Principal Preferences and the Unequal Distribution of Principals across Schools

Eileen Horng,
Demetra Kalogrides,
and Susanna Loeb

Principal Preferences and the Unequal Distribution of Principals Across Schools

Eileen Horng
Stanford University

Demetra Kalogrides
Stanford University

Susanna Loeb
Stanford University

CONTENTS

Principal Preferences and the Unequal Distribution of Principals Across Schools
Eileen Horng, Demetra Kalogrides, and Susanna Loeb
CALDER Working Paper No. 36
December 2009

ABSTRACT

In this study the authors use longitudinal data from one large school district – Miami-Dade County Public Schools, to investigate the distribution of principals across schools. The authors find schools serving many low-income, non-white, and low-achieving students have principals with less experience, 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 at the beginning of their careers and is exacerbated by systematic attrition and transfer away from these schools. Supplementing these data with surveys of principals, the authors find principals' 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 also tend to be schools with fewer poor, minority and/or low-achieving students.

INTRODUCTION

Researchers and policymakers increasingly recognize the important role that principals can play in generating high-quality schools (Hallinger and Heck, 1996). Effective principals influence a variety of school outcomes, including student achievement, through their recruitment and motivation of quality teachers (Harris, Rutledge, Ingle, and Thompson, 2006; Jacob and 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 and Stone, 1988; Knapp, Copland, Plecki, and Portin, 2006; Leithwood, Louis, Anderson, and Wahlstrom, 2004). Given the potential importance of principals, education stakeholders have raised concerns that schools serving poor and low-achieving students have trouble attracting effective and experienced leaders (Darling-Hammond, LaPointe, Meyerson, Orr, and Cohen, 2007; National Association of Elementary School Principals, 1998; Mitgang, 2003).

This paper describes differences in the characteristics of principals across schools. It then identifies the extent to which these differences are driven by the initial job match of first-time principals to schools, differential principal attrition, and the systematic transfer of principals across schools. The patterns that we see could be driven either by principals' preferences, by school district assignment practices that disadvantage some schools, or by a combination of the two. While 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 more favorable working conditions and, when given the opportunity, behave in accordance with these preferences.

Background

Transfer and turnover patterns among teachers consistently reveal an aversion to working at schools with low-income, non-white, and low-achieving students, perhaps due to adverse working conditions in schools that enroll such student bodies (Hanushek, Kain, and Rivkin, 2004; Horng, 2009; Lankford, Loeb, and Wyckoff, 2002). The research on school principals is much less developed, though six studies that we know of have begun to describe principal labor markets.

Gates, Ringel, Santibanez, Ross and Chung (2006), for example, examine data from the 1999-2000 National Center for Education Statistics (NCES) Schools and Staffing Survey (SASS), a nationally representative survey of principals, and find 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. On the other hand, Roza (2003) finds that high poverty and low-performing school districts receive fewer applications per principal vacancy than do other districts; and Gates and colleagues (2006) use administrative data from Illinois and North Carolina and find that principals in schools with large proportions of minority students are more likely to transfer to other schools and to leave the principalship altogether than principals in other schools, though 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 1970-71 to 1999-2000, Papa, Lankford and Wyckoff (2002) find 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 find 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 1994-95 to 2000-01, Branch, Hanushek and Rivkin (2009) show 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 higher income students. Cullen and Mazzeo (2007) also use longitudinal Texas public school system data, asking a somewhat different question. They find 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

While not completely in 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, says little about the mechanisms leading to these differences: for example, are disparities across schools the result solely 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 solely the result of district assignment or policy choices?

An understanding of the dynamics of the principal labor market and 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, districts can target this initial match. If differential attrition is the primary cause of the differences, 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 than they would be if principal preferences were the driving force. In the analyses that follow, we are able to build on prior research both 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 in order to identify whether principals' preferences for different schools are driving the behaviors and sorting that we see.

We begin below by describing the data and methods used in the study. We then present our analyses in four parts. First, we describe the distribution of principal characteristics across schools in the district, categorizing schools based on the grade level, poverty, race and ethnicity, and academic achievement of its students. Next, we describe the role of the district in the hiring, firing, and reassignment of principals in the district. Third, we examine the extent to which the distribution of principal characteristics is driven by initial principal-school matches, by attrition, and by the systematic transfer of different principals to different types of schools. The final part of our analysis investigates principals' stated preferences for school characteristics. Like prior research on principal turnover, we are unable to distinguish between voluntary and involuntary quits using the career path data available to us. However, unlike prior research, we are able to supplement our analyses of administrative data with an analysis of survey data in which we explicitly ask principals 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.

