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Dissertation

What Makes a Successful Principal?

Incorporating School Principal Background in State and District Policy

Ashley Pierson

RAND CORPORATION

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This document was submitted as a dissertation in September 2014 in partial fulfillment of the requirements of the doctoral degree in public policy analysis at the Pardee RAND Graduate School. The committee that supervised and approved the dissertation consisted of Susan Gates (Chair), Francisco (Paco) Martorell, and Lynn Scott.

Prepared for New Leaders

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Abstract

School principals' education and professional experience shape their approach to school leadership and how successful their students will be. However, it is not clear from existing research which aspects of principal education and professional experience are related to student outcomes and principal retention. This dissertation explores aspects of a potential principal's education and professional experience that states and school districts should look for and cultivate in candidates for the position of school principal. The work was guided by two research questions: 1) how are principals' education and professional experience related to student outcomes and principal retention? and 2) how can state certification and district hiring policies better incorporate information about a principal's education and professional experience to improve principal effectiveness? Using information on principals trained by the New Leaders program and school-level data from four large urban districts, I analyzed the relationships between principal education and professional experience and student outcomes and principal retention. I examined state certification and district hiring policies for the four urban districts used in the analysis and conducted a survey of 33 districts regarding their hiring policies and practices. From this research, I provide recommendations designed to inform state certification policy, district hiring policy, and training program curricula.

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Abbreviations

APP	Aspiring Principals Program
CMO	charter management organization
CAO	chief academic officer
ELL	English language learner
ETS®	Educational Testing Service
FRPL	free and reduced-price lunch
ILL	Instructional Leadership License
ISLLC	Interstate School Leaders Licensure Consortium
NCES	National Center for Education Statistics
OLS	ordinary least squares
PD	professional development
PEL	professional educator license
SASS	Schools and Staffing Surveys
TAP	Test of Academic Proficiency
TILS	Tennessee Instructional Leadership Standards

1. Introduction

There is growing recognition by researchers, policymakers, and practitioners in the field of education that student outcomes such as math and reading test scores are affected not only by what happens in the home and classroom, but also by factors that apply at the school level. In particular, many believe that the school principal can influence student outcomes, that the principal's success is related in part to his or her educational background and previous professional experience, and that student outcomes may be improved if a principal remains in a school for multiple years.

In recent years, many public school districts—including large urban districts such as Baltimore City Schools[1], Charlotte-Mecklenburg Schools[2], and Prince George's County Public Schools[3]—have responded to these prevailing beliefs by changing the processes they use to screen, select, place, and evaluate principals.

However, education decision makers don't have all the information they need to change those processes in ways that may improve student outcomes. Which characteristics of principals really make a difference in student outcomes? How do they make a difference and how strong is the connection? To what extent can training improve a principal's performance and what should the training consist of? Which characteristics of principals are related to a principal remaining in his or her job (i.e., retention) rather than leaving? Answers to these and related questions could inform all aspects of principal hiring and retention and thereby improve student outcomes.

The Research Questions

This dissertation takes a closer look at the connections from a principal's background to student outcomes and to principal retention at their school.[4] The overarching policy question is: What education and experience should states and school districts look for and cultivate in candidates for the position of school principal? Two specific research questions guide the work.

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[1] In 2011, Baltimore City Public Schools modified their leadership pipeline process and leadership standards.

[2] Charlotte-Mecklenburg Schools began using an eligibility pool process in school year 2010-2011.

[3] Prince George's County Public Schools (in Maryland) modified their recruitment process in 2011.

[4] Retention in this study refers to whether the principal stays in his or her school from one year to the next – whether or not he or she is "retained" in that position for the following school year. In this context, if a principal is not "retained," it could be for a variety of reasons, including the principal's choice to leave.

1. How are public school principals' education and professional experience related to student outcomes and principal retention at the school and district?
    a. What aspects of a principal's education are related to student outcomes and principal retention?
        i. What is the strength and direction of the relationship?
    b. What aspects of a principal's prior professional experience are related to student outcomes and principal retention?
        i. What is the strength and direction of the relationship?

2. How can state certification policies and school district hiring practices incorporate what we know about the education and professional experiences that make effective principals to improve the quality of district hires?
    a. What are the current state certification policies?
        i. How can these policies incorporate requirements regarding a principal's education and prior professional experience in a way that might improve student outcomes and principal retention?
    b. What are the current district hiring practices?
        i. How can districts incorporate requirements regarding a principal's education and prior professional experience in a way that might improve student outcomes and principal retention?

To address the first question, I conducted an extensive review of the literature related to a principal's education (e.g., his or her undergraduate institution) and prior experience (e.g., as an assistant principal, managing adults, and in an ethnically-diverse workplace). I then analyzed data from four large urban school districts and from principal resumes to determine the strength and potential impact of the connections between a principal's education and prior professional experience and student outcomes, on the one hand, and principal retention and student outcomes on the other.

For the second research question, I examined state certification policies in Illinois, New York, Tennessee, and California and school district hiring practices in Chicago, New York City, Memphis, and Oakland to determine whether and how they consider a candidate's education and professional experience. I also surveyed a number of districts around the United States regarding their hiring policies and practices to gain a broader understanding of principal hiring policies. I then combined this information with the results from the data analysis conducted to investigate the first research question and developed policy recommendations for states and districts as a strategy to improve student outcomes.

Goals of the Research

This dissertation seeks to improve public K-12 education—specifically student outcomes such as math and reading test scores and attendance—through refinement of states' certification policies and districts' selection practices for K-12 public school principals. This work may be of interest to school districts, as it can inform hiring practices by modifying the principal selection process and could improve student outcomes and reduce principal turnover. It also may be of interest to states, since they set minimum qualifications for principal certification that include education (e.g., a master's degree) and required number of years of teaching experience to become certified as a principal. Additionally, an understanding of which prior experiences best prepare a principal for success in the school could influence the curricula of principal training programs and of professional development programs for acting principals.

This work is part of the multi-year RAND evaluation of the New Leaders program and was designed to provide additional information to New Leaders regarding its principal training program as well as provide guidance to other training programs, districts, and states regarding desired principal background characteristics.

About the New Leaders Program

New Leaders is a nonprofit organization that works in 12 urban areas around the country to improve student achievement through school leadership development. Its Aspiring Principals Program began in Chicago and New York City public school districts and Aspire charter schools (in the Bay Area of California) in 2001. The first cohort of APP principals was trained during the 2001-02 school year. Those who applied to the school district and were selected as principals through the standard district recruitment process took their place as principals in the 2002-03 school year. The program expanded over the course of the next decade to:

- Oakland, California
- Memphis, Tennessee
- The Louisiana Recovery School District
- Washington, DC
- Baltimore, Maryland
- Prince George's County Public Schools, Maryland
- Charlotte, North Carolina

- Milwaukee, Wisconsin

The program consists of coursework, a year-long residency in a school, national seminars, and virtual learning.[5] New Leaders screens candidates for the program based on six selection standards, which include cultivation of leadership in other adults, belief in students, and data-driven instruction (New Leaders, 2013b). Upon completion, aspiring principals are expected to seek placement in a school in the district where they completed their residency.

The New Leaders program was one of the first alternative principal preparation programs and one of the first to incorporate a principal residency. Many current alternative preparation programs have now incorporated the residency model into their program (such as the Achievement First program in Connecticut; see, for example, Zubrzycki, 2013). One aspect that sets New Leaders apart from other alternative programs is that it recruits candidates nationally as well as locally; most other principal preparation programs focus their recruitment on their local areas. New Leaders' presence in multiple districts is also unique. The decade-long history of New Leaders combined with its presence in multiple districts makes New Leaders a particularly attractive example of an alternative program for research, as there are multiple years of data and one can make cross-district comparisons to develop more generalizable recommendations.

In addition to expanding to additional districts, New Leaders also expanded its program offerings, adding the Emerging Leaders program for current school district teacher leaders to strengthen their leadership skills before entering the APP. New Leaders also expanded program offerings to include the Principal Institute, a community of support for early-career principals. Prior to the Emerging Leaders program, there was only the national admissions process, though much of the process was run through the local New Leaders offices in each district. (National admissions are now only for non-Emerging Leader candidates.)

From 2006 to 2013, RAND evaluated the New Leaders program's impact on student achievement and other student outcomes through statistical analysis, interviews with district leaders, and principal surveys (Gates et al., 2014). The work described in this dissertation is part of the RAND evaluation of New Leaders.

[5] The program model underwent changes in 2012, including increased incorporation of feedback on practice.

2. Background

This background section describes the direct and indirect ways that principals influence student achievement (typically measured by standardized test scores in math and reading) and the various roles they play in their schools. It reviews the research on the influence of a principal's education and professional experience on student outcomes and principal retention. Student outcomes encompass a variety of measures, including student achievement, attendance, high school graduation, grade repetition, and course performance (completion and grades earned). This dissertation examines student achievement in math and reading on standardized tests given in each of the four districts studied as well as attendance (measured as the percentage of the school year the student was present at his or her school). Much of the research literature focuses on student achievement on standardized math and reading tests, which the No Child Left Behind Act required to be administered annually to students in grades 3 through 8 and once during grades 10-12 (No Child Left Behind Act, 2002). This increased focus on testing has provided researchers with more information on student achievement than in prior decades. Lastly, this background section discusses principal certification, hiring, and training processes because it is in those areas that these findings can influence policy and potentially improve student outcomes.

A 1966 report by University of Chicago researcher James Coleman drew attention to the disparities in student achievement within the public education system of the United States, notably in urban areas. Coleman et al. (1966) found that family background, particularly income level, was more important in predicting student outcomes than school-level factors; low-income students typically had low achievement as measured by standardized achievement tests in math, reading, verbal and non-verbal skills, and general information.

Later studies have shown that school-level factors also influence student achievement, although that influence is typically less than that of family factors. Reexamining the data used by Coleman et al. (1966) but employing more modern multi-level modeling techniques, Borman and Dowling (2010) found that 40 percent of the differences in student achievement among schools could be explained by school-level factors. Lee and Burkam (2003) found that school-level factors such as school size and curriculum also influence student outcomes such as the decision to drop out of high school.

The effectiveness of principals and other school-level factors may not be the primary influence on student outcomes, but they have a substantial effect. And school-level factors are more easily influenced through policy levers than family income level and thus are typically the focus of efforts to improve education.

Principal Roles and Influence

A number of studies confirm the idea that one school-level factor that influences student outcomes is the principal and they describe the nature and size of the effect principals may have on student learning and achievement (see, for example, Marzano, Waters and McNulty, 2005). Principals influence student achievement through both behavior and personal attributes (Eberts and Stone, 1988). Principals can influence student achievement directly, by mentoring students and serving as a role model, but principals are typically thought of as influencing students indirectly (Brewer, 1993).

A review of work from 1980-1995 on the subject of principal effectiveness (Hallinger and Heck, 1998) found support for a positive effect of principals on student achievement through the indirect role. Hallinger et al. (1996) examined the link between principals and student achievement in reading and found evidence that principals do not influence student achievement directly but rather indirectly by shaping the climate of learning at the school. Within this indirect pathway, there are various mechanisms for influencing student outcomes, including managing the school and its human capital (setting school rules and policy and selecting teachers) and providing instructional expertise. In this section, I explore the ways that principals influence student outcomes by playing different roles. Factors that influence principals–such as educational background and prior professional experience–are also explored in the context of a framework that delineates how each role might influence student outcomes.

Principal roles

The research outlined above suggests that principals can have a large effect on student outcomes and that this influence typically takes an indirect route through teachers and other school staff, school and classroom conditions, and outreach to families and communities.

The predominant role of the principal has shifted from head teacher in the 1800s to the bureaucratic administrative "program manager" in the 1960s and 1970s (Hallinger, 1992) to instructional expert (Goodwin, Cunningham and Eagle, 2005). This last shift was prompted by the growing school reform movement in the 1980s and a recognition that instructional expertise was needed

to improve student outcomes (see, for example, Edmonds, 1979). However, principals have been expected to model instruction and manage their schools amidst local, state, and national political pressures for many decades (Kafka, 2009). What has changed in recent years is a shift to more accountability for school outcomes and increased competition between schools for students, given the increase in school choice policies within public school districts and the rise of charter schools. In addition, more research is focusing on principal roles and principals' impact on student achievement, an area to which this dissertation can contribute.

Research sponsored by the Wallace Foundation determined that successful principals are effective at "shaping a vision of academic success for all students, creating a climate hospitable to education, cultivating leadership in others, improving instruction, and managing people, data, and processes to foster school improvement" (Wallace Foundation, 2013, p. 4). Dhuey and Smith (2011) outline the core responsibilities shared by all principals regardless of district. They include teacher management (e.g., evaluating performance, assigning classrooms, developing schedules, and recommending hire or dismissal), student discipline, and liaising between the district and the school. Understanding and using data—for decision-making, planning, and improving schools—are skills that do not correspond to any one principal role, but rather can be used to inform principals' work overall through "…using data as a part of a leader's repertoire for organizational improvement" (Earl and Katz, 2002, p. 3).

The Interstate School Leaders Licensure Consortium (ISLLC) first developed a set of standards for school leaders in 1996, known as the ISLLC standards, which are used by many states and districts to guide school leadership policy (Murphy, 2005). These standards are another example of what education experts determined to be appropriate areas of responsibility for a school principal. The ISLLC standards were revised in 2008[6] and now comprise six standards for promoting student success:

1. "…Setting a widely shared vision for learning;
2. developing a school culture and instructional program conducive to student learning and staff professional growth;
3. Ensuring effective management of the organization, operation, and resources for a safe, efficient, and effective learning environment;
4. Collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources;
5. Acting with integrity, fairness, and in an ethical manner; and
6. Understanding, responding to, and influencing the political, social, legal, and cultural contexts." (Interstate School Leaders Licensure Consortium, 2008).

[6] The standards are expected to be revised again in fall 2014 (Superville, 2014).

In reviewing the articles cited above as well as Clifford, Behrstock-Sherratt, and Fetters (2012), five key roles that principals play in the school recurred: human capital manager; school operations manager; instructional leader; visionary; and community and family outreach coordinator. Both the human capital manager and school operations manager roles fall into the broader category of organizational manager or school manager; some research combines these roles, but these are separated here as recent literature emphasizes the different aspects of human capital manager (see, for example, Ikemoto, Taliaferro and Adams, 2012) and school operations manager (see, for example, Grissom and Loeb, 2011). These five key roles often overlap in various ways as well as complement each other. For example, the visionary role overlaps with the community and family outreach coordinator role in that it is likely the principal would need to express his or her vision for the school in order to engage families.

There is evidence that principal roles have varying effects on different types of teachers. In a study of middle school teachers from six districts in one state, Walker and Slear (2011) determined that the effect of leadership practices on teacher efficacy varied by teacher experience. Less experienced teachers were affected by principals who modeled instructional expectations (in their roles as instructional experts), while moderately experienced teachers were also influenced by communication and consideration from their principals (in their roles as human capital managers). The most experienced teachers were only affected by principals' ability to inspire the group in a common purpose (in their roles as visionary). These findings suggest that principals need to play a number of roles in order to effectively manage a school and positively impact student outcomes. We explore these roles and the research showing their influence on student outcomes below.

Human capital manager

One of the pathways through which principals can indirectly influence student outcomes is human capital management at the school (see, for example, Ikemoto, Taliaferro and Adams, 2012). Human capital management refers to making decisions about selecting and removing staff for positions within a school (including forming teams) and about choosing training and professional development activities for staff.

Teacher selection through hiring and dismissal is one of the main mechanisms through which this indirect influence on student outcomes is thought to occur. However, principals may be constrained in their ability to hire and dismiss staff; this varies due to district and state policy. These constraints on teacher selection would potentially limit the influence a principal may have on student outcomes. In

their book on the U.S. school system, Chubb and Moe (1990) discuss how, if personnel decisions are decentralized, principals will select teachers to improve organizational performance. Staff job satisfaction is another mechanism through which principals have an indirect influence on student outcomes (Griffith, 2004), as is staff development (Joyce and Showers, 2002). Dissatisfaction with administrative support was found to be the most influential aspect of the job for teachers who were considering leaving their position (Boyd et al., 2011). Time spent by principals on personnel issues (including recruiting, hiring, and evaluating staff) was found to be related to student achievement in both English language arts and math (May, Huff and Goldring, 2012).

Jacob (2011) found evidence using Chicago Public Schools data that principals incorporate information about teacher productivity in their decisions regarding teacher removal; the principals removed lower-performing and more frequently absent teachers. Branch et al. (2012) determined that lower-quality teachers more frequently leave schools run by more effective principals. Béteille et al. (2009) found in their study of Miami-Dade Public Schools that more effective principals, as evaluated using school-level value-added measures, hired more effective teachers, retained those effective teachers, and removed less effective teachers. They also found some evidence that effective principals could train teachers in their schools to be more effective. Harris et al. (2010) found that principals seek a mix of professional and personal qualities in their teachers and may favor less experienced teachers due to tenure rules.

Donaldson (2011) studied 30 principals in 15 districts in two states and found that principals' ability to exert influence over these human capital processes varies, and opined that policymakers should consider removing constraints to human capital management. Overall, she found that smaller schools and elementary schools typically gave principals more control over teacher-related human capital decisions; charter schools did not perform better on this indicator than traditional public schools. Principals mentioned such constraints on teacher selection as seniority preference, limited supply of candidates, and centralization of hiring.

In their role as human capital managers, principals may also influence student outcomes through their selection of other school staff. This could include hiring and dismissal of assistant principals, school coaches, and assistants. The appointment of staff to a leadership team or to teacher-leader positions could also influence outcomes at the school (Spillane, 2005; Ikemoto, Taliaferro and Adams, 2012), as might involving staff in decision-making (Grissom, 2012). The ability of principals to make

these decisions about non-teaching staff, leadership positions, and shared decision-making varies by district and state.

School operations manager

School operations management refers to management of the school budget, facility use, curriculum choice, and other non-human capital management tasks that are essential to running a school. There is evidence that skill in this area used in tandem with human capital management skills (collectively called organizational management in the literature) is important to student outcomes. Time spent on budgets and seeking grants was found to relate to student achievement in reading (May, Huff and Goldring, 2012).

Grissom and Loeb (2011), in their study of Miami-Dade County Public Schools, found that the organizational management skill set had the most influence over student achievement; these results were corroborated by the perspective of assistant principals in the district. They suggested that this does not necessarily lessen the importance of the role of providing instructional expertise, but perhaps points to a revised definition for "effective" instructional leadership "…as combining an understanding of the instructional needs of the school with an ability to target resources where they are needed, hire the best available teachers, and keep the school running smoothly (Grissom and Loeb, 2011, p. 1119)." The authors also point out that this finding could guide recruitment of principals at the district level, as those hiring school leaders could select candidates strong in organizational management skills.

Horng et al. (2010) examined principals' time-use (also in Miami-Dade County Public Schools) and found that time spent on organizational management, including hiring and managing staff, overseeing budgets, and student discipline, was positively associated with student achievement and with teacher and parent assessments of the school, while instructional activities did not show a strong relationship with student outcomes and were negatively associated with teacher and parent assessments.

Instructional leader

Other research finds that a principal does influence student outcomes by being an instructional leader and sharing expertise with teachers. Cross and Rice (2000, p. 63) describe instructional leadership by the principal as "…active support of good teaching, by fostering a climate that continually monitors the content to be learned, and by recognizing high student performance of rigorous standards." This role overlaps with the previously discussed roles of managing people (e.g., through selecting appropriate

professional development for teachers to improve their instructional skills) and other resources (e.g., through selecting curriculum).

Reardon (2011) found in a study of 31 Virginia elementary schools that having a rigorous curriculum and emphasizing performance accountability had a positive effect on student reading achievement in elementary schools. In their meta-analysis, Robinson et al. (2008) found that the indirect role of instructional leader has a positive effect on student achievement, particularly in teacher development activities. A study of an urban U.S. district similarly found evidence of the influence of the principal's instructional leadership on teacher practice and thus, indirectly, on student learning (Supovitz, Sirinides and May, 2010). Coelli and Green (2012) found that instructional leadership activities (instructional improvement and curricular improvement) were related to student achievement. Spending time on instructional leadership activities was found to be related to student achievement in math and reading (May, Huff and Goldring, 2012). Grissom, Loeb, and Master (2013) found that specific aspects of instructional leadership were related to positive student achievement growth, namely, teacher coaching, evaluation, and curriculum development.

Visionary

Another important role played by the school principal is that of a visionary. The principal needs to communicate a vision for the school in order to focus and inspire teachers and other stakeholders. This role is often referred to in the literature as transformational leadership. Some studies have examined the intersection between providing instructional expertise and transmitting a vision; for example, Marks and Printy (2003) studied transformational and instructional leadership in 24 U.S. schools. They found that teaching quality and student achievement were positively related to an integrated leadership approach that combined transformational and instructional leadership (Marks and Printy, 2003). In another study, in Tennessee elementary schools, Hallinger et al. (1996) found that principals have an indirect effect on students' reading achievement through their instructional leadership and ability to communicate a clear school mission. Three aspects of transformational leadership (fostering group goals, identifying a vision, and providing a model) were found to be related to student achievement in a study of Missouri high schools (Coelli and Green, 2012). Time spent by principals in planning and setting goals was linked to student achievement in math and reading (May, Huff and Goldring, 2012).

There is evidence for the importance of the visionary role in terms of student achievement. For example, in a study of 180 schools in nine states, Seashore Louis et al. (2010) found that leaders' impact on student achievement is attributable more to motivational influence and working conditions (e.g.,

school climate) rather than to influence on instructor knowledge and skills. This suggests that management skills and the ability to communicate a vision may be more important than instructional expertise. Another example of evidence is from a meta-analysis which found that fostering shared beliefs and a sense of school community and cooperation was correlated with student achievement (Marzano, Waters and McNulty, 2005).

Community and family outreach coordinator

Another mechanism through which the principal can influence student outcomes is through community and family outreach. This role is related to vision transmission in that often outreach to the community and family involves engaging these stakeholders in a shared vision of success for the school. Principals may also reach out to families to increase involvement in their children's education, hoping to affect the influence student and family background has on student outcomes.

School outreach to families and community members has been found to improve student attendance (Sheldon, 2007) and student achievement (Sheldon, 2003). Evidence suggests that principal actions related to parent involvement can have a larger effect in socioeconomically disadvantaged school populations (see, for example, Griffith, 2001). Marzano et al. (2005) found in their meta-analysis that outreach (defined as being an advocate of the school with parents, the community, and the central office and ensuring compliance with district and state mandates) was correlated to student achievement (using information from 14 studies).

Analogies to principal roles in private sector leadership

Principals can be thought of as mid-level managers—such as building or operational managers—because many policy decisions are made at higher management levels by districts, states, and other entities (Chubb and Moe, 1990). There is an extensive body of literature on leadership from a private sector perspective, in contrast to a smaller research corpus for school leadership; this section is not an exhaustive review of the private sector literature but rather an overview to confirm that the private sector literature mirrors the education literature.

The private sector literature confirms that managers influence firm outcomes, corresponding to the education literature's conclusion that principals influence student outcomes (Thomas, 1988; Nohria, Joyce and Roberson, 2003; Day and Lord, 1988). Lazear et al. (2012) studied the importance of lower-level supervisors in a large service company, a role that would be analogous to that of a school principal in a large district. They found that supervisors varied in their productivity and that this productivity (or

lack thereof) had a multiplicative effect on the productivity of their workers. In the context of the company, they determined that the primary role was teaching skills (analogous to the instructional leader role) while the secondary role was motivation (analogous to the vision transmission role). In addition, the business literature also mirrors the education literature in that the firm leader influences company outcomes through their effect on others–an indirect effect (Hogan and Kaiser, 2005; Hollander, 1992; Lord and Brown, 2004).

As demonstrated above, there is evidence from the research literature on private sector leadership indicating that a variety of roles are important for effective leaders, similar to what was found in the education literature. As Ahn et al. (2004) discussed, managerial skills (such as budgeting and staffing – the human capital manager and school operations manager roles) and leadership skills (the visionary role) are necessary for the success of a business. Gilley et al. (2009) found that leaders with the ability to motivate others, communicate, and build teams are more likely to be change agents at their organizations. Other research details the variety of roles needed by successful leaders, which include those corresponding to the principal roles of visionary (Ireland and Hitt, 1999; Hart and Quinn, 1993), human capital manager (Ireland and Hitt, 1999; House and Aditya, 1997), firm/school operations manager (House and Aditya, 1997; Ireland and Hitt, 1999), and communicator to outside stakeholders (House and Aditya, 1997). The instructional leader role can be seen mirrored in the business literature as maintaining core competencies–ensuring the firm performs well at its core business (Ireland and Hitt, 1999), which for a school is that of instruction.

There is also evidence from business literature regarding the effect of prior education and professional background on firm outcomes (Miles et al., 1978; Gupta and Govindarajan, 1984; Kimberly and Evanisko, 1981). Bertrand and Schoar (2003) examined the impact of high-level managers (CEOs and other top executives) on corporate decisions and found that individual managers and managerial style explain differences in investment, financial, and organizational practices. They also found that older CEOs tended to be more conservative in their decisions, while those with an MBA degree were more aggressive, providing support from the business literature that managerial background characteristics can affect firm outcomes. In a cross-country study, Bloom and Van Reenen (2010) found that higher scores on a measure of management practice were positively associated with company performance.

Framework of principal influence on students

This dissertation examines how principals' education and professional background affect their ability to play their roles in schools. To understand how these background factors may affect student outcomes, this section explores a framework that shows how the principal influences student outcomes.

In their framework of a school leader's influence on student learning, Louis et al. (2010; modified from Leithwood et al., 2004) show that a number of factors affect school principals, including state and district policy, the leader's professional experiences, school and classroom conditions, and teachers and other stakeholders.

I have modified the Louis et al. framework for this dissertation by adding detail regarding the principal roles and the relationships between certain factors (see figure 2.1) to highlight the areas investigated by this dissertation and the corresponding policy emphasis. In the modified framework, principals are influenced by state and district policies and practices (explored in more detail in the next section), their educational and professional experiences, and the backgrounds from which their students come; principals influence student outcomes indirectly through school and classroom conditions, teachers, and community/family involvement. Principals may also influence student outcomes directly through these roles, but as shown in the literature, principals are typically seen as having the most influence through indirect channels and that is reflected in Figure 2.1. Hallinger et al. (1996) found that the principal's level of instructional leadership varied depending on student socioeconomic status, parental involvement, and principal gender, demonstrating the interactions among the principal and his or her characteristics and the students and their characteristics. Given the interconnected nature of these factors, it is likely that many of the relationships depicted in the framework might be bidirectional relationships and that there are additional relationships between factors that are not depicted. However, this framework has been simplified to emphasize the relationships of concern in this dissertation and does not show all possible relationships or directions of relationships among these factors.

