consistent with a substantial body of prior research). Schools come in second at three percent of the total variance.

Most important with respect to the question that motivates the present analysis, districts, at 1.7 percent of the total variance, account for more

than five times as much of the variance in student achievement as is associated with superintendents. This means that most of the district effect that we estimated in our previous analysis, which did not separate out the effects of superintendents, is mostly due to something other than differences in superintendents.

How significant is the variation in superintendent effects? The 0.3 percent of variance explained is statistically significant, but is it substantively important? In our analysis, a standard deviation difference in the distribution of superintendent effects corresponds to 0.06 percent of a standard deviation in student test scores. A rough-and-ready anchor for interpreting a standard deviation in student test scores is that one standard deviation is approximately the racial gap in performance between white and black students on standardized tests.

Imagine a district in which a superintendent at the 30th percentile of performance is replaced with a superintendent who is at the 70th percentile of performance (about one standard deviation of difference). Assuming that the superintendent effect we estimate for all students also applies to black students, our results suggest that the gap in performance between black students in that district and state averages for white students would be reduced by six percent during the tenure of the second superintendent.

This is a small effect, particularly considering that it is estimated across the full tenures of the superintendents, not just one year. Further, we find less variation among superintendents when we consider all tested grades in both North Carolina and Florida, not just grades four and five in North Carolina (which were used to generate the results in Figure 4). This two-state, all-tested-grades model, which to be computationally tractable only includes district, superintendent, and year, yields a standard deviation of superintendent effects of 0.016. The tendency to dismiss small effects in education is probably not wise given the challenge of generating moderate or large effects. But, in truth, what we describe as a superintendent “effect” is not an effect of anything that is presently susceptible to

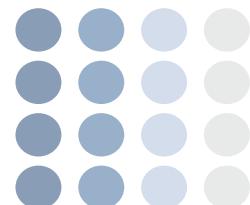
intervention. Thus, it does not lend itself to practical policies intended to improve student outcomes in the way that a teacher “effect” does. This is a point we will flesh out subsequently.

5. Superintendents who have an exceptional impact on student achievement cannot be reliably identified.

The results displayed in Figure 4 indicate that superintendents, on average, have only a minor influence on student achievement. But this is not to conclude that there are no poor performers or high flyers among the superintendents we observe. By analogy, stock market analysts can conclude that actively managed mutual funds do not beat market averages without necessarily concluding that *no* actively managed funds do so. The extent of exceptionality is an empirical question.

We address this question within the context of the same multilevel analysis that generated the results in Figure 4. Working only with the variance in student achievement that is associated with the superintendent level in that analysis, we calculate, for districts in which there were at least two superintendents who each served for at least two years, the difference between the achievement scores of students under each superintendent compared to their immediate predecessor. These differences, which control for all the other information in the multilevel model, are displayed for fourth and fifth grade student achievement in mathematics in Figure 5, along with the 95 percent confidence limits for each individual estimate.

Note that nearly all of the differences in student achievement between a superintendent and his or her immediate predecessor are not statistically significantly different from zero (the error bars cross the zero line). This is consistent with the results from our analyses for question three, which indicated that, on average, a change of superintendent makes no difference. There are just two superintendents on the low side and two on the high side (out of 125 superintendent pairs) who had significantly different results than their immediate predecessor. But with