DATA

The data used in this study come from administrative files on all staff and students in the Miami-Dade County Public Schools (M-DCPS) district from the 2003-04 through the 2008-09 school years, surveys of principals and assistant principals, and publicly available school-level information from the Common Core of Data and from the Florida Department of Education (FDE). 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 School District. In 2008, M-DCPS enrolled nearly 350,000 students, more than 200,000 of whom were Hispanic.[1] 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 makes the district particularly appropriate for studying labor market patterns. With more than 350 schools and principals observed over a six-year time frame, the data provide substantial variation for examining differences among schools in the career pathways of principals.

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 from the 2003-04 through the 2008-09 school years. We link relevant measures from these data to a file that lists the start and end date as principal at a given school for every person who held a principal position in the district over the same time period. Over the six year time-frame, 552 unique individuals held

---

[1] Authors' calculations based on the 2005 Common Core of Data.

principal positions in M-DCPS's 373 schools. Some individuals serve as principal at more than one school during this time 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 prior experience in the district prior to becoming principal, remain principal at a given school for a median of three years, and most (81 percent) only serve as principal at 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 schools at which these positions were held for individuals who become principal at a new school between 2004-05 and 2008-09.

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 (FCAT)[2] and school accountability grades handed out by the FDE.[3] These data come from a variety of sources. For the 2003-04 through the 2008-09 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 FCAT

---

[2] Students in performance level 1 on the FCAT have minimal success with grade-level content.

[3] 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 percent of students, and the percentage of eligible students who are tested. For more information, see: http://schoolgrades.fldoe.org/pdf/0708/2008SchoolGradesTAP.pdf

in math and reading. Some individuals began serving as principal in years not covered by our student-level data (i.e., prior to the 2003-04 school year). For these earlier years, we obtain the percent free or reduced price lunch and the percent minority from the Common Core of Data, a survey of the universe of public education agencies in the U.S conducted by the National Center for Education Statistics. We obtain school averages for earlier years of test score data from the FDE website. School accountability grades from 1999-2009 also come from the FDE. In instances where a school is missing any of these measures in a given year, we replace this 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 (90 percent) and free or reduced price lunch eligible (68 percent) students and has a sizeable portion of students who perform below grade level in math (24 percent) and reading (30 percent). There is substantial variation in student attributes across schools, however, as schools in the bottom quartiles of these measures enroll relatively few poor (29 percent) and low-achieving students (8-12 percent) compared to schools in the top quartile of these measures.[4]

Survey Data

We combine our analyses of these administrative data with an examination of current principals' and assistant principals' (APs') 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 of 2008 in an effort to understand the preferences and responsibilities of school leaders. Of the 360 individuals serving as principals in the 2007-08 school year, 326

---

[4] Given variation in the proportion of students receiving free or reduced price lunch across grades, we create quartiles of this and other measures using level (i.e., elementary, middle, high school) and year specific distributions.

responded to our survey for a 91 percent response rate. Of the 710 individuals serving as APs in the 2007-08 school year, 583 responded for a 82 percent response rate. Both the principal and AP surveys included a question asking respondents to indicate their preference for being a principal at schools with different characteristics. The items are all coded using a likert scale, with higher scores indicating stronger preference.[5]

We also asked principals to list their undergraduate institution on our survey. We link the college they list to measures of college selectivity from the Annual Survey of Colleges (ASC) conducted by the College Board. These measures include: average SAT/ACT scores; [6] acceptance rate; the percentage of freshmen in the top 10, 25, and 50 percent of their high school class; the percentage of freshmen with GPAs within certain ranges; and total tuition and fees. We create a scale of these measures standardized to have a mean of 0 and a standard deviation of 1. Appendix 2 lists the means and standard deviations of the measures that comprise 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 ASC from 1988 because this is the oldest year

---

[5] 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 only mark one characteristic as most important; however, about 20 percent of respondents marked more than one item as most important.

[6] The ASC 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 respective scores. We add these averages together to produce an estimate of the sum of mean scores. If schools reported 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.

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).[7]

METHODS

Our analyses examine the distribution of principal attributes across 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 address four related sets of questions: 1) Do low-income, low-achieving and racial minority students attend schools led by principals with different characteristics than other students? 2) What is the role of the district in the hiring, firing, and transfer of principals? 3) 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? 4) Are principals' and APs' stated preferences for school characteristics consistent with the patterns of transfer and attrition 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

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 due to 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

---

[7] 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.