In this framework, the school principal and the principal's five roles are placed at the center and the principal's five roles are highlighted with different colors. The wide arrows leaving the center box to the right are colored to correspond to the color of the text for each of the principal's five roles and indicate the roles through which we surmise that principals have direct influence on the factors on the right-hand side of the framework: school/classroom conditions, teachers, community/family involvement, and through those factors, ultimately have an indirect influence on student outcomes. All roles except community and family outreach coordinator directly affect teachers. The visionary and

community and family outreach coordinator roles affects community/family involvement, which in turn affects both teachers and student outcomes. The human capital manager, school operations manager, and visionary roles affect both school/classroom conditions and teachers.

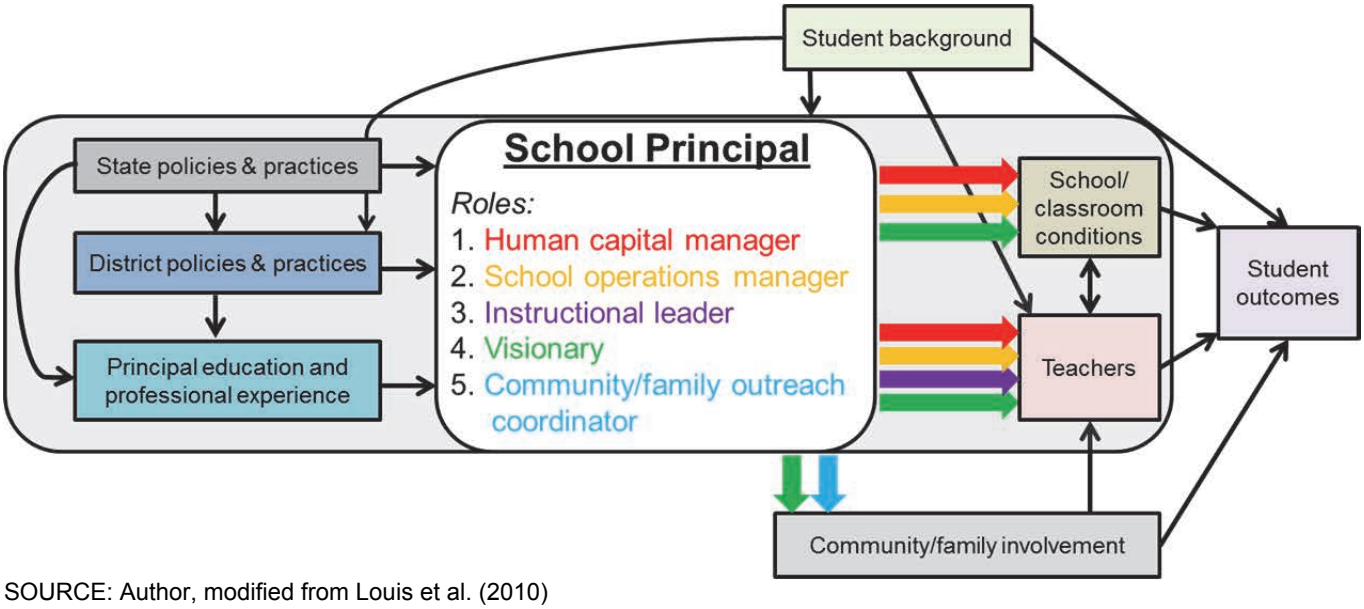
Student outcomes are directly influenced by a student's background, school and classroom conditions, teachers, and community and family involvement. Student background refers to student gender, race/ethnicity, and family socioeconomic status, as well as other aspects such as home language and special education status. Student background directly influences district policies and practices, school principals, teachers, and student outcomes. School and classroom conditions include the resources and non-instructional staffing at the school (e.g., textbook availability and presence of support staff), the school building and physical equipment (e.g., desks and chalkboards), and less tangible concepts such as a college-going climate and school safety. Although school and classroom conditions include school staffing, teachers are excluded for simplicity in this framework and thus only non-instructional staff are included here. School and classroom conditions directly influence teachers and student outcomes. Teachers influence student outcomes directly by teaching students in the classroom and interacting outside of the classroom structure. Teachers directly influence school/classroom conditions as well as student outcomes; they are also influenced by school/classroom conditions, student background, and community/family involvement. Community and family involvement influences student outcomes by helping support the student in school through engaging parents in their child's education and by encouraging community support of educational attainment (e.g., school is seen as a positive entity in the neighborhood and children are encouraged by community members to attend and take school seriously). In addition to influencing student outcomes, community/family involvement influences teachers as well.

The study described in this dissertation examines the left-hand side of the graphic, specifically the influence that a principal's education and prior professional experience have on student outcomes (through the various principal roles) and principal retention, as well as the interplay between state and district policies and practices, principal background, and the principal roles. In order for the principal to have an indirect influence on student learning, the principal must stay in the school, and thus this work examines principal retention as well as student outcomes.

State policies and practices (in the box in the upper left hand corner of the figure) directly influence all the other factors in the diagram except for the three factors (student background, student outcomes, and community/family involvement) that fall to the right and outside of the light-colored

rectangle in the background. The factors that *are* influenced by state policies and practices are: district policies and practices, the education and professional experience the principal brings to his or her job, the principal's ability to play key roles (e.g., by providing more or less autonomy for human capital management or additional school resources), school/classroom conditions, and teachers. Specifically for this study, I examine how state policies and practices influence district policies and practices, principal education and professional experience, and how the school principal plays his or her roles. State policy is seen in this diagram as directly influencing district policies and practices, principal education and professional experience, and principal roles. District policy is influenced by state policy and student background (as the overall student composition of a district would influence district priorities and policies). In turn, district policy influences principal education and professional experience as well as the principal roles. State and district policy could influence principal roles through incentivizing certain behaviors or practices through setting principal evaluation criteria, for example. Lastly, a principal's education and prior professional experiences–the focus of this dissertation–influence how the principal plays his or her roles in the school.

Figure 2.1. Framework of Principal Influence on Student Outcomes



SOURCE: Author, modified from Louis et al. (2010)

Principal Certification, Hiring, and Training

The following section first presents an overview of principal certification at the state level. Principals must be certified by the state in order to be hired by a district and placed at the school. Thus,

certification is a minimum bar to entry into the profession. After discussing certification, I then briefly examine principal training programs and lastly explore principal hiring mechanisms at the district level.

Certification

Principal licensure or certification establishes a set of criteria that an individual must meet in order to become a public school principal and acts as a lever through which states can influence the composition of the principals in their public schools.[7] The power to set policy related to the licensing of school principals typically lies with the state legislature, which often gives authority to the state department of education (Adams Jr and Copland, 2005). Overall, state policy regarding licensing varies widely among states and is typically not based on evidence gathered from research about school leadership (Briggs et al., 2013). Many state licensing requirements are not well-aligned with the expectations of the job (i.e., the roles discussed earlier in this chapter) and with the skills and experience presumed necessary to perform the job well (Adams Jr and Copland, 2005). Many states have adopted the Interstate School Leaders Licensure Consortium (ISLLC) standards to guide state and district policy related to principal preparation, evaluation, and licensing, but often the license requirements are not aligned to these adopted standards and focus on basic education and experience requirements (Vogel and Weiler, 2013).

State requirements for public school principal certification usually include all of the following: passing a certification exam, holding a teaching certification, experience as a primary or secondary teacher (typically two or three years)[8], and a masters-level education at an institution that has been approved for principal preparation by the state (LeTendre and Roberts, 2005). As described below, the details of these requirements vary widely between states and are not evidence-based. For example, Washington State does not require a specific number of years of experience as a teacher, but requires "instructional experience in an educational setting" and teacher certification (Office of Superintendent of Public Instruction, Undated), while New Mexico requires six years of teaching experience (New Mexico Public Education Department, 2007). The variability among states limits the portability of licenses and suggests a lack of agreement regarding what makes a successful principal.

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[7] Certification is not required by state law for private schools and, depending on the state, public charter schools may also not be required to have certified principals. For example, Washington, D.C. law does not require certification for charter school principals (Office of the State Superintendent of Education, 2012).

[8] This experience is typically not specified to have been in a public school setting; thus, private school experience may count as teaching experience.

The certification exam also varies by state; one of the more common tests, used by 16 states and the District of Columbia, is the Educational Testing Service (ETS®) School Leaders Licensure Assessment (ETS, 2013). This test content is aligned with the 2008 ISLLC standards and consists of 100 multiple-choice questions (comprising 70 percent of the test score) and seven essay questions (30 percent of the test score). The multiple choice questions relate to vision and goals, managing organizational systems and safety, collaborating with key stakeholders, and ethics and integrity. The essay questions relate to the education system (internal and external advocacy), vision and goals (implementation and data planning), and teaching and learning (professional culture, curriculum and instruction, and assessment and accountability) (ETS, 2012). Other states have developed their own tests, including Colorado, Florida, and New York. For teaching certification exams, a 2008 study did not find that requiring a certification exam increased teacher quality (Angrist and Guryan, 2008), while another study showed that certification exams may disqualify some effective teachers from receiving certification (Goldhaber, 2007). These studies indicate that these certification exams may not be an appropriate mechanism with which to improve the quality of the pool of educators.

As of 2005, all states with the exception of Michigan required school principals to hold an administrator certificate or license (LeTendre and Roberts, 2005). In 2010, Michigan began requiring the school administrator certificate (Michigan Department of Education, 2014). Now, all states and Washington, D.C. have certification requirements. As an example, the state of Maryland requires three years of full-time teaching experience, a master's degree, a valid teaching certificate, completion of additional coursework or a principal training program, and a qualifying score on the certification exam (see Maryland State Code 13A.12.04). Washington, D.C. requires two years of teaching experience, a passing score on the certification exam, and either a bachelor's degree and completion of a principal training program or a master's degree (Office of the State Superintendent of Education, 2012). New Jersey requires either a master's degree in a designated field (educational leadership, curriculum or instruction, or management) or a master's degree in another field combined with a principal training program, as well as graduate-level credit hours in certain subjects that promote student learning and an internship in educational leadership. These education requirements are in addition to passing the certification exam and having five years of prior education experience (N.J.A.C 6A:9-12.5).

Cheney and Davis (2011) reviewed state policies on licensure and did not find any states that require performance-based assessments (e.g., assessments that incorporate a practice teacher evaluation) to receive an administrator license; Briggs (2013) confirms that state policies do not focus on

demonstrating competence in any areas shown by research to matter for principal effectiveness. However, some states (including Illinois, Louisiana, and New York) have recently included performance evaluations in the licensure renewal process (Cheney and Davis, 2011) and more states may have included performance evaluations in recent years. As of 2013, Indiana, Minnesota, and New York were planning to incorporate performance-based assessments into their initial licensing process (Briggs et al., 2013). These types of policies create a multi-tiered licensure system, with a principal receiving an initial license for a limited number of years. To receive the next tier of license, the principal must have served for a specific number of years and demonstrate a certain number of professional development hours, positive evaluation ratings and/or student achievement gains (Shelton, 2011). However, only six states include a requirement for principal effectiveness in the renewal process (Briggs et al., 2013).

There is large variation between states in their licensure requirements, particularly for years of teaching and master's degrees, and, as seen from the literature review, there is a lack of clear guidelines on what type of education or prior professional experiences best prepares candidates to be a principal. As shown above in the three state licensure examples, some states (e.g., New Jersey), require a master's degree in education or educational administration; others (e.g., Maryland and Washington, D.C.) simply require a master's degree. Many states require completion of a state-approved master's or principal training program, creating another lever of influence for the state over school leadership: the ability to approve principal training programs (LeTendre and Roberts, 2005). The differences in required years of teaching also points to lack of guidance on this subject for policymakers. Overall, there is little or no evidence that these dimensions outlined in licensure requirements matter for principal performance; the variation in principal quality among schools suggests that the standards are not well-targeted to those areas of principal background that make a difference for students, such as experience managing adults.

Mitchem (2007) examined changes in the Texas principal certification standards in 1999 and 2000; these changes consisted of ending the practice of granting lifetime certification and instead requiring renewal every five years and approving alternative routes to certification. Allowing alternative certification routes allows potential principals to access a wider range of programs, many of which are lower-cost and more flexible than the traditional university programs; this lowers the entry costs into the profession. He found that these changes increased the quality of entrants (as measured by student test scores while the principal was a teacher) into the principal profession. This indicates that changes in certification have the potential to affect the quality of the pool of principals.

Principal education and training

Aspiring principals typically complete a master's degree in education or educational administration or an alternative approved principal-training program.[9] Programs in educational administration, which focus on preparing students for the principalship and other educational leadership roles, are designed for those who have teaching experience. Master's programs are available at brick-and-mortar universities and online through public, non-profit, and for-profit institutes of higher education.

It is the states that approve principal preparation programs, and many states have recently passed laws with requirements designed to improve principal preparation programs (Shelton, 2011). However, most states do not align the requirements for program approval with what research shows matters for principal success; in addition, re-approval of programs is rarely based on outcome data regarding program success (Briggs et al., 2013). Alternative approved principal programs—programs offered by various non- and for-profit organizations as alternatives to the programs offered by colleges or universities—are those that the state has decreed as fulfilling licensing requirements. These alternative programs often consist of coursework combined with a residency or internship at a school condensed into a year timeframe. Residencies and internships as part of principal training are becoming more common, both in university preparation programs and alternative programs (Zubrzycki, 2013). Many of the alternative programs do not result in a master's degree, setting them apart from the typical university program. Districts may work with local organizations to develop partnerships for principal preparation programs or the districts may develop their own programs. For example, New York City partners with the NYC Leadership Academy to offer the Aspiring Principals Program (APP), which comprises coursework and a year-long residency in a New York City school. Chicago partners with the University of Illinois at Chicago (UIC) and offers the EdD in Urban Education Leadership program. This program consists of coursework, an 18-month residency at a school, post-residency coaching for two years, and a capstone thesis, culminating in an EdD degree. Chicago and New York City also have partnerships with other principal training programs, including New Leaders. Charlotte-Mecklenburg Schools, a former New Leaders partner district, has partnerships with local universities that include residency or internship experiences in schools, resulting in the Leaders for Tomorrow program and the School Executive Leadership Academy program.

[9] Approved by the state in which the principal seeks certification.

Another national program, the National Institute for School Leadership (NISL) Executive Development Program, is designed as a curriculum that districts implement themselves. This program targets existing school leaders and school staff rather than recruiting outside the district as New Leaders does.

In work supported by the philanthropic Wallace Foundation, whose mission is to improve learning and enrichment opportunities for children, Mitgang (2012) recommends that leadership training programs should include selective admissions and training for improved instruction and school change; it also recommends that districts and states should set policy and create programs to improve leadership training, through levers such as principal certification and program accreditation, among others. Mitgang (2012) also points out that training at many university-based programs is outdated and does not account for district needs or the needs of a diverse student body; many programs also feature outdated internship structures and faculty with little school leader experience, and they do not provide exposure to leadership experiences. Orphanos and Orr (2013) found that participation in "exemplary" preparation programs (which include factors such as selective admissions, internships, and cohort structures) directly influenced leadership practices, which in turn indirectly influenced teacher satisfaction and collaboration. Braun, Gable, and Kite (2008) developed a list of essential school leader preparation practices, culled from the literature; these include a focus on school reform and social justice, standards-based content, a relevant curriculum, field experience/internship, mentoring/coaching, performance assessments, and a cohort structure. Principals who participated in preparation programs with these essential practices were associated with higher student achievement (Braun, Gable and Kite, 2008).

The prior professional and educational experiences of those who participate in principal training programs may have some influence on which program participants are hired and take principal positions; there is some evidence that those who had previously held leadership roles working with adults and had earned a master's degree or higher prior to entering the program were more likely to go on to the principalship (Muth et al., 2013).

Hiring

There is not an extensive body of research on principal hiring. Nationally, hiring practices vary widely between states and districts, and the pool of candidates may vary widely as well. Districts may be risk-averse in hiring principals with non-standard resumes or qualifications, particularly when there is district leadership pressure to hire quality principals, and focus on the traditional qualifications such as

years of teaching (Roza, 2003). This attitude may contribute to the perceived challenge of finding principals–Roza (2003) found that 82 percent of superintendents agreed that finding principals was problematic. Superintendents also seemed to value general leadership skills over a traditional education sector background for principals. Having a background of leading professional colleagues (corresponding with the human capital management role) was ranked as the most important skill by 83 percent of superintendents, while only 14 percent ranked teaching experience as the most important skill (corresponding to the instructional leader role) (Roza, 2003). There is evidence that hiring processes need to be revised to emphasize what research shows to be the key characteristics of successful principals, according to district superintendents (Rammer, 2007).

The principal pipeline is thought of as the mechanism through which districts find potential principal candidates. Some districts have a formalized pipeline process, wherein teachers and other school staff currently working in the district are recommended for leadership positions and are trained to rise to the principalship. For principal training, many districts have formed partnerships with principal preparation programs at local universities or nonprofits or have created their own principal preparation programs (Mendels and Mitgang, 2013).

Other districts have a more informal mechanism, such as when the current principal at a school encourages certain teachers to consider an administrative career path (often called “tapping” in the literature). Myung et al. (2011) studied this process in the Miami-Dade County Public School district and found that principals encouraged teachers who have more leadership experience showed bias in that they were more apt to encourage male teachers who were of the same ethnicity as the principal. Most principals report having been encouraged by a sitting principal when they were teaching. The authors conclude that succession planning and training may help to lessen any inherent bias and to select teachers to become principals based on skills and qualities.

A review of successful international education systems in Finland, Ontario, Canada, and Singapore corroborates the utility of a system of succession planning: “…as the examples from high-performing nations show, only a systemic approach will ensure that all schools and classrooms are staffed by highly effective leaders and teachers (Alliance for Excellent Education, 2011, p. 8)." However, few districts engage in regular and organized succession planning for school leaders.

Districts typically have three steps in the hiring process: recruitment, selection, and placement. Candidates for principal may be selected through an internal pipeline process or they may apply through an open system (typically online). Principal candidates are usually screened on the basis of their resumes

and certification status. However, these initial screening criteria may not align with indicators of what makes an effective principal. Schlueter and Walker (2008) examined the criteria that Iowa school districts used to screen principal candidates and found that there was a gap between the screening criteria and criteria related to creating change at the school level (including knowledge of curriculum and instruction, ideals, and beliefs).

Once through the resume screening, principal candidates typically go through an interview process that may involve various activities in the day of a principal (e.g., teacher evaluation workshops or data interpretation); the interview may be structured more like a typical job interview as well, depending on the district. There is potential for these interview screening methods to better align with criteria related to what makes an effective principal, as the interview affords an opportunity for task-based assessment that relates to effective actions in the school.

During the resume screening and interview process, districts may follow a set of standards that delineate key competencies required for the district. A commonly-used set of standards by districts are the ISLLC standards (Interstate School Leaders Licensure Consortium, 2008). Other districts have developed their own standards (Orr, King and LaPointe, 2010).

After the interview screening, in most districts principals are placed in an eligible candidate pool. Once in the pool, in some districts, principals then have access to listings of job vacancies and can apply directly with the schools. Other districts allow schools to select and contact candidates from the pool but do not allow candidates to apply directly. Typically, then there is an interview process with the school; in some districts—in Chicago, for example—the school has a large degree of discretion over hiring. Often the school-level decision and interviews are facilitated by the principal manager (the person in the district responsible for overseeing principals); in smaller districts this part of the process might be handled by the superintendent or other senior district leaders. Hiring and placement in a school occurs once the school and candidate agree on a match; in many districts, this hiring decision must be approved by the superintendent or chief academic officer (CAO).

The Influence of a Principal's Education and Prior Professional Experience

An individual's background includes characteristics such as gender and ethnicity, but in the context of this study we focus on the educational and professional experiences a principal has prior to leading a school. Different educational and professional experiences will affect how well a principal can

play the multiple roles required of a successful school leader; the success of the principal in these roles may have an impact on student outcomes and on his or her retention in a particular school.

Prior education and professional experience may influence the likelihood that a principal undertakes certain actions as well as the effectiveness of those actions; a principal with a background as an assistant principal, for example, may have a better understanding of how to manage people and other resources at a school and may be a more effective manager than a principal without that experience. Certain educational and professional experiences might better prepare principals to fill the key roles described above and may increase their effectiveness.

Table 2.1 below outlines the five major principal roles described above and suggests a prior professional experience that may result in the principal better fulfilling that role. For example, a principal with management experience in a past position might be better at managing people and other resources and at transmitting a vision than someone without that experience. Other background characteristics, such as attending a selective university (defined as one that typically admits students with high entrance exam scores and has a low overall admission rate compared to the number of applicants) or earning a master's degree in education, may signal that the principal is better prepared overall and may perform all of the roles better than a principal without a comparable educational background. However, there is limited research on how a principal's education and prior professional experience affect student outcomes (see, for example, Goldring et al., 2009) or retention or on the effect education and experience may have on a principal's ability to play certain roles. The research is focused on a narrow set of principal characteristics and many items that are included in Table 2.1 have not been examined in the literature.

Table 2.1. Principal Role and Corresponding Background Experience

Principal role	Prior professional experience
Human capital manager	Managing people in an education- or non-education-related position; serving as an assistant principal; master's degree in educational administration
School operations manager	Managing resources in an education- or non-education-related position; serving as an assistant principal; master's degree in educational administration
Instructional leader	Teaching experience; serving as a teacher leader (for example, helping to select new teachers or administrators or designing/delivering professional development for other teachers through a formal or informal role)
Visionary	Management experience in another education or non-education related position
Community and family outreach coordinator	Experience with outreach to parents/community in another education position (including as a teacher)

SOURCE: Author, summarized from literature review and theory regarding principal background experience

Relationship between a principal's education and professional experience and student outcomes

The following section consists of a review of studies that examine the influence of a principal's education and prior professional experience on student outcomes and on principal retention. This dissertation explores how a variety of principal education and professional characteristics, including college selectivity and degrees earned, influence student outcomes. The evidence available in the existing literature is mixed regarding the influence of a principal's education and experience on student outcomes; few outcomes have been tested repeatedly in different contexts. Many studies examined variables from both education and professional experience. Overall, I find evidence that principal education and professional experience do have an effect, but results for specific factors are mixed (particularly for years of professional experience).

The education of principals has been found to be related to student outcomes (see, for example, Coelli and Green, 2012; Valentine and Prater, 2011). Education broadly refers to the number of years in postsecondary education, degrees earned, subjects studied, and institutions attended. Using national data from the 1994-1995 Schools and Staffing Surveys (SASS), Baker and Cooper (2005) examined whether a principal's educational background influenced whether the principal hired teachers from "selective" undergraduate institutions, or those institutions who typically accept a small fraction of applicants and whose student bodies demonstrate high achievement on standardized tests (teachers who attended selective institutions have been linked to improved student outcomes in various teacher studies). The

researchers used a five-point ranking of selectivity of undergraduate education as their dependent variable and found that principals who attended more selective undergraduate universities tended to hire teachers from more selective undergraduate institutions, implying that principals educational backgrounds influence their teacher hiring decisions. They also found that principals sorted into certain types of schools based on their educational backgrounds: principals who attended more selective universities were less likely to work in high-poverty schools. Alternative and vocational schools were less likely to have principals from selective universities.

Knoeppel and Rinehart (2008), in their study of Kentucky elementary schools, found that principal background characteristics, including Kentucky principal certification test score, principal preparation group (a variable reflecting changes in Kentucky licensing standards), post-master's degree coursework, and instructional supervisory certificate explained 3.9 percent of the variation in student achievement gains. Post-master's degree coursework was found to have a positive relationship with student achievement gains; more recent training as a principal (reflected by preparation group) also had a positive relationship with student achievement gains.

Fuller et al. (2011) found in Texas schools that principals who attended principal preparation programs at a research institution that issued doctoral degrees were more effective in increasing overall teacher qualifications than those who attended preparation programs at regional institutions. They did not find an effect from years of experience in any educational role (including teaching experience). Fuller, Young, and Baker (2007) found that student achievement varied according to the type of institution in which the principal enrolled for a principal preparation program.

In contrast, Clark et al. (2009) did not find evidence that the selectivity of the principal's undergraduate or graduate institution or his/her prior work experience affected student outcomes, with the exception of serving as an assistant principal in the same school prior to becoming principal. Clark et al. (2009) also found that principal experience at a school was positively related to math achievement and negatively related to absences. Fuller et al. (2007) found that principal tenure seemed to be associated with less teacher turnover and higher student outcomes.

Brewer (1993) found that a principals' administrative experience and teaching experience were not significantly related to a gain in test scores for students between their sophomore and senior years of high school. He also found that principal tenure at the current school was not related to student outcomes, but he determined that principal tenure may have an indirect effect through teacher selection, as by staying in the school principals have the opportunity to select more teachers that are "in tune" with

the principal and his or her goals for the school (Brewer, 1993). Dhuey and Smith (2011), using data from British Columbia, Canada, also found that principal experience does not affect student performance, but that improving principal quality (as measured by calculating principal fixed effects that capture time-invariant principal factors such as prior education, professional experiences, demographic factors, and leadership ability) by one standard deviation is associated with a 0.3 standard deviation increase in student math and reading achievement.[10]

Zimmer and Buddin (2005), in their study of principals in California charter schools, found that the number of years of teaching experience a principal had before becoming a principal had no effect on student test scores. They also found that a principal's prior experience in an administrative role had a negative effect on student achievement in math and reading at non-charter high schools but no effect for students at other grade levels. The authors determined that tenure positively influenced math achievement in non-charter middle and high schools but not in charter schools or elementary schools (Zimmer and Buddin, 2005).

Relationship between a principal's education and professional experience and principal retention

Principals frequently leave their schools; turnover rates approach 30 percent in many districts, indicating that nearly one-third of principals leave their schools each year (Fuller and Young, 2009). Turnover is typically greater in low-performing schools than in high-performing schools (Clark, Martorell and Rockoff, 2009). Principals may leave a school for a variety of reasons – perhaps to take a position in a better-paying district or in the district central office, or to change careers entirely. Principals may also be reassigned by the district central office, and thus not all principal turnover behavior is voluntary or indicative that individuals are seeking better opportunities (Farley-Ripple, Solano and McDuffie, 2012). Farley-Ripple et al. (2012) found that administrative experience and teaching experience were related to principal mobility between schools, indicating that principal education and professional experience may have an influence on principal retention.

The effect of a principal on student outcomes grows over time, with first-year principals reaching only approximately one-quarter of the impact they may have over time (2012). For principals to influence student outcomes, they must remain in their schools for several years, though as Farley-Ripple et al. (2012) point out, the desirable time period of retention is not clear.