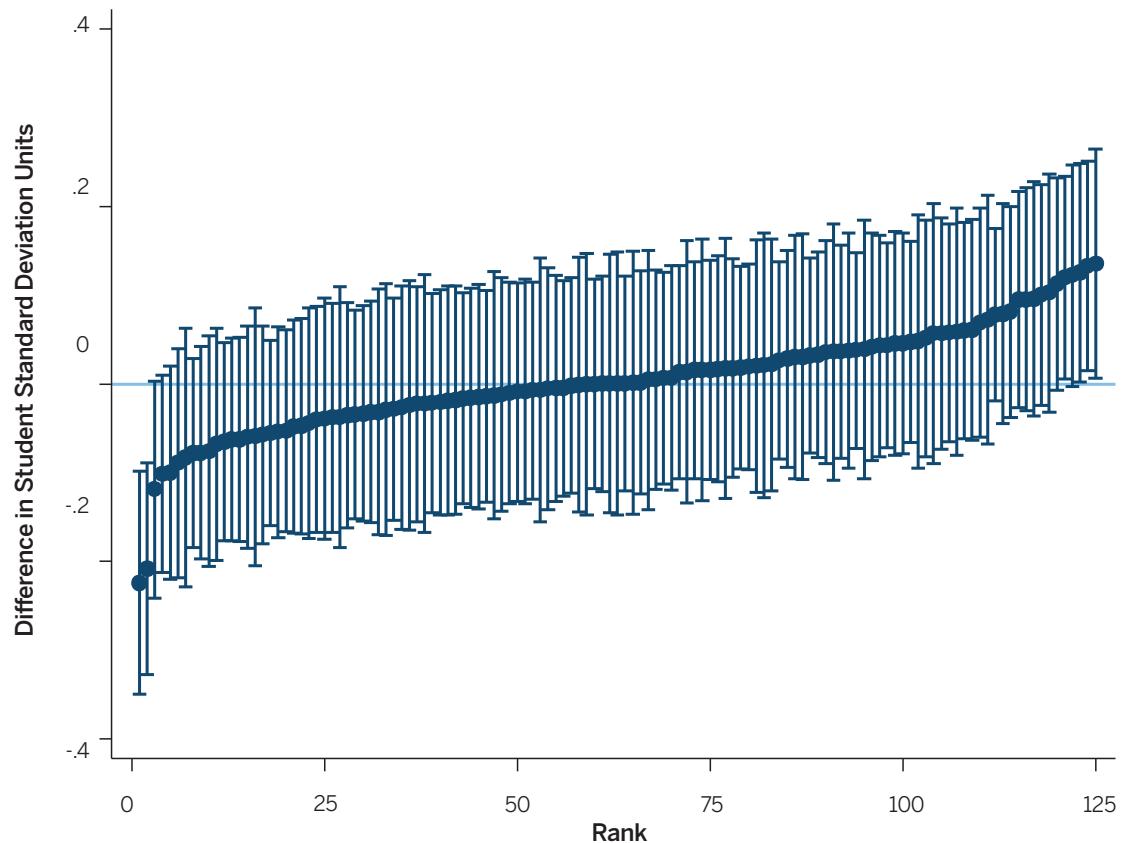
Districts account for more than five times as much of the variance in student achievement as is associated with superintendents.

125 comparison pairs and a five percent significance level for each comparison, we would expect six comparisons to be statistically significant simply on the basis of chance, whereas we found only four. Even if we leave aside the overall error rate and accept the differences as real for the top two and bottom two superintendents, consider that the extremes of any distribution of characteristics are measured with more error than the midpoints. So, instances of superintendent pairs with such sizable differences in student achievement will not only be rare (because they are, by definition, extremes), but also not replicable (the lowest performing superintendents would likely look better in a different pairing). Also, keep in mind that a superintendent who has bad

things happen on his or her watch in terms of student achievement may be a victim of influences that are not captured and thus not controlled for in our model, e.g., a natural disaster.

We conclude that even though there is a small but statistically significant effect for superintendents when examining variation across an entire state for a decade, individual superintendent effects, i.e., the difference in the academic performance of students under two superintendents who serve successively in the same district, cannot be estimated with sufficient precision to permit the reliable identification of winners and losers.

Figure 5. Differences in Fourth and Fifth Grade Student Achievement in Mathematics between Each Superintendent and Predecessor in the Same District When Each Served At Least Two Years, North Carolina, 2000-01 to 2009-10



Conclusions and Discussion

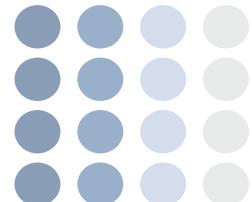
Superintendents may well have impacts on factors we have not addressed in our study, such as the financial health of the district, parent and student satisfaction, and how efficiently tax dollars are spent. And to be certain, they occupy one of the American school system's most complex and demanding positions. But our results make clear that, in general, school district superintendents have very little influence on student achievement in the districts in which they serve. This is true in absolute terms, with only a fraction of one percent of the variance in student achievement accounted for by differences among superintendents. It is also true in relative terms, with teachers/classrooms, schools/principals, and districts having an impact that is orders of magnitude greater than that associated with superintendents.

