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## Principal Preferences and the Uneven Distribution of Principals Across Schools

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*The authors use longitudinal data from one large school district to investigate the distribution of principals across schools. They find that schools serving many low-income, non-White, and low-achieving students have principals who have less experience and less education and who attended less selective colleges. This distribution of principals is partially driven by the initial match of first-time principals to schools, and it is exacerbated by systematic attrition and transfer away from these schools. The authors supplement these data with surveys of principals and find that their stated preferences for school characteristics mirror observed distribution and transfer patterns: Principals prefer to work in easier-to-serve schools with favorable working conditions, which tend to be schools with fewer poor, minority, and low-achieving students.*

Keywords: *principals, urban education, leadership*

ONE of the greatest differences in resources across schools is that of human capital. Many studies have documented the inequitable distribution of teacher quality, which disadvantages poor, non-White, and low-achieving students (see, as examples, Boyd, Lankford, Loeb, & Wyckoff, 2005; Hanushek, Kain, & Rivkin, 2004; Scafidi, Sjoquist, & Stinebrickner, 2008). Some research has shown a parallel inequitable distribution of principal quality, in which schools that serve poor, non-White, and low-achieving students are more likely to have high rates of principal turnover and limited principal applicant pools (Branch, Hanushek, & Rivkin, 2009; Gates, Ringel, Santibanez, Ross, & Chung, 2003; Papa, Lankford, & Wyckoff, 2002; Roza, 2003). The inequitable distribution of principal quality is of particular concern because principals play a critical role in developing high-quality schools (Hallinger & Heck, 1996). This study extends the current literature by describing the distribution of principal quality, as

measured (a) by experience and educational background across different types of schools and (b) by identifying the extent to which this distribution of principals is driven by the initial job match of first-time principals to schools, differential principal attrition, and the systematic transfer of principals to and from different types of schools.

We find a pattern similar to that found in prior research in which lower-achieving schools are led by less-qualified principals. This pattern is reflected in the initial match of principals to schools but is compounded by differential attrition and the systematic transfer of more qualified principals to higher-achieving, lower-poverty, and higher-proportion-White schools. The pattern could be driven by principals' preferences, by school district assignment practices that disadvantage some schools, or both. Although we cannot perfectly distinguish these potential causes, we compare principals' reported preferences for schools from a survey that we

administered in the spring of 2008 to the career patterns observed in administrative data. The results indicate that many principals prefer to work in schools with fewer at-risk students and, when given the opportunity, behave in accordance with these preferences.

### **Background on Effective Principals**

Effective principals influence a variety of school outcomes, including student achievement, through their recruitment and motivation of quality teachers (Harris, Rutledge, Ingle, & Thompson, 2006; Jacob & Lefgren, 2005), their ability to identify and articulate school vision and goals, their effective allocation of resources, and their development of organizational structures to support instruction and learning (Brewer, 1993; Eberts & Stone, 1988; Knapp, Copland, Plecki, & Portin, 2006; Leithwood, Seashore Louis, Anderson, & Wahlstrom, 2004). Robinson, Lloyd, and Rowe (2008) conducted a meta-analysis of studies on the relationship between school leadership and student outcomes and concluded that the average effect of instructional leadership practices—such as being an instructional resource for teachers—is 3 to 4 times that of transformational leadership practices, such as sharing an inspirational vision. In contrast, Horng, Klasik, and Loeb (forthcoming) found a significant and positive relationship between time spent on organization management tasks—such as hiring staff and allocating budgets—and student outcomes. Despite a lack of clarity on how principals affect school outcomes, there is consensus that principals have a significant impact on student development and other school outcomes. Consequently, the distribution of effective principals across schools likely has implications for students.

### **Background on Distribution of Principals Across Schools**

Given that a majority of principals were previously teachers, it is not surprising that the principal labor market parallels the teacher labor market—particularly in attrition behavior. Transfer and turnover patterns among teachers consistently reveal an aversion to working at schools with low-income, non-White, and

low-achieving students, perhaps because of adverse working conditions in schools that enroll such student bodies (Boyd et al., 2005; Hanushek et al., 2004; Scafidi et al., 2008). The research on school principals is much less developed, although seven studies that we know of have begun to describe principal labor markets.

Gates et al. (2003) examined data from the 1999–2000 National Center for Education Statistics Schools and Staffing Survey, a nationally representative survey of principals, and found that principals serving large concentrations of low-income, minority, and/or limited-English-proficient students are no less experienced on average than principals at other schools. Yet, Roza (2003) found that high-poverty and low-performing school districts receive fewer applications per principal vacancy than do other districts. Similarly, Gates and colleagues (2005) used administrative data from Illinois and North Carolina and found that principals in schools with large proportions of minority students are more likely to transfer to other schools and leave the principalship altogether than are principals in other schools, although this is not the case for principals who share the same race as the largest student racial group in the school.

Data in New York and Texas mirror the results from Illinois and North Carolina. Using information on New York public schools from 1970–1971 to 1999–2000, Papa et al. (2002) found that urban schools—particularly, low-performing ones—staff less-experienced principals and principals with bachelors' degrees from lower-ranked undergraduate institutions, on average. They also found that when principals transfer to schools outside of New York City, they tend to move to schools with higher test scores, better-qualified teachers, and fewer low-income students. Using Texas longitudinal administrative data from 1994–1995 to 2000–2001, Branch et al. (2009) showed that low income, non-White, and low-achieving students are more likely to have principals with little or no prior experience and that as principals gain more experience, they tend to move to schools with students from higher-income families. Most recently, Fuller and Young (2009) examined the retention rates of newly hired principals in Texas public schools, from 1996 to 2008.

They found that principals in the lowest-achieving and highest-poverty schools have the lowest retention rates. They also found that principals' personal characteristics (e.g., age, race, and gender) and certification test results have little impact on their retention rates. Cullen and Mazzeo (2007) also used longitudinal Texas public school system data, asking a somewhat different question. They found that principals at schools that exhibit declining student achievement under their direction were more likely to move to positions where they had lower wage growth.

### Motivation

Prior research has demonstrated that principal quality significantly affects a variety of school outcomes. Although not in complete agreement, the current evidence suggests that students in high-poverty, low-achieving schools are more likely to have an inexperienced and otherwise less-qualified principal. The research to date, however, has said little about the mechanisms leading to these differences—for example, are disparities across schools solely the result of higher principal turnover in these schools, or does systematic movement of more experienced principals to higher-income schools contribute as well? Do the patterns reflect preferences of principals for higher-performing or higher-income schools, or are they the result of district assignment or policy choices? If principal labor markets do indeed parallel teacher labor markets, we would expect our findings to mirror those of teacher career studies. Specifically, many of these studies showed that teachers prefer schools with high-income, White, and high-achieving students (Boyd et al., 2005; Hanushek et al., 2004; Scafidi et al., 2008). We hypothesize that principals' preferences for schools—and, consequently, the distribution of principals across schools—mirror those of teachers.

An understanding of the dynamics of the principal labor market and of principal preferences for serving different types of schools can be useful for designing policies that address these difficulties. If differences in principals' qualifications across schools are the result of the match of first-time principals to schools, then

districts can target this initial match. If differential attrition is the primary cause of the differences, then districts can target this turnover. Similarly, if district policies and not principals' preferences for school characteristics are driving the lower qualifications of principals in the schools with the most at-risk student populations, then the best approaches for reducing the disparities will be different from what they would be if principal preferences were the driving force. In the analyses that follow, we build on prior research by examining the factors that contribute to unequal distribution of principal characteristics across schools (i.e., initial match, attrition, and transfer) and by combining analyses of principals' stated and revealed preferences for different types of schools to identify whether principals' preferences for different schools are driving the behaviors and sorting that we see.

We begin by describing the data and methods used in the study. We then present our analyses in three parts. First, we describe the distribution of principal characteristics across schools in the district, categorizing schools based on grade level, poverty, race/ethnicity, and academic achievement of its students. Next, we examine the extent to which the distribution of principal characteristics is driven by initial principal-school matches, attrition, and the systematic transfer of principals to different types of schools. The final part of our analysis investigates principals' and prospective principals' stated preferences for school characteristics. As in prior research on principal turnover, we are unable to distinguish between voluntary and involuntary quits using the career path data available to us. However, we are able to supplement our analyses of administrative data with an analysis of survey data in which we explicitly ask principals and assistant principals (APs) the types of schools they most like to work in. We conclude with a discussion of the implications of our findings for policy and future research.

### Method

This study examines the principal labor market in one large school district, particularly focusing on distribution of principals across schools, initial match of principals to schools,

attrition from the principal position, systematic transfers of principals across schools, and current and prospective principals' stated preferences for working in various types of schools. The purpose of this study is to describe patterns in the principal labor market. We estimate the extent to which school characteristics—including student body ethnicity, poverty, and performance, as well as school climate—are associated with principal school matches. These matches could be driven by principal preferences, the preferences of school hiring authorities, or district policies. Using survey data, we test whether principal preferences are, at least in part, driving the patterns. The remainder of this section describes the data sources, measures, and data analysis methods we use. We conclude with a discussion of the limitations of this study.