[10] The authors define principal quality as the distribution of principal fixed effects in a statistical model of student-, principal-, and school-level factors on student test scores.

Principal turnover may have a negative effect on students. Miller (2013) found that student performance typically declined before a principal departed the school and for two years after the departure; in year three of the new principal's tenure, student performance began to increase and reached its pre-departure level at about five years of principal tenure. This shows that principals may leave their school as a reaction to student outcomes and that a departure may have long-lasting effects.

In a study of Miami-Dade County schools, low principal retention at a school was shown to result in lower student test scores and more teacher turnover than in schools with high principal retention, and these results were more marked in low-income schools (Béteille, Kalogrides and Loeb, 2011). Béteille et al. (2011) also found that most new principals in high-poverty schools have no previous leadership experience and transitioned to lower-poverty schools when able to, on average. Their results "…suggest that principals' desire to work in schools with more affluent and high achieving students reduces disadvantaged students' exposure to experienced and stable school personnel (both teachers and principals) which has negative consequences for their learning" (Béteille, Kalogrides and Loeb, 2011, p. 27).

Branch et al. (2012) found that principals in the lowest quartile of effectiveness (as measured by student achievement data) and in the highest were more likely to leave their schools, with many of these taking other principal positions. Burkhauser et al. (2012) found that high principal turnover negatively affects student outcomes and suggested that improving the principal placement process (perhaps through improving the match between principal and school and thus reducing turnover) could have an effect on student achievement.

Tekleselassie and Villarreal (2011), in their study using nationally representative data from the 2003-2004 Schools and Staffing Survey, found that principal age, gender, and professional experience were related to turnover and the desire to leave one's school. Papa (2007) found that schools in New York with less-qualified teachers and more at-risk students had higher leadership turnover; principals with less than five years of district experience were more likely to leave their principal positions.

Fuller and Young (2009) explored principal background, tenure, and school characteristics and found that turnover is highest in low-achieving and high-poverty schools. They also found that principal background, such as age, race, gender, and certification test results had little influence on tenure. Loeb et al. (2010) showed that low-performing, high-poverty schools tended to receive placements of inexperienced or new principals and confirmed that these low-performing schools have higher turnover, possibly reflecting a mismatch between principal preferences and school assignment by the district.

The research cited above suggests that principals do have an effect on student achievement and that this effect may vary based on the principal and school characteristics. The evidence shows a relationship between student outcomes and a principal's education, experience as a teacher, administrator, and/or assistant principal, and tenure.[11] The principal's education and experience may influence the principal's ability to play the various roles outlined above. The research also suggests a relationship between a principal's education and experience and how long he or she stays in the job. However, these observable characteristics do not capture all dimensions of what we would expect based on the emerging literature to be important in a school leader, such as the ability to transmit a vision and to manage teachers and other staff members.

Decisions made about changing the composition of the principal pool and improving selection and placement processes may have a corresponding effect on outcomes. As Branch et al. (2012, p. 28) conclude, "…From a policy viewpoint, added attention to the selection and retention of high quality managers would have a very high pay-off." To make a difference for students, a principal needs to be both effective and stay at the school, likely for multiple years; any effect on students is conditional on retention of the principal.

Summary

This literature review examined ways that principals influence student outcomes and the roles principals play in their schools. Five central roles were identified: human capital manager, school operations manager, instructional leader, visionary, and community and family outreach coordinator. I also reviewed the research on how student outcomes and principal retention may be influenced by a principal's education and professional experience. I explored principal certification, hiring, and training practices and summarized the typical requirements for state certification, the process for district hiring, and the types and content of training programs for principals. Throughout this review, I identified certain background experiences that have been found to be related to student outcomes and retention in the literature; in turn, I examined those background experiences in my analysis if those data were available (e.g., having served as an assistant principal). Identification of the principal roles helps to understand the mechanisms for why principal background may be related to student outcomes, as

[11] Many of the studies examined here use tenure, which is typically the number of years a principal has been in his or her position; this dissertation examines retention, a related concept, which is whether the principal remains in his or her school the following year.

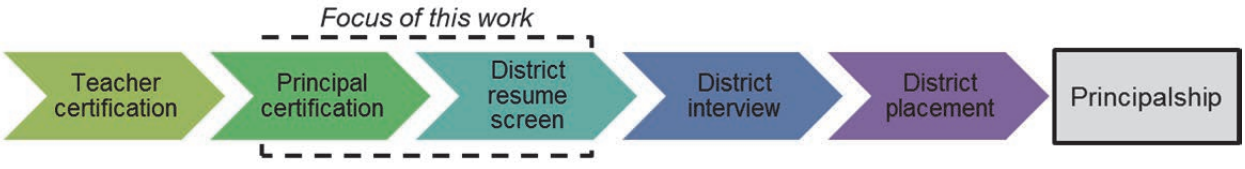
principal background influences how principals play their roles; for example, having supervised adults may be related to the human capital manager role. The review of principal certification, training, and hiring processes sets the stage for an exploration of how to best revise state certification and district hiring policy and modify training program curricula to incorporate principal background that reflects the five roles. However, there are areas where existing research falls short, and this dissertation seeks to bridge some of those areas.

Bridging School Leadership Theory, Evidence, and Practice

We see from the research outlined above regarding the framework of principal influence and principal roles, evidence of principal background influence, and the screening processes that gaps exists between theory on the roles of a school leader and how a principal influences student outcomes, evidence, and practice. There is a lack of research related to how various factors, including principal background experiences, are related to principal roles, and in turn how those factors are related to student outcomes and to principal retention. As Smylie et al. (2005, p. 139) mention in their review of the evidence on principal preparation, "…we face the problem of school leader development with remarkably little empirical evidence to guide us." More evidence is needed regarding what aspects of principals' prior professional and educational experience seem to matter once they are leading a school in order to guide states and districts on certification and hiring criteria; this work seeks to contribute to filling those gaps. States and districts may wish to better align their certification and hiring criteria to those indicators that are related to principal effectiveness, but until there is more clear direction from the research literature these entities have little guidance.

Figure 2.2 below depicts the typical path a principal takes from teacher certification to becoming a principal. This work will focus on the steps of principal certification and district resume screen. These steps are affected by both district and state policy. State policy governs principal certification through licensing requirements and principal preparation program approval and district policy governs resume screening.

Figure 2.2. Path to the Principalship and Focus of this Work



SOURCE: Author (from discussions with Lynn Scott)

By analyzing how public school principals' educational history and prior professional experience are related to student outcomes and principal retention for the first research question, this work helps to bridge the gap between theory and evidence and links principal background, principal roles, and student outcomes and retention. Background characteristics that are related to student outcomes and principal retention (through the principals' roles) were identified through that analysis. Through answering the second research question on how principal background information can be best incorporated into state certification guidelines and district-level hiring practices, this work bridges the gap between evidence and practice and provides research-based guidance for states and districts.

3. Data & Methods

This chapter describes the data and the methodology used in this study, as well as the study's inherent limitations. In the previous chapter, I described the findings of the first step in my approach to this work—an extensive literature review. The methods described in this chapter build on the literature review by analyzing relevant data to determine the strength and potential impact of the connections between a principal's education and prior professional experience and student outcomes and principal retention.

Data

I employed four sources of data. The first data source was interviews with and surveys of district leaders and staff; these data were integrated with other research findings on state certification and district hiring practices, as well as with the analysis results from the other three data sources, to inform the second research question: How can state certification policies and school district hiring practices incorporate what we know about the education and professional experiences that make effective principals to improve the quality of district hires?

The next three sources of data (resumes, administrative district data, and IPEDS data) were combined to inform the first research question: How are public school principals' education and professional experience related to student outcomes and principal retention at the school?

I extracted data on education and prior professional experience from the resumes of participants in the New Leaders alternative principal preparation program. The New Leaders program is particularly well-suited as a data source. It has been training principals in select districts for over a decade, which provides historical data, and its principals are now working in many school districts nationwide, which allowed me to analyze and compare data in several districts. Also, aspects of the New Leaders program such as the residency year and extensive candidate screening are used in many other alternative preparation programs, so I could compare data from similar programs.

Through the New Leaders evaluation study of which this dissertation is a part (see Chapter 1 for a description of New Leaders), I had access to school- and student-level administrative data from school districts in Chicago, New York City, Memphis, and Oakland. These data provided student information

(including student outcome), principal tenure information (which was used to create the retention outcome), and school-level information such as the number of students in a school.

Finally, the fourth data source was the Integrated Postsecondary Education Data System (IPEDS), which is collected and made available by the National Center for Education Statistics (NCES). These data provide information on postsecondary institutions and were used to determine the selectivity of undergraduate institutions.

All of these data sources are discussed in more detail below.

Survey and interview data

Information on district- and school-level hiring practices was used to place the findings of this study in context (as districts can operate very differently) and provide information to address the second research question. Information about the districts' principal recruitment, selection, placement, and evaluation, and their level of autonomy in decision-making was available from the records of the annual interviews with district leaders conducted as part of the RAND New Leaders evaluation. For the four districts included in this study, basic information regarding district- and school-level hiring practices was compiled along with state certification information (see Chapter 5 for a discussion of this information and findings from the survey described below).

From February 2014 to June 2014, I conducted a survey directed at district personnel who were responsible for hiring school principals. (The findings from the survey are presented in Chapter 5 and integrated with other data to address the second research question.)

The survey contained 16 content questions related to the professional capacity of the respondent and principal recruitment, screening, interviewing, and placement (see Appendix A for the full survey). Eleven questions were multiple-choice and five were open-ended. The survey was administered online using Google™ Forms; respondent names and contact information were not recorded, although the respondents' school districts and the responsibilities associated with their positions were collected on the survey form.[12]

District staff were contacted through email and invited to complete the survey. They were informed that they could forward the invitation to others in their district or in other districts and thus we are purposefully unsure of the identity of respondents from each district.

[12] The survey was deemed exempt from further review for human subjects purposes in November 2013 by RAND's Institutional Review Board.

All current and past New Leaders partner districts were contacted. We reached out to the contacts at the districts and asked for suggestions for an appropriate person in the district to contact who was responsible for hiring principals. Through my professional network, approximately 20 districts in addition to the New Leaders districts were contacted using a similar method; I reached out to contacts I knew who worked at school districts and asked for their suggestions as to who in their districts would be most appropriate to send the survey to. In both the New Leaders and professional network invitations, the initial contact was asked to provide either contact information for their suggested staff members or to forward the email directly.

The last method of contacting potential survey respondents was cold-emailing. Approximately 95 districts were contacted using this method. I created a list of medium and large urban districts across the country and investigated their human resources personnel using the school district websites. In many cases, I was able to identify a district staff member responsible for principal hiring and emailed that staff member directly asking him or her to complete the survey or to send it on to a more appropriate colleague. Reminders to complete the survey were emailed to those districts (cold-emailed only) who had not completed the survey in May 2014.

Given the open nature of the survey invitation process and the purposeful lack of recording of respondent identity, a precise nonresponse rate cannot be calculated. Individuals in approximately 133 districts were contacted and invited to complete the survey. I recorded 35 responses from 33 districts or charter management organizations (CMOs), for an approximate response rate of 25 percent. This response rate is relatively low, which may indicate bias as non-respondents may be different than respondents. However, this survey sample was not designed to be representative and all results should be interpreted as just the responses of the 33 districts, rather than representing all 133 contacted districts or all school districts in the United States. Three staff members responded from Atlanta Public Schools; from all other districts or CMOs only one staff member responded. The responses from Atlanta Public Schools were collapsed into a single response to avoid triple-counting the district. I used the following methodology: I kept the record for the respondent with the most job functions (i.e., widest range of experience related to principal hiring). If the other two Atlanta Public Schools responses were the same (and differed from the respondent with the most job functions), I replaced the entry of the respondent with the most job functions with the most common answer. For open-ended questions, I combined the responses of all three Atlanta Public Schools respondents and reviewed all entered information.

Data from the principal survey was merged with publicly-available information from the National Center for Education Statistics (NCES) and from Collegiate Academies (one of the CMOs), as data on that CMO was not available from NCES. Survey respondents are not a representative sample of all districts in the country; the findings provide context for how districts hire principals but actual district policies may vary across the country.

Data from the resumes of participants in the New Leaders program

New Leaders selection standards

The New Leaders program selection standards have varied slightly over time in their wording and focus. But these standards fall into several broad categories that correspond to the roles of principals: belief that all children can succeed (visionary role); a drive for results, problem-solving skills, and project management skills (school operations manager role); teaching knowledge (instructional leader role); self-awareness, commitment to lifelong learning, and communication skills (visionary and community and family outreach coordinator roles); and interpersonal skills, and experience in adult leadership and team-building (human capital manager role).

Current selection standards guide admissions and focus on four areas: personal leadership; instructional leadership (corresponding to the instructional leader role); culture leadership (corresponding to the visionary and community and family outreach coordinator roles); and adult and team leadership (corresponding to the human capital management role; New Leaders, 2013b). In addition, each location has its own requirements, typically dictated by the principal licensing standards for that state; these requirements include degrees (e.g., a master's degree), years of teaching experience required, and certifications.

The selection standards used for Cohort 6 (principals trained by New Leaders in academic year 2006-07) are contrasted with the selection standards for Cohort 10 (2010-11) in Table 3.1 below. This study used data from Cohort 6 (2006-07) through Cohort 10 (2010-11). Standards for Cohorts 6 and 10 comprised six descriptions that fit within the broad categories mentioned above and shown in table 3.1. We see that belief in all children's success in the Cohort 6 standards evolved to "belief and urgency" by Cohort 10. A drive for results in Cohort 6 became two phrases in Cohort 10: "personal responsibility and relentless drive", and "results orientation". The selection standards for problem solving, project management, teaching knowledge, communications, and interpersonal skills are the same in Cohorts 6 and 10. Self-awareness and lifelong learning were two standards in Cohort 6 and were combined in one

standard for Cohort 10. However, the language for that standard stayed similar between Cohorts 6 and 10. Between Cohorts 6 and 10, the language changed from team-building to adult leadership for that category. Overall, for some standards, the language used shifted between Cohorts 6 and 10, but the broad categories of selection standards were the same over time.

Table 3.1. Comparison of New Leaders Selection Criteria among Selected Cohorts

	Belief in all children	Drive for results		Problem solving	Project management	Teaching knowledge	Self-awareness & lifelong learning		Communication	Interpersonal Skills	Adult leadership/ team-building
Cohort 6	Belief in the potential of <u>all</u> children to excel academically	Unyielding focus on goals and results		Problem solving	Project management to deliver results	Knowledge of teaching and learning	Commit-ment to ongoing learning	Self-awareness	Communication and listening	Interpersonal skills	Team building
Cohort 10	Belief and urgency	Personal responsibility and relentless drive	Results orientation	Problem solving	Project management to deliver results	Knowledge of teaching and learning	Self-awareness and commitment to ongoing learning		Communication and listening	Interpersonal skills	Adult leadership

SOURCE: New Leaders, from personal communication with and documentation provided to author

Overall, we see that the shifts in standards were mostly small changes in language and refining phrases through splitting or merging standards. In particular, there were few substantial changes to the selection standards between Cohorts 6 and 10, indicating that the pool of principals used for this study faced similar selection standards regardless of their New Leaders cohort year. Changes in selection standards affect the composition of the principals in this sample, as all principals in the study had to meet the selection standards in order to enter the New Leaders program. Thus, all principals in the sample met certain minimum requirements of degree, years of teaching and certifications, and additional skills and beliefs as detailed in the selection standards. In addition, we see that the selection standards represent the five roles identified here.

Resumes and district selection

To support RAND's evaluation of New Leaders, I gained access to the resumes of all participants in the principal training program from 2005-06 through 2010-11 (totaling more than 300 resumes). Many of these program participants went on to lead schools in their districts.

The New York City and Chicago school districts are the two largest in the country and had correspondingly larger shares of principal candidates and placements; I chose to include data from these two districts to ensure large numbers of principals in the study sample. The Charlotte, Newark, Prince Georges County, and Louisiana partnerships are more recent, with smaller numbers of principals than the longer-established partnerships and fewer years of data available, so I did not select them for the study. Milwaukee is no longer a location for the Aspiring Principal Program and placements no longer occur, making it a less-than-ideal district to select for data entry.

That left the possible districts in Baltimore, Washington, D.C., Memphis, and Oakland. All four districts had roughly similar numbers of New Leaders placements and established partnerships. Washington, D.C. was decided against given the structure of the district; the divided administration between district-run schools and charter schools, as well as the unique state structure, made it less comparable to other districts in the country. Oakland and Memphis were selected to provide more geographic reach with this study, given their respective western and southern locations in the country. The final selection of Chicago Public Schools (CPS), New York City (NYC) schools, Memphis City Schools (MCS)[13], and Oakland Unified School District (OUSD) provided over 150 principal candidates

[13] MCS merged with Shelby County Public Schools in the 2012-2013 academic year; this does not affect the data for this study as the study time span is up to 2011-2012 academic year.

for analysis. Additional districts were not entered given the time investment needed for data entry of each resume.

Data entry

I entered information on principal education and professional experience gleaned from the resumes. The principal training program (New Leaders) was not part of the information recorded for the analysis, as all of the principals in my sample were trained by New Leaders and the resumes represented the point in time before entry into the principal training program. The resume information was not in a usable format for data analysis, as resumes were either scanned to create an electronic copy or provided by New Leaders in an electronic document format. The resume information was entered by hand by the author. A list of potential variables to enter from the resumes was informed by the literature on principal characteristics and background. As I began the data entry, I modified the list if a "new" variable was apparent on the resumes and seemed pertinent (e.g., the variable for international experience was added after I began data entry). When I added a new variable during the process, I went back to the previously completed resumes and entered any new information.

Data were entered in an Excel spreadsheet; this method was chosen for ease of use. Given that I was the only coder, it was not deemed necessary to create a more user-friendly database system as might be advantageous to reduce errors when employing multiple coders. Duplicate coders were not feasible given the sensitive nature of the data, the limited budget for the project, and the fact that many districts are unlikely to have duplicate personnel available to categorize resume characteristics. Explicit rules for coding each of the resume variables were developed, documented, and followed for all resumes to ensure reliability (see Appendix B for detailed rules for each variable). When a judgment call had to be made, this was documented either in a corresponding text-based explanatory variable or in a comment in the Excel spreadsheet. Variables that could not be easily coded were not used for this project for two reasons: 1) the reliability of the variable would be suspect; and 2) it would be challenging for a district or state to incorporate this variable into their screening or certification requirements. Each principal was assigned a unique identification number by the New Leaders program; this identification number was already present in the school data, facilitating the linking of the principal data with the school data. I first linked the principal data to all available years of student-level data (i.e., all years where that principal was present at the student's school), then aggregated the data up to the school level.

Composition of the resume sample

The pool of principals trained by New Leaders may be different from the pool of all principals in a district given the selective admissions of the program (including the selection standards). However, in order to be hired by the district and placed at a school, the principal must have met the district's minimum requirements, so we know that all principals in the sample met the New Leaders requirements as well as the district requirements. District requirements may have been less stringent, similar, or more stringent than the New Leaders and state standards. A description of district hiring processes and standards is available in Chapter 5.

Data obtained from school districts in Chicago, New York City, Memphis, and Oakland

RAND's evaluation of New Leaders used student-level databases constructed from district administrative records in the impact evaluation of the New Leaders program. As part of the larger evaluation, the study described in this dissertation also had access to these data.

The student-level data are available for all students and schools in the districts, including those who were led by a New Leaders-trained principal, and span a number of years. For all districts, there are data from at least the 2005-2006 school year to the 2011-2012 school year. In some districts, the data begin in an earlier school year.

The student-level data include control variables for all districts and grades, student test scores in math and reading for selected grades in all districts, and other student outcomes such as attendance, graduation, dropout, completion of advanced placement/international baccalaureate (AP/IB) high school courses, and, in some districts, suspensions and expulsions. Student test scores in math and reading were standardized as z-scores by test, grade, and year.[14] Control variables at the student level include free and reduced-price lunch (FRPL) status[15], gender, race/ethnicity, limited English proficiency (LEP) status, and birthdate.[16] Principal tenure information (from which the retention outcome was created) and other school-level variables, such as number of students at the school, racial/ethnic composition of the student body, and whether the school is a charter school are also available. The data are roughly equivalent in all districts and the same basic set of variables is available, as the New Leaders evaluation combines

[14] A z-score is a variable standardized using the normal distribution, where the mean is zero and the unit is standard deviations. The z-score can be positive or negative (above or below the mean).

[15] Due to regulations in certain districts, free and reduced-lunch status may not be available at the student level.

[16] This variable is available in most districts and is used to calculate whether a student is considered older than expected for their grade.

estimates for all schools to examine program effect over all districts. The school-level retention variable marks whether the principal stayed at the school in the following year. To create the district-level retention variable, I pooled all years of data and examined how many years each principal was present in the district data. From this, a variable was created that marks if a principal was in the district for two or more years (compared to only staying in the district for one year).

Data from the Integrated Postsecondary Education Data System (IPEDS)

One of the background characteristics that can typically be pulled from principals' resumes is their undergraduate institutions. I combined these data with IPEDS information to create a selectivity index for the undergraduate institutions of the New Leaders principals. Barron's selectivity index is often used in the literature to examine selectivity (see, for example, Long, 2010; Koljatic and Kuh, 2001); however, this index is part of a restricted-use data file, while IPEDS data through 2013 are publicly available. Barron's index uses student SAT and ACT scores, the GPA and class ranking required by the college for admission, and the overall college admission rate to classify colleges into six levels of selectivity (Smith, Pender and Howell, 2013). The IPEDS data include information on a number of aspects of postsecondary education and information for all U.S. postsecondary institutions that participate in federal student financial aid programs. I accessed IPEDS data from 2009 to 2011 and incorporated two available aspects of postsecondary selectivity into an index variable: admissions percent and college entrance examination scores (SAT and ACT). The 2009-2011 data were selected as they are the later years in our sample of resumes; it was not feasible to use selectivity data from the year of undergraduate entrance for each principal due to coding constraints as well as entrance year omission on the resumes. For the admissions percent, I calculated the percent not admitted for 2009 by taking the number of applicants not admitted over the total number of applicants. If data were not available for an institution in 2009, I used the same statistic for 2010; if neither 2009 nor 2010 data were available, 2011 data were used. SAT scores used were from 2011; the 75th percentile SAT score for math was added to that for reading to create a composite SAT score. For ACT, I used the 75th percentile of the composite score; the composite score was reported in IPEDS. I then weighted admissions as 50 percent of the selectivity index and SAT and ACT at 25 percent each. This selectivity index variable was available for most of the undergraduate institutions attended by New Leaders principals; those who attended university outside of the United States were not included for this variable, however, as IPEDS only covers U.S. institutions. Given the missing data for this variable, for the analysis I created a dummy

variable for attending a selective institution (defined as being in the top 50 percent of selectivity based on the index). Those with no selectivity index were coded as zero for this variable.

I tested the correlation between my selectivity index and Barron's selectivity index through a published list of Barron's index rankings for 236 postsecondary institutions in the top four selectivity categories (Leonhardt, 2013) and merging this into my data; 74 institutions matched between my data and the Barron's list. The two indexes were highly correlated and the correlation was statistically significant to the 1-percent level (see Appendix C for results).

Methods

Statistical analysis

To explore the connections between principals' education and prior professional experience with student outcomes and principal retention (research question 1), I analyzed principal resume, student, school, and IPEDS data. Principal data were arrayed with school data and IPEDS data to create a database with student outcome data; data on principal characteristics, education, prior professional experience, and retention; and student- and school-level control variables. The outcomes examined were student math scores, student reading scores, attendance, the average percent of students eligible for free and reduced-price lunch, school-level retention, and district retention. All outcomes other than district retention were at the school level. The variables themselves were examined using descriptive statistics and the relationships among these variables were analyzed using regression models. The choice of regression model may have a large influence on the reported effect of a principal on student learning (Grissom, Kalogrides and Loeb, 2014) and thus various regression models were considered.

New Leaders principals who did not have a certain background characteristic were compared to those New Leaders principals who did have the background characteristic in question. Statistically significant differences between these two groups in terms of student outcomes and likelihood of principal retention were explored through the magnitude of the coefficient and the p-value on the corresponding background characteristic. As this project examines characteristics of principals before they began leading schools, principal fixed effects were not included in the models, and since the resume information represents a single point in time, the observed principal characteristics did not change even as they were part of the data over time. School fixed effects were also not included, as in many cases all the years that principals were part of the data they remained at the same school; including school fixed effects would thus also control for the principal characteristics of interest. In light of this, a number of

school-level time-varying control variables were used to help control for the differences between schools and allow for the comparison of principal characteristics in all models but the district retention model (in which only district variables could be used as school and time variation were collapsed in that model).

Use of value-added modeling was considered, but was not used for this analysis as the purpose of this study was not to identify the effectiveness of individual principals but rather how certain background characteristics relate to student outcomes and principal retention. Hierarchical linear modeling was also considered, but given that most principals do not switch schools in this sample, the distinction between school and principal levels would not have been great.

Descriptive statistics such as tabulations, cross-tabulations, and averages were calculated on both the sample of principal observations and of school observations. This was done to explore the percentage of the sample included in different variables and see the averages of certain variables in order to better understand the sample used in regression analyses.

For the regression analyses, I used multivariate ordinary least squares (OLS) regression analysis and logistic regression analysis. To build these models, I examined the bivariate relationship between the outcome and the variable of interest individually. I tested correlations between sets of similar variables to determine which variables might be highly positively correlated and thus measuring similar concepts related to the outcome; in determining which variable to use from a set of correlated variables, I selected variables that met the following criteria: highly statistically significant relationships with the outcome, strong connection to theory, and large number of observations. I then built the multivariate model by including variables that had a statistically significant bivariate relationship (except those highly correlated to other variables with a stronger statistical significance in the bivariate relationship) as well as variables with a strong theoretical relationship with the outcome. The final model included those variables with statistical significance with the outcome in the multivariate model (which was built by including variables with a strong bivariate relationship) as well as those variables with a strong theoretical relationship with the outcome.