None of the characteristics of superintendents that are captured in our datasets, including within-district experience, race/ethnicity, and gender, are meaningfully associated with student academic achievement. Further, the one district policy lever we examined, superintendent replacement, is also not associated with changes in student achievement.

Our inability to reliably identify exceptional superintendents using on-the-job performance puts us in a very different policy position than is the case when similar methods are applied to identifying exceptional teachers. Although there is considerable error in the estimates of individual teacher effects, there is also a reliable signal that can be used to identify exceptional individual teachers, particularly those at the very bottom of the distribution.¹⁹ That is not the case for superintendents, in part due to simple statistical reasons: their average effect on student achievement is much less than that for teachers, and there are far fewer superintendents than teachers who can be compared.

Teacher and superintendent policies also differ because human resource approaches that are responsive to measured teacher performance in the classroom apply to large numbers of teachers, not just to one person. This means that the error rate for a policy such as denying tenure to teachers in the lowest five percent of performance can be evaluated with respect to the class of individuals that would be affected. Thus, we ask not what the odds are that Mr. Smith, performing at the fifth percentile of all teachers in a district in a particular year, will continue to be a very low performer in subsequent years if he is given tenure. Rather, we want to know the odds that the 100 teachers at the fifth percentile or below will continue to underperform if they are retained. The confidence limits around a prediction of the average future performance of 100 low-performing teachers are dramatically smaller than around the prediction of the future performance of one superintendent. Districts have hundreds to thousands of teachers about whom they have to make tenure, promotion, and dismissal decisions, so they should mostly be concerned with whether, on average, their decisions are empirically well-founded and serve the interests of student learning. But they have only one superintendent, so an empirical strategy for recruitment and retention based on on-the-job performance runs afoul of the law of small numbers.

Our finding that districts account for much more variance in student achievement than superintendents was unexpected and suggests that superintendents are, at least in part, imperfect reflectors of the civic values, investments, and supports of the school districts in which they serve. Imagine two districts that are similar on the variables in our model (e.g., percentage of children



Our results make clear that, in general, school district superintendents have very little influence on student achievement in the districts in which they serve.

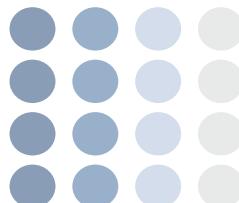
qualifying for free or reduced price lunch, variance in student achievement associated with teachers, and so on), but that differ on civic commitment to the schools, leadership at the school board level, philanthropic involvement, press scrutiny, plans for economic development, family services, etc. These differences play out in a number of ways, one of which could include the type of person who serves as superintendent. An activist school board in the community that is more committed to its schools and to wider community improvements may attract a superintendent that reflects those community values. That superintendent would have some impact on student achievement, but all the things that made this district different from its demographically similar twin in the first place also would have direct routes into the schools that bypass the superintendent, such as higher teacher morale and lower turnover, parents with higher aspirations for their children and lower levels of drug abuse, and so forth. Because the superintendent is merely a reflector of these variables, whereas the district encompasses them, the district has more influence on student achievement than the superintendent.

What do these findings imply for policy? The transformative school district superintendent who single-handedly raises student achievement through dint of will, instructional leadership, managerial

talent, and political acumen may be a character of fiction rather than life. At the least, such individuals are very difficult to identify using quantitative tools. Further, real superintendents, defined as the entire class from the best to the worst, have very little influence on student achievement collectively compared to all other components of the traditional education system that we measure.

A parent who wants the best education for her child would be well advised to care about the teacher and classroom to which her child is assigned and the school in which that classroom is embedded. The district and community in which the school and classroom exist are also worthy of some of her attention as is the curriculum her child will encounter. But, with rare exceptions, the coming and going of school superintendents can be off her radar screen.