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/interim.[8]

The research on the relationship between principals' measured characteristics and effectiveness is sparse. Thus it is not clear how good these measures are of principal effectiveness, but they are measures that distinguish principals and may affect their likelihood of obtaining desired positions. There is some evidence that principal experience is associated with quality. Research in Texas suggests that students have greater learning gains when their school has a more experienced principal (Branch et al., 2009), and we find similar evidence of a positive relationship between principal experience and student learning in preliminary analyses we have done in M-DCPS. 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 effectiveness (Ballou and Podgursky, 1995, Hanushek and Pace, 1995). While parallel analyses of principals have not been done, there may be a similar relationship between the academic ability and training of principals and their effectiveness. Though we do not have information on principal grades or test scores, we do know the selectivity of their undergraduate institutions, which serves, in part, as a proxy for both the quality of training received and, perhaps more importantly, of unobserved academic achievement and/or ability.

---

[8] In M-DCPS, temporary/interim principals are appointed by the Superintendent to fill a vacancy which occurs as the result of an emergency situation – 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. Though there is formally no guarantee that they will be hired, analyses of our data show that about 88 percent of temporary principals become the regular principal at the same school the year following their temporary status. The remaining 12 percent become regular principals at other schools.

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 FCAT. We use t-tests to compare schools in the top and bottom quartiles of these measures as well as schools that receive A accountability grades and schools that receive D or F accountability grades. The structure of the data for these analyses is such that each school contributes one observation per year from 2003-04 through 2008-09.

What Drives the Unequal Distribution of Principals Across Schools?

We find large differences in average principal characteristics across schools. To further understand this finding, we first describe the district's role in the hiring, firing and reassignment of principals. We next examine the career histories and preferences 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 position. Transfers of principals between schools and attrition from the district may also impact equity if there are systematic patterns in the principals who leave or transfer and in the schools from which and to which principals transfer. 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 more detail below. To assess whether systematic transfer behavior also contributes to the differences in

11

principal characteristics across schools, we examine differences in the characteristics of principals filling 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 different student demographics and achievement. These models allow us to examine both if and when people leave their principal position at a given school. 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 particular school stays in that school or leaves that school at some point in our observation period. Second, we examine principal mobility using competing risks models since there are multiple transitions a principal can make upon leaving a given school. In any given year a principal may stay at their 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. Since we only have data from one district we cannot say anything about between-district transfers and 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 since in most cases they would require a residential re-location.[9]

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

---

[9] Cullen and Mazzeo (2007) examine principal mobility in Texas with longitudinal data from throughout the state and find that from 1989 to 2005, only 2.3 percent of principals transfer between districts.

will have multiple spells in our data with their clock (i.e., years spent as principal) restarting each time they change schools.[10] 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:

$$\text{logit}\{\Pr(y_{isj}=1 \,|\, \text{d}_{isj})\} = [\alpha_2 d_{2isj}... + \alpha_{10} d_{10isj}] + \beta_1 Spell_{is} + SchoolChar_{sj}\beta_2 + X_{ij}\beta_3 \quad (1)$$

where d_{isj} are dummy variables representing the years spent as principal for person i in school s, $Spell_{is}$ are dummy variables indicating the spell number as principal for person i in school s, $SchoolChar_{sj}$ are school-level measures (i.e., school level, quartiles of percent free or reduced price lunch, percent minority, percent low achievers, and accountability grades) for school s in year j, and X_{ij} are 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 using the same predictors shown in equation 1 but instead 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 both the initial match of principals to schools at the beginning of their careers and of attrition and transfer patterns among principals

---

[10] Note that these spell numbers refer to the number of times 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.

serving low-performing, high-poverty schools. These differences could be driven either 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 describe principals' and assistant principals' stated preferences for sixteen different school characteristics. We present data on the extent to which principals and assistant principals report valuing each of these characteristics and also use logistic regression to model whether principals prefer each of these school attributes as a function of the school leaders' characteristics and the characteristics of the schools in which they currently work. Based on interviews with district personnel, we also describe the role of the district in principal hiring, firing and transfer decisions.