I tested the models for heteroskedasticity through examining residual plots and conducting statistical tests (including White's test and the Breusch-Pagan/Cook-Weisberg test). The models for math scores, reading scores, and free and reduced-price lunch eligibility showed evidence of heteroskedasticity; robust standard errors clustered at the school level were used to mitigate this issue. The attendance model also showed evidence of heteroskedasticity; I examined the Cook's D statistic and

identified three observations that were much higher than the typical threshold for this statistic. I removed these observations from the model which helped the issue with heteroskedasticity but did not solve the issue; again, robust standard errors clustered at the school level were used to mitigate the issue. For logistic regression models, I tested the model using a specification link test to examine model specification; no errors were indicated by this test for either logistic regression model. However, robust standard errors clustered at the school level were used for the logistic regression models to be more conservative in determining statistical significance of coefficients. Prior to determining a final model, I removed the principal variables with statistically significant relationships to the outcome from the model and ran the model without these variables to ensure that the other previously non-statistically significant coefficients in the model did not become statistically significant at a 10-percent level or above. I tested the final model with different types of standard errors: regular, robust, robust clustered at the school level, and robust clustered at the principal level.

For categorical variables, such as the district a school was located in or the year of the observation, one category was omitted (the reference category) and indicator variables for the other categories were included; this resulted in comparing the indicator category to the reference category in the analysis. For example, the year 2008 was excluded and variables were included for the years 2009, 2010, 2011, and 2012 in certain models; the coefficients on each of the four indicator variables for years should be interpreted as the comparison between that year and the reference year as relates to the outcome variable.

The basic longitudinal school-level model for student outcomes and FRPL at the school level followed this general equation structure:

$$Y_{pst} = \beta_1 X_{pst} + \beta_2 D_p + u_{pst}$$

where Y_{pst} represents a school-level outcome for school *s* under principal *p* in year *t* (e.g., average student achievement in math), X_{pst} is a vector of observed time-varying school-level covariates (e.g., percent of free and reduced-price lunch eligible students at the school or number of students at the school), D_p is a vector of observed principal background characteristics that do not vary by time or school, and u_{pst} is a random disturbance term. The variables of interest for this study are contained in the D_p vector. Through this equation, school-level outcomes are a function of the school environment, aggregated student characteristics, and principal characteristics.

Specifically, the equation used for analyzing the relationship between principal education and professional characteristics and average z-score in math using OLS regression was:

$$Math\ zscore_{pst} = \beta_1 X_{pst} + \beta_2 D_p + u_{pst},$$

where the vector X contains average z-score in reading, indicator variables for years (2009-2012), indicator variables for districts (Chicago, Memphis, New York City), an indicator variable marking charter school status, an indicator variable marking whether the school was a high school, and the average percent of students old for their grade at the school. The vector D contains a variable denoting the number of years of classroom teaching experience as well as indicator variables for the following principal characteristics: international experience, charter school experience, any supervisory experience, private sector experience, taught math, and mentioned community and family outreach on their resume.

The equation used for analyzing the relationship between principal education and professional characteristics and average z-score in reading using OLS regression was similar to the math equation but included a different selection of school and principal variables. The equation was:

$$Reading\ zscore_{pst} = \beta_1 X_{pst} + \beta_2 D_p + u_{pst},$$

where the vector X contains the average z-score in math, indicator variables for years (2009-2012), indicator variables for districts (Chicago, Memphis, New York City), indicator variables marking elementary school and middle school status, and the average percent of FRPL and of white students at the school. The vector D contains a variable denoting the number of years of classroom teaching experience as well as indicator variables for the following principal characteristics: taught reading, any supervisory experience, and mentioned community and family outreach on their resume.

The attendance equation was:

$$Attendance_{pst} = \beta_1 X_{pst} + \beta_2 D_p + u_{pst},$$

where the vector X contains indicator variables for years (2009-2012), indicator variables for districts (Chicago, Memphis, New York City), an indicator variable marking charter school status, and the average percent of white, male, FRPL, and old for grade students at the school. The vector D contains a variable denoting the number of years of classroom teaching experience as well as indicator variables for the following principal characteristics: master's in education, elementary school experience, private sector experience, any supervisory experience, assistant principal experience, and mentioned community and family outreach on their resume.

I analyzed the relationship between principal education and professional experiences and the average percent of FRPL students at a school in order to examine possible school sorting and preference

effects. It may be that more highly-qualified principals select away from high-poverty schools. The equation used for the OLS regression that examined school sorting was:

$$FRPL_{pst} = \beta_1 X_{pst} + \beta_2 D_p + u_{pst},$$

where the vector X contains a variable for the average z-score in reading, indicator variables for years (2009-2012), indicator variables for districts (Chicago, Memphis, New York City), and the average percent of mobile and white students at the school. The vector D contains a variable denoting the number of years of classroom teaching experience as well as indicator variables for the following principal characteristics: attended a highly selective undergraduate institution, had experience with diverse populations, middle school experience, assistant principal experience, mentioned community and family outreach on their resume, any supervisory experience, and private sector experience.

The equation for principal retention at the school level used for logistic regression modeling was:

$$\Pr(Retention_{pst}) = \frac{e^f}{1+e^f}; f = \beta_1 X_{st} + \beta_2 D_p + u_{pst}$$

where the left-hand side is the probability principal *p* is retained in school *s* in time *t*. The function *f* is a function of X_{st}, a vector of observed time-varying school-level covariates (composed of indicator variables for 2009 and 2011 – 2010 was not included as all observations were not retained; indicator variables for Chicago, Memphis, and New York City; an indicator variable for high school; and the average percent of students old for their grade), D_p, a vector of observed principal background characteristics that do not vary by time or school (composed of a variable denoting the number of years of classroom teaching experience as well as indicator variables for the following principal characteristics: mentioned community and family outreach on their resume, private sector experience, any supervisory experience, assistant principal experience, and principal experience), and u_{pst}, a random disturbance term. The variables of interest for this study are contained in the D_p vector. Through this equation, principal retention is a function of the school environment, aggregated student characteristics, and principal characteristics.

The equation for principal retention at the district used for logistic regression modeling was:

$$\Pr(Retention_{pl}) = \frac{e^f}{1+e^f}; f = \beta_1 X_l + \beta_2 D_p + u_{pl}$$

where the left-hand side is the probability principal *p* is retained for two or more years in district *l* (as compared to leaving the district after one year). The function *f* is a function of X_l, a vector of observed district covariates (composed of indicator variables for Chicago, Memphis, and New York City), D_p, a vector of observed principal background characteristics that do not vary by time or school (composed of

a variable denoting the number of years of classroom teaching experience as well as indicator variables for the following principal characteristics: mentioned community and family outreach on their resume, private sector experience, any supervisory experience, assistant principal experience, and principal experience), and u_{pl}, a random disturbance term. This model does not include any time-varying characteristics since to create the outcome variable, all years of data were pooled and the time a principal was present in the district was tallied. The variables of interest for this study are contained in the D_p vector. Through this equation, principal retention is a function of the district environment and principal characteristics.

State and district policy research

Research question 2 asks, "How can state certification policies and school district hiring practices incorporate what we know about the education and professional experiences that make effective principals to improve the quality of district hires?" To address this research question, I conducted research on current state certification guidelines (research question 2a) and on district hiring practices (research question 2b) for the four districts used in the analysis (Chicago, New York City, Memphis, and Oakland). Internet research provided the necessary information regarding the states' certification guidelines. For district hiring practices in the four districts in this study, I combined internet research with information from the New Leaders evaluation regarding district practices. The New Leaders information is collected annually through semi-structured interviews with district leaders in the New Leaders partner districts. This study focuses on information collected in 2011, because a) the semi-structured interview protocol included detailed questions regarding district hiring practices and b) the years of district data analyzed in this study are 2006-2007 through 2011-2012 and thus information on district hiring practices during the years analyzed is particularly relevant.

To gain a wider perspective on district hiring practices and to inform the recommendations, the previously mentioned principal hiring survey was conducted with human resources personnel at 33 school districts. For analysis of the closed-ended survey questions, responses were tabulated to calculate the percentage of districts selecting each response. The open-ended questions were analyzed through review of the responses and common themes were identified and tallied among the responses to determine which themes were more commonly cited among the responses. The district survey data were linked to publicly-available information on district size and characteristics from the National Center for Education Statistics Common Core of Data (U.S. Department of Education, 2008-2009b; U.S.

Department of Education, 2008-2009a; U.S. Department of Education, 2011-2012a; U.S. Department of Education, 2011-2012b) and Collegiate Academies' website (Collegiate Academies, 2013). These additional data allowed for analysis by district characteristics (e.g., by urbanicity and number of schools).

Limitations of the Study

One of the limitations of the study described in this dissertation is that the analysis is limited to only those district principals who completed the New Leaders training program. Given the selective admissions criteria for the program, this sample is unlikely to be representative of the pool of available principals in most urban school districts. However, many alternative principal preparation programs have similar screening criteria, and findings based on New Leaders data are potentially relevant for other principal preparation programs.

Another limitation of this study is that principals with certain characteristics were not randomly assigned into schools, which would allow for stronger internal validity of the results. Principals with certain backgrounds may be more likely to work in certain types of schools, which may influence their ability to influence student outcomes (e.g., principals who attended selective undergraduate institutions may prefer to work at schools with lower levels of poverty, where conditions for influencing student outcomes may be different than at schools where students are poorer). School districts also may be more likely to place principals with certain characteristics in certain types of schools. Thus both principal choice and school district placement play a part in the school assignment. Due to potential selection effects from school assignment being potentially related to our characteristics of interest, the results from this study are not causal and do not have validity outside of the districts in which the research was conducted. In addition, the results of this study involve multiple statistical tests and the possibility of type I error is present; no multiple comparison adjustment was made for the analysis results.

Even with the limitations described above, policy recommendations may be made on the basis of these findings (with appropriate caveats), given the number of control variables available in the data and the large number of New Leaders principals working in different districts. Additionally, although New Leaders graduates are not necessarily representative of newly-hired principals in a district, they provide a sample particularly fitting for this study as they are more likely than the traditional pool of candidates to have a wide range of prior work experiences. Further research should be conducted that examines these characteristics in other settings.

Some of the connections in the theoretical framework (see Figure 2.1), particularly those related to how specific principal roles affect student outcomes and principal retention and how principals' education and prior professional experience are related to principal roles, have not been explored in the research literature. This limits the current work as certain mechanisms that are outside of the scope of this study have not been explored, resulting in a "black box" effect. This limitation will not impede answering the research questions for this study, however; in fact, this study may help in that it can serve to point the research community towards certain characteristics whose mechanisms should be explored further.

Another minor limitation is that the resume information may not be accurate. However, as this was the main source of detailed principal background information I had available, I used this information as the best-available option and assumed the information reported was accurate. A district screening a candidate for hiring would need to make a similar assumption if it was screening based on the background information reported on the resume, and thus this limitation should not impede the relevance of the results.

This study will likely be of more interest to certain types of districts, resulting in a limitation of applicability to different districts. School districts who prefer not to conduct extensive screening upon hiring and wait for a "sink or swim" process to weed out principals will find limited value in the conclusions of this work. Overall, district context matters, and high-volume, high-turnover districts who want to improve placement and reduce turnover will benefit most from this work. Recommendations may have less impact in districts that have an explicit principal pipeline with extensive screening and background requirements already in place.

Overall, this study bridges the gaps between theory, evidence, and practice in using principal background characteristics in state certification and district hiring processes even in light of these limitations. Given the lack of an extensive literature on the subject, studies on the subject will help to inform the field, and New Leaders is a particularly relevant program to study given its national presence and the length of time it has been training and placing principals.

4. Results of Analysis

The following chapter explores the results of the analysis of principal education and prior professional experiences and their impacts on student outcomes and principal retention. I first explore descriptive statistics of New Leaders principals' backgrounds and average characteristics of schools in the sample. Then, I examine the results of regression analyses of school characteristics and principal education and prior professional experiences on average math and reading test scores, percent of FRPL students, and school attendance rates. Last, I investigate results from the regression analysis of school characteristics and principal education and prior professional experience on the likelihood a New Leaders principal is retained at the school the following academic year and the likelihood that a New Leaders principal remains employed as a principal in the district for two or more years.

Descriptive Statistics

Table 4.1 below provides some descriptive statistics for the 162 New Leaders-trained principals in the sample. A higher percentage of principals in the sample were placed in Chicago Public Schools (36 percent) than in any other school district. New York City public schools, Memphis, and Oakland followed. Almost one-third of principals in the sample were trained in 2006-2007; relatively few principals were trained in later cohort years. Over 60 percent of the principals were female, with an average age in the sample of 35 years old (based on the year of their first college experience or work experience). Twenty percent reported on their resume that they speak a language other than English and 22 percent had some international experience (typically, they studied abroad while they were in college).

A little over a quarter of the principals reported that they majored or minored in education at their undergraduate institution. Over one-third attended a highly-selective institution for their bachelor's degree. The majority – over 80 percent – reported having a master's degree in education, while 36 percent had a master's degree in administration (many principals reported multiple master's degrees). Only 11 percent had earned a Ph.D. or were a Ph.D. candidate at the time they submitted their resume to New Leaders.

Examining principals' non-education professional experience, a small percentage (4 percent) reported having served in the military. Nearly one-third had experience in the private sector and 15 percent had supervisory experience in the private sector. Twenty-two percent had non-profit experience

and 9 percent had supervisory experience in that sector. Smaller numbers of principals had experience in the public sector (non-education) – only 9 percent reported work experience and 3 percent supervisory experience. Overall, 45 percent reported some non-education sector experience.

Two principals reported zero years of teaching experience (student teaching was not counted as teaching experience in this study). All others reported some teaching experience. Four percent had zero to two years of teaching experience, while 44 percent had three to five years and 52 percent six or more years. Overall, principals had an average of 6.7 years of classroom teaching experience. Approximately half reported teaching experience in an elementary setting and half in a middle school setting, while only 41 percent reported experience in a high school setting. Eighty-six percent had taught both math and reading. More principals had taught reading – 76 percent – than math (59 percent). Seventy-one percent had taught some other subject (neither math nor reading). Thirty-six percent reported that they had experience as a teacher leader while they were teaching. Nearly 20 percent reported charter school experience (as a teacher or in another position). Only 12 percent reported on their resumes that student outcomes improved while they were a teacher or in another position in the school.

Over 80 percent of principals had previously worked in the city corresponding to their district of placement (e.g., had experience working in Chicago and then worked as a New Leaders principal in Chicago). Thirty percent reported that their first work experience was in the city corresponding to the district where they were eventually placed, indicating that the principal had familiarity with the area (and perhaps was from there). Over 75 percent had taught in the district in which they were placed is a principal. Only 14 percent did not report any work (including work for the district) or education experience (such as attending college) in the city or district in which they were later placed as a principal, indicating that most principals were local candidates and had some familiarity with the city and district of placement.

Sixty percent of principals reported that they had non-teaching education experience, with 15 percent having served previously as an assistant principal (or in a similar position) and 4 percent as a principal (or in a similar position). Forty-one percent reported that they had supervisory responsibilities in their non-teaching education experience. Considering all prior professional experience, nearly 60 percent reported that they had had some sort of supervisory role in a prior position.

Almost 30 percent of principals reported some experience with special education populations, either as a teacher or in another position (not necessarily in the education sector). Almost one-quarter of

principals reported working with diverse populations in prior professional and life experiences (e.g., working with at-risk children at a school for refugees, volunteering with the homeless).

Overall, many principals in this sample exhibit education and professional experiences that we surmise are connected to the principal roles described in Chapter 2. Almost 60 percent had some supervisory experience, corresponding to the human capital manager role. Thirty percent had private sector experience, 15 percent had served as an assistant principal, and 4 percent had served as a principal, all of which may be related to the school operations manager role. All but two principals reported teaching experience (corresponding to the instructional leader role). Over 60 percent reported some outreach to the community or parents, not necessarily in the education sector (community and family outreach coordinator role). Lastly, the visionary role was not easily represented by information included on a resume and was not examined in this section of the work.

Table 4.1. Summary of Principal Education and Prior Professional Experiences

Principal Characteristic	Statistic
District of principalship (percent)	
Chicago	35.8
Memphis	21.0
New York City	27.2
Oakland	16.0
Spring of cohort school year (percent)	
2007	30.9
2008	23.5
2009	25.3
2010	8.0
2011	12.3
Principal characteristics	
Male (percent)	38.3
Average age	34.5
Speaks a language other than English (percent)	19.8
International experience (percent)	21.6
Education (percent)	
Education named as major or minor area of study for bachelor's degree	26.5
Highly selective undergraduate institution	34.6
Master's in education	81.5
Master's in administration	36.4
Ph.D.	10.5
Prior non-education professional experience (percent)	
Military experience	3.7
Private sector	30.2
Supervisory role in private sector	14.8
Non-profit sector	22.2
Supervisory role in non-profit sector	9.3

Public sector (non-education)	8.6
Supervisory role in public sector (non-education)	2.5
Any non-education experience	45.1
Average years of non-education experience (only for those with any years)	5.2
Education experience (percent unless otherwise noted)	
Taught for 0-2 years*	4.3
Taught for 3-5 years	43.8
Taught for 6-plus years	51.9
Average years of classroom teacher experience	6.7
Teaching experience in an elementary setting	51.2
Teaching experience in a middle school setting	52.5
Teaching experience in a high school setting	40.7
Taught math	59.3
Taught reading	76.3
Taught both math and reading	85.6
Taught other subject	71.3
Teacher leader	35.8
Charter school experience	19.1
Working in city (corresponding to school district) at time of application to New Leaders	82.1
First work experience in city corresponding to school district	29.6
Taught in district	75.9
No current or prior experience in city	13.6
Reported improving student outcomes while teaching or working in a school	12.3
Non-teacher education experience K-12	59.9
Assistant principal or similar position	14.8
Principal or similar position	3.7
Supervisory role in other education experience	40.7
Special education experience	29.0
Parent/community outreach reported on resume	61.1
Diversity experience	24.2
Any supervisory experience (in education or other sectors)	58.6
Number of observations	162

NOTE: Not all characteristics derived from the resumes are presented in this table. *Two principals reported zero years of teaching experience, while four principals reported two years of teaching experience.
SOURCE: Author

I also examined descriptive statistics at the school level. Table 4.2 shows a summary of school characteristics by the five years in this sample (2008-2012). All New Leaders principals were placed in schools that have their own set of characteristics that exert influence over student outcomes and principal retention. There are 156 individual schools in four districts in this sample, with 58 in Chicago (37 percent), 30 in Memphis (19 percent), 42 in New York City (27 percent), and 26 in Oakland (17 percent). Few principal-school matches (where a principal resume matched an existing school observation in the district data that had available test score data) occurred in earlier years (2008-2010), resulting in a majority of observations in 2011 and 2012. This may have been because a number of principals entered turnaround or new schools and there were no test data available for the first few years

of their tenure. Chicago and New York City have the highest percentages of schools in 2011 and 2012 (the years where most observations are concentrated, with 121 school observations each year).

The percentage of charter schools in the sample varied over time, ranging from 13 to 57 percent. However, in later years (2011 and 2012), the percentage was between 13 and 17 percent of the sample. More of the schools were elementary schools (kindergarten through 5th or 6th grade) than middle schools (grades 6 or 7 through 8 or 9), elementary through middle schools (kindergarten through grade 8), and high schools (grade 9 or 10 through 12).

Table 4.2 also shows the average percentages of certain student outcomes and demographic characteristics at the school level. Average attendance varies between 91.5 and 95.3 percent, while the percent of students who did not advance to the next grade varies between 2.3 and 4.9 percent. The percentage of male students is approximately 50 percent across all years, as expected. The schools in this sample are, on average, high-poverty schools, with the average percent of FRPL students near 80 percent for most years in the sample.

The "Percent old for grade" shows those students who are older than expected based on their birthdate and grade level; this is an indicator of non-advancement in school or of parents holding children back to enter school at later ages (a practice sometimes called "red-shirting"). This varies in my sample between 21 percent and 31 percent of students at a school. The "Percent mobile" examines the percentage of children at a school who have switched or transferred schools in that year; this ranges from 6 to 15 percent on average across the years.

I also examined racial and ethnic group percentages. The average percentage of black students at a school varied between 57 percent and 80 percent in the years of the sample, while the percentage of white students at a school varied between 2 and 5 percent. The average percent of students reporting Hispanic ethnicity at a school varied between 11 and 37 percent across the years. English as a second language (ESL) students were, on average, between 11 and 16 percent of the school population. Lastly, the percent of students receiving special education services was relatively stable from 2008 to 2012, with a range between 8 and 11 percent on average.

Summary statistics of student math and reading test score outcomes and principal retention examined by regression analysis in the next section are also included in table 4.2. The average aggregated test score (standardized as a z-score by test, grade, and year) at a school in this sample was between 0.1 and 0.4 standard deviations below the average score, indicating that these schools were relatively low-performing. Principal retention is shown in the table as a percentage of principals who

return to the same school the following year (this percentage is not available for 2012, since data from the following year of 2012-2013 were not available for this study). Three-quarters of principals in 2011 were retained, while rates of retention were lower in prior years (between 0 and 67 percent).

Overall, the schools in this sample are relatively low-performing in terms of math and reading test scores, have mostly non-white student bodies, and are high-poverty schools. This fits what we might expect from large urban school districts such as those that I studied.

Table 4.2. Summary of School Characteristics

School Characteristic	Academic Year (Spring)				
	2008	2009	2010	2011	2012
Percent of school observations in each district					
Chicago	33.3	36.4	42.9	36.4	29.8
Memphis	44.4	27.3	14.3	21.5	23.1
New York City	0.0	9.1	14.3	27.3	29.8
Oakland	22.2	27.3	28.6	14.9	17.4
School type (percent)					
Charter	0.0	18.2	57.1	17.4	13.2
School level (percent)					
Elementary	22.2	36.4	42.9	32.2	33.1
Middle school	22.2	18.2	0.0	24.0	23.1
Elementary middle school	33.3	18.2	14.3	21.5	21.5
High school	22.2	27.3	42.9	22.3	22.3
School characteristics					
Average attendance (percent)	92.1	91.5	95.3	91.5	92.5
Percent did not advance	2.6	2.7	3.8	4.9	2.3
Percent male	50.1	49.8	49.6	50.4	50.5
Percent FRPL	54.8	83.1	82.6	80.0	78.8
Percent old for grade	30.8	23.1	20.5	22.3	20.8
Percent mobile	13.3	7.8	6.0	9.2	14.6
Percent black	80.2	66.2	57.6	60.1	56.8
Percent white	4.4	3.8	1.7	4.6	4.6
Percent Hispanic	11.3	25.7	37.1	29.5	32.4
Percent ESL	10.7	12.5	16.4	12.2	13.1
Percent special education	9.8	9.0	7.9	10.9	10.6
Average math z-score	-0.4	-0.2	-0.1	-0.2	-0.2
Average reading z-score	-0.4	-0.2	-0.2	-0.2	-0.2
Retained principal in following year	66.7	54.5	0.0	75.2	n.a.
Number of observations	9	11	7	121	121

SOURCE: Author

Student Outcomes

I analyzed the relationship between principal education and prior professional experience of New Leaders-trained principals and three student outcomes aggregated up to the school level: average z-score

in math, average z-score in reading, and average attendance at a school. Table 4.3 shows the regression results for average z-score in math. The average z-score in reading had a strong positive relationship with the average z-score in math, indicating that test performance in the two subjects at the school level is highly related. Indicator variables for the years of the data were not statistically significant (indicated by asterisks in the table below); included years are compared to the omitted year variable 2008. Variables for the district of the school were included and also not statistically significant, indicating that the average z-score in math did not differ significantly across districts among schools with a New Leaders-trained principal. Chicago, Memphis, and New York City are here compared to Oakland (the omitted district variable). Charter schools in this sample had, on average, higher scores in math at the school level when controlling for the other factors in the model; this result was statistically significant at the 5-percent level. High schools tended to have lower scores in math than elementary or middle schools (statistically significant at the 10-percent level). The remaining school variable in the model, the average percentage of students old for their grade, had a negative relationship with average math scores (as expected) and this relationship was statistically significant at the 1-percent level.

For principal variables, international experience, charter school experience, and the number of years as a classroom teacher had statistically significant relationships with the average math score at a school. International experience–which typically was from a study abroad experience during college–had a positive, statistically significant relationship (at the 1-percent level) with a coefficient of 0.09 standard deviations. This indicates that having a New Leaders principal with international experience rather than a New Leaders principal with no international experience would move a school from the 50th percentile of math score to the 53rd (calculating percentile effect using the normal distribution).

A principal having had charter school experience either as a teacher or in another education position prior to entering the New Leaders program was negatively related to average math performance at a school (statistically significant at the 1-percent level), with an associated three-percentile point shift (from the 50th percentile to the 47th). Having had an additional year of experience as a classroom teacher was associated negatively with average math score at the school as well (statistically significant at the 5-percent level); however, this result was only associated with a -0.2 percentile decrease and was not of a large magnitude. The average number of years of teaching experience in the sample was 6.7 (see table 4.1) and 50% of teachers had between 4.5 and 8 years of experience, indicating that there was not a large variation in teaching years between most principals in this sample.

All results may be the result of principal preference or placement decisions made by the district; it could be that New Leaders principals with prior charter school experience are more likely to prefer lower-performing schools or that principals with prior international experience are viewed as more selective and are placed in "better" schools with higher performance. In addition, when we explore the same model with the addition of the prior year math score or using the difference in math scores from year to year as the dependent variable, only the result for years of teaching experience holds but is less strongly statistically significant (at the 10-percent level). This indicates that though international experience and charter school experience are statistically significantly associated with the average math score in a given year, they are not statistically significantly associated with the average math score gain at a school (see Appendix C for results).

I tested the relationships of all principal variables individually with average z-score in math as the dependent variable while controlling for the prior year math score and none were statistically significant at the 10-percent level or better, though evidence of improved student outcomes was close to being statistically significant at the 10-percent level (see Appendix C for results). I included the variable evidence of improved student outcomes in the model with prior year control and gain score model and this variable was positively related to the outcome and statistically significant at the 10-percent level (see Appendix C). From these results, it seems that years of teaching experience are negatively related to changes in math scores while evidence of improved student outcomes is positively related. However, given the weaker results when including prior year scores or when testing gain scores, it may be that the actions of the New Leaders principals once they are in their schools have a stronger relationship with test score performance gains or losses in a given year than the experiences they reported on their resumes (though their past experience may influence their actions taken while in the school). One hypothesis generated from this result is that principals with more teaching experience may take actions that are not conducive to students earning higher test scores.