Superintendents associated with substantive improvements in district performance are quite rare, likely to be playing a part in an ensemble performance that doesn't depend uniquely on them, and difficult to identify reliably using the best empirical strategies presently available. In the end, it is the system that promotes or hinders student achievement. Superintendents are largely indistinguishable creatures of that system. ■



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Endnotes

- 1 Douglas Martin, "Arlene C. Ackerman, Superintendent, Dies at 66," *New York Times*, February 4, 2013.
- 2 Kristen A. Graham and Susan Snyder, "Arlene Ackerman, under fire as Philadelphia school superintendent, has been staying away from official functions," *Philadelphia Inquirer*, August 17, 2011.
- 3 Thomas Kaplan, "Cuomo, Pushing School Cuts, Offers a Target: Superintendent Salaries" *New York Times*, February 6, 2011.
- 4 Christina A. Samuels, "Critics Target Growing Army of Broad Leaders," *Education Week*, June 8, 2011.
- 5 See discussion in Matthew M. Chingos, Grover J. Whitehurst, and Michael R. Gallaher, "School Districts and Student Achievement," *Education Finance and Policy*, Forthcoming.
- 6 Grover J. Whitehurst, "Deconstructing Union City," Brown Center on Education Policy, Brookings Institution, 2013.
- 7 Eric A. Hanushek and Steven G. Rivkin. "Generalizations about Using Value-Added Measures of Teacher Quality." *American Economic Review*, 100(2), 267-271 (2010).
- 8 Jason A. Grissom, Demetra Kalogrides, and Susanna Loeb, "Using Student Test Scores to Measure Principal Performance." *Educational Evaluation and Policy Analysis*, Forthcoming.
- 9 Grover J. Whitehurst, Matthew M. Chingos, and Michael R. Gallaher, "Do School Districts Matter?" Brown Center on Education Policy, Brookings Institution, 2013.
- 10 Grover J. Whitehurst, "School Choice and School Performance in the New York City Public Schools - Will the Past be Prologue?" Brown Center on Education Policy, Brookings Institution, 2013
- 11 If a change in superintendent occurred mid-school year, as was the case for elected superintendents in some Florida districts, we chose the superintendent who served the greater portion of the school year.
- 12 Information regarding which districts elect vs. appoint superintendents is available from the FLDOE Education Information and Accountability Services at <http://www.fl DOE.org/eias/flmove/supers.asp>.
- 14 North Carolina Department of Public Instruction's School Report Cards are available at <http://www.nc reportcards.org/src>.
- 15 We accessed historical versions of these directories using web pages archived in the Wayback Machine, available at www.archive.org.

- 16 We are able to include some of these superintendents in our experience analysis by putting them in the top category. For example, if the top category is seven or more years of experience, we can include a superintendent first observed in North Carolina in 2000-01 in this top category in 2006-07 and later years.
- 17 The statistics reported in Figure 1 are not weighted by student enrollment in each district. Weighted results (not shown) are qualitatively similar. We limit Figure 1 to the last four years of our data so that districts where the superintendent was in office in the first year of our data can be included in the top category (seventh year or later).
- 18 The mean experience level in 2009-10 weighted by student enrollment is 4.1 years, implying somewhat higher experience levels in larger districts. These statistics omit the 14 districts with long-serving superintendents for whom the exact experience level is missing. Assuming an experience level of 15 years for these superintendents would raise the unweighted average to 4.2 years and the weighted average to 4.5 years.
- 19 "Urban School Superintendents: Characteristics, Tenure, and Salary," Council of Great City Schools, 2010, available at http://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/4/Supt_Survey2010.pdf; Thomas E. Glass and Louis A. Franceschini, "State of the American School Superintendency: A Mid-Decade Study," AASA: The School Superintendents Association, 2006.
- 20 Grover J. Whitehurst, Matthew M. Chingos, and Katharine Lindquist, "Evaluating Teachers with Classroom Observations: Lessons Learned in Four Districts," Brown Center on Education Policy, Brookings Institution, 2014; Grover J. Whitehurst and Katharine Lindquist, "Teacher Dismissals Under New Evaluation Systems," Brown Center on Education Policy, Brookings Institution, 2014.

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