### *The District*

The data in this study come from administrative files on all staff and students in Miami-Dade County Public Schools (M-DCPS) for the school years 2003–2004 through 2008–2009, from surveys of principals and APs, and from publicly available school-level information from the Common Core of Data (a survey of the universe of public education agencies in the United States conducted by the National Center for Education Statistics) and the Florida Department of Education.

M-DCPS is the largest school district in Florida and the fourth-largest in the country, trailing only New York City, Los Angeles Unified, and the City of Chicago. In 2008, M-DCPS enrolled nearly 350,000 students, more than 200,000 of whom were Hispanic.<sup>1</sup> Most large urban districts throughout the nation struggle with finding and keeping principals in particular schools (Darling-Hammond et al., 2007). Our interviews with district leadership suggest that M-DCPS is no different. In addition, its unusually large enrollment and large geographic area make the district appropriate for studying labor market patterns. With more than 350 schools and principals observed over a 6-year time frame, the data provide substantial variation for examining differences among schools in the career pathways of principals. From 2004–2005 to 2007–2008, Dr. Rudy Crew

was the superintendent of the district: Our data allow us to observe the principal labor market throughout the length of his tenure, including additional bookend school years.

### *Administrative Data*

The M-DCPS staff database includes demographic measures, prior experience in the district, current position, and highest degree earned for all district staff for the school years ranging 2003–2004 through 2008–2009. We link relevant measures from these data to a file that lists the start and end dates for every person who held a principal position in the district over this period. Over the 6-year time frame, 552 unique individuals held principal positions in M-DCPS's 373 schools. Some individuals served as principal at more than one school during this period, bringing the total number of individual–school combinations to 804. As shown in Table 1, the majority of M-DCPS's principals are Black or Hispanic, which mirrors the racial composition of teachers in the district. Principals average roughly 18 years of experience in the district before becoming principal; they remain principal at a given school for a median of 3 years; and most (81%) serve as principal at only one school over our observation period. Given the nature of our data, we are able to examine the distribution of principal attributes across schools, as well as transfer and attrition among principals who leave a given school during our observation period. We are also able to examine the prior positions held and the schools at which these positions were held for individuals who became principal at a new school between 2004–2005 and 2008–2009.

### *Survey Data*

We combine our analyses of these administrative data with an examination of current principals and APs—specifically, their stated preferences for the types of schools in which they would prefer to be principal. These data come from a larger study in which we surveyed principals and APs in the district in May 2008 in an effort to understand the preferences and responsibilities of school leaders. Of the 360 individuals serving as principals in the 2007–2008

TABLE 1

*Descriptive Statistics: Principal and School Attributes*

	<i>M</i>	<i>SD</i>
Principal characteristics		
White	0.26	—
Black	0.36	—
Hispanic	0.38	—
Female	0.67	—
Years experience		
In district	22.37	8.14
As principal in current school level	3.88	3.61
In district in first year as principal	17.7	7.67
Master's degree or higher	0.70	—
Median years as principal at given school	3.00	—
Principal at only one school from 2003 to 2008	0.81	—
Mean schools served as principal from 2003 to 2008	1.21	0.46
Unique principals from 2003 to 2008	552	—
Spells as principal from 2003 to 2008	804	—
Standardized College Selectivity Scale	0	1
Items in College Selectivity Scale		
Acceptance rate	63.5	15.6
Mean SAT/ACT scores (SAT scale, in hundreds)	10.59	1.02
Percentage of freshmen		
In top 10% of high school class	20.75	23.02
In top 25% of high school class	37.4	31.61
In top 50% of high school class	58.9	43.31
In bottom 50% of high school class	7.54	12.16
With high school GPA above 3.00	35.77	32.78
With high school GPA above 2.00–2.99	24.73	24.25
With high school GPA above 1.00–1.99	1.83	4.74
Total tuition and fees (in 1988 dollars)	3,900	3,500
School characteristics		
Elementary school	0.65	—
Middle school	0.17	—
High school	0.14	—
Mean proportion on free/reduced-price lunches		
Bottom quartile	0.29	0.12
Top quartile	0.91	0.06
Mean proportion minority		
Bottom quartile	0.71	0.11
Top quartile	0.99	0.01
Mean proportion in FCAT Achievement Level 1: Math		
Bottom quartile	0.08	0.05
Top quartile	0.43	0.17
Mean percentage in FCAT Achievement Level 1: Reading		
Bottom quartile	0.12	0.07
Top quartile	0.50	0.18
Accountability grades: Percentage receiving		
A	0.43	—
D or F	0.14	—
Schools, <i>n</i>	373	—

*Note.* Figures are based on data aggregated over the school years ranging 2003–2004 through 2007–2008. FCAT = Florida Comprehensive Assessment Test.



school year, 326 responded to our survey, for a 91% response rate. Of the 710 individuals serving as APs in the 2007–2008 school year, 583 responded, for a 82% response rate. The principal and AP surveys both included a question asking respondents to indicate their preference for being a principal at schools with different characteristics. The items are all coded with a Likert-type scale, with higher scores indicating stronger preference.<sup>2</sup> We also asked principals to list their undergraduate institution. We link the college they list to measures of college selectivity from the Annual Survey of Colleges, conducted by the College Board.

### *School Attributes Measures*

We use several measures of school attributes in our analyses, including the percentage of students who qualify for free or reduced-price lunch, the percentage of students who are Black or Hispanic, the percentage of students who score in the lowest of the five achievement levels on the Florida Comprehensive Assessment Test,<sup>3</sup> and school accountability grades handed out by the Florida Department of Education.<sup>4</sup> These measures overlap to some extent but are far from perfectly correlated. The percentage of students receiving free or reduced-price lunch correlates with percentage of minority students at .73, but these measures correlate with percentage of low-achieving students at about .40. Although many of the poorest schools are among the lowest achieving, this is not always true. We think that these measures capture features of schools that designate them as being harder or easier to serve as well as coveted or not by principals of certain characteristics (i.e., schools that attract principals versus schools to which certain principals are assigned).

Our data on school attributes come from a variety of sources. For the 2003–2004 through 2008–2009 school years, we have administrative data with demographic and test score information for all students in the district. We collapse these data to the school year level to obtain the percentage of students eligible for free or reduced-price lunch, the percentage of minority students (Black or Hispanic), and the percentage of students who score in the lowest performance level on the Florida Comprehensive Assessment

Test in math and reading. Some individuals began serving as principal in years not covered by our student-level data (i.e., before the 2003–2004 school year). For these earlier years, we obtain the percentage free or reduced-price lunch and the percentage minority from the Common Core of Data. We obtain school averages for earlier years of test score data from the Florida Department of Education website. School accountability grades from the 1999–2009 period also come from the Florida Department of Education. In instances where a school is missing any of these measures in a given year, we replace the missing information with data from the closest available year, assuming high within-school correlations over time. The numbers in Table 1 show that the average school in M-DCPS is made up of predominately minority students (90%) and students eligible for free or reduced-price lunch (68%) and that it has a sizable portion of students who perform below grade level in math (24%) and reading (30%). There is substantial variation in student attributes across schools, however, because schools in the bottom quartiles of these measures enroll relatively few poor (29%) and low-achieving students (8% to 12%) compared to schools in the top quartile of these measures.<sup>5</sup>

### *Principal Attributes Measures*

We use the M-DCPS administrative data to develop six measures of principal experience: total years experience in the district, total years experience as principal, years experience as principal at the current school, years experience in the district when becoming principal, whether the principal is new to a school, and whether the principal is temporary or interim. We also have two measures of principals' academic backgrounds: whether they have a master's degree or higher and selectivity of their undergraduate institutions. The M-DCPS administrative data provide us with their highest degree earned. The other measure of academic background is developed from principals' reported undergraduate institutions—specifically, we link the college listed on our survey to measures of college selectivity from the Annual Survey of Colleges. These measures include average SAT/ACT scores;<sup>6</sup> acceptance rate; the percentage of freshmen in

the top 10%, 25%, and 50% of their high school class; the percentage of freshmen with grade point averages within certain ranges; and total tuition and fees. We then create a scale of these measures, standardized to have a mean of 0 and a standard deviation of 1. Table 1 lists the means and standard deviations of the measures that compose the selectivity scale. We do not know the exact year that principals graduated from college, but given the distribution of their ages and years of experience in the district, we suspect that most graduated between the late 1970s and late 1980s. We use the Annual Survey of Colleges from 1988 because this is the oldest year of available data with our desired measures. We use surrounding years of data to impute missing values in 1988, following procedures implemented by Royston (2004).<sup>7</sup>

### *Data Analysis Methods*

Our analyses examine distribution of principal attributes across schools, initial match of principals to schools, attrition from the principal position, transfers of principals across schools, and principals' and APs' stated preferences for working in various types of schools. Specifically, we use these analyses to address three related sets of questions: First, do low-income, low-achieving, and racial-minority students attend schools led by principals with different characteristics than do other students? Second, is principal sorting driven by initial match, turnover, and/or transfer patterns? In other words, are there varied patterns of principal placement, turnover, and replacement among different schools? Third, are principals' and APs' stated preferences for school characteristics consistent with the patterns of transfer and attrition that we observe in the administrative data? That is, is the sorting of principals at least partially a function of principal preferences or unrelated (and unobserved) district policies?