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.[11] Schools that enroll the largest proportion of poor students had a first year principal in 20 percent of the school-years between 2003-04 and 2008-09 compared to only 11 percent in schools that enroll the fewest poor students. In any given year, schools that have received an accountability grade of D or F will have a principal with about 2.5 years total experience as principal compared to the 5.1 years of average experience for 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

---

[11] Two caveats about these experience measures should be noted. First, both of these experience measures are based on dates when *continuous* employment in the district or in a particular job code began. If a principal leaves the district or a particular job for any amount of time, their experience clock will restart. 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, their job experience clock will also restart upon entering a principal position at a different type of school.

experience as principals 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 while 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 a principal with a master's degree or higher and are more likely to have a principal serving in a temporary or interim status. Schools with high proportions of students in poverty had a temporary principal in 17 percent of the school years compared to only five percent of school years at schools with low proportions of students in poverty. These schools are therefore relatively likely to have an inexperienced school leader who may only be filling in as the 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 of lower overall quality based on the selectivity scale 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 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 we observe by influencing application. We next examine the career histories and stated preferences of principals to assess the extent to

15

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 with 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. Prior to 2008-09, 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 about approving those transfer applications or not, typically in consultation with the Regional Office(s) that would be affected by the transfer. If a vacancy is not filled by a lateral transfer, it is posted by the district's Central Office, which also 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 (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 final decision of whom to hire. While the district 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. Direct appointments are made by the Superintendent only when necessary – for example, in cases of leaves or emergency needs, reassignment of personnel within region or district offices, or when the interview committee cannot make an appropriate selection. Even in the 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 re-direction" (typically moving a principal back to an assistant principal position) or relocating a principal to another school site. While the district has the discretion to assign and reassign principals, they usually do so considering 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 maybe 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 are highly dependent upon current and prospective principals expressing their preferences – formally through the application process and informally through discussions with district leadership.

Initial Match: Having established that principal assignment is generally determined by individuals first choosing to apply for vacant positions they desire, rather than being placed at the discretion of the district, we next 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 strikingly, first-time principals in schools with more poor, minority, 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. These types of appointments are often made in emergency situations directly by the district in the absence of a formal selection process. Therefore, these results suggest that it is fairly common, especially in schools with more disadvantaged and low-achieving student populations, for individuals to begin their career as principal not having full choice over where they are placed. Individuals may seize the opportunity to move into leadership when it arises, 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.

First year principals do not look very 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 new principals in schools with fewer of these students though 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. Aside from substantial differences across schools in the percentage of first-year principals who begin with a temporary status and differences in overall college 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 clearly is not the full story, especially given that principals differ across schools not only in whether they are a temporary principal or in the quality of colleges attended, but also 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. The survival function shows the probability of staying in the principal position at a given school through the year given on the x-axis. This figure clearly illustrates the higher attrition rate of principals in low-performing schools. While about 80 percent of principals in the highest achieving schools (those in the bottom quartile of low achievers in math) remain principals at a given school after three years of service, only 60 percent of principals in the lowest achieving schools do so. After ten years, virtually none of principals in schools with the most low-achieving students remain compared to 40 percent of principals in schools with the fewest. The survival functions look similar by quartiles of percent on subsidized lunch, percent minority, percent 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 each school characteristic separately while model 2 is a full model with all of the school characteristics entered at once. Table 4 only includes estimates of the effects of school characteristics on turnover though other measures are included in the models as described above. Appendix 1 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 percent lower in schools in the bottom quartile of free or reduced price lunch relative to those in the middle quartiles, which corresponds to a three percentage point difference in the probability of leaving for the average principal. The odds of leaving are 60 percent higher among principals in schools that enroll the most minority students, which corresponds to a five percentage point difference in the probability. Principals in schools with the fewest low-achieving students in math are less likely to leave while 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 four percent higher than for whites (this corresponds to about a 50 percent difference in the odds) and the probability of leaving is about ten percent higher among those with at least a masters degree relative to those with only a bachelors 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 risks 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 both more likely to transfer as principal to another school as well as to 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 also result from differential 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 prior position of the individual who fills the vacancy. The results are presented in the first three columns of Table 5 and show that high poverty schools are much less likely to fill vacancies with experienced principals. First, note that in both high and low poverty schools the vast 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

percent of them are filled with an AP from another school while 61 percent are filled with a principal from another school. On the other hand, in schools in the top quartile of students receiving free or reduced price lunch, the poorest schools, 60 percent of principal vacancies are filled with APs from other schools and only 21 percent are filled with principals from other schools.

This trend is consistent when we categorize schools using quartiles of percent minority and quartiles of percent 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 previously served as principal. In contrast, schools with large proportions of affluent, White and/or high-achieving students have relatively few vacancies, and when vacancies do arise they are usually filled by someone with prior principal experience.