Table 4.3. Regression Results, Average Z-score in Math

Average z-score in math	
School variables	
Average z-score in reading	0.822***
	[0.0435]
2009	0.0715
	[0.0757]
2010	0.0899
	[0.0584]
2011	-0.0085
	[0.0435]
2012	-0.016
	[0.0434]
Chicago	-0.0595
	[0.0360]
Memphis	0.0319
	[0.0408]
New York City	-0.0437
	[0.0401]
Charter school	0.0898**
	[0.0358]
School is a high school	-0.0689*
	[0.0355]
Average percent of students old for their grade	-0.00557***
	[0.00136]
Principal variables	
International experience	0.0858***
	[0.0323]
Charter school experience	-0.0787***
	[0.0277]
Any supervisory experience	-0.0134
	[0.0242]
Private sector experience	0.0336
	[0.0281]
Years as a classroom teacher	-0.00716**
	[0.00301]
Taught math	-0.00946
	[0.0283]
Parent/community outreach	0.0232
	[0.0235]
Constant	0.140**
	[0.0648]
Observations	269
R-squared	0.845
Robust standard errors clustered at the school level in brackets	
*** p<0.01, ** p<0.05, * p<0.1	

SOURCE: Author

Table 4.4 shows the regression results for the average z-score in reading. Again, we see that the average z-score in math was statistically significant and positively related to the average z-score in reading. District indicator variables were included for Chicago, Memphis, and New York City as control variables; the coefficients for the Memphis and Oakland indicator variables were positive and statistically-significant (at the 10-percent and 1-percent levels, respectively). For reading scores, elementary and middle schools both perform worse than high schools (results are statistically significant at the 5-percent level). The average percent of FRPL students at a school was statistically significantly negatively related (at the 1-percent level) to the average reading score, indicating that higher-poverty schools have lower reading scores, as expected. The average percent of the student body that was white was positively related to reading scores (statistically significant at the 1-percent level).

For principal education and prior professional experience, having taught reading and any past supervisory experience were statistically significantly and positively related to reading scores (at the 10- and 5-percent levels, respectively) among the sample of New Leaders principals. Both relationships correspond to a 2-percentile increase, where having a New Leaders principal with prior experience teaching reading or any supervisory experience (compared to a New Leaders principal without that experience) was associated with a shift from the 50^{th} percentile of schools in reading to the 52^{nd}.

Examining a gain score model where the dependent variable was the change in reading z-score from year to year, the result for taught reading did not hold but supervisory experience was statistically significant and negatively related to a gain in reading scores (at the 5-percent level; see Appendix C for results). Similarly to the math model above, I regressed each principal variable on average z-score in reading and the prior year reading score; evidence of improved student outcomes was positively and statistically significantly related to the average reading score when controlling for the prior year score (at the 5-percent level; see Appendix C for results). No other principal variables were statistically significant when tested in this manner. I included evidence of improved student test scores in the prior year control model and the gain score model and this variable was positively related to the outcome and statistically significant at the 10-percent level in the prior year control model. Taught reading was also statistically significant in this model at the 10-percent level. These results indicate that taught reading, evidence of improved student outcomes, and any supervisory experience have a relationship with the changes in reading scores from year to year. However, these results are not consistent between the prior year control and gain score models and are less strongly statistically significant than in table 4.4,

indicating that there are likely other factors that are more strongly related to the changes in scores from year to year than principal education and professional experience.

Table 4.4. Regression Results, Average Z-score in Reading

Average z-score in reading	
School variables	
Average z-score in math	0.758***
	[0.0478]
2009	0.0356
	[0.0858]
2010	0.00486
	[0.0792]
2011	0.084
	[0.0596]
2012	0.0756
	[0.0605]
Chicago	0.065
	[0.0517]
Memphis	0.0857*
	[0.0502]
New York City	0.145***
	[0.0493]
School is an elementary school	-0.0920**
	[0.0393]
School is a middle school	-0.100**
	[0.0442]
Average percent of FRPL students	-0.00207***
	[0.000728]
Average percent of white students	0.00601***
	[0.00157]
Principal variables	
Taught reading	0.0559*
	[0.0324]
Any supervisory experience	0.0463**
	[0.0221]
Years as a classroom teacher	0.0031
	[0.00299]
Parent/community outreach	0.0048
	[0.0218]
Constant	-0.0944
	[0.0778]
Observations	266
R-squared	0.84
Robust standard errors clustered at the school level in brackets	
*** p<0.01, ** p<0.05, * p<0.1	

SOURCE: Author

Table 4.5 shows the regression results for the average attendance at a school (where 100 percent would indicate perfect attendance by all students in a year). The indicator variables for 2011 and 2012 show a statistically significant and negative relationship with attendance, indicating that attendance was lower in these years than in 2008 (the reference year). Again, indicator variables were included for Chicago, Memphis, and New York City as control variables (with the reference category of Oakland); all of the coefficients on these indicator variables were negative and statistically significant at the 1-percent level. Charter schools were associated with a three-percent increase in attendance rates (statistically significant at the 5-percent level). The average percentages of white, male, and FRPL students were positively associated with attendance (statistically significant to the 99-, 90-, and 99-percent, respectively), but these relationships were small in magnitude, associated with a less than one-percent increase in attendance. The average percent of students old for their grade was negatively associated with attendance and was statistically significant at the 1-percent level, but again, this result was small in magnitude.

Moving to the principal variables, having a master's degree in education (as compared to not having a master's in education) was statistically significantly and positively related to attendance (at the 1-percent level) among New Leaders principals; this was associated with a 2 percent increase in attendance when controlling for the other variables in the model. Experience at the elementary school level was negatively related to attendance (statistically significant at the 5-percent level) and was associated with a 1 percent decrease in attendance among schools in the sample.

Table 4.5. Regression Results, Average Attendance

Average attendance	
School variables	
2009	-4.417
	[2.708]
2010	-1.769
	[1.698]
2011	-4.623***
	[1.485]
2012	-4.384***
	[1.517]
Chicago	-5.871***
	[1.081]
Memphis	-4.297***
	[1.120]
New York City	-3.962***
	[0.937]
Charter school	2.807**
	[1.290]
Average percent of white students	0.0704***
	[0.0248]
Average percent of male students	0.153*
	[0.0918]
Average percent of FRPL students	0.0548***
	[0.0180]
Average percent of students old for their grade	-0.347***
	[0.0421]
Principal variables	
Master's in education	2.055***
	[0.771]
Elementary school experience	-1.132**
	[0.468]
Private sector experience	0.213
	[0.595]
Any supervisory experience	-0.363
	[0.473]
Years as a classroom teacher	0.0598
	[0.0784]
Assistant principal experience	0.489
	[0.719]
Parent/community outreach	0.225
	[0.450]
Constant	93.82***
	[4.508]
Observations	253
R-squared	0.739
Robust standard errors clustered at the school level in brackets	
*** p<0.01, ** p<0.05, * p<0.1	

SOURCE: Author

Principal Placement in Schools

I examined whether certain principal characteristics were related to the percentage of FRPL students at a school in order to study principal placements and potential sorting/preference effects. It could be that working in higher-poverty schools is seen as less desirable, and thus more highly-qualified principals may be placed in lower-poverty schools. Table 4.6 details the results from this regression analysis, with one column for the results including school-level control variables and another without school-level control variables. The second column is included since we are examining the relationship between New Leaders principal characteristics and the level of poverty at a school; additional school controls may not be theoretically needed since we are not trying to predict the overall level of poverty but rather see what principal characteristics might be related to FRPL percentage.

First examining the model with school controls, we see that the average z-score in reading had a negative and highly statistically significant relationship (at the 1-percent level) with the average FRPL percent at a school. All four of the coefficients on the indicator variables for years (2009, 2010, 2011, and 2012) were positive and statistically significant at the 10-percent level, indicating that average FRPL percentages increased in those years compared to 2008. The indicator variables for district (Chicago, Memphis and New York City compared to Oakland) showed a positive and statistically significant relationship with the FRPL percentage at a school. Lastly, the average percent of mobile students and the average percent of white students at a school had a negative relationship with the average percent of FRPL students (statistically significant at the 1-percent level).

Having attended a highly selective undergraduate institution was negatively related to the FRPL level at a school in both the school controls and no school controls models (statistically significant to the 10- and 5-percent levels, respectively), which is what we would expect if more highly-qualified principals prefer not to work in low-income schools. Experience with diverse populations was positively related to FRPL (statistically significant at the 1-percent level), indicating that New Leaders principals with this type of prior professional experience may select higher-poverty schools and/or be more comfortable working with high-poverty populations. Experience working at the middle school level was also positively related to average school FRPL (statistically significant at the 5-percent level). Assistant principal experience, community and family outreach, and any supervisory experience were not statistically significantly related to average FRPL. Years as a classroom teacher was not statistically significant when school controls were included but was statistically significant at the 10-percent level without school controls. This variable was negatively related to average FRPL, so that each additional

year of teaching experience among New Leaders principals was related to a decrease in average FRPL of approximately 1 percent – indicating that more experienced teachers tended to be in lower-poverty schools. This again indicates that more highly qualified candidates may prefer low-poverty schools, as in principal hiring years of teaching experience is seen as a desirable quality. Private sector experience was negatively related to FRPL but was statistically significant only in the school control model (at the 10-percent level), indicating that the result for that variable may not be particularly robust.

Overall, we find some evidence that more highly-qualified New Leaders principals are placed in lower-poverty schools. I am unable to determine with my data whether this is from personal preference or from a district placement decision; further research is needed to determine if the mechanism for this sorting on principal characteristics.

Table 4.6. Regression Results, Average FRPL

Average FRPL	With school controls	Without school controls
School variables		
Average z-score in reading	-10.21***	
	[3.236]	
2009	30.84*	31.36**
	[15.69]	[15.38]
2010	30.51*	31.89*
	[16.68]	[16.96]
2011	27.19*	23.77
	[15.69]	[16.54]
2012	28.28*	23.55
	[15.63]	[16.55]
Chicago	22.99***	34.05***
	[5.678]	[6.385]
Memphis	43.59***	47.72***
	[5.447]	[6.356]
New York City	24.43***	32.38***
	[4.908]	[5.484]
Average percent of mobile students	-0.361***	
	[0.113]	
Average percent of white students	-0.764***	
	[0.135]	
Principal variables		
Attended a highly selective undergraduate institution	-4.121*	-6.624**
	[2.457]	[3.240]
Diverse experience	8.680***	11.29***
	[2.997]	[3.942]
Middle school experience	5.148**	6.480**
	[2.149]	[2.652]
Assistant principal experience	2.336	3.568
	[2.279]	[2.761]
Years as a classroom teacher	-0.409	-0.926*
	[0.363]	[0.480]
Parent/community outreach	-2.85	-1.579
	[2.261]	[2.887]
Any supervisory experience	0.598	-0.052
	[2.570]	[3.175]
Private sector experience	-4.263*	-2.26
	[2.557]	[2.850]
Constant	35.06*	28.08
	[18.50]	[19.13]
Observations	269	269
R-squared	0.69	0.528

Robust standard errors clustered at the school level in brackets
*** p<0.01, ** p<0.05, * p<0.1

SOURCE: Author

Principal Retention

School retention

I examined a school's likelihood of retaining a New Leaders principal the following year using a logistic regression model. Overall, approximately 30 percent of principals in this sample do not stay at their school the following academic year (either from personal choice or district reassignment).[17] (Approximately 22 percent left the district after one year; the remaining 78 percent stayed in the district as a principal for two or more years.) The data available in my sample were from 2008-2012; thus, the year 2012 was not included in this model. All seven New Leaders principals in 2010 did not stay in their school in 2011 and thus the variable for 2010 was dropped from this model. 2008, 2009, and 2011 principals are in this model; indicator variables for 2009 and 2011 are shown below, with a reference category of 2008. Indicator variables for Chicago, Memphis, and New York City were included as control variables (with a reference category of Oakland); only Chicago is statistically significantly related to retention (compared to Oakland; significant at the 5-percent level). This indicates that New Leaders principals in Chicago were less likely to stay in their position than New Leaders principals in Oakland, controlling for the other conditions included in the model. An indicator variable for whether the school was a high school and the average percent of students old for their grade were included as control variables given their statistically significant bivariate relationship with retention; however, in the full model, they are not statistically significant.

Only three of the principal variables included in the model were statistically significant, indicating that the likelihood of New Leaders principal retention at the school level may be driven by factors not included on a principal candidates' resume. In terms of bivariate relationships, being a male principal, having a master's degree in administration, having taught a subject other than math or reading, and mentioning outreach to parents or community on the resume were more likely to result in retention the following year, while never having worked or taught in the district or city previously was associated with a lower likelihood of retention. However, these models did not attempt to control for any other factors and some of these variables were no longer statistically significant when included in a model with school-level control variables and other principal education and professional experience variables.

[17] These results may differ from overall retention at the school level among New Leaders principals or among all principals in the district (see, for example, Gates et al., 2014), as this is a restricted sample of New Leaders principals in these districts and does not analyze retention for all New Leaders principals.

Male principals were more likely to be retained in the following year (statistically significant at the 5-percent level), as were principals who had noted parent or community outreach on their resumes when they were candidates for New Leaders (statistically significant at the 10-percent level). New Leaders principals who had attended a highly selective undergraduate institution were less likely to be retained the following year; this result was statistically significant at the 1-percent level. Examining the predicted percentages at the mean, 60 percent of principals who attended a highly-selective institution were predicted to be retained while 86 percent who did not attend a highly-selective institution were predicted to be retained. This may indicate that those who attended a highly-selective undergraduate institution were more competitive in the job market and had more opportunities or connections. These relationships may be driven by a preference on the part of the principal to leave his or her position or a preference by the district to remove the principal from his or her position or transfer the principal to another school. Highly-performing principals may be reassigned to more in-need schools and that could explain what we see here – if attending a highly-selective school somehow makes one a more effective principal, then the lack of retention could be a sign that the district is reassigning these principals to where they are needed most.

However, we are unable to tell the mechanism or cause for retention with our data and may only examine statistical relationships. These relationships may guide future research on this subject; districts may consider examining some of these factors in their own human resources records to see if there are relationships between these factors and retention among all the principals for which they have data. The reason for leaving a position–be it principal preference or district reassignment–could be included in the principal's human resources file and connected to student data so that the mechanisms behind retention could be further examined.

Table 4.7. Regression Results, Principal Retention at the School Level

	Retention
School variables	
2009	-0.591
	[1.201]
2011	0.402
	[0.765]
Chicago	-2.365***
	[0.871]
Memphis	-0.947
	[0.921]
New York City	-1.121
	[0.972]
Principal variables	
Male	1.164**
	[0.513]
Attended a highly selective undergraduate institution	-1.380***
	[0.437]
Years as a classroom teacher	0.0163
	[0.0771]
Private sector experience	0.348
	[0.519]
Any supervisory experience	0.049
	[0.465]
Parent/community outreach	0.784*
	[0.462]
Assistant principal experience	0.0609
	[0.693]
Constant	1.684
	[1.239]
Observations	141
Robust standard errors clustered at the school level in brackets *** p<0.01, ** p<0.05, * p<0.1	

SOURCE: Author

District retention

I also examined the likelihood of being retained in the district for two or more years, as compared to only staying one year in the district. The results shown below in table 4.9 show characteristics associated with principals who stayed in the district for two or more years. 78% of principals who had an opportunity to be in the data (i.e., were in the data in 2011 or earlier) for at least two years stayed in their district for two years or more, while 22% left the district after one year. I included district-level indicators but did not include school-level or time-variant controls in this model as all years were pooled and principals may have served at one or more schools; this model is at the principal level. I modeled the relationship of principal background characteristics with district retention

with and without controls for the cohort year (the year the principal was trained by New Leaders). Results do not differ greatly between the two models and none of the coefficients on the cohort controls were statistically significant at the 10-percent level or higher.

As mentioned above, indicator variables for Chicago, Memphis, and New York City were included as control variables (with a reference category of Oakland); only Chicago is statistically significantly related to retention (compared to Oakland; significant at the 1-percent level). This indicates that New Leaders principals in Chicago were less likely to stay in the district as a principal than New Leaders principals in Oakland, controlling for the other variables included in the model.

Principals who were male and had a bachelor's in education were more likely to stay in the district for two or more years than female principals and those who did not have a bachelor's in education (both statistically significant at the 1-percent level). Principals with teaching experience in an elementary setting (statistically significant at the 5-percent level), who attended a highly selective undergraduate institution (statistically significant at the 1-percent level), and had no prior education or work experience in the city (statistically significant at the 5-percent level), were less likely to remain in the district for two years or more. In both the school and the district retention models, we see that being male and having attended a highly selective undergraduate institution had similar relationships with retention. As in the school retention model, the result for highly-selective undergraduate institution may indicate that those who attended a highly-selective undergraduate institution were more competitive in the job market and thus more apt to leave the district for another principalship or career elsewhere. The negative relationship between having had no prior education or work experience in the city and district retention is as expected; those with fewer ties or historical connections to the district may be more willing to leave for a different geographical area.

Again, I am unable to determine from the data the reason for leaving a district – whether a principal was removed from his or her position by the district or whether the principal chose to leave. In addition, the data do not inform us as to whether the principal continued in his or her career as a school leader in a different district or if they chose a different career.

Table 4.8. Regression Results, Principal Retention at the District Level

District retention (2 years or more at district as principal)		
	No cohort controls	Cohort controls
School variables		
2008 cohort	n.a.	-0.643
		[0.651]
2009 cohort	n.a.	-0.389
		[0.638]
2010 cohort	n.a.	-0.741
		[1.172]
Chicago	-3.040***	-3.126***
	[0.825]	[0.867]
Memphis	-1.425	-1.655
	[1.137]	[1.181]
New York City	-1.245	-1.449
	[0.972]	[1.026]
Principal variables		
Male principal	1.608**	1.803***
	[0.641]	[0.664]
Bachelor's major or minor in education	2.253***	2.363***
	[0.738]	[0.811]
Teaching experience in an elementary setting	-1.411**	-1.373**
	[0.582]	[0.606]
Highly selective undergraduate institution	-1.783***	-1.767***
	[0.536]	[0.546]
No current or prior experience in city	-2.007**	-2.087**
	[0.824]	[0.817]
Private sector experience	0.571	0.636
	[0.640]	[0.658]
Any supervisory experience	0.27	0.254
	[0.578]	[0.591]
Years as a classroom teacher	0.0754	0.0747
	[0.109]	[0.0980]
Assistant principal experience	-0.142	-0.137
	[0.934]	[0.919]
Parent/community outreach	0.492	0.53
	[0.520]	[0.513]
Constant	3.054**	3.413***
	[1.277]	[1.308]
Observations	134	134
Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1		

SOURCE: Author

Summary

Through the analyses described in this chapter, we see that certain characteristics that may be connected to the roles a principal plays are related to student outcomes and principal retention. These analyses were conducted to identify certain background experiences that states, districts, and principal training programs may want to screen on or incorporate into their existing policies and programs in order to improve student outcomes and retention. Many New Leaders principals in the sample had education and professional experience related to principal roles, including supervisory experience, private sector experience, assistant principal or principal experience, teaching experience, or community and family outreach experience. In all four districts, the schools are relatively low-performing in terms of test scores and are typically high-poverty schools. These results are applicable only to these four urban districts and only among New Leaders-trained principals, though urban districts with similar characteristics may find similar patterns among principals trained through selective programs (but should confirm using their own data).

Table 4.9 below shows the results of all analyses as they relate to principal variables in this sample of New Leaders-trained principals. We see that few variables have statistically significant relationships with the outcome in multiple models; the exceptions are years as classroom teacher (negative for both math z-score and average FRPL) and highly-selective undergraduate institution (negative for both average FRPL and retention). Overall, few principal variables were statistically significantly related to student outcomes, average FRPL, or retention, indicating that there are likely other principal factors that are more strongly related (e.g., a principal's actions at the school and the amount of time he or she spends on different activities).

International experience, charter school experience, and the number of years as a classroom teacher were related to the average z-score in math. Having taught reading and any supervisory experience were positively related to the average z-score in reading. A master's degree in education and elementary experience were related to attendance.

In the analysis of average FRPL level, I find evidence that more highly-qualified New Leaders principals are less likely to be in high-poverty schools (based on the highly-selective undergraduate institution and private sector experience variables). This may be because of principal choice or preference or it could be a function of district placement preference. Diverse experience and middle school experience were positively related to FRPL, indicating that New Leaders principals with a

background interacting with diverse populations and those who had previously taught at the middle school level were more frequently in high-poverty schools.

For retention, there was evidence that more highly-qualified New Leaders principals were less likely to stay at their schools and their districts (based on the highly-selective undergraduate institution variable) and that male principals were more likely to stay at their schools and districts. Those with prior experience with community and family outreach were more likely to stay at their schools. Principals with an undergraduate major or minor in education were more likely to stay in their district, while those who had teaching experience at the elementary level and no prior education or work experience in the city where they were placed were less likely to stay in their district for two or more years. These results again could be due to principal preference, district placement policies, or district removal decisions.

Overall, there are statistically significant relationships between the outcomes and variables that relate to the human capital manager role (any supervisory experience related positively to reading scores), the school operations manager role (private sector experience related negatively to average FRPL), the instructional leader role (taught reading positively related to reading scores, years as classroom teacher negatively related to math scores and average FRPL, teaching experience at the elementary level negatively related to district retention), and the community and family outreach coordinator role (community and family outreach related positively to school retention). I hypothesize that the mechanism for these relationships could be that those New Leaders principals with experience supervising other adults are better able to manage teachers at their schools to instruct children in reading; this may be the result of a combination with the instructional leader role (taught reading results). New Leaders-trained principals with private sector experience may be more skilled in school operations management tasks, which may make them appear more qualified to districts and allow them to select placement in lower-poverty schools. Years as a classroom teacher was negatively related to math scores, perhaps indicating that the instructional leader role may not be as crucial for this outcome. This variable was also negatively related to the average FRPL – it could be that districts view years of teaching experience as an asset and allow these more qualified candidates to select or be placed into lower-poverty schools. Retention and community and family outreach experience were related, indicating that the outreach coordinator role may be important for retention. It could be that principals with a background in this area are more likely to form bonds with the school community and then are less likely to choose to leave the school or to have the district reassign them to a new school. However, I

am unable to test these hypotheses with existing data; this is an area where future research may be able to shed light on the mechanisms behind the statistical associations I found in my analysis.

Most of the results from these analyses were intuitive–such as that those who attended highly selective undergraduate institutions were less likely to stay at the school or district–or were results for which there was little prior intuition–such as that teaching experience at the elementary level was negatively related to attendance and to district retention. Other results–such as that male principals are more likely to stay in their school or district–are not necessarily actionable at face value, as districts cannot institute a gender-biased policy in favor of male principals. There was one counter-intuitive result that should be noted here: that of the negative relationship between years of teaching experience and math scores. Overall, the findings here do provide evidence that states and districts may wish to emphasize certain education and professional experiences in their certification and hiring policy in order to affect student outcomes and retention, with the caveat that these findings only apply to a subset of New Leaders principals in the four districts analyzed. Other states and districts should conduct research to determine which education and professional experiences seem to be related to the outcomes important to their agencies and then consider revising their policies accordingly with the findings from their data.

These analytic results indicate principal education and professional experiences that may be tied to desired student outcomes and principal retention. State and district hiring policies may be modified to include or screen on these education and professional experiences. To determine how best to include these education and professional experiences in existing policy, I examine state and district hiring policy in the following chapter. In the last chapter, I combine the results of my analysis with the examination of state and district hiring policy to craft recommendations for revising policy.

Table 4.9 Relationships Between Principal Characteristics and Student Outcomes, Average FRPL, and Principal Retention

Variable	Student outcomes			Principal placement	Retention	
	Math score	Reading score	Attendance	Average FRPL	Retention (school)	Retention (district)
International experience	↑	-	-	-	-	-
Charter school exp.	↓	-	-	-	-	-
Years as classroom teacher	↓	X	X	↓ X[a]	X	X
Taught reading	-	↑	-	-	-	-
Any supervisory exp.	X	↑	X	X	X	X
Master's in education	-	-	↑	-	-	-
Elementary experience	-	-	↓	-	-	↓
Highly selective undergrad.	-	-	-	↓	↓	↓
Diverse experience	-	-	-	↑	-	-
Middle school experience	-	-	-	↑	-	-
Private sector experience	X	-	X	↓ X[b]	X	X
Male	-	-	-	-	↑	↑
Parent/community outreach	X	X	X	X	↑	X
Bachelor's in education	-	-	-	-	-	↑
No current/prior experience in city	-	-	-	-	-	↓
Taught math	X	-	-	-	-	-
Assistant principal experience	-	-	X	X	X	X

NOTE: Up arrows indicate a positive statistically significant relationship between the variable and the outcome in the model indicated by the column name; down arrows indicate a negative statistically significant relationship.
Statistical significance was determined from regression models using robust standard errors clustered at the school level, with the exception of the retention district model where robust (unclustered) standard errors were used.
[a]Statistically significant without school controls; not statistically significant with school controls.
[b]Statistically significant with school controls; not statistically significant without school controls.
A "-" indicates that the variable was not included in the model.
X indicates the variable was included in the model but was not statistically significant at the 10-percent level or better.
SOURCE: Author

5. Review of Current State and District Policy

This chapter explores current state and district policy related to the qualifications of school principals in order to better understand the policy environment. This, in turn, will allow for crafting more targeted guidelines to states and districts in how to revise principal licensing standards and recruitment policies by incorporating the findings from the analysis of principal background characteristics in Chapter 4. I first explore state licensing requirements for the four states I considered in this analysis (Illinois, New York, Tennessee, and California) and then examine district hiring policies in the featured districts (Chicago, New York City, Memphis, and Oakland). Lastly, I expand my focus to a variety of districts across the country who responded to the survey I conducted. The survey analysis provides an overview of district policies across the country and context for how the results of this dissertation may be used in other districts to guide research and practice.

State Licensing Requirements

State licensing policy has the power to affect all public school principals in the state through setting the requirements for new principals and changing requirements for professional development and licensing renewal for existing principals. Many states mention approved principal preparation programs in their licensing requirements; approval of programs is another policy tool that states have to shape their principal pool. Nearly all states have incorporated the ISLLC standards in their program approval process (Darling-Hammond, 2007). Recently, many states have modified their policies related to principal certification and administrator preparation programs; for example, 19 states modified their laws regarding certification between 2007 and 2010 (Shelton, 2011).

This dissertation provides guidance regarding how states, districts, and principal training programs may use information regarding school principals' education and prior professional experience to improve student outcomes. Each of the four districts' state licensing requirements are explored below in order to better target the guidance to states on revising licensure policy that is discussed in Chapter 6. Licensing standards as of 2014 are highlighted as the current regime influences the policy recommendations more than the past regime, though the past regime may have been in place when the principals analyzed in Chapter 4 gained their certification.