### *Distribution of Principals*

To address our first research question, we compare the characteristics of principals across schools with varying student populations. Ideally, we would like to examine the distribution of principal quality across different types of schools.

However, it is difficult to form an operational definition of an effective principal largely because of the complex role of the principal and the difficulty in measuring competency in various aspects of this role. In the absence of direct measures of principal quality, we use several measures as proxies for quality, including highest degree earned, selectivity of the undergraduate college, and multiple measures of principal experience. The experience measures include total years experience in the district, total years experience as principal, years experience as principal at the current school, years experience in the district when becoming principal, whether the principal is new to a school, and whether the principal is temporary or interim.<sup>8</sup>

The research on the relationship between principals' measured characteristics and effectiveness is sparse. Although it is not clear how well these characteristics measure principal effectiveness, they do distinguish principals and they may affect their likelihood of obtaining desired positions. There is some evidence that principal experience is associated with quality. Research in Texas, for example, finds that students have greater learning gains when their school has a more experienced principal (Branch et al., 2009). Measures that tap into the academic ability of teachers—such as test scores, college selectivity, and undergraduate grade point average—have been found to be associated with teaching effectiveness (Ballou & Podgursky, 1995; Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008; Hanushek & Pace, 1995). Although limited, there is some evidence of a parallel relationship between principals' academic background and their effectiveness. Baker and Cooper (2005) found that principals who attended highly selective or the most selective undergraduate institutions were more likely to hire teachers who attended similar institutions. Similar to Baker and Cooper, we use the selectivity of principals' undergraduate institutions as measures of their academic background.

In the first stage of our study, we treat schools as the unit of analysis and make comparisons of principal attributes across schools with different student demographics. We categorize schools into quartiles based on the percentage of students receiving free or reduced-price lunch, percentage of minority students, and percentage



of students in Achievement Level 1 in math and reading on the Florida Comprehensive Assessment Test. We use *t* tests to compare schools in the top and bottom quartiles of these measures, as well as schools that receive accountability grades of A and D/F. The structure of the data for these analyses is such that each school contributes one observation per year from 2003–2004 through 2008–2009.

*What Drives the Unequal Distribution of Principals Across Schools?*

In answering our first research question, we observe large differences in average principal characteristics across schools. Our second research question asks whether this principal sorting is driven by the initial match of principals to schools, principal attrition, and/or principal transfer patterns. We first describe the district’s role in the hiring, firing, and reassignment of principals. We next examine the career histories of principals to assess how this sorting is influenced by the initial match of individuals to schools at the beginning of their principal career, by differential attrition, and by systematic transfers of principals from one type of school to another. New principals may influence disparities between schools by their choice of, or assignment to, their first principal positions. Furthermore, systematic patterns—in not only the principals who leave or transfer but also the schools from which and to which they transfer—may affect equity. To assess the role of the initial match of principals to schools, we simply compare the characteristics of first-time principals in different types of schools, again treating schools as the unit of analysis. The attrition analysis requires multivariate approaches to account for differences in the initial characteristics of principals in different schools, and we explain this approach in detail below. To assess whether systematic transfer behavior also contributes to the differences in principal characteristics across schools, we examine differences in the characteristics of principals who fill open positions in different types of schools and describe differences in the characteristics of schools from which and to which principals are moving.

For the attrition analysis, we use discrete-time hazard models to model differential patterns of

principal turnover in schools with various student demographics and achievement. These models allow us to examine if and when people leave their principal positions at given schools. Whereas the methods described previously treat schools as the unit of analysis, our turnover analysis treats individual principals as the unit of analysis. First, we model whether a principal serving a school stays in that school or leaves it at some point in our observation period. Second, we examine principal mobility using competing risks models, given the multiple transitions that a principal can make upon leaving a given school. In any given year, a principal may stay at his or her current school, transfer as principal to another school, or leave a given school and not serve as principal again in the district within our observation period. Because we have data from only one district, we cannot say anything about between-district transfers, and we do not know how common it is for principals to leave M-DCPS to transfer to another district. However, given that school districts in Florida are formed at the county level and that M-DCPS covers nearly 2,000 square miles, we anticipate that between-district transfers are relatively uncommon given that in most cases, they would require a residential relocation.<sup>9</sup>

To estimate the discrete-time hazard models, we construct a data set that includes one observation for each year that a principal is at risk of leaving the principal position. For each observation, the dependent variable identifies the type of transition, if any, that occurs during that year. Individuals who are principals at more than one school during our observation period will have multiple spells in our data, with their clock (i.e., years spent as principal) restarting each time they change schools.<sup>10</sup> Individuals who remain principal at a given school as of September 2008 are right-censored in these analyses.

The discrete-time hazard of leaving the principal position for person *i* in school *s* and in year *j*,  $h_{isj}$ , is interpreted as the conditional probability of leaving school *s* in year *j*, given that an individual did not leave a given school prior to year *j*. This model is estimated by

$$\text{logit} \{ \Pr(y_{isj} = 1 \mid d_{isj}) \} = [\alpha_2 d_{2isj} \dots + \alpha_{10} d_{10isj}] + \beta_1 \text{Spell}_{is} + \text{SchoolChar}_{sj} \beta_2 + X_{ij} \beta_3 \tag{1}$$

where  $d_{isj}$  represents the dummy variables representing the years spent as principal for person  $i$  in school  $s$ ,  $Spell_{is}$  represents the dummy variables indicating the spell number as principal for person  $i$  in school  $s$ ,  $SchoolChar_{sj}$  represents school-level measures (i.e., school level, quartiles of percentage free or reduced-price lunch, percentage minority, percentage low achievers, and accountability grades) for school  $s$  in year  $j$ , and  $X_{ij}$  represents fixed (race, gender, highest degree earned) and time-varying (years of experience in the district, age) attributes for principal  $i$  in year  $j$ . Our competing risks models are estimated with the predictors shown in Equation 1 but use a multinomial logit model, with people who stay in a given school as the baseline category.

### *Do Principals' Preferences Contribute to Sorting? Survey Responses*

The above analyses display systematic differences in the initial match of principals to schools at the beginning of their careers and the attrition and transfer patterns among principals serving low-performing, high-poverty schools. Our third research question asks whether principals' and APs' stated preferences for school characteristics are consistent with these patterns of principal transfer and attrition. These patterns could be driven by district policies that directly disadvantage these schools or by principal preferences that make these schools more difficult to staff. To shed light on these causes, we first describe the district's processes for hiring and placing principals, based on interviews of district personnel; then, we investigate principals' and APs' stated preferences for 16 school characteristics. We present data on the extent to which principals and APs report valuing each characteristic, and we use logistic regression to model whether principals prefer each school attribute, as a function of the school leaders' characteristics and the characteristics of the schools in which they currently work.

### *Limitations*

Our analyses describe the distribution of principals across schools and the extent to which this distribution is driven by initial match, differential attrition, or systematic transfer across

schools. Although we use multivariate methods to help distinguish potential mechanism, we cannot convincingly identify the causal mechanism. We are limited by the relatively sparse measures of schools to which we have access. For example, although we see differences in principals between schools serving high and low proportions of students in poverty, we cannot be sure that principals prefer low-poverty schools. There may be other characteristics of those schools, such as resources and teaching staff, that make high-poverty schools less appealing. There may also be endogeneity bias in our analyses of the relationship between principal characteristics and student achievement. Our models assume that student achievement affects principal choices, but to some extent, principal choices also affect student achievement. Although we are not able to draw causal conclusions, our multivariate methods and unique survey data allow us to isolate relationships between principal turnover and school characteristics. Another limitation is that we do not have information on how specific principal-school matches were made. We do know that the district context for this study, M-DCPS, allows for district assignment as well as principals' expressed preferences. Because we do not have information about how specific principal placements were made, we can use only the survey information to determine the extent to which the current distribution of principals in the district can be attributed to district assignment practices versus principals' preferences.