The last four columns of Table 5 show the selectivity of undergraduate institutions and the proportion of principals with a master's degree for individuals filling principal vacancies in different types of schools. 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 percent of the vacancies that arise in schools with high concentrations of poor students. Similarly, 50 percent of vacancies in schools receiving accountability grades of A are filled by someone with a masters degree compared to only 44 percent 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, Kain, and Rivkin (2004) and by Lankford, Loeb, and Wyckoff (2002), in M-DCPS the schools to which principals transfer have, on average, 10 percent 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 people who stay in their initial school, but the attributes of the schools they transfer to are similar to the attributes of the schools served by principals who stay. While 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 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.

Do Principals' Preferences Contribute to Sorting? Survey Responses

The distribution of principals we observe reflects both the decisions and preferences of individual principals and 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 by the school/district, and therefore cannot distinguish the cause of the patterns we observe.

In order to shed some light on whether principal preferences are likely to contribute to the patterns that we see, we surveyed all of the principals and assistant principals in the district, asking them directly what types of schools they would prefer to work in. We include assistant principals 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 experience as an assistant principal or equivalent as a qualification requirement. Eighty percent of surveyed assistant principals indicated that they aspired to be a principal in the future. While it is true that not all assistant principals will eventually become principals, our administrative data show that 63 percent of first-time principals in the district were assistant principals in the district the year prior to becoming a principal. The results we present for assistant principals are not sensitive to the exclusion of individuals with no aspirations to become a principal in the future.

Respondents rated their preferences for 16 different school characteristics on a five 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 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 assistant principals state a consistent preference for working in schools that might be considered easier to serve. Their strongest preference is for schools that are safe, well resourced, have supportive parents, and are close to home. On the other hand, they consistently state the weakest preference for schools that are failing and that have many poor and English language learning students. In fact, 11 percent of principals and ten percent of assistant principals 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, in fact, 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 while 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 assistant principals in these models but include a flag indicating their position to capture differences in preferences between the two groups. Table 8 presents these models and shows that black school leaders are more likely to prefer working in schools that are failing and that enroll many poor students relative to their white counterparts, though 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 also substantially more likely to prefer working in a school that is close

to their residence. Not surprisingly, principals and APs in schools enrolling many low-achieving students are more likely to prefer working in a failing school or in a school with many students of poverty. Those currently working in schools with few low achieving students are two times as likely to prefer working in a high performing school. It therefore appears that there is 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.[12]

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 (poor) conditions of the schools that typically enroll such students. Schools with high concentrations of poor, minority and low-achieving students tend to also have poor working conditions. For example, they tend to have fewer resources, more safety and disciplinary problems, less parental involvement, more teacher and student turnover, and to be located in further proximity from staff residences. 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.

---

[12] In results not shown, we investigate whether these preferences for school characteristics are associated with turnover patterns. Since we conducted our survey in the spring of the 2007-08 school year, we only have one year of post-survey turnover data (i.e., from the 2008-09 school year) to do so. We found no statistically significant relationships between principals' or assistant principals' preferences and their career patterns in this one year (results are available upon request).

The district provided us with data from a staff climate survey that the district conducts each year. A sample of the staff at each school was asked whether or not 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 2004-05 through 2008-09 with the average letter grade given to the school by staff and the percent that agree with the three items listed above. Within each year, these four items correlate at between .8 and .9 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. Since the climate measures are not available until 2004, we cannot use a discrete-time hazard model due to left censoring. Instead, we use a logit model predicting whether a principal left their current school in any given year as a function of school characteristics, school climate, principal demographics, number of years at current school, and school year dummies. The standard errors in these models are clustered at the principal level since 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 9. 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 at between .5 and .7 with the school

climate measures, while the percentage of students receiving subsidized lunches correlates at between .3 and .4.

In Table 10, we seek to separate the effects on turnover of student demographics from school climate. 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. A one standard deviation increase in the school climate scale is associated with about a 20 percent 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 compared to their peers. 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 masters' degree, and a principal that went to a less selective college as compared to their more advantaged counterparts. The uneven distribution of principal attributes across schools is only driven partly by the initial match of first-time principals with schools. In

fact, since first year principals are more likely to be appointed by the district in schools with more disadvantaged and low-achieving student bodies (rather than having full choice over their initial placement), there is more likely to be a mismatch between preferences and initial school assignments in such schools. This mismatch likely influences the turnover and transfer patterns that disadvantage some schools. Transfer and attrition from the principal position are both 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 previously served as principal in the district, while vacancies in schools with harder to serve populations are generally filled by an individual with no prior principal experience.