Illinois

To simplify the educator certification system, Illinois began using a system of three licenses that replaced the previous system of 60 different educator certificates in 2013; any educators holding certificates had their certificates automatically transferred to the corresponding new license category with the same expiration date as the certificate (Illinois State Board of Education, 2014a). Aspiring principals now seek a professional educator license (PEL) with the more-specific addition to the license, the principal (PK-12) endorsement. To obtain the PEL, applicants need to earn passing scores or above on the Test of Academic Proficiency (TAP), the ACT Plus Writing, or the SAT and the appropriate content area test and complete an educator preparation program approved by the state.[18] To obtain the additional principal endorsement, applicants must have four years of teaching experience; a master's degree; coursework in special education, reading, and instruction for English language learners (ELLs); and internship experience (Illinois State Board of Education, 2014b). They also must have completed an applicable and approved preparation program and passed the TAP and the principal content area tests.

The previous certificate required of principals, the Type 75 Certificate with General Administrative Endorsement, had similar requirements with the exception of only requiring two years of teaching experience (Roosevelt University, 2014). This certificate converted to an administrative endorsement on a Professional Educator License under the new system, allowing a working principal to continue working without meeting the requirements of the "new" principal endorsement. The administrator endorsement can be converted to the principal endorsement with one or more years of work as an administrator or principal in a school in the past five years, but those who have not worked as an administrator in a school in the past five years would not be eligible for license conversion (Illinois State Board of Education, 2013).

New York

New York requires principals to hold the School Building Leader (SBL) certificate (which replaced the School Administrator and Supervisor certificate in 2007) (NYC DOE Division of Human Resources, 2014). The requirements for the initial SBL certificate are three years of teaching or student services experience; a master's degree[19]; and a 15-week full-time school building leadership internship

[18] Passing scores are set by the Illinois State Board of Education.

[19] A master's degree in any subject is acceptable as long as it represents a year or more of graduate-level coursework and is from an accredited institution (New York State Education Department, Undated).

experience. They also must have completed an applicable and approved preparation program and passed the principal content area tests. To maintain certification, 175 hours of professional development are required every five years (NYC DOE Division of Human Resources, Undated).

Tennessee

Prior to 2009, Tennessee had a two-tiered licensing structure for principals: the Beginning Administrator License and the Professional Administrator License (Tennessee State Board of Education, 2012). The current license is the Instructional Leadership License (ILL), with four levels: aspiring, beginning, professional, and exemplary. All levels of licensure are aligned with the Tennessee Instructional Leadership Standards (TILS), which are the standards used for evaluating the performance of administrators in the state.

ILL-Aspiring is for those who are enrolled in a principal preparation program and employed as an assistant principal while completing the preparation program. ILL-Beginning requires three successful years of teaching or other education experience; a current teaching license; and a master's degree. It also requires completion of an applicable and approved principal preparation program and passing scores on the state administrator exam (Tennessee Department of Education, 2014a). ILL-Professional is available after two years of professional-level performance at the ILL-Beginning licensing level as well as completion of professional learning requirements (Tennessee State Board of Education, 2012). The ILL-Exemplary is an optional license available to those with ILL-Professional status; guidelines for achieving this certification have not been determined by the State Board of Education (Tennessee Department of Education, 2014a).

Professional development for license renewal and advancement is provided through the Tennessee Academy for School Leaders (TASL); these professional development opportunities are aligned with the TILS (Tennessee Department of Education, 2014b). All licenses except Exemplary are five-year licenses and are renewable; the ILL-Exemplary license is an eight-year, renewable license (Tennessee State Board of Education, 2012).

California

California has two tiers of principal licensing: a preliminary credential (valid for five years) and a clear credential. For the preliminary credential, aspiring principals must have a valid teaching or other student services license and five years of full-time educational experience (e.g., teaching and/or other school services). They must have completed an approved principal preparation program or earned a

passing score on a state-approved exam and passed a basic skills test (options determined by the state include the California Basic Educational Skills Test). School districts may waive up to two years of required experience to allow licensing of candidates with less than five years of experience. To move on to the clear credential (a candidate must apply for this within the five years he or she holds the preliminary credential), those with preliminary credentials must have two years of full-time successful principal experience and complete an individualized preparation program and a state-approved administrative preparation program. The candidate also must meet certain standards through a state-approved credentialing program, or an approved performance assessment (State of California Commission on Teacher Credentialing, 2014). California provides more flexibility in licensing than the other three states profiled here; an aspiring principal can either complete an approved program or take a test, in contrast to other states requiring both of these items. In addition, the district can waive some experience requirements.

Summary

In the four states profiled here, the licensing requirements are not explicitly tied to what research says matters for school leadership—namely, human capital management, school operations management, instructional leadership, visionary, and community and family outreach skills (as discussed in Chapter 2). However, the approved principal preparation program or the test required by the certification process may cover these aspects. We know that the ability to approve principal preparation programs is another state policy lever by which states influence the pool of principals. However, 45 states do not require principal preparation programs to include all components shown by research to be important for school leadership success (which include hiring and selecting professional development for teachers, using data to drive instruction, and establishing positive school culture). Only Pennsylvania, Hawaii, South Carolina, Kentucky, and Oklahoma require all components (Briggs et al., 2013). This indicates that many states could better align their licensing and preparation program approval requirements to the components that seem to be related to strong leadership.

School District Hiring Policy

Districts are often constrained in their hiring due to factors such as budgetary limitations, lack of enough qualified candidates, and state policy. Some districts have a harder time than other districts attracting external candidates because of where they are located in the United States and the perceived

desirability of living there. A district may be constrained in setting hiring policy that fits its needs by the school board or the county office of education. When they can, districts often modify or revise their hiring policies in an attempt to improve their process or gain access to a different pool of candidates. As a result, hiring policies vary widely among districts—perhaps in part to work around various constraints.

This section discusses current district hiring policy in Chicago, New York City, Memphis, and Oakland. The information reported in this section came from online resources and information gathered through interviews with district leaders as part of the RAND New Leaders evaluation. Information for Memphis came solely from the interviews (conducted in 2011), while Chicago, New York City, and Oakland had more current information available online which was used for the summaries below. Understanding hiring policy in the four districts of focus in this dissertation provides insight into how principals' education and prior professional experience may be better incorporated into the hiring process.

Chicago

Chicago Public Schools (CPS) has selected four principal preparation programs to form the Chicago Leadership Collaborative which recruits and trains principal candidates. The four preparation programs are: New Leaders; University of Illinois at Chicago's College of Education; Teach for America; and Loyola University Chicago (Chicago Public Schools, Undated-b).

After completing a principal preparation program, an aspiring principal in Chicago would join the principal "pipeline" developed by the school district; i.e., he or she would apply for the CPS Principal Eligibility Process. To apply for the CPS Principal Eligibility Process, a candidate must have a professional educator license with a principal endorsement and must complete the application form, which requires general information, a resume, a response to an essay question about leadership, a description of education and credentials, and professional references (Chicago Public Schools, Undated-a). CPS screens on education, credentials, prior experience, and evidence of the CPS principal competencies which are used as part of the principal evaluation process in the district (Chicago Public Schools, Undated-e). These competencies and success factors address the five principal roles explored in Chapter 2.

Once past the screening process, a principal candidate would participate in an interview with human resources staff. After successfully interviewing, the candidate would then spend a full day in activities that include a school walk-through, a community meeting, supervisor briefing, and a coaching-

and-feedback session. If approved after those activities, the candidate participates in a background check, after which the candidate can join the eligibility pool (Chicago Public Schools, Undated-c). Once in the pool as an eligible principal candidate, candidates can apply directly with schools that have posted openings.

In CPS, the Local School Council chooses the principal at the school; participants in the Local School Council include teachers, non-instructional school staff, the current administrator, parents, and community members. Local School Councils typically review resumes and conduct multiple interviews with each candidate (Chicago Public Schools, Undated-d). The screening and placement processes are separate; i.e., the people who screened the candidate at the beginning of the process do not participate in the interviews that lead to the candidate being placed in a school or not.

CPS ensures during the eligibility process that candidates have the skills needed to succeed as a school leader by requiring evidence that candidates have the principal competencies and thereby are a match for the roles of a principal that I explored in Chapter 2. CPS' approach to improving candidate quality has been through the use of these competencies in their selected principal preparation programs and in the internal screening process (Orr, King and LaPointe, 2010).

New York City

In 2011, the New York City School District received a grant from the Wallace Foundation to improve and strengthen its principal pipeline. The district works with many external principal preparation programs, including New Leaders, the New York City Leadership Academy, Bank Street's Principals Institute, and the Summer Principals Academy at Teachers College, Columbia University, as well as one internal program, the Leaders in Education Apprenticeship Program (NYC DOE, 2014c). These programs are not the exclusive paths to a principalship in New York City but are recommended by the district.

All principal candidates in New York City must have their state license (the New York state School Building Leader certificate). The first step to becoming a principal in New York City (after obtaining the state certificate) is to fill out an online application, which asks for basic qualifications, an essay, and demonstration of the "School Leadership Competencies" (which are essentially the ability to fulfill all the roles of a principal I discussed in Chapter 2). In April 2014, New York City changed its policy to require that all principals have seven years of prior pedagogic experience; candidates with less

than seven years may enter the eligibility pool but cannot apply for principal positions (NYC DOE, 2014b).

New York City revised its "Principal Candidate Pool" process in December 2013 to better-align the process with principal evaluation standards. After passing the application screening, candidates must complete three professional development sessions and three performance assessments centered on instruction, school culture, and structures for improvement (NYC DOE, 2014a). The last step before entering the candidate pool is to pass reference checks. Once in the pool, candidates apply directly with schools that have posted open positions. Eligibility screening is thus separate from the placement process. Hiring at the school is conducted through a committee interview, where the committee consists of school community members (including parents) and school staff. The committee makes recommendations on candidates to the hiring manager (typically the area superintendent), who makes the final decision (NYC DOE, 2014b).

Memphis

Memphis City Schools (MCS) merged with Shelby County Public Schools in the 2012-2013 academic year to create a county-wide district: Shelby County Public Schools. After the 2013-14 academic year, the large district divided into seven districts for the 2014-15 school year (Dries, 2014). As of July 2014, there was no information on recruiting and hiring principals in Shelby County Public Schools available on the district's website (Shelby County Schools, Undated). The information regarding MCS below came from interviews conducted with MCS district leaders in 2011.

MCS had an internal pipeline program (the Urban Education Center) and New Leaders as another source of principal candidates. New Leaders continues to operate as a pipeline for Shelby County Public Schools (Zubrzycki, 2014). The Urban Education Center still exists and has a school leadership program (National Urban Education Center, Undated) but it is unclear if it is still an internal pipeline for the local district. Previously, the Urban Education Center provided development for district employees (typically teachers) interested in becoming a principal.

MCS previously had an eligibility pool process with three stages. Candidates would first submit a resume, personal statement, and application with basic information, and then would be screened. Next, candidates would be interviewed and given a performance-based task and a written exercise. The last stage consisted of an additional interview; pipeline candidates (from New Leaders and the Urban Education Center) were immediately placed into the last stage of the process.

Like the Chicago and New York City districts, MCS had separate processes for eligibility screening and candidate placement (the people who conducted the screening were not responsible for hiring candidates into specific schools). After candidates entered the eligibility pool, a region-based team including sitting principals and school staff was formed; that team recommended candidates to a regional superintendent. The regional superintendent conducted an interview and made the final decision with the district's Chief of Operations and Deputy Superintendent of Operations. Finally, the district superintendent would approve the placement.

In MCS, the pipeline preparation programs were aligned with the principal roles discussed in Chapter 2, but the eligibility pool process did not seem to be explicitly aligned with principal evaluation standards or criteria based in evidence about effective school leadership.

Oakland

Oakland Unified School District (OUSD) has no internal or formal leadership pipeline, though New Leaders and the University of California, Berkeley's Principal Leadership Institute are sources of candidates for the district. The eligibility process consists of three stages and results in eligibility pools for schools at all three levels—elementary, junior high, and high school (Oakland Unified School District, 2014c; Oakland Unified School District, 2014b). Candidates must first submit a basic application and resume to the district. After the initial screening, principal managers (network executive officers responsible for managing a number of schools) conduct a short interview. Next, candidates complete a performance-based interview that may involve instructional activities, role-playing, and a group interview. These performance-based tasks are meant to focus on OUSD's definition of a successful school leader, which relate to the visionary and instructional leader roles but do not directly relate to the human capital manager, school operations manager, and community and family outreach coordinator roles (Oakland Unified School District, 2014a).

After completing the three stages, candidates enter the appropriate eligibility pool. For placement, candidates are interviewed by school committees (including teachers, staff, and community members); these committees recommend candidates to the superintendent, who makes a final decision (Oakland Unified School District, 2014b).

OUSD does not explicitly align its screening standards to evaluation standards and does not seem to reference all school leader roles in its criteria.

Summary

Chicago and New York City have screening standards that are well-aligned with their evaluation systems and seem to connect to the key roles of a principal. MCS did not align its process with what research shows matters for school leadership; OUSD's criteria did not cover all roles of the principal. All four districts have separate screening and placement processes with an eligibility pool for candidates after screening. Placement of principals is conducted after school staff and community input in all cases, though the degree of school site control over the process varies. Examining these four districts demonstrates the typical process of principal recruitment and hiring, beginning with pipeline entry and completion, then the initial application screen and interview with performance-based tasks to enter the eligibility pool, and finally school committee and district leadership interviews for placement. However, alignment with research-based roles in these four districts varies, indicating that for those districts with less alignment to research-based roles, there is room to improve this process through improved alignment between screening and evaluation criteria and ensuring these criteria are connected to principal roles.

Survey Results and Implications

The principal survey (described in "Data and Methods," Chapter 3; see full survey in Appendix B) was targeted to district personnel responsible for hiring school principals. From February 3, 2014 to June 12, 2014, I recorded 35 responses from 33 districts or charter management organizations (CMOs). The purpose of the survey was to provide a better understanding of district hiring policy across the country in order to help identify areas of strength and weakness in the hiring process and thus identify areas where policy could be improved overall and to identify areas in district policy where background might be better incorporated. In addition, understanding the context of hiring policy in other districts provides information to craft recommendations for future research and data use in districts more generally, allowing for more generalizability of the research- and data-related recommendations. Although the analysis in Chapter 4 applies only to a subset of New Leaders principals in the four districts analyzed, the background characteristics identified through that analysis can help guide other districts to understand what characteristics to research with their own data. Combining the analysis results with the review of state licensing and school district hiring policy and the survey results allows for a wider understanding of how policy stands in a variety of settings across the nation and thus provides more context for the recommendations.

Responding districts

Of the 33 districts represented in the survey responses, three CMOs, all located in the Recovery School District in New Orleans, responded to the survey, while the other responses were from traditional public school districts. For the analysis below, "district" is used to refer to both traditional public school districts and CMOs for simplicity. The districts span 19 states, with California having the most individual district responses at five, followed by Iowa and Louisiana at three. Table 5.1 lists the responding districts and the city and state in which district headquarters are located.

Table 5.1. List of Districts that Responded to the Survey and their Cities and States

District	City	State	Number of Schools, 2010-11	Number of Students, 2010-11	Percent Free and Reduced-Price Lunch Eligible
Ann Arbor Public Schools	Ann Arbor	Michigan	32	16,635	23%
Atlanta Public Schools	Atlanta	Georgia	108	50,009	75%
Austin ISD	Austin	Texas	120**	83,483**	63%**
Boston Public Schools	Boston	Massachusetts	118	55,027	69%
Boulder Valley School District	Boulder	Colorado	55	29,780	19%
Cedar Rapids Community School District	Cedar Rapids	Iowa	33	17,170	39%
Charleston County	Charleston	South Carolina	78	44,058	52%
Choice Foundation*	New Orleans	Louisiana	2	1,238	93%
Cleveland Metro School District	Cleveland	Ohio	100	42,805	83%
Collegiate Academies*	New Orleans	Louisiana	3***	580***	93%***
Dallas ISD	Dallas	Texas	241	157,575	86%
Denver Public Schools	Denver	Colorado	164	80,890	72%
Des Moines Public School	Des Moines	Iowa	62	33,453	67%
FirstLine Schools*	New Orleans	Louisiana	4	1,801	97%
Fort Wayne Community Schools	Fort Wayne	Indiana	51	30,821	69%
Franklin County	Frankfort	Kentucky	14	6,211	47%
Fresno Unified School District	Fresno	California	106	74,235	80%**
Greenville County Schools	Greenville	South Carolina	96	72,153	48%
Gresham-Barlow School District	Gresham	Oregon	23	12,376	49%
Hamilton County	Chattanooga	Tennessee	78	43,296	59%
Hillsborough County Public Schools	Tampa	Florida	318	197,041	57%
Iowa City Community School District	Iowa City	Iowa	25	12,652	29%
Kansas City, Kansas Public Schools	Kansas City	Kansas	43	20,499	87%
Leon County Schools	Tallahassee	Florida	61	33,218	45%
Long Beach Unified	Long Beach	California	92	83,691	68%**
Palm Springs Unified School District	Palm Springs	California	29	23,676	76%
Ramona Unified School District	Ramona	California	10	6,092	31%
Salt Lake City School District	Salt Lake City	Utah	45	25,016	71%
San Jose Unified School District	San Jose	California	53	33,308	n.a.
Spokane	Spokane	Washington	61	29,038	56%
Syracuse City School District	Syracuse	New York	32	20,491	78%
Topeka Public Schools, USD 501	Topeka	Kansas	31	14,082	74%
White Plains City School District	White Plains	New York	7	6,959	46%

NOTE: * signifies a charter management organization (CMO) rather than a traditional public school district. **Data comes from 2008-2009. ***Data comes from 2012-13. N.A. signifies data not available.
SOURCE: Author; NCES 2008-9 and 2011-12, Collegiate Academies

Figure 5.1 shows a map of the United States with responding districts marked with a black circle. The responding districts have a wide geographic spread, but certain regions were not represented such as the northern Plains states and the Southwest. Ten responding districts (30% of respondents) were in the top 100 largest school districts according to NCES from 2008-2009 data.

The number of students in the districts varied widely, from 580 students (Collegiate Academies) to 197,041 students (Hillsborough County; see table 5.1). The number of schools per district also varied, from two to 318 schools (see table 5.1). Thirteen districts were considered as being in a large city, 11 in a midsize city, three in a small city, four in a large suburb, and two (Ramona and Franklin County) in a distant town (using the NCES urban-centric locale classification structure). Thus, the majority of districts that responded are located in urban areas but there is some variation in the sizes of the cities.

Table 5.1 shows the percentage of students in the district eligible for free and reduced-price lunch (FRPL), which is a commonly-used measure of student socioeconomic status. The FRPL percentage varied widely from 19 percent to 97 percent. NCES classifies schools based on the level of FRPL (U.S. Department of Education, 2014): high-poverty schools are those where more than 75 percent of students are eligible for FRPL; mid-high poverty schools, 50.1 to 75 percent; mid-low poverty schools, 25.1 to 50 percent; and low-poverty 25 percent or less. Using this classification, nine districts that responded to this survey are high-poverty, 13 mid-high poverty, eight mid-low poverty, and two low-poverty (data were not available for one district). The percent of students classifying their race/ethnicity as non-white varies as well, from 21 percent to 99 percent (results not shown; data were not available for two districts).

Figure 5.1. United States Map of Responding Districts

SOURCE: United States Geological Survey (2005), with location circles added by author

Job function and district

After confirming with the survey respondents their consent to participate in the survey, I asked respondents to select from a list of job functions the functions that matched their own in order to determine the basic duties of the respondents and whether they overlapped with the duties referred to in the survey. Of the 33 respondents, most were involved in recruiting, screening, interviewing, and recommending candidates (see table 5.2). Only 24 percent of respondents reported being involved in the final decision making regarding a principal hire. Respondents from three districts reported job functions that were not on the list in the survey: supporting and supervising principals, sitting on the interview committee to ensure questions are not in violation of district or human resources guidelines, and participating in other hiring aspects such as reviewing writing samples and essays written in response to questions about how a candidate would handle various challenging scenarios. Overall, based on responses to the job function question, it seems survey respondents were in job positions that allowed them to answer knowledgeably the remaining questions on the survey about the districts' processes for hiring principals. Fifty-eight percent of respondents reported that their jobs included four or more functions that related to hiring principals. There did not seem to be a strong statistical relationship between the number of related job functions and the size of the district (results not shown).

The next question asked respondents to type in the name of their districts. I purposefully did not record contact information, respondents' names, or their job titles so that respondents could not be identified.

Table 5.2. Job Function

Job Function	Number of Respondents	Percent
Recruit	23	70%
Screen	27	82%
Interview	25	76%
Recommend	23	70%
Final decision	8	24%
Other	3	9%
Total	33	-

SOURCE: Author

Previous workplace and training

The next set of questions asked about principal candidate education and training and the workplace from which principal candidates were hired. Respondents were asked to rank the top three

most common types of places where principals hired by the district within the last two years had worked before they were hired. Table 5.3 shows the responses to each option. Nearly all respondents (29 of 33) reported that the most common previous workplace was within the district in another position. Twenty-five of 33 respondents said that the second-most common workplace was another school district or CMO. Consensus for the third-most common workplace was split between a private school and the education sector; no one responded with "other" as one of the three most-common responses. Not all districts fully ranked options – all but one selected a first most common, while 29 selected a second and 16 selected a third. Overall, most principals previously worked within the district or were coming from another district or CMO.

Table 5.3. Most Common Prior Workplace of Principal Hires

	This school district in another position (internal candidate)	Another school district or CMO	A private school	The education sector but not at a school district, CMO, or private school	The private, non-profit, or public sector in a position not related to education	Other
First most common	29	3	0	0	0	0
Second most common	4	25	0	0	0	0
Third most common	0	1	8	8	1	0
Not in top three	0	1	18	20	24	21
Total responses	33	30	26	28	25	21

SOURCE: Author

The next question asked respondents to think again about principals hired in the last two years and rank the top three most common places where the new hires received their principal training. Respondents reported that a traditional university program was the most common (11 most-common rankings), followed by a district- or CMO-run internal training program (eight most-common rankings). Alternative principal preparation programs (such as New Leaders) was the most-common choice for only one district, but eight districts marked these types of programs as the second or third most-common places for training. Again, not all districts fully ranked options or responded to all parts of this question.

Table 5.4. Most Common Prior Training of Principal Hires

	District- or CMO-run internal training program	Traditional university program	Alternative principal preparation program	Other
First most common	8	11	1	0
Second most common	5	3	5	0
Third most common	2	2	3	1
Not in top three	4	2	7	12
Total responses	19	18	16	13

SOURCE: Author

Screening process

The next series of questions asked about the district's initial screening process and particularly the materials the district requires applicants to submit. The first question provided a list of materials as well as an "other" write-in option and asked respondents to check all that applied. Table 5.5 summarizes their answers.

All but two districts (94 percent) require candidates to submit a resume, indicating that they value for their screening processes the kind of information a resume usually includes such as the candidate's education, training, and prior professional experience (the focus of this work). The two districts that do not require resumes, Hillsborough County and Leon County (both Florida districts), require an application form and evidence that the candidate has satisfied the state's certification requirements. Hillsborough County also requires an essay and competency-based reference forms (on forms provided by the district) as to the candidate's competency from two former supervisors. Leon County also requires that candidates explain how their experience relates to Florida's principal leadership standards, which include seeing student learning as a priority, using data to plan instructional improvement, and being fiscally responsible for the school (Leon County Schools, Undated).

Resumes are the most common materials required by the districts, followed by an application form, a cover letter, references, and evidence of state certification. Less-commonly required items are essays and short-answer questions; they were required by only 36 percent of the responding districts. Four districts responded that they required an item not on the list, including Hillsborough County and Leon County School Districts as mentioned above. These "other" answers are: the online digital interview that is part of Gallup PrincipalInsight™, a description of a school-level project the candidate would undertake as a principal, competency-based reference forms completed by two supervisors, and a response to district leadership standards.

Two districts require only two items from the list, while four districts require nine items from the list. Most districts require that candidates submit multiple items; the average number of items required is 6.2.

Table 5.5. Materials Required by District upon Application for Principal Position

Materials	Number of districts	Percent
Resume	31	94%
References	26	79%
Letter(s) of recommendation	23	70%
Cover letter	27	82%
Essay	12	36%
Short answer	12	36%
Application form	28	85%
State certification(s)	25	76%
Transcripts	18	55%
Other	4	12%

SOURCE: Author

The next question asked respondents if their district used certain criteria to screen resumes. The question did not specify exactly how these were used in screening; that is, districts may have used these criteria to reject candidates without these attributes or these may have just been items that were viewed as positive but not essential for hiring. Twenty-one districts responded yes (64 percent of respondents). Those who responded yes to this question were asked to write in the criteria their district uses to screen resumes. Twenty of the 21 districts answered (see table 5.6). Past experience seems to be the most popular criterion, with 13 districts reporting that they look for experience in education and/or as an assistant principal or administrator. However, only four districts named evidence of success in past positions as a criterion.

One district mentioned that they screen for basic compliance with application requirements (e.g., whether candidates have attached all required documents and met the timeline). Four districts mentioned writing skills (such as format and punctuation). One district mentioned that they screen for "progressively stable and responsible positions" on a principal resume. Only one district mentioned the ability to speak multiple languages as a screening criterion, though three districts mentioned that they seek candidates with experience in diverse and/or urban schools. Three districts mentioned that they specifically screen for the candidate's certification to be a principal.

Overall, few districts have aligned their resume screening criteria explicitly to the roles that principals play in the school. Three districts specifically mentioned criteria aligned with the principal roles explored in Chapter 2: human capital manager, school operations manager, instructional leader, visionary, and community and family outreach coordinator. Citing "experience" as a criterion could be referring to all of these roles. Denver Public Schools mentioned that candidates need to have the abilities outlined in the district's school leadership framework. They include: culture and equity leadership, instructional leadership, human resource leadership, strategic leadership (corresponds to the visionary role), organizational leadership (corresponds to the school operations manager role), and community leadership (corresponds to the community and family outreach coordinator role). The Denver list includes all five roles explored in this dissertation, plus one additional role: culture and equity leader. Palm Springs Unified School District mentioned that they look for evidence of instructional leadership on resumes, among other criteria. Boston Public Schools cited four leadership standards (used across the state of Massachusetts): instructional leadership, management and operations (analogous to the human resource manager and school operations manager roles), family and community engagement (analogous to the community and family outreach coordinator role), and professional culture (which incorporates some aspects of the visionary role).