## **Results**

### *Distribution of Principals*

Table 2 shows clear significant differences in the average experience of principals in schools with large and small proportions of poor, minority, and low-achieving students.<sup>11</sup> Schools that enroll the largest proportion of poor students had first-year principals in 20% of the school years between 2003–2004 and 2008–2009, compared to only 11% in schools that enroll the fewest poor students. In any given year, schools that receive an accountability grade of D or F have a principal with about 2.5 years of experience, compared to 5.1 years of experience for

TABLE 2  
Means of Principal Experience and Education Across School Type

	Experience				Education/attributes of college attended						
	Years in district	First-year principal	Years principal	Years principal current school	Temp / interim principal	Age	Acceptance rate	SAT / ACT <sup>a</sup>	College Selectivity Scale	Master's degree	School years
All	22.15	0.17	3.85	2.79	0.12	49.89	59.9	10.84	0.14	0.66	2,202
Percentage free/reduced-price lunch											
Quartile 1	22.80	0.11	4.75	3.07	0.05	50.64	62.46	11.11	0.32	0.70	537
Quartile 4	20.85**	0.20**	3.43**	2.48**	0.17**	48.90**	57.84**	10.69**	0.05**	0.62**	554
Percentage minority											
Quartile 1	22.78	0.12	4.34	2.90	0.07	50.23	61.47	10.98	0.20	0.68	447
Quartile 4	21.25**	0.21**	3.29**	2.46**	0.15**	48.67**	62.72	10.57**	-0.06**	0.62	447
Percentage low achieving—math											
Quartile 1	24.12	0.07	5.50	3.77	0.04	51.65	60.39	11.20	0.34	0.72	557
Quartile 4	21.28**	0.21**	2.99**	2.37**	0.15**	49.10**	62.15	10.59**	-0.05**	0.65**	399
Percentage low achieving—reading											
Quartile 1	23.62	0.09	5.47	3.63	0.05	51.00	59.53	11.20	0.35	0.73	567
Quartile 4	20.73**	0.23**	2.84**	2.22**	0.14**	48.86**	62.05*	10.70**	0.02**	0.64**	411
School accountability grades											
A	23.34	0.13	5.08	3.43	0.09	50.70	58.98	11.11	0.33	0.69	790
D or F	20.24**	0.26**	2.47**	1.97**	0.14**	48.06**	61.86*	10.57**	-0.09**	0.67	310

Note. Asterisks indicate significant differences between Quartiles 1 and 4 and between schools receiving A and D/F grades within each experience/education measure. Information about the college that principals attended was retrieved from a survey administered in 2008; therefore, this information is available only for individuals who were principals in the 2007–2008 school year. The selectivity measures were obtained from the 1988 Annual Survey of Colleges. See Table 1 for means and standard deviations of items composing the selectivity scale.

<sup>a</sup>In hundreds.

\* $p < .05$ . \*\* $p < .01$ .

schools receiving accountability grades of A. Principals in schools with more low-income, non-White, and/or low-performing students tend to have less total experience as principal overall and have served fewer years in their current school. For example, principals in schools with the most low-achieving students have been at their school for an average of 2.2 years, whereas principals in schools with the fewest low-achieving students have been at their school for an average of 3.6 years. Schools with more poor, minority, and low-performing students are also less likely to have principals with master's degrees or higher and are more likely to have a principal serving in temporary or interim status. Schools with high proportions of students in poverty have temporary principals in 17% of the school years, compared to only 5% at schools with low proportions of students in poverty. These schools are therefore relatively likely to have inexperienced school leaders who may be filling in as principal for a short period. There are also differences among schools in the selectivity of the undergraduate institutions attended by principals. Principals in schools with more poor, minority, and low-achieving students attended colleges with lower SAT scores and lower overall quality based on the selectivity scale that we constructed.

#### *What Drives the Unequal Distribution of Principals Across Schools?*

The first stage of our analysis showed that principals in schools with large concentrations of low-income, minority, and/or low-achieving students have significantly less experience and fewer credentials than do their counterparts in schools with fewer of these students. In the analyses that follow, we seek to understand the mechanisms that underlie this sorting. First, we describe the district's role in the hiring process. We find that direct assignment of principals to schools by the district is rare and that vacancies are generally filled by interested principals who apply to, and are then chosen for, open positions. Thus, individual preferences (rather than solely district policy) are likely to play a big role in the patterns that we observe by influencing application. We next examine the career histories and stated preferences of principals to

assess the extent to which sorting is driven by initial matches between first-year principals and schools and by differences in transfer and attrition across schools. We then examine the congruence between principals' stated preferences for working in different types of schools and the turnover patterns we observe.

*The role of the district in principal assignment.* The assignment of principals to schools in M-DCPS is determined by principal preferences expressed in their applications for vacant positions and in the district leadership's selection among the applicants. Before 2008–2009, the district was divided into six geographically defined regions but was reduced to four regions in 2008 in response to budget cuts. Each region has a central office led by a regional superintendent and four directors. Vacancies for specific principal positions are initially posted internally throughout the district to give current principals the opportunity to apply for a lateral transfer. Principals apply to transfer to particular schools, and the district central office makes the final decision regarding approval of those transfer applications, typically in consultation with the regional offices affected by the potential transfer. If a vacancy is not filled by a lateral transfer, it is posted by the district's central office, which does the initial screening of candidates. The regional offices then conduct another round of screening using the eligible candidate roster provided by the central office. A regional office director, a teacher at the school (as selected by faculty vote), and a principal of another school in the region typically conduct initial interviews. The regional superintendent, the central office's associate superintendent of school operations, and the teacher representative typically conduct the final interview and collectively make the decision of whom to hire. Although the district's central and regional offices make the ultimate decision about the hiring and placement of a principal, current and prospective principals express their preferences for schools by applying for specific positions.

In some circumstances, an individual is directly appointed to a position in the absence of a formal advertisement and selection process. The superintendent makes direct appointments only when necessary—for example, in cases of leaves or emergencies, reassignment of

personnel within region or district offices, or when the interview committee cannot make an appropriate selection. Even in cases of direct appointment, the principal's interest in the position is a consideration of the superintendent.

The district occasionally reassigns principals who have not expressed an interest in being reassigned. The reassignment can take the form of a "career redirection" (i.e., typically moving a principal back to an AP position) or relocating a principal to another school site. Although the district has the discretion to assign and reassign principals, they usually do so in consideration of a principal's fit with a particular school and the individual's preferences. For example, according to the assistant superintendent of school operations,

Sometimes a person may be a relatively good leader but may be not in one of these challenging schools. . . . A few of them were demoted back to being an assistant principal, either through their own choice or our choice. So the fit was not there. . . . We had one person who just could not communicate with the community well. So one thing after another kept happening until the pressure [was too much] and she requested to be changed, "redirected" as we call it, to being an assistant principal again. (K. Caballero, interview, April 17, 2008)

In all, the district makes the official decisions about principal hiring and assignments; however, the ultimate matches highly depend on current and prospective principals' expressing their preferences—formally through the application process and informally through discussions with district leadership.

*Initial match.* We have established that principal assignment is generally determined by the individuals themselves and by their choosing to apply for the vacant positions they desire, as opposed to being placed at the discretion of the district. As such, we now turn to an analysis of principals' career histories and stated preferences.

Table 3 shows attributes of first-year principals across different types of schools. Most striking, first-time principals in schools with more poor, non-White, and low-achieving students in math are substantially more likely to begin on a temporary or interim basis, compared to their peers serving schools with fewer of these students—perhaps because principals are

more likely to leave these types of schools mid-year, thus making an emergency appointment of a temporary or interim principal necessary. Exacerbating the problem, these types of emergency appointments are often made directly by the district in the absence of a formal selection process. These results suggest that it is fairly common—especially in schools with more disadvantaged and low-achieving student populations—for individuals to begin their careers as principal without having full choice over placement. The preponderance of appointments of inexperienced principals to low-performing, low-income schools results in part from the district's initial assignment of new principals. Openings for initial appointments typically occur in poor, low-achieving schools because of the principal transfer patterns we examine later. Individuals may view these openings as opportunities to move into leadership, even if the school in which they first serve is not their first choice. However, this mismatch between preferences and initial placements might influence later transfer. Principals who had less choice over their initial placement may be more likely to apply to vacancies in what they perceive to be more desirable schools once they have acquired some experience—again perpetuating the cycle of principal vacancies being more prevalent in these less-desirable schools.