These findings are consistent with the limited research to date on the distribution of principals across schools in other states (Branch, Hanushek, and Rivkin, 2009; Gates et al., 2006), suggesting that the experiences of M-DCPS may be similar to those in other school districts. These findings also mirror research on the distribution of teachers that find that low-income, non-white, and/or low-achieving students tend to have less experienced teachers and more teacher turnover (Carroll, Reichardt, Guarino, and Mejia, 2000; Hanushek, Kain, and Rivkin, 2004; Lankford, Loeb, and Wyckoff, 2002; Scafidi, Sjoquist, and Stinebrickner, 2008). The similarity between the sorting of principals and teachers is likely to not be coincidental, but driven by a shared preference for schools serving less at-risk populations. While other factors such as district assignment practices and the choices of school hiring authorities may be partially responsible for the disparities in principal characteristics observed across schools, we find evidence that principal preferences are at least partially responsible. Also, considering 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 to not 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 district direct assignment of principals, the principal's consent is necessary.

Unlike previous research on the sorting and transfer of principals, we administered principal and assistant principal surveys to supplement administrative data on school leaders' career paths. We find that both principals and assistant principals state strong preference for working in schools that are safe, well resourced, close to their home, and that have few teacher vacancies. In contrast, they are far less likely (and, in fact, least likely) to prefer schools with many students in poverty, many English learners or schools that have been failing to achieve academic standards.

Both principals' stated preferences and their behaviors demonstrate an aversion to leading schools with many poor, minority and/or low-achieving students. These patterns may not be driven by a distaste for leading schools with such student bodies but, rather, by a desire to serve a school with a positive climate and good working conditions. Though we could not fully separate the effect of student demographics from other school resources on turnover, the end result of higher turnover in schools serving more poor, minority and low-achieving students remains no matter what the true cause. In this paper we have not tried to assess the extent to which these preferences and labor market patterns disadvantage already at-risk student populations. Initial evidence from Texas and from analysis of student level data in M-DCPS suggests that indeed they might. In a working paper, Branch, Hanushek and Rivkin (2009) find

that principals in schools that have improved are more likely to move to higher performing schools. In preliminary analyses of M-DCPS we find that principals get considerably better at raising student achievement the longer they spend at a given school. 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 well-resourced, safe schools 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 the substantial effort that has gone into understanding teacher career paths. Yet, school leaders are 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 of the effectiveness of targeted inventions to address the differences in leadership across schools would put us in a better position to address these disparities and improve the likelihood of implementing well the variety of current reforms that rely on effective school leadership.

REFERENCES

Ballou, Dale, and Michael J. Podgursky. 1995. "Recruiting Smarter Teachers." J*ournal of Human Resources* 30(2):326–38.

Branch, Gregory F., Eric A. Hanushek, and Steven G. Rivkin. 2009. "Estimating Principal Effectiveness." Working Paper 32. Washington, D.C.: The National Center for Analysis of Longitudinal Data in Education Research, The Urban Institute.

Brewer, Dominic. 1993. "Principals and Student Outcomes: Evidence from U.S. High Schools." *Economics of Education Review* 12(4): 281–92.

Carroll, Stephen J., Robert Reichardt, Cassandra M. Guarino, and Andrea Mejia. 2000. *The Distribution of Teachers Among California's School Districts and Schools*. Monograph Report 1298.0-JIF. Santa Monica, CA: RAND Corporation.

Cullen, Julie B., and Michael J. Mazzeo.2007. "Implicit Performance Awards: An Empirical Analysis of the Labor Market for Public School Administrators." Unpublished manuscript.

Darling-Hammond, Linda, Michelle LaPointe, Debra Meyerson, Margaret T. Orr, and Carol Cohen. 2007. "Preparing School Leaders for a Changing World: Lessons from Exemplary Leadership Development Programs." Stanford, CA: Stanford University, Stanford Educational Leadership Institute.

Eberts, Randall W., and Joe A. Stone. 1988. "Student Achievement in Public Schools: Do Principals Make a Difference?" *Economics of Education Review* 7(3):291–99.

Florida Department of Education. 2008. *2008 Guide to Calculating School Grades*. Technical Assistance Paper. Tallahassee, FL: Florida Department of Education, Bureau of Research and Evaluation, Division of Accountability, Research, and Measurement. http://schoolgrades.fldoe.org/pdf/0708/2008SchoolGradesTAP.pdf

Gates, Susan M., Jeanne S. Ringel, Lucrecia Santibanez, Cassandra Guarino, Bonnie Ghosh-Dastidar, and Abigail Brown. 2006. "Mobility and Turnover Among School Principals." *Economics of Education Review* 25(3): 289–302.

