

Training and Retaining Effective School Leaders: Results from Efforts to Improve Principal Effectiveness in Chicago Public Schools

by Steven G. Rivkin, Lauren Sartain, and Jeffrey C. Schiman

Principals are widely seen as central to school improvement. But it is challenging to measure their impact on the development of students' cognitive and noncognitive skills because their effects are indirect—often operating through personnel decisions, teacher mentoring, their influences on school climate, and their use of resources. This leads district leaders and policymakers to ask questions like:

- How much do principals affect students' cognitive and noncognitive skill development?
- What can districts do to strengthen the principal pipeline?
- What policies can districts implement to raise the effectiveness of their principals?

In this brief, we present findings from three studies on principalship in Chicago Public Schools (CPS), focusing on:

- Principals' contributions to students' development of cognitive and noncognitive skills and to school climate,
- The district's residency-based training programs developed for aspiring school leaders (the Chicago Leadership Collaborative), and
- Merit pay bonuses given to principals who raise student achievement.

Key takeaways

Principals had immediate influence on student learning and school culture, and they also had lasting impacts on students' outcomes into young adulthood. With such wide-reaching impacts, it is not surprising that districts such as Chicago are working to cultivate strong school leadership through several policy mechanisms. In our research, we establish the principalship as a position that has lasting impact on students, and then we explore the effects of two policies: 1) a principal training program designed to support future urban school leaders, and 2) a principal merit pay program aimed at providing extra compensation to effective leaders.

CPS's principal residency program appeared to increase principal effectiveness at improving achievement in the first two years of the principalship. CPS has invested in and partnered with local universities to train aspiring leaders to work in urban schools. These programs feature “residencies” where candidates work as part of the leadership team on the ground in CPS schools for an entire school year. In their first two years as new principals, leaders who completed a residency program were able to raise math and reading test scores at their schools more than at schools with new principals who did not complete the residency program.

The slow pace at which residency completers became CPS principals dampens the potential benefits of the residency program to the district. If more residents became CPS principals, and became principals sooner after their residency programs, the cost-to-benefit ratio would improve for CPS. The district might consider: Are the benefits of the residency program sufficient to merit the costs of the program? What modifications might lead more residency graduates to become CPS principals, and to become principals more quickly after finishing their residencies?

CPS's principal merit pay program led to improvements in student achievement, but there were some negative consequences for the district in terms of principal mobility. CPS implemented a merit pay program that featured large bonuses for principals leading schools with the largest improvements in student test scores. District leaders might consider: What are different approaches for rewarding strong principals for performance in ways that retain them as school and district leaders?

Taken together, this research points to the lasting impact principals have on the lives of students, and that investments in principal training and support are likely well spent. Students who had strong principals were more likely to go on to complete college, find more stable employment, and were less likely to be involved in the criminal justice system. However, the reality is that designing policies that effectively attract leaders into the profession and incentivize sitting principals to become more effective is challenging. For example, accountability policies that focus primarily on student test scores may shift efforts away from developing students' noncognitive skills, which principals can influence and which recent research shows is much more valuable for young adults' long-term success.¹ State and district policymakers can use the research presented here to shape their decisions and maximize the likelihood that policies aimed at strengthening the principal workforce will have the desired effect of increasing principal effectiveness.

Research findings

Study 1. How principals affect student outcomes & school climate

Student achievement is an important indicator in education because it is a measure of student knowledge and skills. Student test scores are also correlated with many other later outcomes, like educational attainment and labor market participation. And it is well-established that teacher and school effects on both cognitive and noncognitive skills contribute to longer-term academic, social, and labor-market outcomes. But there is little research showing how much individual principals impact the life trajectories of their students.

We do know that principals vary in their ability to have an immediate impact on student outcomes, but whether their impacts are short-term or if those impacts last as students move through schooling and into young adulthood is an open question. **In our research in CPS and Texas, we found that middle grade principals had lasting impacts on their students' outcomes into young adulthood (e.g., college going, employment), as well as a strong influence on contemporaneous student achievement and school climate.**

Study 1 findings:

Principals' long-term effects on student life outcomes

Our research from Chicago found that middle grades principals (typically at schools serving K–8 students) had lasting effects on students that could be seen when they continued into high school, including **their ninth-grade course performance, the number of absences, their likelihood of receiving disciplinary infractions, and college enrollment and persistence rates.** This finding highlights the importance of principals' effects on the development of students' social-emotional skills in the determination of high school performance.