First-year principals do not look altogether different across schools on the other attributes included in Table 3. Those in schools with the largest proportions of low-achieving, minority, and poor students have slightly less experience in the district when becoming principal than do new principals in schools with fewer of these students, although none of these differences are statistically significant. There do not appear to be many differences in the percentage of first-year principals who have a master's degree or in the acceptance rate or average SAT scores of principals' undergraduate institutions across schools that serve different student populations. New principals in schools with more minority and low-achieving students did, however, attend colleges with lower overall selectivity, as measured by our scale.<sup>12</sup> Aside from substantial differences across schools in the percentage of first-year principals who begin with a temporary status and differences in overall college



TABLE 3

*Means of Principal Experience and Education Across School Type Among First-Year Principals*

	Years in district	Temp/interim principal	Master's degree	Acceptance rate of college	SAT/ACT	College Selectivity Scale
All	17.85	0.51	0.54	60.1	10.71	0.06
Percentage free/reduced-price lunch						
Quartile 1	17.59	0.36	0.56	60.61	10.84	0.15
Quartile 4	17.13	0.66**	0.60	56.92	10.87	0.07
Percentage minority						
Quartile 1	18.24	0.47	0.51	61.01	10.78	0.12
Quartile 4	18.10	0.56	0.53	61.72	10.55	-0.11*
Percentage low achieving-math						
Quartile 1	20.14	0.39	0.61	64.92	10.89	0.22
Quartile 4	17.66	0.55	0.56	61.46	10.51	-0.09*
Percentage low achieving-reading						
Quartile 1	18.22	0.47	0.53	61.45	11.00	0.29
Quartile 4	17.33	0.45	0.59	63.41	10.59	-0.02**
School accountability grades						
A	19.21	0.57	0.51	57.72	11.07	0.29
D or F	15.74**	0.40**	0.65	62.48	10.54**	-0.14**

*Note.* Asterisks indicate significant differences between Quartiles 1 and 4 and between schools receiving A and D/F grades within each experience/education measure. Information about the college that principals attended was retrieved from a survey administered in 2008; therefore, this information is available only for individuals who were principals in the 2007–2008 school year. The selectivity measures were obtained from the 1988 Annual Survey of Colleges. See Table 1 for means and standard deviations of items composing the selectivity scale.

\* $p < .05$ . \*\* $p < .01$ .

selectivity, principals in different types of schools look fairly similar at the beginning of their careers.

*Attrition.* The initial match of first-year principals to schools accounts for much of the differences in temporary/interim status and some of the differences in overall college selectivity among principals in different types of schools. However, initial match is clearly not the full story, especially when considering that principals differ across schools in whether they are a temporary principal, in the quality of colleges attended, and in their experience in the job of a principal. Differences in turnover rates could explain the experience difference. In Figure 1, we plot the survival function by school quartiles of low achievers in math, which shows the probability of staying in the principal position at a given school through the year given on the  $x$ -axis. The figure clearly illustrates the higher attrition rate of principals in low-performing schools. Although about 80% of principals in

the highest-achieving schools (those in the bottom quartile of low achievers in math) remain principals at a given school after 3 years of service, only 60% of principals in the lowest-achieving schools do so. After 10 years, virtually none of principals in schools with the most low-achieving students remain, compared to 40% of principals in schools with the fewest. The survival functions look similar by quartiles of percentage on subsidized lunch, percentage minority, percentage low achievers in reading, or school accountability grades (not shown).

In the first two columns of Table 4, we present odds ratios from the discrete-time hazard models predicting principal turnover. Model 1 includes school characteristics separately, whereas Model 2 is a full model, with all the school characteristics entered at once. Table 4 includes only estimates of the effects of school characteristics on turnover, although other measures are included in the models as described above. The supplemental appendix, in the online



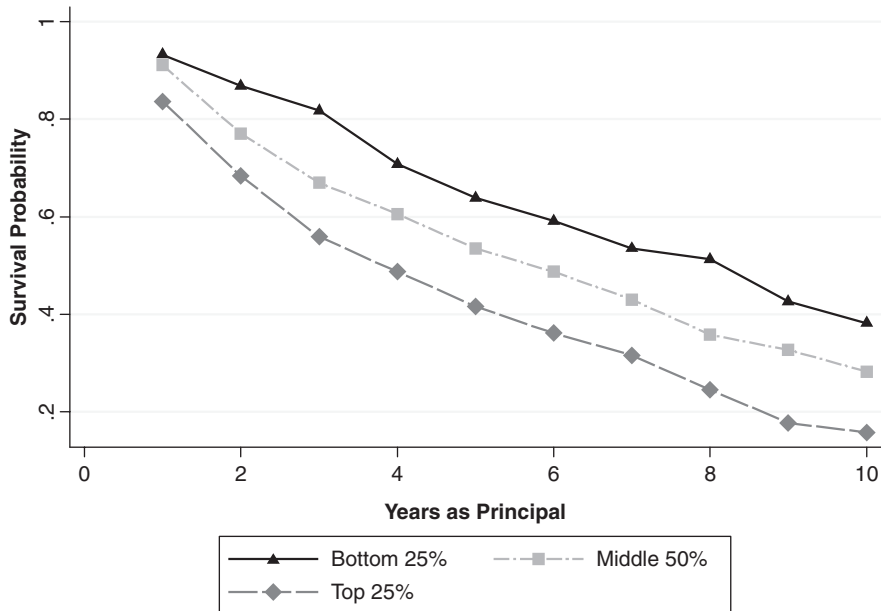


FIGURE 1. *Survival function of remaining in principal position through a given year, by school quartiles based on percentage low achievers in math.*  
*Note.* Models are not adjusted for any other covariates.

version of the journal, gives odds ratios for the full model, as well as the percentage change in the probability of leaving the principalship, given a one-unit increase in the independent variable, while holding all other variables at their sample means (i.e., marginal effects).

The odds of leaving the principal position are about 30% lower in schools in the bottom quartile of free or reduced-price lunch relative to those in the middle quartiles, which corresponds to a 3-percentage-point difference in the probability of leaving for the average principal. The odds of leaving are 60% higher among principals in schools that enroll the most minority students, which corresponds to a 5-percentage-point difference in the probability. Principals in schools with the fewest low-achieving students in math are less likely to leave, whereas those in schools with the most low-achieving students in math are more likely to leave relative to the middle-achieving schools—findings that remain significant upon entering the full set of school measures in the second model.

The probability that an average Black or Hispanic principal leaves the principalship is about 4% higher than it is for Whites, which corresponds to about a 50% difference in the

odds, and the probability of leaving is about 10% higher among those with at least a master's degree relative to those with only a bachelor's degree. Finally, older principals and those who first enter principal positions with more experience in the district are more likely to remain as principal in a given school.

The final four columns of Table 4 present the odds ratios from competing risk models, examining whether there are differences in transfer and attrition patterns among principals in schools with different student populations. The findings are similar to those presented thus far and, in general, suggest that principals serving schools with more poor, minority, and/or low-achieving student populations are more likely to transfer as principal to another school as well as leave the principalship in the district. For example, the odds of both transfer and attrition from the principalship are about twice as high among principals serving schools with the most low-achieving students in math and reading.

*Transfers.* In addition to differences arising from the initial match of principals to schools at the beginning of their careers and differential attrition rates, the unequal distribution of principals across schools may result from differential

TABLE 4

*Odds Ratios for School Characteristics From Discrete-Time Hazard Models of Principal Turnover*

	Ever left versus stayed		Attrition as principal versus stayed		Transfer versus stayed	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Percentage free lunch						
Quartile 1	0.74 (0.14)	0.71 (0.17)	0.91 (0.20)	0.75 (0.22)	0.50* (0.16)	0.62 (0.24)
Quartile 4	1.35* (0.20)	1.16 (0.21)	1.20 (0.22)	0.95 (0.22)	1.62* (0.37)	1.46 (0.39)
Percentage minority						
Quartile 1	1.12 (0.19)	1.87** (0.42)	1.51* (0.31)	2.59*** (0.71)	0.66 (0.18)	1.11 (0.39)
Quartile 4	1.60** (0.25)	1.38† (0.25)	1.81** (0.34)	1.60* (0.36)	1.30 (0.31)	1.10 (0.30)
Percentage low achievers—math						
Quartile 1	0.53*** (0.10)	0.47** (0.12)	0.56** (0.12)	0.40** (0.13)	0.47* (0.15)	0.59 (0.25)
Quartile 4	1.52** (0.23)	1.74** (0.34)	1.58* (0.30)	1.73* (0.42)	1.39 (0.33)	1.70† (0.52)
Percentage low achievers—reading						
Quartile 1	0.69* (0.12)	0.81 (0.22)	0.86 (0.18)	0.97 (0.31)	0.45* (0.14)	0.59 (0.26)
Quartile 4	1.59** (0.24)	1.72** (0.35)	1.92*** (0.36)	2.14** (0.54)	1.17 (0.27)	1.26 (0.39)
School accountability grades						
A	0.93 (0.14)	1.71** (0.31)	0.96 (0.17)	1.61* (0.37)	0.90 (0.21)	1.84* (0.51)
D/F	0.75 (0.13)	0.41*** (0.08)	0.80 (0.18)	0.41*** (0.11)	0.67 (0.18)	0.41** (0.13)
Other school measures						
Events	No 325	Yes 325	No 205	Yes 205	No 120	Yes 120

Note. Standard errors in parentheses. All models have individual measures. Unique individuals,  $n = 457$ ; observations (principal years),  $n = 2,616$ . All models include dummy variables for the number of years spent as principal, spell number, and school level. Models with individual characteristics include principal race, gender, highest degree, age, age<sup>2</sup>, and years of district experience when first becoming principal. Models with all school measures include those listed above as well as enrollment.

† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

transfer behavior. We can see whether this is the case by looking at differences in who fills vacancies in different types of schools and by looking at differences between the characteristics of schools that principals move from and those that they move to.