Table 5.6. Criteria Used to Screen Resumes

Criterion	Number	Percent (of 20 respondents)
Past experience	13	65%
Evidence of success in past positions	4	20%
Writing skills	4	20%
Diverse/urban school experience	3	15%
Principal certification	3	15%
Instructional leadership	3	15%
School operations manager experience	2	10%
Human resource manager experience	2	10%
Visionary skills/experience	2	10%
Community and family outreach coordinator experience	2	10%
Basic compliance with application requirements	1	5%
Progressive positions	1	5%
Multiple languages	1	5%

SOURCE: Author

Interview process

The next series of questions asked about the interview process a candidate goes through after passing the screening process. Respondents were first asked if principal candidates are required to

complete performance-based tasks (e.g., a mock teacher evaluation) as part of their interview process. Twenty-two districts, or 67 percent of respondents, said that their districts require performance-based tasks. Ten districts, or 30 percent, responded that their districts do not require performance-based tasks; one respondent said that he/she did not know. There did not seem to be a statistically significant relationship between the size of the district (either in terms of number of schools or number of students) and whether districts require performance-based tasks.

Those district respondents who said that their district did require performance-based tasks were then asked to describe the performance-based tasks required. All 22 districts prompted for this question provided a text answer; see table 5.7 for a tally of results and corresponding principal roles. Many districts cited performance-based tasks that do not fit cleanly within the five roles of principals; some of these activities span multiple roles. Two districts reported having candidates develop an entry plan for a school (i.e., their vision for school improvement if they were principal), while one school has candidates perform an email prioritization exercise. Seven districts reported requiring a written analysis of a school issue; one example cited is asking candidates to "…please spend the next 30 minutes to develop and document a strategy to improve the transition of 9th graders into high school." Two districts mentioned a school accountability report or school report card exercise. Seven districts reported a data analysis exercise.

A fair number of respondents reported requiring performance-based tasks that relate to the human capital manager role. Five districts reported role-plays of leadership scenarios, such as "…meeting with teacher who does not want to fulfill a duty/obligation." Two districts reported having candidates develop a professional development plan for staff, while one reported requiring the candidate to lead a (fake) faculty meeting.

Only two districts mentioned items relating explicitly to the school operations manager role. One mentioned a school site walk-through activity while another mentioned a budget exercise. It is possible that some of the leadership scenarios referenced would include aspects of school operations but these specifics were not described in the responses.

The most common performance-based task was that of a teacher evaluation/observation, with 12 districts reporting that they require some form of this. Two districts reported that they require candidates to develop an instructional plan or teach a lesson themselves. This emphasizes the focus many districts have on the instructional leader role. Teacher evaluations and observations are also related to human capital management, as shown in the table below.

For the visionary role, no districts provided evidence of an explicit performance-based task that relates to this. However, some of the presentations or leadership exercises mentioned may result in an assessment of the candidate's ability to play this role. Two schools mentioned a group interview discussion or scenario where candidates would be graded on communication skills, which is part of the visionary role.

Lastly, for community and family outreach coordinator, four districts mentioned a role play or communication with parents or stakeholders, such as "…the applicant must role play a scenario where there are two angry parents waiting to see him/her."

Overall, we see most emphasis on evaluating candidates for the instructional leader role with some attention paid to the human capital manager role and community and family outreach coordinator role. Few districts have tasks that seem designed to evaluate for the school operations manager role and the visionary role. This indicates that there may be a gap in hiring, where the district evaluates candidates with a focus on some but not all aspects of the job. Improving resume screening may help to reduce this gap, as could redesigning the performance-based tasks to cover all principal roles.

Table 5.7. Performance-based Tasks and Principal Roles

Performance-based task	Number	Percent (of 22 respondents)	Principal role
Teacher evaluation/observation	12	55%	IL/HCM
Written analysis of school issue	7	32%	-
Data analysis	7	32%	-
Leadership role-play	5	23%	HCM
Parent role-play	4	18%	CFOC
Entry plan	2	9%	-
School accountability report	2	9%	-
Professional development plan	2	9%	HCM
Instructional plan/lesson	2	9%	IL
Group interview	2	9%	V
Email prioritization	1	5%	-
School site walk-through	1	5%	SOM
Budget	1	5%	SOM

NOTE: HCM is Human Capital Manager, SOM is School Operations Manager, IL is Instructional Leader, V is Visionary, and CFOC is Community and Family Outreach Coordinator.
SOURCE: Author

Placement process

Next, respondents were asked about the placement process wherein a principal candidate is matched with an opening at a school and hired as a principal. They were asked to select all that apply in the district's placement process from the following list:

- Principal candidates seek out placements and contact the district or school regarding the opening
- District staff seek out and contact principal candidates regarding the opening at a school
- Schools seek out principal candidates for their opening
- Other

Twenty-two districts (67 percent) responded that principal candidates seek out placements; 20 districts (60 percent) said that the district seeks out candidates; six districts (18 percent) reported that schools seek out candidates; and three districts reported another mechanism. Five districts reported that they use all three mechanisms. Thirteen districts reported that both candidates and the district are active in making a match, while five districts reported that districts and the school are active in making a match or the candidate and the school are active in matching. The other responses included descriptions of the process that differed from these mechanisms; for example, one district remarked, "principals apply with location [of their placement in a school] TBD. Then a group of finalists partake in site visits/interviews with the staff at the school and then separately with parents. If [the school is] a secondary school, there is also a session with students." Another answered, "…[the] district advertises, interviews and selects and assign[s] principal[s] based on skill set and experience."

The next question on the survey asked if the district uses an eligibility pool process (where candidates are screened for eligibility first, placed in a pool of candidates, and then potentially matched with schools). Fifty-eight percent of districts (19) responded that they did use an eligibility pool process, while 39 percent (13) responded that they did not and one respondent said that he/she didn't know. There is a statistically significant relationship between the size of the district (as measured by both number of students and number of schools) and the use of an eligibility pool; the relationship is positive and statistically significant at the 5-percent level for student number and 1-percent level for the school number (results not shown). This indicates that larger districts may be using the eligibility pool mechanism as a way to manage large numbers of candidates, given that they have more schools and thus more open positions to fill.

The next question asked if the school community (including site-based staff, parents, students, and/or community members) is involved in the selection of a principal. Twenty-eight respondents (85 percent) said yes, while five (15 percent) said no. Those who responded yes were then prompted to select from a list the school community groups that are involved in the selection of a principal. Most districts (over 70 percent) responded that teachers and parents are involved. One-third of respondents reported that students are involved and slightly over half (55 percent) reported that non-parent community members are involved.

Table 5.8. School Community Groups Involved in Principal Selection

School community group	Number	Percent
Teachers	25	76%
Students	11	33%
Parents	24	73%
Other school staff	21	64%
Community members (not parents)	18	55%
Other	4	12%

SOURCE: Author

Survey respondents were then asked to indicate who is responsible for final selection of the principal candidate for a given opening: the superintendent/chief education officer, the principal manager, a local school group, or other. Nearly all respondents marked the superintendent/chief education officer (91 percent, or 29 respondents). One respondent noted that the principal manager is responsible, while two others wrote in answers describing a specific group or staff member responsible.

Then, the survey asked if the district compares school needs with a candidate's strengths and weaknesses to guide the placement of the right candidate in the right school. All but one district (97 percent, or 32 respondents) marked yes. These respondents were then asked to describe how their district considers school needs and candidate strengths and weaknesses. Many districts described a general process, where candidates are interviewed by a group of administrators or school committee and then the superintendent makes a decision. Other district mentioned "conversations" between district personnel as part of the placement process, from which we can infer that in many cases this is not a formalized process.

Five districts cited the superintendents' perspective or view as part of the placement process. Two explicitly mentioned an interview committee with a school community (including parents). Two other districts mentioned a rubric or strengths and weaknesses chart that is developed based on the candidates for a position and used in placement. Four districts cited experience with similar schools or similar populations of students as being very important in the process. Only one district mentioned that they look for a good fit on "soft skills" (i.e., communication style) and that the soft skills become important when a principal steps into a negative school environment.

Three districts mentioned that they used a school community survey or other feedback mechanism to get information from parents and school community members on school needs prior to placing a candidate. In a related area, two districts reported that they form interview questions related to areas of need as determined by the school community and/or hiring committee. One district responded,

"…[the] district looks at school data, school demographics, formal feedback information from staff, make-up of the staff... and we generate a list of priorities and the specific skills that we're looking for. Interview questions are then created to find the level of competency of each candidate related to the desired needs."

Strengths and weaknesses of the hiring system

I asked respondents to describe in open-ended responses the strengths and weaknesses of the principal hiring system in their districts. Twenty-three shared their thoughts about the systems strengths and weaknesses, while two districts shared their thoughts about only system strengths. Eight respondents cited community or stakeholder involvement as a strength of their system; six respondents mentioned the thoroughness or comprehensiveness of the process as a strength. Four districts mentioned that they focus on "growing their own" candidates through prior positions in the district and internships. Three districts mentioned having multiple interview rounds as a strength. One district mentioned transparency of the process: "It is a written, transparent policy that is backed by the school board and easy to follow." Only two districts mentioned that the process is aligned to the evaluation system and/or their leadership rubric. Another district responded that the willingness to start over was a strength of their system: "…one major strength is we do not settle. If there truly is not a candidate that matches the 'profile' we are looking for, we will start another search."

I found more variation among the responses about system weaknesses. Six districts reported that the process is too time and/or labor intensive, while five districts mentioned a lack of candidates. Three districts mentioned that they rely on internal hires which may be a problem in terms of "stagnation." Three districts reported inconsistencies in the hiring practices among elementary, middle, and high schools. Remaining issues were cited only by one district and included: coordination issues among central office staff, focus on qualitative rather than quantitative candidate ratings, problems with the timing of the hiring cycle, and not having enough time to do the process right.

Three districts mentioned a need for a better understanding of principal leadership, with one district mentioning "…better understanding of principal leadership" is lacking in their system. Another said, "…not enough interdepartmental collaboration and discussion about what attributes/skills we should recruit, screen, interview, [and] hire for." This indicates that there may be opportunities in this district for collaboration across departments to provide a deeper understanding of principal leadership roles and how to recruit candidates who can play those roles well. Lastly, one district commented,

"…when principals are interviewed, we should be able to determine their strengths/deficiencies, how we would be able to support them and help them to grow, where to best place them and what potential they have to improve our district. This is not happening consistently across all levels. We need to work on our interview process and understanding of leadership skills."

Overall, the discussion of strengths and weaknesses reveals that there may be gaps between hiring standards and evaluation standards and that districts may have a need to reexamine principal leadership roles and improve their hiring process to better identify and match needed leadership skills.

Additional comments

Lastly, I asked respondents to share any additional comments on the survey or on principal hiring. I received two requests for sharing research results. Three other districts offered other comments. Two of those comments were related to earlier survey questions; one discussed a weakness in the hiring system and another explained application requirements. One school district shared that, "hiring of building principals and administrators in our schools is the most important work we do at the district office level."

Summary of survey results

The survey results paint a picture of district hiring policies and practices in 33 districts and charter management organizations (CMOs) around the country. Overall, we see that most districts do not have detailed criteria against which they screen resumes and that most do not use criteria aligned with principal roles. This suggests that there is an opportunity to provide guidance to districts on the aspects of a candidate's education and prior professional experience as reported in the resume that are correlated with student success and principal retention (the focus of this work). Even for those districts that do use criteria aligned with principal roles in screening resumes, there are opportunities to improve the screening process with more targeted criteria based on principal education and professional experience.

Respondents noted that most principals hired by the district received their education in traditional university training programs and previously worked within the district or in another district or CMO. Two-thirds of respondents said that their districts require performance-based tasks as part of the screening process. In the survey questions about placement of a principal candidate, two-thirds of districts responded that candidates come to the district seeking a principal position, while in other districts it is the district that seeks out candidates. Thirteen districts reported both placement situations—candidates come to them and they seek candidates. Over half the districts, typically the larger ones,

reported using an eligibility pool process. Eighty-five percent of respondents noted that school community members are involved in the hiring process, with parents and teachers the most commonly-included groups. Ninety-one percent of districts reported that the superintendent or chief education officer makes the final selection of principals and 97 percent of districts reported that they compare a school's needs with a candidate's strengths and weaknesses to guide the placement process. Lastly, respondents answered questions about the strengths and weaknesses of their hiring process. Commonly-cited strengths were community involvement and a comprehensive process. On the other hand, many districts reported that their system needs improvement and in particular that they don't have enough information about the best way to align hiring processes with what is known about the desirable attributes of an effective principal.

6. Policy Recommendations and Conclusions

This dissertation explored aspects of a principal candidate's education and professional experience that states and school districts should seek and cultivate to strengthen school leadership. The work was guided by two research questions: 1) how principals' education and professional experience are related to student outcomes and principal retention and 2) how state certification and district hiring policies can better incorporate information about a principal's education and professional experience to improve principal effectiveness. The recommendations and conclusions in this chapter are targeted to states, districts, and training programs as they can inform state certification policy, district hiring policy, and training program curricula. In addition, this dissertation will inform the New Leaders program about how the education and prior professional experiences of their principals are connected with student outcomes and retention.

First I conducted a literature review to examine ways that principals influence student outcomes and the roles principals play in their schools. Five central roles were identified: human capital manager, school operations manager, instructional leader, visionary, and community and family outreach coordinator. I then reviewed the research on how a principal's education and professional experience influence student outcomes and principal retention and I discussed principal certification, hiring, and training.

I analyzed data from four urban school districts and New Leaders-trained principal resume data, and identified certain principal education and professional experiences that were statistically related to student outcomes and principal retention. By examining descriptive statistics, I confirmed that many New Leaders principals had background experiences related to the principal roles identified in the literature review, such as supervisory experience (human capital manager role) and teaching experience (instructional leader role). I found evidence that experience related to the human capital manager role (any supervisory experience) and the instructional leader role (the individual taught reading) was positively related to reading test scores. Experience related to the community and family outreach coordinator role was positively related to principal retention among New Leaders-trained principals at the school level. I also found evidence that more highly-qualified principals (given the typical qualifications required – that is, with more years of teaching experience and who attended highly-selective universities) tended to be in lower-poverty schools, indicating a potential sorting effect that is

occurring through candidate preference or district placement policies. However, these qualifications were not found to be related to student outcomes and thus may not indicate a more effective principal.

I researched state licensing policies and district hiring practices in the four districts studied here and conducted and analyzed a survey of hiring policy and practice from districts around the United States. In the four states corresponding to the districts studied here, the licensing policies are not connected to what matters for school leadership according to the research literature and neither are the requirements for approval of principal preparation programs. Two of the districts, Chicago and New York City, have district hiring policies that align with a principal's key roles. However, Memphis' policies were poorly aligned and Oakland did not align with all roles. The survey analysis provided information on hiring policies in 33 districts and CMOs; I found that most of these districts did not have resume screening criteria and that criteria used to select candidates is often not aligned with the research on effective school leadership.

This chapter synthesizes the results of the previous chapters to produce recommendations for states, districts, and principal preparation programs. For states, the recommendations relate to principal licensing requirements and principal training program approval processes. For districts, the recommendations relate to hiring practices. Lastly, for preparation programs, the recommendations relate to the curricula of principal training programs and may be relevant to professional development programs for acting principals. The chapter concludes with thoughts on directions for future research.

Recommendations for States

"…Determining who is prepared to educate our children—by approving preparation programs and determining licensure status—is a core responsibility of the state. By investing in more effective approaches, states can develop higher quality programs and create a more efficient state role" (New Leaders, 2013a, p. 8). The research conducted here indicates that many states could better align their licensing standards and preparation program approval standards to the factors related to principal success. From my research, I developed the recommendations outlined below for states as relates to their licensing standards. The analytical research did not explicitly address preparation program approval standards, though that is another important policy lever at the state level to influence principal quality. States can also adopt standards for principal screening and evaluation that districts must use (Shelton, 2011). States also have another lever in that they can provide professional development programs and other assistance to districts to help districts support principals (Shelton, 2012). States interested in other

policy levers should consult the resources cited here and in Chapter 2 for best practices in those other policy areas.

Based on the positive association between any supervisory experience and reading scores, *states should consider requiring that principal preparation programs provide experience supervising adults and opportunities to practice leadership among adults*. *Experience working with people of diverse backgrounds* and operating in a potentially unfamiliar environment may also be something states wish to encourage preparation programs to include in their curricula (based on the results that diverse experience positively relates to FRPL students; i.e., principals who have experience with diverse populations are more likely to work in schools with high percentages of FRPL students). In general, states should base their principal preparation program approvals on ensuring that the programs are aligned with the key roles of the principal and with the experiences that research has shown to be important for success as a principal.

States that require a principal to have taught in a classroom for several years (e.g., five or more) in order to become licensed as a principal may wish to *consider decreasing the years required for initial licensing*, as I found a negative association between the number of years as a teacher and math scores. However, this finding could be due to an unknown mechanism or another factor that is not captured by the data available, and should be examined with data from the state or district prior to modifying policy. Renewal of licenses could then be stricter and tied to student success or stronger indications of satisfactory performance.

States should improve their data systems and consider tracking the job performance of the principals who complete state-approved principal preparation programs. This information should be incorporated into the states' decisions about program approval and renewal (see, for example, Shelton, 2011). Also, *states can support the creation of a statewide longitudinal database* that incorporates student information from all districts in the state as well as information about principals and their education and professional background so that statewide studies can be done. This would allow for a better understanding of how principals move between schools in addition to shedding light on principal education and professional experiences that are associated with student success and retention.

Recommendations for Districts

"Principals matter to the academic success of students—and districts should therefore take a strong hand in selecting and training their leaders and cultivating their continuing success" (Mendels and

Mitgang, 2013). However, from the review of district policy and the survey results, I found that many districts do not align their selection process with what research has determined is needed for principal success. The open-ended comments on the survey indicated that many districts are not satisfied with their principal hiring system and that the human resources department doesn't have information about what attributes are most desirable in principals and how to align their system to find candidates with those attributes. Other research has confirmed that many districts do not have a coherent way to evaluate key principal characteristics during the hiring process and need to ensure the process identifies principal characteristics that are connected with student outcomes (Rammer, 2007).

These findings indicate that many *districts have an opportunity to revise their principal hiring policies and could realize improvements in student outcomes through the process*. Large districts that want to improve placement and reduce turnover could realize the most benefit from revising policy, whereas small districts with a limited number of hires and districts who rely on a "sink or swim" process to weed out unsatisfactory principals may not see as much benefit from an effort to revise policy. Policy revisions may also have less effect in districts that already have extensive screening in place for principals and whose screening criteria are already aligned with their evaluation. However, even for those districts, certain education and professional experiences that were identified in this dissertation as being related to student outcomes or principal retention may be incorporated into the screening process better to target candidates who are likely to be successful.

Districts should consider tracking certain information regarding principals and linking this information to student information systems so that district or external researchers can conduct research on how principal education and professional experience seem to influence student outcomes and principal retention in their districts. Specifically, *I recommend that districts track data on principal retention* and attempt to record the reasons for departures (e.g., district decision to remove or reassign a principal or principal choice to leave district/school) and use this information to identify school conditions that seem related to principals choosing to stay or leave a school and to district reassignments. In addition, *entering into a database the information available from a principal's resume and linking it to the main student data system* would allow districts to conduct research similar to the research described in this dissertation and identify certain education and professional experiences that seem to be particularly key for success in their districts. This data entry could be required of the principal candidates themselves upon application to the district; many human resources processes

already require candidates to enter certain information into an online form as well as submit a resume. Districts could modify the online form to include all information of interest.

Those in the district with research experience and an understanding of what makes a good school leader should share that information with human resources personnel that conduct the hiring process. Based on my survey results, there seems to be a lack of understanding among human resources personnel about what attributes of principals have been found in the literature to correlate with student success and how to design the hiring process to pick up those attributes in candidates.

Principal selection standards should be aligned with performance evaluation standards and clearly stated in the job description. The federal No Child Left Behind requirements have placed emphasis on modifying principal evaluation processes and there has not been a corresponding push to modify selection processes to align with the evaluation. As Hassenpflug expressed, "…The current emphasis on changing the principal evaluation process without changing the principal selection process is like putting the cart before an unattached horse in a distant field" (2013, p. 3). If the evaluation criteria represent what makes a good principal, the screening criteria should be aligned to those same evaluation standards for the system to work smoothly.

Districts should consider looking for the following attributes when screening candidate resumes: international experience (which has a positive relationship with math scores); community and family outreach experience (which has a positive relationship with principal retention at the school); *a master's in education* (which has a positive relationship with attendance), *supervisory experience* (which has a positive relationship with reading scores); *a major or minor in education* for their undergraduate degree (positive relationship with district retention) and *having taught reading* (which has a positive relationship with reading scores). These education and professional experiences were positively and statistically significantly related to the outcomes in question; however, as discussed in Chapter 4, many of these results for reading and math scores did not hold when controlling for prior school achievement level. Ideally, a district would conduct its own research to confirm that these attributes are important in their context.

It is likely that many districts already screen based on some of these attributes (for example, whether the candidate has a master's degree in education). But other attributes, such as *supervisory experience and community and family outreach experience*, may not be incorporated into the screening process. Given that these two experiences relate to two of the main roles of the principal in a school and may be neglected in the hiring process (based on the research described in Chapter 5), *districts may wish*

to particularly consider incorporating these two aspects either into their resume screening process or their interview process.

When placing successful candidates into a school, districts may want to consider paying attention to those schools that are difficult to staff (such as high-poverty schools) and *ensure that the placement process does not systematically place more highly-qualified principals in lower-poverty schools*. I found that more years as a classroom teacher, having attended a highly-selective undergraduate university, and private sector experience were all negatively associated with the level of FRPL in a school; i.e., those attributes were related to being principal in a lower-poverty school. These three attributes are often seen as indicating a better-qualified candidate and the analytic results may indicate a sorting preference either on the part of the candidates themselves or through district policy. If the sorting preference lies more with the principals themselves, the district may not be able to counter this effect, but the district should examine its own placement policies to ensure this sorting preference is not encouraged by its own policies. Principals with diverse experience and experience in middle schools were associated with higher levels of FRPL, indicating that those experiences may better prepare a principal for working in a high-poverty environment.

Another consideration when placing candidates is that *principal candidates with past charter school experience may need additional support* when being placed in a traditional public school (based on the finding that students in schools where the principal had prior experience in a charter school tended to have lower math scores). Principals with a background in community and family outreach were more likely to be retained at their school; districts may want to *consider encouraging newly-placed principals to form outreach and communication strategies and to provide the principal with coaching and support in this area to encourage retention*. However, retention at the school did not have a strong relationship with most principal education and professional experience, indicating that principal retention may be driven by other factors not available on a resume. Having had prior experience teaching at the elementary level and no prior experience in the city were both negatively related to retention at the district while having attended a highly selective undergraduate institution was negatively related to both school and district retention. Districts may want to *consider researching why these characteristics seem to be negatively related to retention and institute additional support programs or training for principals with those characteristics to encourage retention*.

Lastly, districts may want to consider the recommendations for preparation programs below and incorporate aspects of those recommendations into existing professional development programs. For

example, *districts may wish to provide training to sitting principals on how to supervise adults or on working with diverse populations*.

Recommendations for Preparation Programs

By modifying their curricula to emphasize experiences associated with success, principal preparation programs may improve the success of their trainees once they are placed in a school. Recommendations for potential modifications to program curricula based on the results of this research are below. However, preparation programs should recognize that these results are based on research conducted with principals trained through one preparation program (New Leaders) and results should be confirmed through research related to their own trainees.

Preparation programs should track the information that participants provide on their applications to the program (e.g., resume data) and enter it into the same system in which program attendees' progress is tracked. This will allow the programs to examine the relationships between background characteristics and program success. Ideally, the preparation program could also form partnerships with districts and CMOs that hire large numbers of trainees and connect the program data with student and school data to examine program participant success and determine which education and professional experiences seemed to lead to greater success. This can inform program application criteria and help programs craft curricula to give participants the experiences that seem to correlate with success in schools.

Principal preparation programs may want to consider providing attendees with opportunities to supervise other adults, perhaps through group projects with explicit leadership roles; this recommendation is based on the finding that supervisory experience was positively associated with reading scores (see Chapter 4). Programs whose trainees typically are placed in urban districts and/or districts with diverse populations may want to encourage opportunities to work with diverse groups of students and adults, perhaps by making volunteer opportunities easily available or organizing cohort volunteer days; this recommendation is based on the finding that there is a positive association between diverse experience and FRPL. In the same vein, international experiences were found to be positively related to math scores and *preparation programs could consider offering or encouraging short-term volunteer experiences abroad, potentially for credit, where attendees work with schools in another country*.

Preparation programs should be mindful of the potential differences in leading elementary, middle, and high schools and consider targeting certain preparation areas to the school level. All attendees should, however, have exposure to coursework that addresses all levels, given that placements may not match the level of school that a principal candidate desires. I found that elementary experience was negatively associated with attendance and district retention, while middle school experience was positively related with FRPL, indicating that past experience in different types of schools may influence student outcomes and principal placement and thus should be considered in preparation programs.

Lastly, *preparation programs should be mindful of the importance of the community and family outreach coordinator role and incorporate this outreach and communication into the curriculum*. I found that principals with a background that included community and family outreach were more likely to be retained at their schools. Programs could provide opportunities to practice outreach as well as provide coursework or materials discussing strategies for outreach.

Recommendations for Further Research

This dissertation looked at how a principal's education and prior professional experience are related to student outcomes and principal retention, with implications for how states set certification policy, districts craft hiring policies, and training programs design curricula. This chapter outlined recommendations for potential policy changes that may serve better to align policy with what research has shown is important for success as a school leader.

Throughout the process of conducting research for this dissertation, I identified areas where future research in this field may continue to advance understanding of how principal hiring policy may influence student outcomes and principal retention.

Additional research should be conducted on the entire population of principals in a district, rather than just those trained through a specific program, in order to examine how different training program experiences may influence student outcomes. Conducting similar studies in other contexts, for example in rural districts, would also provide information as to how school and district context may produce variations in the relationships between principal education and professional experience and student outcomes and principal retention.

Random assignment of principal candidates to school placements is unlikely, given the understandable wish to involve school communities in principal selection as well as a desire to create a "good match" between a principal and a school, and thus an experimental design approach to examining

the question of how principal education and professional experiences influence student outcomes and principal retention is unlikely to occur. Given this, *future studies on this subject should attempt to include additional control variables on students, on schools, and on the principals themselves to better isolate the effect of the principal's education and professional experience*. In a sample where many principals move between schools, *other methodological approaches such as school fixed effects may be used again to help isolate the effect of principal background on student outcomes and principal retention.* However, these efforts would only mitigate the issue of non-random assignment of principals to schools rather than solving the problem.