Principals' effects on school climate

The impact of principals on students is often indirect because principals typically have limited one-on-one interactions with students. However, principals are the drivers of school culture and climate, which affect the day-to-day work of teachers and, ultimately, students' learning and skill development. To test this idea, we used CPS teacher and student responses to the *Essentials* Surveys² to compare teachers' perceptions about the quality of instructional leadership and other school-level working conditions to our estimates of principal effectiveness in raising student test scores).

We found that the principals who were most effective at raising middle grade students' test scores (i.e., "high value-added" principals) were often the same principals whose teachers and students reported more positive

impressions of their principal and the school's culture and climate. Specifically, teachers in schools with high value-added principals typically reported stronger levels of their principal's instructional leadership in these areas:

- Makes teaching expectations clear
- Communicates clear vision for school
- Understands how students learn
- Sets high standards for student learning
- Presses teachers to implement professional development
- Tracks student academic progress

In addition, students in schools with high value-added principals were more likely to agree that:

- They felt safe in their school, including in their classes, the hallways, and the bathrooms,
- The topics they studied were interesting and challenging, and
- They worked hard to do their best in class.

Research methods: Estimating principal effects on student outcomes & school climate

We used administrative data from 1994–2018 in all CPS schools with elementary grades to estimate middle-school³ principal effects on students' cognitive and noncognitive skill development. Importantly, we also looked at how those contemporaneous principal effects were related to students' later skill development and post-secondary schooling.

It is difficult to disentangle the effect of an individual principal and the school and neighborhood context where the principal works. We used multiple methods to isolate the effects of the principal on achievement in their school. These methods included:

- Comparing student achievement in years with a given principal to the achievement we would predict the school to have in those years, based on achievement at the school in years prior to receiving that principal, as well as the demographic characteristics of the student body and achievement in other CPS schools,
- Adjusting for year-to-year variation in achievement across the years where the school had different principals with the year-to-year variation in achievement across years in which the school was led by the same principal,
- Comparing achievement over time within the same school controlling for student prior achievement, absences, and receipt of disciplinary infractions, and
- Adjusting for districtwide year-to-year changes in achievement.

Study 2. The value of residency principal training programs in developing effective leaders

In November 2011, CPS launched a principal residency program called the Chicago Leadership Collaborative (CLC), and the program continues today. The goal of the CLC is to generate a pipeline of strong school leaders. In partnership with local universities, candidates start with classroom-based coursework that focuses on issues faced by leaders in urban schools and is aligned with the State of Illinois Principal Standards. Then, each candidate completes a year-long residency in a CPS school under the tutelage of a “high-performing” principal. During the residency, CPS pays candidates the equivalent of their CPS salary or \$80,000, whichever is higher. Upon completion of these programs, candidates receive a graduate degree. The training programs also continue to support candidates for 1-2 years once they attain principal positions.

From a district perspective, the benefits of investing in a residency program depends upon three key factors:

- 1) The value of the training as measured by its impact on leadership effectiveness (relative to training programs without a residency),
- 2) The difference between the salary paid to a resident-trained principal and the value of the principal’s work, and
- 3) The timing and length of service in a leadership role in the district.

In this study, we look at the effectiveness of principals who completed a residency compared to other new principals, as well as the timeframe for residency completers entering and being retained in a CPS principalship.