*Principal vacancies.* The above analyses show that principal vacancies are more common at schools with more poor, minority, and/or low-performing students. For each vacancy that arises in a school, we identify the prior school served and the prior position of the individual

who fills the vacancy. Table 5 presents the results in the first three columns, which show that high-poverty schools are much less likely to fill vacancies with experienced principals. First, note that in high- and low-poverty schools, the majority of principal vacancies are filled with an AP or principal from a different school rather than with another staff member from the same school. When vacancies arise in schools in the bottom quartile of students receiving free or reduced-price lunch, 15% of them are filled with an AP from another school, whereas 61% are

TABLE 5  
*Attributes of Individuals Filling Principal Vacancies*

	Prior position			College attributes				Vacancies
	Staff– same school	AP– other school	Principal– other school	Acceptance rate	SAT/ ACT average	Selectivity scale	Master’s degree	
Percentage free/reduced-price lunch								
Quartile 1	0.19	0.15	0.61	61	10.90	0.26	0.60	52
Quartile 4	0.16	0.60	0.21	60	10.70	0.04	0.44	106
Percentage minority								
Quartile 1	0.12	0.35	0.51	60	10.80	0.21	0.51	75
Quartile 4	0.19	0.51	0.27	62	10.60	–0.03	0.49	113
Percentage low achieving–math								
Quartile 1	0.14	0.26	0.58	59	10.90	0.30	0.47	43
Quartile 4	0.19	0.52	0.26	62	10.60	–0.02	0.47	115
Percentage low achieving–reading								
Quartile 1	0.15	0.28	0.54	57	11.00	0.37	0.48	54
Quartile 4	0.16	0.47	0.33	62	10.80	0.01	0.52	118
School accountability grades								
A	0.15	0.42	0.37	57	10.90	0.32	0.50	113
D or F	0.24	0.37	0.37	61	10.70	–0.06	0.44	62

Note. AP = assistant principal.

filled with a principal from another school. However, in schools in the top quartile of students receiving free or reduced-price lunch, the poorest schools, 60% of principal vacancies are filled with APs from other schools, and only 21% are filled with principals from other schools.

This trend is consistent when we categorize schools using quartiles of percentage minority and quartiles of percentage low achievers. Schools with large concentrations of poor, minority, and/or low-achieving students are more likely to have vacancies given higher rates of turnover, and the majority of those vacancies are filled by individuals who have not served as principal. In contrast, schools with large proportions of affluent, White, and/or high-achieving students have relatively few vacancies, and when they do arise, they are usually filled by someone with principal experience.

The last four columns of Table 5 show the selectivity of undergraduate institutions and the proportion of principals with master’s degrees. Sixty percent of vacancies in schools with the fewest poor students are filled by someone with at least a master’s degree, compared to only 44% of the vacancies that arise in schools with

high concentrations of poor students. Similarly, 50% of vacancies in schools receiving accountability grades of A are filled by someone with a master’s degree, compared to only 44% of vacancies in schools receiving grades of D or F. Vacancies in schools with more minority and low-achieving students tend to be filled by principals who attended colleges with somewhat lower average SAT scores and lower overall selectivity, as measured by our scale.

*Transfer patterns.* Finally, we compare the characteristics of sending and receiving schools among principals who transfer. Table 6 shows the results. Similar to teacher transfer patterns found by Hanushek et al. (2004) and Lankford, Loeb, and Wyckoff (2002), in M-DCPS the schools to which principals transfer have, on average, 10% fewer students receiving free or reduced-price lunch and smaller proportions of minority and low-achieving students as compared to the schools from which they come. Individuals who transfer begin in schools with larger concentrations of poor, minority, and/or low-achieving students than do those who stay in their initial schools, but the attributes of the schools to which they transfer are similar to the attributes

TABLE 6

*Difference in School Attributes Among Principals Who Transfer With Comparisons of School Attributes for Nontransfers*

	Transfers				Nontransfers	
	Sending	Receiving	Difference	<i>n</i>	Stayed in same school	Left district
Percentage free/reduced-price lunch	0.73	0.63	-0.10	110	0.65	0.68
Percentage minority	0.91	0.87	-0.04	110	0.86	0.89
Percentage low achievers—math	0.27	0.22	-0.05	110	0.21	0.28
Percentage low achievers—reading	0.33	0.30	-0.03	110	0.27	0.34
School Climate Scale	-0.12	-0.08	0.04	56	0.04	-0.12
Percentage first-year teachers at school	0.12	0.13	0.01	86	0.13	0.15
School average teacher years of experience	9.70	9.90	0.02	86	9.60	9.30
Percentage teachers with master's degree at school	0.32	0.34	0.02	86	0.36	0.34

of the schools served by principals who stay. Although principals transfer to schools with more advantaged and higher-achieving students compared to where they start, there are only small differences in the attributes of the teaching force at transferring principals' sending and receiving schools. The proportion of teachers with master's degrees and the average teacher experience are about the same in sending and receiving schools, suggesting that principals may not be seeking out a more qualified group of teachers to lead when they transfer. However, there may be differences in the teaching force across schools that we are unable to observe with our data. In particular, we do not have measures of teacher effectiveness.

*Do principals' preferences contribute to sorting? Survey responses.* The distribution of principals that we observe reflects the decisions and preferences of individual principals and the district retention practices and school hiring decisions. Most, but not all, cases of attrition from a given school are voluntary, but some principals may be forced to change schools or be dismissed from the principal role altogether. In our prior analyses of administrative data, we are unable to discern whether a transition away from a given school is initiated by the principal or the school/district; therefore, we cannot distinguish the cause of the patterns we observe.

To shed some light on whether principal preferences are likely to contribute to the patterns that we see, we surveyed all the principals and APs in the district, asking them directly what types of schools they would prefer to work in. We include APs in these analyses because they are likely to be next in line to fill principal vacancies when they arise in the district. As a matter of fact, the job description for principal vacancies in M-DCPS generally includes, as a qualification requirement, experience as an AP or equivalent. Eighty percent of surveyed APs indicated that they aspired to be principals. Although not all APs will eventually become principals, our administrative data show that 63% of first-time principals were APs in the district the year before becoming principal. The results we present for APs are not sensitive to the exclusion of individuals with no aspirations to become principal in the future.

Respondents rated their preferences for 16 school characteristics on a 5-point scale. They also identified the one characteristic that was most important to them. Analysis of the responses permits a more direct examination of the extent to which individual preferences, rather than district policy, influence the distribution of principals we observe in the administrative data. Table 7 presents the descriptive statistics for principals' and APs' assessments of the specified school characteristics. The items are

TABLE 7

*Descriptive Statistics for Preferences for Working at Schools With Different Characteristics*

	Principals				Assistant principals			
	<i>M</i>	<i>SD</i>	MI	PN	<i>M</i>	<i>SD</i>	MI	PN
A sense of safety on campus	3.80	0.89	0.20	0.01	3.70	0.86	0.15	0.00
Availability of school resources	3.74	0.89	0.18	0.01	3.61	0.87	0.12	0.01
Good condition of school facilities	3.66	0.90	0.15	0.01	3.56	0.86	0.10	0.01
A school with supportive parent participation	3.51	0.95	0.16	0.02	3.52	0.87	0.11	0.01
Collegial school culture	3.46	1.01	0.15	0.03	3.33	0.96	0.09	0.03
Close proximity to home	3.44	1.01	0.14	0.03	3.51	1.03	0.14	0.02
Diverse student population	3.38	0.96	0.12	0.03	3.38	0.93	0.10	0.02
A high performing school	3.04	1.00	0.09	0.04	3.01	0.89	0.04	0.04
School in same district as which I taught	3.04	1.05	0.08	0.03	3.19	0.99	0.08	0.04
A school that recently demonstrated academic improvement	3.03	0.97	0.07	0.04	3.04	0.88	0.04	0.03
Small school size	2.93	1.00	0.08	0.03	3.16	0.96	0.07	0.02
School similar to one I attended as a student	2.84	1.03	0.07	0.05	2.98	1.02	0.07	0.04
School similar to the one in which I taught	2.84	1.02	0.06	0.06	3.02	0.98	0.05	0.04
Many students of poverty	2.71	0.96	0.03	0.11	2.77	0.93	0.02	0.10
Many English-language learners	2.66	0.98	0.04	0.12	2.83	0.91	0.03	0.06
A "failing" school in need of reform	2.31	1.09	0.04	0.27	2.59	1.09	0.03	0.21

Note. MI = most important; PN = prefer not.

sorted from highest to lowest in terms of the mean responses among principals (higher means indicate stronger preference). We also show the percentage of respondents indicating that a particular item is the most important to them, as well as the percentage of respondents who indicate that they prefer not to be in a school with a particular characteristic.