This dissertation highlighted certain education and professional experiences that were statistically related to student outcomes and principal retention. However, we do not have a full understanding of why these experiences might be related. Further research into the mechanisms behind these experiences would provide the education community with better information as to how to incorporate these experiences into policy and practice. For example, *research to identify what skills and practices of current principals are related to having had supervisory experience would help to demystify the "black box" of why having had past experience supervising adults seems to be related to certain student outcomes.* It could be that a single effective practice is associated with this experience or that it is a range of practices; understanding this can help target policy and practice to be even more effective in selecting and training principals. Lastly, *additional research on district placement policies and on retention decisions would advance the field by shedding light on important aspects of how school leadership influences students*: the processes by which principals arrive at and leave a school.

As the body of research around the importance of principals grows, research on these topics will become increasingly relevant as a better understanding of what makes a principal an effective school leader has a clear link to state and district policy. States and districts want to improve educational outcomes for their students and policy related to principal effectiveness, including principal hiring, is one area in which there is an opportunity to better-align policy to research and potentially realize gains in student outcomes.

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Appendix A: Principal Hiring Survey

Principal Hiring Practices Survey

Your school district has been selected to participate in a short survey regarding school principal hiring practices. These questions are for a central office staff member (not for school principals) to answer. Your responses will inform research for a dissertation on school principal leadership. If you are not aware of principal hiring practices and policies, you are welcome to pass the survey on to colleagues in your district (or in other districts) who are involved with hiring principals.

The survey is available online and should take less than 15 minutes of your time. Feel free to contact me with any questions or problems with the survey. Thank you for providing information on how principal hiring conditions vary between districts!

Best,
Ashley

--
Ashley Pierson
Assistant Policy Analyst, RAND Corporation
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* Required

Consent

The RAND Corporation is conducting a study regarding principal leadership. RAND is a non-profit research organization known for objective evaluations of various education initiatives. The purpose of this study is to better understand how prior educational and professional experiences are related to a principals' performance.

As part of this study, we are surveying representatives in various school districts to gather information on the general conditions related to hiring and placement of principals in your district.

We expect this survey to take no more than fifteen minutes of your time and there are no anticipated risks to participation. This study may help to inform districts and charter management organizations of ways to improve the recruitment and hiring process.

Your participation in this survey is voluntary. We will not report your name, contact information, or job functions to any other person or entity outside of the RAND research team. We plan to provide district-specific summaries of these principal conditions in our published report. You may choose not to participate, decline to answer any question, or exit the survey at any time.

Please contact Ashley Pierson, Assistant Policy Analyst, RAND Corporation, at apierson@rand.org or at [redacted] with any questions regarding this survey.

1. **Consent** *
   Do you agree to participate? (Please mark yes or no below.)
   Mark only one oval.

   ◯ Yes
   ◯ No *Stop filling out this form.*

Respondent Information

2. **Job Function** *
   What is your job function as it relates to hiring principals? (Select all that apply.)
   Check all that apply.

   - [ ] Recruit district principal candidates
   - [ ] Screen district principal candidates (examine applications and resumes)
   - [ ] Interview principal candidates
   - [ ] Recommend hires for district principal positions
   - [ ] Make final hiring decision for district principal positions
   - [ ] Other: _____

3. **District** *
   For what school district do you work? (Please type response below.)

   _____

   _____

   _____

   _____

   _____

Previous Work and Training

These questions ask about principal candidate training and the position a principal candidate held immediately before being hired as a principal in your school district.

4. Thinking about principals hired in the last two years, where did they work most recently before being hired by your district as a principal? (Please rank the top three most common previous positions in your estimation; select "not in top three" for unranked options.)

   Mark only one oval per row.

	First most common	Second most common	Third most common	Not in top three
This school district in another position (internal candidate)				
Another school district or CMO				
A private school				
The education sector but not at a school district, CMO, or private school				
The private, non-profit, or public sector in a position not related to education				
Other				

5. Thinking about principals hired in the last two years, where did they receive their most recent training to become a principal? (Please rank the top three most common sources of training in your estimation; select "not in top three" for unranked options.)

   Mark only one oval per row.

	First most common	Second most common	Third most common	Not in top three
District- or CMO-run internal training program				
Traditional university program				
Alternative principal preparation program				
Other				

Screening Process

These questions ask about the initial application of a candidate to the district.

6. What does this district require principal candidates to submit when candidates first apply (e.g., the initial screen)? (Please check all that apply from the list below.)

   Check all that apply.

   - [ ] Resume
   - [ ] Personal references
   - [ ] Letter(s) of recommendation
   - [ ] Cover letter
   - [ ] Essays (typically more than 2 paragraphs)
   - [ ] Short-answer questions (typically less than 2 paragraphs)
   - [ ] Application form
   - [ ] Proof of state certification(s) required for the position
   - [ ] Transcripts from postsecondary programs
   - [ ] Other: _____

7. Does your district have certain criteria used to screen resumes? (Please select one response below.)

   Mark only one oval.

   - ◯ Yes
   - ◯ No *Skip to question 9.*
   - ◯ Don't know *Skip to question 9.*
   - ◯ Not applicable; my district does not use resumes in screening *Skip to question 9.*

8. What are the criteria your district uses to screen resumes submitted as part of their initial application? (Please describe below.)

   _____

   _____

   _____

   _____

   _____

Interview process

These questions ask about the interview process a candidate goes through after passing the screening process.

9. Are principal candidates required to complete performance-based tasks, such as a mock teacher evaluation, as part of the interview process?

   Mark only one oval.

   - ◯ Yes
   - ◯ No *Skip to question 11.*
   - ◯ I don't know *Skip to question 11.*

10. Please describe the performance-based tasks that principal candidates perform during the interview.

    _____

    _____

    _____

    _____

    _____

11. **Placement process: These questions ask about the placement process wherein a principal candidate is matched with an opening at a school and hired as a principal.**

    In your district's placement process, do: (select all that apply)

    Check all that apply.

    - ☐ Principal candidates seek out placements and contact the district or school regarding the opening?
    - ☐ District staff seek out and contact principal candidates regarding the opening at a school?
    - ☐ Schools seek out principal candidates for their opening?
    - ☐ Other: _____

12. Does your district use an eligibility pool process (where candidates are screened for eligibility and placed in a pool of candidates and then potentially matched with schools)?
Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ I don't know
- ◯ Other: _____

13. Is the school community (including site-based staff, parents, students, and/or community members) involved in the selection of a principal?
Mark only one oval.

- ◯ Yes
- ◯ No *Skip to question 15.*
- ◯ Don't know

14. Who from the school community is involved in the selection of a principal? (Select all that apply.)
Check all that apply.

- ☐ Teachers
- ☐ Students
- ☐ Parents
- ☐ Other school staff
- ☐ Community members (not parents)
- ☐ Other: _____

15. Who is responsible for final selection of the principal candidate for a given opening? (Please select one option.)
Mark only one oval.

- ◯ Superintendent/Chief Education Officer
- ◯ Principal manager
- ◯ Local school group
- ◯ Other: _____

16. Does your district consider school needs against candidate strengths and weaknesses to guide the placement process between school and principal?
Mark only one oval.

- ◯ Yes
- ◯ No *Skip to question 18.*
- ◯ Don't know *Skip to question 18.*

17. Please describe how your district considers school needs against candidate strengths and weaknesses to guide the placement process between school and principal.

_____

_____

_____

_____

_____

Conclusion

18. What are the strengths of the principal hiring system in your district? (Please describe below.)

_____

_____

_____

_____

_____

19. What are the weaknesses of the principal hiring system in your district? (Please describe below.)

20. **Thank you for your time in completing this survey. Your responses will help inform research on school leadership. Please provide any additional comments on the survey or on principal hiring below.**

Appendix B: Coding Rules and Variable Description

Table B.1 below details the variables entered from principal resumes and the coding rules used. Additional information regarding coding follows the table.

Table B.1. Coding Rules and Variable Description

Variable	Coding rules and variable description
General	
ID	Individual identification code assigned by New Leaders to aspiring principal program participants
Name	Full name
Gender	Male or female; determined from first and middle names. If not apparent, Google search was used to determine if the name is more commonly used for males or females, and a Google search of the full name was used to research the person. Typically there would be an article quoting the principal or a "welcome" page for the school website that had a photograph or used a gendered pronoun.
Cohort	Year participated in the New Leaders program
District	District of program
Languages	Languages spoken (other than English)
Year of first degree or first experience	Year of bachelor's or associate's degree (or first military/first work, if bachelor's not earliest experience listed)
Detail on year of first	Detail on what year was listed (bachelors, first military, first work, etc.)
Education background: If it was not listed what the degree was in, it was counted as “No” for degree in education or administration.	
Associates dummy	Indicator for associate's degree
Associates in Ed	Indicator for if associate's was in education field
Bachelors Institute	Bachelor's institute
Major in Ed	Indicator for if major was in education
Minor in Ed	Indicator for if minor was in education
Bachelors year (if not previous)	Year of bachelor's degree
Masters Institute	Master's institute (first master's)
Masters in Ed	Indicator for if master's was in education
Masters in Admin/Super	Indicator for if master's was in educational administration
Year of master's	Year of first master's degree
second masters	Indicator for second master's degree
Masters Institute 2	Master's institute (second master's)
Masters in Ed 2	Indicator for if master's was in education (second master's)
2nd Masters in Admin/Super	Indicator for if master's was in educational administration (second master's)
Masters 2 year	Year of second master's degree
Third masters	Indicator for third master's degree
Masters Institute 3	Master's institute (third master's)
Masters in Ed 3	Indicator for if master's was in education (third master's)

3rd Masters in Admin/Super	Indicator for if master's was in educational administration (third master's)
Masters 3 year	Year of third master's degree
Years between bachelors and masters	Years between earning of bachelor's degree and first master's
PhD	Indicator for PhD (current candidates were included)
Year of PhD	Expected or actual year of PhD
PhD in Education	Indicator for if PhD was in education
PhD in Super/Admin	Indicator for if PhD was in educational administration
Cities: If city is a suburb of main city, listed main city. Suburb status was determined by if suburb forms part of metropolitan area and if in same county as main city.	
City from (first city listed)	City listed for earliest experience (job or education).
Other cities 1	Next city listed (chronologically)
Other cities 2	Next city listed (chronologically)
Other cities 3	Next city listed (chronologically)
Other cities 4	All other cities
Current city (on resume)	Current city listed on resume (in address)
International experience	Indicator for any international experience on resume (education or work-related)
Work experience (non-education)	
Military experience	Indicator for any military experience (including reserves)
Military supervisor role	Indicator for supervising others while in the military
Reason for supervisory role	Evidence/reason for supervising others in the military
Military years	Number of years of experience in the military
Private sector	Indicator for private sector experience. If worked at a private company but work was related to education, looked at duties. If duties were teaching/interacting with children, this counted as K-12 other education experience. If duties were not related to children, then this was categorized as private sector.
Years in private sector	Years of private sector experience
Supervisory role in private	Indicator for supervising others while in the private sector
Reason for supervisory role in private	Evidence/reason for supervising others in the private sector
Number of private sector employers	Number of private sector employers. Did not count multiple positions in same company as separate jobs since only the last title with a company may be listed.
Non-profit sector	Indicator for non-profit sector experience (experience as a pastor or minister was included here). Work for a college or university that was not teaching and not directly related to K-12 was included as nonprofit (e.g., worked in admissions). Summer camp and non-academic after school programs included as nonprofit (but summer school was included as education experience).
Years in non-profit sector	Years of non-profit sector experience
Supervisory role in non-profit	Indicator for supervising others while in the non-profit sector
Reason for supervisory role in non-profit	Evidence/reason for supervising others in the non-profit sector
Number of non-profit sector employers	Number of non-profit sector employers. Did not count multiple positions in same company as separate jobs since only the last title with a company may be listed.

Public sector (non-education)	Indicator for non-education public sector experience. Teaching was not included here and district central office work was included as other education; however, working for state department of education was included as public sector as duties were more removed from working in schools and with children.
Years in public sector (non-education)	Years of public sector experience
supervisory role in public sector (non-education)	Indicator for supervising others while in the public sector
Reason for supervisory role in public sector (non-education)	Evidence/reason for supervising others in the public sector
Number of public sector employers	Number of public sector employers. Did not count multiple positions in same company as separate jobs since only the last title with a company may be listed.
Work experience (education)	
Education sector	Indicator for education experience (mainly public sector, but private school experience and work for private and non-profit organizations directly related to education were included)
Years as classroom teacher	Years as a classroom teacher (PK-12); including private school experience; not counting student teaching. Long-term substitute teaching counted but at a 1/3 discount for years of teaching, as this employment may not have been full-time; also, substitute teachers typically do not develop their own lesson plans, which is a central responsibility of teaching.
Min grade taught	Lowest grade taught. If grade levels not listed, inferred where possible from other information (e.g., taught AVID, must have been at MS or HS level; school is "XYZ Elementary", then counted for K-5). If no information provided, this was left blank (e.g., resume lists Educator in School District X with no school names or grade indication).
Max grade taught	Highest grade taught
Taught math	Indicator for teaching math (some elementary teachers did not specify subjects; given that many elementary teachers teach all subjects, these were coded as teaching math, reading, and other)
Taught reading	Indicator for teaching reading/writing/language arts
Taught other	Indicator for teaching subjects other than math or reading
Teacher leader?	Indicator for teacher leadership; defined here as supervising (being responsible for hiring/feedback/dismissal) of other teachers or school staff. Leading PD sessions, mentoring new teachers, or developing curriculum without evidence of supervising others did not count. However, with some combination of these and evidence of supervising (e.g., was administrator when principal was absent) this was counted as teacher leader.
Evidence of teacher leader	Evidence/reason for teacher leadership decision
District taught in (1)	First district taught in
School(s) taught in (district 1)	Schools in first district taught in
Grades taught at (1)	Grades taught in first district
Years taught in district 1	Number of years taught in first district
District taught in (2)	second district taught in
School(s) taught in (district 2)	Schools in second district taught in

Grades taught at (2)	Grades taught in second district
Years taught in district 2	Number of years taught in second district
Additional districts	Any additional districts taught in
Evidence of improved student outcomes	Indicator for if resume listed evidence of improving student outcomes while in education (as a teacher or in other non-teacher role in education)
Citation of improved student outcomes	Evidence for improving student outcomes
Taught or worked in charter school	Indicator for if taught or worked in a charter school; if not apparent from name of school (e.g., charter in the name or a recognizable charter management organization, such as Aspire or KIPP), checked online to see if it was charter
Non teacher education experience K-12	Indicator for experience working in education not as a teacher (could be for district, but also private and non-profit experience directly related to education counted)
District of other education experience	District(s) and cities of other education experience
Years of other education experience	Years of other education experience
Position of other education experience	Position(s) of other education experience; this was the title name and/or details of what they did
AP or analogous position	Indicator for if held AP or analogous (e.g., assistant director) position. If unclear from title, examined evidence on resume to see if position description was similar to typical duties of AP: supporting principal in hiring, scheduling, discipline.
Principal or analogous position	Indicator for if held principal or analogous position (e.g., director of school)
School of other education experience	School(s) of other education experience
Supervisory role in other education experience	Indicator for if supervised adults in other education role
Reason for supervisory role	Reason/evidence for supervising adults in education role
Special education experience	Indicator for if special education was mentioned in any work experience; this was identified through reading the resume as well as searching to check for key words "special" and "IEP"
Reason for special education experience	Reason/evidence for special education decision
Adult education experience - years	Number of years teaching adults (e.g., college instructor)
Adult education experience - description	Description of adult education experience (role)
Parent/community dummy	Indicator for if parent or community was mentioned on resume in any context related to work or education; this was identified through reading the resume as well as searching for "parent" and "community". Something as small as "held conferences with parents" counted here.
Reason for parent/community	Reason/evidence for parent/community decision (copied text from resume to provide evidence)
Diversity experience	
Diversity experience (1-4 scale)	Rating of diversity experience on a 1-4 scale. A 1 indicates little exposure to diversity (never taught in urban school, for example). A 2 indicates some exposure to diversity (taught in one or two urban school districts). A 3 indicates more exposure to diversity (taught in multiple urban school districts, worked with at-risk populations, volunteered with at-risk populations). A 4 indicates that nearly all experience on resume is connected with at-risk and diverse populations (e.g.,

	taught in a school for newly arrived immigrants and taught in multiple districts and taught ELL).
Reason for diversity experience	Reason/evidence for diversity experience rating

SOURCE: Author

Additional notes on coding:

- If you worked for a private-sector educational company and your duties were similar to those if you worked for a district (e.g., conducted training for teachers), it went to other education experience. Similarly, if you worked for an education nonprofit whose mission focused on PK-12 and your duties were similar to those at a district position, this was included in other education experience (e.g., managed PLCs or taught literacy intervention to teachers). Summer camp and non-academic after school experiences went to nonprofit, while more academic after school and summer school activities were counted as other education.
- Certain teaching positions with responsibilities outside of the classroom were coded for both teaching and other education given the nature of their duties; time was split between these in relation to the responsibilities listed. For example, a band director position counted for both teaching and other education, since the band director duties listed were more widespread than classroom teaching.
- For supervisory experience, if no details on responsibilities were provided and the title did not indicate supervisory responsibilities, then this was coded as no supervisory experience. For example, listing "assistant principal" with no description would count, but "lead sales agent" would not, as the latter does not indicate if supervision of adults occurred at that position.
- If year of work experience was not listed, then inferred from degree where possible (e.g., if no year span for teaching, then looked at year earned teaching masters to discern probable first year teaching). For work and education experience, if year was not listed, an internet search was performed; often, a version of the person's resume could be found online (typically on LinkedIn®) and the year was then determined from that information.
- If experience was month or less (e.g., served as AP for a month interim) then this didn't count for that sector. However, summer jobs and internships were included.
- When listing years or determining time span, a conservative estimate was used (e.g., 1996-1998=2 years rather than 3). Where months were listed, these were used for more specific estimates. For example, November 1993 - March 1997 = 3.3 years, while 1993-1997=4.

Appendix C: Additional Results

Selectivity index correlation

In testing the correlation between my selectivity index and Barron's selectivity index, I found the correlation coefficient to be -0.817 and statistically significant at the 1-percent level. I also regressed Barron's index on my selectivity index as another measure of the relationship between these two indexes and again found a statistically significant relationship at the 1-percent level. Table C.1 below shows these results.

Table C.1. Regression Analysis of Selectivity Indexes

	My selectivity index
Barron's selectivity index	-11.12***
	[1.024]
Constant	98.38***
	[2.065]
Observations	61
R-squared	0.667
Standard errors in brackets	
*** p<0.01, ** p<0.05, * p<0.1	

SOURCE: Author

Average z-score in math with prior year score

The results in table C.2 show the same model as in table 4.3 but with the inclusion of the prior year's average z-score as a control variable in the middle column. The right-hand column shows a similar model that uses the yearly difference between math scores (the gain score) as the dependent variable rather than the score in a given year. Table C.3 shows the results of regressing evidence of improved student outcomes on average z-score in math with the prior year math score as a control variable. No principal variables were statistically significant at the 10-percent level or better when testing variables in this manner, but evidence of improved student outcomes was close to this level of significance with a p-value of 0.113. I included evidence of improved student outcomes in both of the models below and found it to be statistically significant at the 10-percent level in the model with the prior year score control.

Table C.2. Regression Analysis of Average Z-score in Math with Prior Year Math Score as Control

	Average math z-score			
	Prior year control	Prior year control	Gain score as dependent variable	Gain score as dependent variable
School variables				
Prior year average z-score in math	0.377***	0.379***		
	[0.0598]	[0.0581]		
Average z-score in reading	0.551***	0.541***	0.106***	0.0959**
	[0.0577]	[0.0574]	[0.0389]	[0.0403]
2009	0.0981	0.0965	0.084	0.0822
	[0.110]	[0.110]	[0.136]	[0.136]
2010	0.0967*	0.0871	0.0822	0.071
	[0.0569]	[0.0566]	[0.0846]	[0.0853]
2011	0.0145	0.00893	0.0427	0.0361
	[0.0360]	[0.0358]	[0.0508]	[0.0512]
2012	-0.00229	-0.00721	0.00703	0.00123
	[0.0366]	[0.0362]	[0.0528]	[0.0534]
Chicago	-0.0485	-0.0544*	-0.0454	-0.0524
	[0.0318]	[0.0321]	[0.0355]	[0.0370]
Memphis	0.0206	0.0244	-0.00669	-0.00214
	[0.0326]	[0.0328]	[0.0361]	[0.0366]
New York City	-0.0142	-0.0185	0.00591	0.000857
	[0.0343]	[0.0355]	[0.0429]	[0.0425]
Charter school	0.0658**	0.0721**	0.0613*	0.0687**
	[0.0312]	[0.0310]	[0.0341]	[0.0337]
School is a high school	-0.0546*	-0.0519*	-0.0388	-0.0357
	[0.0294]	[0.0295]	[0.0332]	[0.0335]
Average percent of students old for their grade	-0.00278***	-0.00295***	0.00238	0.00216
	[0.00102]	[0.00101]	[0.00172]	[0.00174]
Principal variables				
International experience	0.0412	0.0458	-0.0313	-0.0257
	[0.0268]	[0.0277]	[0.0274]	[0.0283]
Charter school experience	-0.0425	-0.0498*	0.0255	0.0167
	[0.0275]	[0.0276]	[0.0294]	[0.0297]
Any supervisory experience	-0.0134	-0.0119	-0.0292	-0.0273
	[0.0209]	[0.0209]	[0.0247]	[0.0246]
Private sector experience	0.0333	0.033	0.0128	0.0125
	[0.0215]	[0.0215]	[0.0233]	[0.0238]
Years as a classroom teacher	-0.00428*	-0.00423*	-0.00084	-0.00079
	[0.00229]	[0.00227]	[0.00299]	[0.00285]
Taught math	-0.0203	-0.0228	-0.0241	-0.0271
	[0.0210]	[0.0211]	[0.0220]	[0.0220]
Parent/community outreach	0.0132	0.0126	0.018	0.0173
	[0.0191]	[0.0188]	[0.0210]	[0.0207]
Evidence of improved student outcomes	n.a.	0.0499*	n.a.	0.0586
	n.a.	[0.0276]	n.a.	[0.0391]
Constant	0.0795	0.0821*	-0.00878	-0.00541

	[0.0486]	[0.0472]	[0.0769]	[0.0750]
Observations	257	257	257	257
R-squared	0.88	0.881	0.085	0.094

Robust standard errors clustered at the school level in brackets
*** p<0.01, ** p<0.05, * p<0.1

SOURCE: Author

Table C.3. Evidence of Improved Student Outcomes with Average Z-score in Math with Prior Year Math Score as Control

Average math z-score	
Prior year average z-score in math	0.902***
	[0.0294]
Evidence of improved student outcomes	0.0572
	[0.0359]
Constant	-0.0179
	[0.0144]
Observations	257
R-squared	0.787

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

SOURCE: Author

Average z-score in reading with prior year score

The results in table C.4 show the same model as in table 4.4 but with the inclusion of the prior year's average z-score as a control variable in the second column. The fourth column shows a similar model that uses the yearly difference between reading scores (the gain score) as the dependent variable rather than the score in a given year. Table C.5 shows the results of regressing evidence of improved student outcomes on average z-score in reading with the prior year reading score as a control variable; this was the only principal variable that was statistically significant at the 10-percent level or better when testing all variables in this manner. I included evidence of improved student outcomes in both of the models below (see table C.4, columns three and five) and found it to be statistically significant at the 10-percent level in the model with the prior year score control.

Table C.4. Regression Analysis of Average Z-score in Reading with Prior Year Reading Score as Control

	Average reading z-score			
	Prior year control	Prior year control	Gain score as dependent variable	Gain score as dependent variable
School variables				
Prior year average z-score in reading	0.488***	0.489***	n.a.	n.a.
	[0.0609]	[0.0602]	n.a.	n.a.
Average z-score in math	0.440***	0.434***	0.0941***	0.0886***
	[0.0518]	[0.0508]	[0.0266]	[0.0274]
2009	-0.0481	-0.0446	-0.0768**	-0.0731**
	[0.0439]	[0.0436]	[0.0369]	[0.0349]
2010	-0.0279	-0.0263	-0.0395	-0.0378
	[0.0519]	[0.0503]	[0.0645]	[0.0622]
2011	0.0196	0.0194	-0.0118	-0.012
	[0.0340]	[0.0344]	[0.0380]	[0.0374]
2012	-0.0007	-0.00012	-0.0611	-0.0603
	[0.0354]	[0.0357]	[0.0412]	[0.0405]
Chicago	0.0378	0.0302	-0.0134	-0.0213
	[0.0306]	[0.0294]	[0.0392]	[0.0415]
Memphis	0.0263	0.0366	-0.0294	-0.0183
	[0.0329]	[0.0319]	[0.0388]	[0.0385]
New York City	0.0618*	0.0568*	0.00769	0.0025
	[0.0316]	[0.0290]	[0.0378]	[0.0372]
School is an elementary school	-0.0207	-0.0306	0.019	0.00835
	[0.0268]	[0.0266]	[0.0335]	[0.0332]
School is a middle school	-0.0252	-0.0278	0.0154	0.0126
	[0.0260]	[0.0259]	[0.0317]	[0.0331]
Average percent of FRPL students	-0.000994**	-0.00102**	0.000168	0.000142
	[0.000466]	[0.000470]	[0.000560]	[0.000565]
Average percent of white students	0.00227**	0.00254***	-0.00121	-0.00092
	[0.000912]	[0.000875]	[0.000832]	[0.000879]
Principal variables				
Taught reading	0.0256	0.0336*	-0.00011	0.00847
	[0.0199]	[0.0200]	[0.0230]	[0.0235]
Any supervisory experience	-0.0105	-0.00756	-0.0500**	-0.0468**
	[0.0147]	[0.0139]	[0.0194]	[0.0191]
Years as a classroom teacher	3.40E-05	0.000146	-0.00224	-0.00211
	[0.00210]	[0.00201]	[0.00239]	[0.00228]
Parent/community outreach	0.0068	0.00407	0.00623	0.00333
	[0.0139]	[0.0141]	[0.0167]	[0.0164]
Evidence of improved student outcomes	n.a.	0.0608*	n.a.	0.0647
	n.a.	[0.0319]	n.a.	[0.0400]
Constant	0.00476	-0.00572	0.0797	0.0684
	[0.0489]	[0.0481]	[0.0634]	[0.0629]
Observations	250	250	250	250

R-squared	0.917	0.92	0.101	0.118

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

SOURCE: Author

Table C.5. Evidence of Improved Student Outcomes with Average Z-score in Reading with Prior Year Reading Score as Control

Average reading z-score	
Prior year average z-score in reading	0.920***
	[0.0247]
Evidence of improved student outcomes	0.0722**
	[0.0288]
Constant	-0.0341***
	[0.0113]
Observations	253
R-squared	0.847

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

SOURCE: Author

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