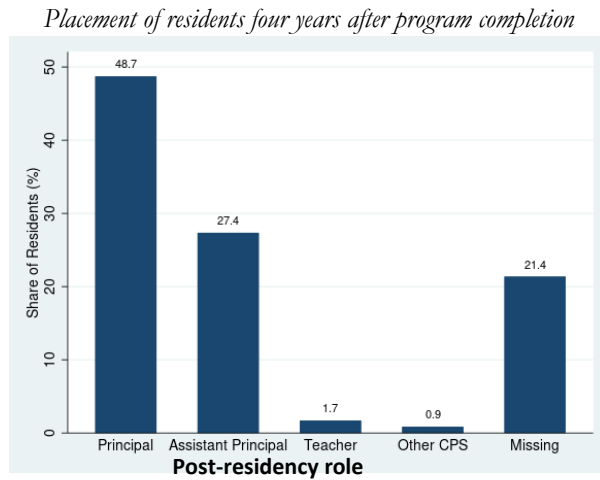
Study 2 findings: Principal residency programs

Residency-trained principals were significantly more effective than non-residents at raising test scores. Compared to new principals that did not complete a residency program, residency completers who took principal positions did so at schools with slightly lower test scores than the average in the district. In their first two years as principals, math and reading test scores at their schools increased more than at schools with a new principal who was not residency completer. In math, their students scored 0.07 standard deviations more per year than at schools with non-residency principals. In reading, their students scored roughly 0.05 standard deviations more compared to schools with non-residency principals. The achievement differences between schools that received a non-residency principal vs. a residency principal was roughly 0.065 (math) and 0.053 (reading) of a standard deviation in the year before entering—which suggests that residents completely closed the test score differences between their schools and schools that hired non-resident principals.

Most residency completers entered an assistant principal position upon program completion, and about one-half of residents became principals in CPS within four years of completing their residency (see Figure 1.) The relatively slow progression into the principalship means that the benefits of the residency training—in terms of cultivating effective leaders—were limited due to a “leaky pipeline.”

Resident-trained leaders who did enter the principalship typically remained in CPS at similar rates as other principals. Because the residency program likely develops skills that are valuable to other school districts and potentially other professions, one area of concern for CPS is that the value of the residency training might not be realized if the training leads residents to accept positions in other places. However, we do not find evidence to support that this happened. Residency-completer principals had similar rates of transfer to other CPS schools and exit from the district as other principals—which does mean, on the flip side, that they are also no more likely to stay in CPS than non-residency principals.

Figure 1. Nearly one-half of residency completers were in district-run CPS school principal roles four years later; the other half were not



Note: The CPS personnel data used in this study includes school-based personnel in non-charter CPS schools. As such, “Missing” includes employees who may be in CPS charter schools, central office in Chicago, exited CPS for another district, or exited the education sector.

CPS’s return on investment in the residency training programs may be limited because of the “leaky pipeline.”

While residency-trained principals were effective, program costs per resident principal are determined by the sum of the stipends paid to all residents, plus district support for the principal training programs, divided by the number of residents who became principals. As of 2017, slightly more than one-fourth of residents became principals. Dividing the \$16.2 million the district spent to support residency program providers among the 70 residents who became principals, along with the costs of the \$80,000 average stipend for all residents, divided by the share that became principals ($\$80,000/0.264$) sums to a total cost of roughly \$535,000 per new principal. Based on the career paths of residents in the early cohorts, it is likely that the share who become principals will approach 50%, which would reduce the cost per resident by half, if realized (about \$268,000 per new principal). Because residency costs do not vary with the number of years a resident serves as principal, the cost-to-benefit ratio potentially increases as principals remain longer at CPS schools. The impact of the residency training could be broader if more of these aspiring school leaders entered the CPS principalship.

To address the “leaky pipeline,” CPS might consider: Are the benefits of the residency program sufficient to merit the costs of the program? What modifications might lead more residency graduates to become CPS principals, and to become principals more quickly after finishing their residencies?

Research methods: Principal residency programs

This study uses longitudinal data on CPS principals and residency program participants entering the principalship between 2013 and 2019 to estimate residency program effects through quasi-experimental, event-study methods. The statistical models incorporate data on students including race, ethnicity, gender, test scores, and special education status. Unlike previous research on residency program effects, the models address complications associated with staggered timing of treatment (program participants enter their programs and ascend to principal positions over a period of years). Personnel data on principals are used to understand their employment trajectories, including transitions from teacher to assistant principal to principal.