Both principals and APs state a consistent preference for working in schools that are considered easier to serve. Their strongest preference is for schools that are safe and well resourced, that have supportive parents, and that are close to home. Yet, they consistently state the weakest preference for schools that are failing and that have many poor and English-language-learning students. In fact, 11% of principals and 10% of APs indicate that they would not want to work in a school with many poor students, and

about one quarter report that they would not want to serve a failing school in need of reform. Significance tests for the equality of means confirm that preferences for poor students, English-language learners, and failing schools are significantly lower than preferences for school resources, a high performing school, a familiar school, and a school that is close to home. These results are similar when we disaggregate the analyses by race, gender, experience, and school quartiles of free lunch (not shown).

Finally, we examine variation in preferences using logistic regression models. These models predict the likelihood of at least preferring a given item (*prefer*, *strongly prefer*, and *most important* are given a value of 1, whereas *not a consideration* and *do not prefer* are given a value of 0) as a function of school level, race, gender, experience, school quartiles of poverty,

and school quartiles of low achievers. We pool principals and APs in these models but include a flag indicating their position, to capture differences in preferences between the two groups. Table S1, in the online version of the journal, presents these models and shows that, relative to their White counterparts, Black school leaders are more likely to prefer working in schools that are failing and that enroll many poor students, although they are also more likely to prefer high-performing schools. Hispanic school leaders are more likely than Whites to prefer working in schools with many English-language learners and are substantially more likely to prefer working in schools that are close to their residence. Not surprisingly, principals and APs in schools enrolling many low-achieving students are more likely to prefer working in failing schools or in schools with many students of poverty. Those currently working in schools with few low-achieving students are 2 times as likely to prefer working in high-performing schools. Thus, there appears to be at least somewhat of a match between the types of schools that individuals are currently serving and their stated preferences for various school characteristics. All in all, these results suggest that the patterns observed in the administrative data are consistent with principals' stated preferences for different school attributes and, particularly, with their preferences for higher income and higher performing students.<sup>13</sup>

*Separating preferences for student demographics from working conditions.* Although we have clearly shown that turnover is higher at schools serving more poor, minority, and low-achieving students, we do not know whether principals are attempting to flee these types of students or if they are leaving because they dislike the conditions of the schools that typically enroll such students. Schools with high concentrations of poor, minority, and low-achieving students tend to have poor working conditions. For example, they tend to have fewer resources, more safety and disciplinary problems, less parental involvement, and more teacher and student turnover, and they tend to be located in further proximity from staff residences. Principals may also avoid working in low-performing schools, not so much because the students are low achieving, but rather because of the formal

and informal sanctions and accountability pressures placed on these schools. It is difficult to disentangle the effect of student demographics on turnover from the effect of these other unobserved school characteristics. We attempt to do so by incorporating data from school climate surveys into our turnover models.

The district provided us with data from a staff climate survey that it conducts each year. A sample of the staff at each school was asked whether they agree with the following statements: "At my school I feel safe and secure"; "I believe children attending my school are receiving a good education"; and "The overall climate or atmosphere at my school is positive and helps students learn." They are also asked to give their school an overall letter grade, indicating their perceived quality of the school. We have school-level data on these measures from 2004–2005 through 2008–2009, with the average letter grade given to the school and the percentage that agree with the three items listed above. Within each year, these four items correlate at between .80 and .90, so we combine them into a single scale that is standardized within each year to have a mean of 0 and a standard deviation of 1. The reliability of the scale is .95.

Our turnover models that incorporate the school climate measure are slightly different from the hazard models presented previously. Because the climate measures were not available until 2004, we cannot use a discrete-time hazard model, because of left censoring. Instead, we use a logit model predicting whether a principal left his or her current school in any given year as a function of school characteristics, school climate, principal demographics, years at current school, and school year dummies. The standard errors in these models are clustered at the principal level because individuals are present in multiple years. We examine the extent to which the school climate measure mediates the association between school demographics and principal turnover.

We first show correlations between the school climate measures and student demographics in Table 8. These results reveal the strong relationship between school climate and the concentration of poor, minority, and low-achieving students at a school. For example, the percentage of low-achieving students in reading correlates between .50 and .70 with the school



TABLE 8

*Pairwise Correlations Between School Climate Measures and Student Demographics*

	1	2	3	4	5	6	7	8	9
1: School Climate Scale	—								
2: Percentage agree school is safe	.92	—							
3: Percentage agree students get good education	.96	.84	—						
4: Percentage agree climate helps learning	.96	.85	.91	—					
5: Average grade given to school	.94	.77	.86	.88	—				
6: Percentage free/reduced-price lunch	-.30	-.24	-.26	-.26	-.43	—			
7: Percentage minority	-.36	-.28	-.33	-.33	-.48	.73	—		
8: Percentage low achieving in math	-.62	-.49	-.60	-.57	-.71	.40	.44	—	
9: Percentage low achieving in reading	-.67	-.53	-.67	-.60	-.73	.37	.49	.88	—
10: Accountability grade <sup>a</sup>	.71	.58	.68	.63	.78	-.40	-.45	-.71	-.77

*Note.* School Climate Scale is a standardized scale ( $M = 0$ ,  $SD = 1$ ) comprising Items 2–5.

<sup>a</sup>From Florida Department of Education.

climate measures, whereas the percentage of students receiving subsidized lunches correlates between .30 and .40.

In Table 9, we seek to separate student demographics from school climate with regard to their effects on turnover. As previously reported, Model 1 shows that turnover is higher in schools with high concentrations of poor, minority, and low-achieving students. However, when we enter the School Climate Scale in Model 2, the magnitudes of these relationships are reduced in size and are no longer statistically significant. An increase of one standard deviation in the School Climate Scale is associated with about a 20% decline in the odds of leaving one's current school. Models with interactions between school climate and quartiles of low achievers suggest that a positive school climate may be even more important for lowering principal turnover in schools with the highest concentrations of low-achieving students. These results suggest that high rates of turnover in schools with poor, minority, and low-achieving student bodies may

not necessarily be driven by these student characteristics but rather by the other undesirable features of schools that enroll these students.

## Discussion

If consistent and experienced school leadership matters to student achievement, our research suggests that low-income students, students of color, and low-performing students are at a distinct disadvantage: As compared to their more advantaged counterparts, these students are more likely to attend a school that has a first-year principal, a principal with less average experience, a temporary or interim principal, a principal without at least a master's degree, and a principal that went to a less selective college. The uneven distribution of principal attributes across schools is partly driven by the initial match of first-time principals with schools. In fact, because the district is more likely to appoint first-year principals in schools with more disadvantaged and low-achieving student bodies—

TABLE 9

*Logit Models of Principal Turnover by School Characteristics: Left School in Following Year Versus Stayed*

	Model 1	Model 2	Model 3	Model 4
Percentage free lunch				
Quartile 1	0.81 (0.153)	0.89 (0.170)	0.87 (0.176)	0.84 (0.184)
Quartile 4	1.36* (0.195)	1.26 (0.185)	1.33† (0.210)	1.46* (0.255)
School Climate Scale		0.81** (0.055)	0.74** (0.073)	0.72** (0.093)
Quartile 1 × School Climate			1.20 (0.239)	1.34 (0.271)
Quartile 4 × School Climate			1.22 (0.180)	1.10 (0.187)
Percentage minority				
Quartile 1	0.99 (0.156)	1.10 (0.175)	1.01 (0.165)	1.21 (0.222)
Quartile 4	1.37* (0.204)	1.21 (0.189)	1.19 (0.204)	1.29 (0.239)
School Climate Scale		0.80** (0.056)	0.77* (0.082)	0.78† (0.102)
Quartile 1 × School Climate			1.26 (0.221)	1.14 (0.220)
Quartile 4 × School Climate			1.00 (0.156)	0.87 (0.148)
Percentage low achievers in math				
Quartile 1	0.69* (0.130)	0.77 (0.148)	0.88 (0.179)	0.80 (0.191)
Quartile 4	1.36* (0.190)	1.10 (0.188)	0.96 (0.200)	1.00 (0.239)
School Climate Scale		0.81* (0.074)	1.04 (0.137)	1.02 (0.150)
Quartile 1 × School Climate			0.67† (0.141)	0.70 (0.163)
Quartile 4 × School Climate			0.66* (0.121)	0.65* (0.131)
Percentage low achievers in reading				
Quartile 1	0.87 (0.158)	0.98 (0.187)	0.90 (0.368)	0.94 (0.352)
Quartile 4	1.55** (0.212)	1.28 (0.206)	1.13 (0.207)	1.20 (0.252)
School Climate Scale		0.82* (0.071)	0.95 (0.128)	0.93 (0.139)
Quartile 1 × School Climate			0.99 (0.506)	0.93 (0.432)
Quartile 4 × School Climate			0.74† (0.131)	0.73 (0.145)
Individual controls	No	No	No	Yes

Note.  $N = 1,270$ . Robust standard errors in parentheses. Standard errors clustered by principal identifier. Model 4 also controls for school level and total enrollment but not for other school characteristics. The models include one observation per principal, per year, between 2004–2005 and 2008–2009.

† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

rather than offer principals full choice over their initial placement—a mismatch is likely to result between principal preferences and initial school assignments, which likely influences the turnover and transfer patterns that disadvantage some schools. Transfer and attrition from the principal position are more common in schools serving more poor, minority, and/or low-achieving students, and principals who transfer tend to move to schools with lower concentrations of these students. Principal vacancies that arise in schools with relatively advantaged student populations are usually filled with principals who have served as principal in the district, whereas vacancies in schools with harder-to-serve populations are generally filled by individuals with no prior principal experience.

These findings are generally consistent with the limited research to date on the distribution of principals across schools in other states. As with research on principal transfer patterns in Illinois and North Carolina (see Gates et al., 2005), we find that principals in schools with high concentrations of minority students are more likely to transfer to other schools. Furthermore, as with research in New York State (see Papa et al., 2002), we find that low-performing schools are more likely to have principals with less experience and principals with bachelor's degrees from less selective institutions. Finally, as with research in Texas (see Branch et al., 2009; Fuller & Young, 2009), we find that schools with more low-income, non-White, and/or low-achieving students are more likely to have principals with little or no prior experience and that principals tend to transfer away from low-achieving and high-poverty schools. Notably, the findings from research on a nationally representative sample of principals (see Gates et al., 2003) differ from the conclusions of these other studies, including our own. Specifically, Gates et al. (2003) found that principals serving large concentrations of low-income or minority students are no less experienced on average than principals at other schools.

Our findings also mirror research on the distribution of teachers that found that low-income, non-White, and/or low-achieving students tend to have less experienced teachers and more teacher turnover (Boyd et al., 2005; Hanushek et al., 2004; Scafidi et al., 2008). The similarity

between the sorting of principals and teachers is not likely coincidental but driven by a shared preference for schools serving less at-risk populations. Whereas other factors may be partially responsible for the disparities in principal characteristics observed across schools (e.g., the assignment practices of the district, the choices of school hiring authorities), we find evidence that principal preferences are at least partially responsible. Also, given that principals in M-DCPS apply for specific vacant positions, their preferences for schools drive the applicant pool from which the district selects principals. For example, if experienced principals choose not to apply for positions at schools with high concentrations of poor, minority, and low-achieving students, then the district will have no choice but to staff these schools with inexperienced principals. Even in the rare cases of the district's direct assignment of principals, the principal's consent is necessary.

Unlike authors of previous research on the sorting and transfer of principals, we administered principal and AP surveys to supplement administrative data on school leaders' career paths. We find that principals and APs state strong preference for working in schools that are safe, well resourced, and close to home and have few teacher vacancies. In contrast, they are far less likely (in fact, least likely) to prefer schools with many students in poverty, schools with many English learners, or schools that fail to achieve academic standards. Again, these findings mirror research on teachers' preferences for schools (see Boyd et al., 2005; Hanushek et al., 2004; Scafidi et al., 2008).

Furthermore, our results suggest that the distribution of principals is driven by school conditions as well as by student demographics. In other words, the high rates of turnover in schools with many poor, minority, and low-achieving students is at least in part the result of the undesirable working conditions in the schools serving these students. In particular, once we control for school climate measures in our models, the relationship between student demographics and principal turnover becomes non-significant—indicating that the higher rates of turnover in high-poverty and low-achieving schools are mostly mediated, or accounted for, by school conditions. Additionally, our models

with interactions between school climate and student achievement suggest that school conditions may be even more important for reducing principal turnover in low-performing schools. Overall, these results suggest that student demographics may be proxies for working conditions when principals express their preferences for schools—a conclusion that parallels analyses of teachers' preferences (see Boyd et al., 2009; Hornig, 2009; Ingersoll, 2001).

Principals' stated preferences and their behaviors demonstrate an aversion to leading schools with many poor, minority, and/or low-achieving students. Although these patterns may be driven, not by a distaste for certain students, but more so by a desire to serve a school with a positive climate and good working conditions, the result remains: higher turnover in schools serving more poor, minority, and low-achieving students. In this article, we do not try to assess the extent to which these preferences and labor market patterns disadvantage already at-risk student populations. Initial evidence from Texas suggests that they might. In a working paper, Branch et al. (2009) found that principals in schools that have improved are more likely to move to higher-performing schools. If these patterns are detrimental to students in higher-poverty, lower-achieving schools—and it is easy to believe that they are—then the results suggest the potential benefits of policies that aim to attract and retain highly effective principals at low-performing schools. Principals do state preferences for schools that are well resourced and safe, and these preferences could be used to the advantage of currently difficult-to-staff schools.

Overall, the research on labor markets for principals and other school leaders is in its infancy, compared with the substantial effort that has gone into understanding teacher career paths. Further research is needed to examine the effects of principal turnover and principal characteristics (e.g., experience, academic background) on school outcomes. Even without definitive research on principal effectiveness, school leaders are clearly at the center of most current education policy reforms—from the implementation of new curriculum packages to test-based accountability reforms. A further understanding of the labor markets, as well as the effectiveness of targeted interventions to address the differences in

leadership across schools, would put us in a better position to address these disparities and improve the likelihood of well implementing the variety of current reforms that rely on effective school leadership.

## Notes

<sup>1</sup>Our calculations based on the 2005 Common Core of Data.

<sup>2</sup>Specifically, the items are coded as follows: 5 = *most important*, 4 = *strongly prefer to be principal at*, 3 = *prefer to be principal at*, 2 = *not a consideration*, 1 = *prefer not to be principal at*. Respondents were asked to mark only one characteristic as *most important*; however, about 20% of respondents marked more than one item as such.

<sup>3</sup>Students in Achievement Level 1 on the Florida Comprehensive Assessment Test have minimal success with grade-level content.

<sup>4</sup>School grades are determined by a formula that weighs the percentage of students meeting high standards across various subjects tested, the percentage of students making learning gains, whether adequate progress is made among the lowest 25% of students, and the percentage of eligible students who are tested. For more information, see <http://schoolgrades.fl DOE.org/pdf/0708/2008SchoolGradesTAP.pdf>.

<sup>5</sup>Given variation in the proportion of students receiving free or reduced-price lunch across grades, we create quartiles of this and other measures using distributions specific to school level (elementary, middle, high school) and year.

<sup>6</sup>The Annual Survey of Colleges collected data on the SAT and ACT scores of students at the 25th and 75th percentiles of the college's incoming freshmen class. For schools that only report SAT scores, we take the average of verbal and mathematics scores of incoming students based on the mean of these scores. We add these averages together to produce an estimate of the sum of mean scores. If schools report ACT composite scores, we convert those scores to their SAT score equivalents based on an equivalency table published by the College Board (see <http://professionals.collegeboard.com/profdownload/act-sat-concordance-tables.pdf>). SAT scores for schools reporting both ACT and SAT scores are a simple average of the two composites.

<sup>7</sup>To fill in missing values we originally imputed five data sets. The correlations among items across the imputations are quite high (above .8) so we take the average of the imputed values across the five datasets and use a single value for each measure in our analyses.

<sup>8</sup>In Miami-Dade County Public Schools, the superintendent appoints temporary/interim principals to fill vacancies that occur as the result of an emergency—often in the middle of the school year. These temporary appointments remain in effect until the incumbent principal returns or the position is filled through the formal selection process. The temporary/interim principal may apply for the position. Despite no formal guarantee that temporary/interim principals will be hired, analyses of our data show that about 88% of temporary principals become regular principal at the same school the year following their temporary status. The remaining 12% become regular principals at other schools.

<sup>9</sup>Cullen and Mazzeo (2007) examined principal mobility in Texas with longitudinal data throughout the state and found that from 1989 to 2005, only 2.3% of principals transferred between districts.

<sup>10</sup>Note that these spell numbers refer to the number of times that we observe people as principals at different schools in our data and not necessarily to the total number of spells as principals they have had through their careers.

<sup>11</sup>Two caveats about these experience measures should be noted. First, both these experience measures are based on dates when continuous employment began in the district or a particular job code. If a principal leaves the district or a job for any amount of time, his or her experience clock restarts. Second, the job experience measure is based on experience in fairly detailed job codes. If an individual is an elementary school principal and later becomes a high school principal, her or his job experience clock restarts (i.e., upon entering a principal position at a different type of school).

<sup>12</sup>This finding might be partially driven by the race/ethnicity of principals: Black principals in our sample attended less selective colleges than those of White and Hispanic principals. Black principals also lead schools with larger concentrations of Black students and larger proportions of students receiving free or reduced-price lunch.

<sup>13</sup>In results not shown, we investigate whether these preferences for school characteristics are associated with turnover patterns. Because we conducted our survey in the spring of the 2007–2008 school year, we only have 1 year of postsurvey turnover data (i.e., from the 2008–2009 school year). We found no statistically significant relationships between principals' or assistant principals' preferences and their career patterns in this 1 year (results available upon request).

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