Hallinger, Phillip, and Ronald H. Heck. 1996. "Reassessing the Principal's Role in School Effectiveness: A Review of Empirical Research, 1980–1995." *Educational Administration Quarterly* 32(1):5–44.

Hanushek, Eric A., and Richard R. Pace. 1995. "Who Chooses to Teach (and Why)?" *Economics of Education Review* 14(2):101–17.

Hanushek, Eric A., John F. Kain, and Steven G. Rivkin. 2004. "Why Public Schools Lose Teachers." *Journal of Human Resources* 39(2):326–54.

Harris, Douglas N., Stacey A. Rutledge, William K. Ingle, and Cynthia C. Thompson. 2006. "Mix and Match: What Principals Look for When Hiring Teachers and Implications for Teacher Quality Policies." Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, April 11.

Horng, Eileen. 2009. Forthcoming. "Teacher Tradeoffs: Disentangling Teachers' Preferences for Working Conditions and Student Demographics."*American Educational Research Journal*.

Jacob, Brian A., and Lars J. Lefgren. 2005. "Principals as Agents: Subjective Performance Measurement in Education." Working Paper 11463. Cambridge, MA: National Bureau of Economic Research.

Knapp, Michael S., Michael A. Copland, Margaret L. Plecki, and Bradley S. Portin. 2006. "Leading, Learning, and Leadership Support." Seattle, WA: University of Washington, Center for the Study of Teaching and Policy.

Lankford, Hamilton, Susanna Loeb, and James Wyckoff. 2002. "Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis."*Educational Evaluation and Policy Analysis* 24(1):37–62.

Leithwood, Kenneth, Karen Seashore Louis, Stephen Anderson, and Kyla Wahlstrom. 2004. "How Leadership Influences Student Learning." Center for Applied Research and Educational Improvement and Ontario Institute for Studies in Education at the University of Toronto, Learning from Leadership Project.

Mitgang, Lee D. 2003. "Beyond the Pipeline: Getting the Principals We Need, Where They Are Needed Most." Policy Brief. New York: Wallace Foundation.

National Association of Elementary School Principals.1998. "Is There a Shortage of Qualified Candidates for Openings in the Principalship? An Exploratory Study." *NAESP Principal Online*. http://www.naesp.org/misc/shortage.htm.

Papa, Frank C., Hamilton Lankford, and James H. Wyckoff. 2002. "The Attributes and Career Paths of Principals: Implications for Improving Policy." Working Paper. Albany, NY: Teacher Pathways Project, Teacher Policy Research.

Royston, Patrick. 2004. "Multiple Imputation of Missing Values." *Stata Journal* 4(3): 227–41.

Roza, Marguerite, with Mary B. Celio, James Harvey, and Susan Wishon. 2003. "A Matter of Definition: Is There Truly a Shortage of School Principals?" Seattle, WA: Center on Reinventing Public Education.

Scafidi, Benjamin, David L. Sjoquist, and Todd R. Stinebrickner. 2008. "Race, Poverty, and Teacher Mobility." *Economics of Education Review* 26(2):145–59.

TABLES

Table 1. Descriptive Statistics: Principal and School Attributes [1]