Study 3. Retaining strong principals: Merit pay's benefits and challenges

Another policy approach to fostering principal quality is to incentivize improved performance among current principals. In the fall of 2012, CPS introduced a merit award program that featured public recognition and one-time bonuses of up to \$20,000 to principals of schools with the highest achievement growth. These bonuses provided incentives for principals to focus more on achievement and take actions to raise test scores. Although a merit award system may increase effort and productivity, it may also produce unintended consequences if it provides new information to the labor market that enables outside employers to differentiate workers more accurately by their effectiveness. This study investigates the effects of the merit award program on leadership effectiveness as measured by achievement growth and the informational effects of merit awards on the probability of leaving CPS.

In this study, we asked:

- Were there turnover differences and other student, school, and demographic differences for award winners compared to non-winners?
- Did the award program incentives increase achievement in the school?

Study 3 findings: Merit pay

The program led to higher mobility out of CPS for award winners. Principals who received the award were nearly three times as likely to leave their school the year after they won the award (16.9%), compared to principals with similar effectiveness who just missed the merit award cut-off (5.9%). Most of these departures were principals leaving the district (83% of the turnover estimate), rather than transitioning within the CPS.⁴ The findings suggest that some winning principals responded to labor market incentives, using the recognition provided by the award to leverage outside employment opportunities.

The program led to modest improvements in student test scores in select schools in the year it was offered. In schools that were close to the award threshold, where principals had a reasonable chance of earning the award, math and reading test scores increased more strongly than in other schools following the announcement of the merit award program. The closer the school was to the cut-off for the principal to receive a merit award—meaning it was easier to reach the threshold for an award—the larger the improvement in student achievement, which suggests that the merit award was a motivator when the goal felt within reach.

Research methods: Merit pay

The study is based on principals who worked in the CPS beginning in 2011–12 or earlier and still served in the CPS the year the awards were announced in 2012–13. Measurement of student achievement growth was based on students in grades 3–8, using scores on the state assessment which, at that time, was the ISAT. Estimates of the effects of the program were based on comparisons of schools where principals received bonuses to schools that just missed the cut-off for bonuses.

About the studies

Study 1. Rivkin, S.G., Schiman, J.C., & Sartain, L. (2023). *How much does leadership matter? Effects of Elementary School Principals in Chicago on Students' High School Outcomes*. (Technical appendix, UChicago Consortium.)

Study 2. Nguyen, M., Rivkin, S.G., Sartain, L., & Schiman, J.C. (Forthcoming). School district investments in general skills: The case of principal residency programs. *IZA Journal of Labor of Economics*.

Study 3. Schiman, J.C. (2021). [The information content of employee awards](#). *Economics of Education Review* (84), 102-154.

About the authors

Steve Rivkin is a Professor and Head of the Department of Economics at the University of Illinois Chicago. He is working with the UChicago Consortium to study the variation in principal quality as measured by improvements in students' test scores over time (e.g., principal value-added on student achievement), the pathways through which principals influence achievement (e.g., principal effects on teacher mobility), and the reward structure of the principal labor market. Steve's research interests include teacher and principal quality and labor markets, charter schools, affirmative action, and school reforms in Central Europe.

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Authors completed this work as affiliated researchers with the UChicago Consortium on School Research.

¹ Porter, S.C., Jackson, C.K., Kiguel, S., & Easton, J.Q. (2023). *Investing in adolescents: High school climate and organizational context shape student development and educational attainment*. Chicago, IL: University of Chicago Consortium on School Research.

² CPS administers the University of Chicago Consortium on School Research's validated school climate survey instrument (the *5Essentials* Survey) to all pre-k–12 teachers and all students in grades 4–12, with response rates above 80% for teachers and around 80% for students in the years studied.

³ In CPS, most elementary schools serve students in grades K-8, but we focus on student outcomes for grades 6-8 (i.e., the middle school years).

⁴ These figures are based on the means from Table A.1 in the final columns (optimal bandwidth) in the full manuscript. The mean rate of turnover is 16.9% for those just above the threshold; compared to 5.9% for those just below the award threshold. Focusing on those leaving the district is 14.1% ($14.1/16.9 = 83\%$); most of the departures or 83% of the departures are leaving the district.