	Mean	SD
Principal Characteristics		
White	0.26	---
Black	0.36	---
Hispanic	0.38	---
Female	0.67	---
Years Experience in District	22.37	8.14
Years Experience as Principal in Current School Level	3.88	3.61
Years Experience in District in First Year as Principal	17.7	7.67
Masters Degree or Higher	0.70	---
Median Years As Principal at Given School	3.00	---
Principal at Only 1 School from 2003-08	0.81	---
Mean Number of Schools Served as Principal from 2003-08	1.21	0.46
Number of Unique Principals from 2003-08	552	---
Number of Spells as Principal from 2003-08	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 100s)	10.59	1.02
Percent of Freshmen in Top 10% of HS Class	20.75	23.02
Percent of Freshmen in Top 25% of HS Class	37.4	31.61
Percent of Freshmen in Top 50% of HS Class	58.9	43.31
Percent of Freshmen in Bottom 50% of HS Class	7.54	12.16
Percent of Freshmen With Above 3.0 HS GPA	35.77	32.78
Percent of Freshmen With Above 2.0-2.99 HS GPA	24.73	24.25
Percent of Freshmen With Above 1.0-1.99 HS GPA	1.83	4.74
Total Tuition and Fees (in 1988 dollars)	3900	3500
School Characteristics		
Elementary	0.65	---
Middle School	0.17	---
High School	0.14	---
Mean % on Free/Reduced Price Lunches	0.68	0.23
Mean % on Free/Reduced Price Lunches: Bottom Quartile	0.29	0.12
Mean % on Free/Reduced Price Lunches: Top Quartile	0.91	0.06
Mean % Minority	0.89	0.12
Mean % Minority: Bottom Quartile	0.71	0.11
Mean % Minority: Top Quartile	0.99	0.01
Mean % in FCAT Achievement Level 1: Math	0.24	0.16
Mean % in FCAT Level 1 Math: Bottom Quartile	0.08	0.05
Mean % in FCAT Level 1 Math: Top Quartile	0.43	0.17
Mean % in FCAT Achievement Level 1: Reading	0.30	0.18
Mean % in FCAT Level 1 Reading: Bottom Quartile	0.12	0.07
Mean % in FCAT Level 1 Reading: Top Quartile	0.50	0.18
Accountability Grades: Percent Receiving an A	0.43	---
Accountability Grades: Percent Receiving a D or F	0.14	---
Number of Schools	373	---

[1]Figures are based on data aggregated over the 2003-04 through the 2007-08 school years.

Table 2. Means of Principal Experience and Education Across School Type

	Yrs in District	1st Year Prin	Yrs As Prin	Yrs as Prin in Current School	Temp/ Interim Principal	Age	Acceptance Rate of College	College SAT/ACT (in 100s)	College Selectivity Scale	MA Deg
			Experience				*Education/Attributes of College Attended*			
All	22.15	0.17	3.85	2.79	0.12	49.89	59.9	10.84	0.14	0.66
Percent Free/Reduced Lunch										
Quartile 1	22.80	0.11	4.75	3.07	0.05	50.64	62.46	11.11	0.32	0.70
Quartile 4	20.85**	0.20**	3.43**	2.48**	0.17**	48.90**	57.84**	10.69**	0.05**	0.62**
Percent Minority										
Quartile 1	22.78	0.12	4.34	2.90	0.07	50.23	61.47	10.98	0.20	0.68
Quartile 4	21.25**	0.21**	3.29**	2.46**	0.15**	48.67**	62.72	10.57**	-0.06**	0.62
Percent 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
Quartile 4	21.28**	0.21**	2.99**	2.37**	0.15**	49.10**	62.15	10.59**	-0.05**	0.65**
Percent 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
Quartile 4	20.73**	0.23**	2.84**	2.22**	0.14**	48.86**	62.05*	10.70**	0.02**	0.64**
School Accountability Grades										
A	23.34	0.13	5.08	3.43	0.09	50.70	58.98	11.11	0.33	0.69
D or F	20.24**	0.26**	2.47**	1.97**	0.14**	48.06**	61.86*	10.57**	-0.09**	0.67

Significance levels: **.01, *.05
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 asked on a survey administered in 2008. Therefore, this information is only available for individuals who were principals in the 2007-08 school year. The selectivity measures were obtained from the 1988 Annual Survey of Colleges. See Table 1 for means and standard deviations of items comprising the selectivity scale.

Table 3. Means of Principal Experience and Education Across School Type Among First-Year Principals

	Yrs in District	Temp/ Interim Principal	MA Deg	Acceptance Rate of College	College SAT/ACT Average	College Selectivity Scale
All	17.85	0.51	0.54	60.1	10.71	0.06
Percent Free/Reduced 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
Percent 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*
Percent 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*
Percent 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**

Significance levels: **.01, *.05
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 asked on a survey administered in 2008. Therefore, this information is only available for individuals who were principals in the 2007-08 school year. The selectivity measures were obtained from the 1988 Annual Survey of Colleges. See Table 1 for means and standard deviations of items comprising the selectivity scale.

Table 4. Odds Ratios for School Characteristics from Discrete-Time Hazard Models of Principal Turnover (standard errors)

	Ever Left vs. Stayed				Attrit as Principal vs. Stayed				Transfer vs. Stayed			
Percent Free Lunch	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
Quartile 1	0.74		0.71		0.91		0.75		0.50	*	0.62	
	(0.14)		(0.17)		(0.20)		(0.22)		(0.16)		(0.24)	
Quartile 4	1.35	*	1.16		1.20		0.95		1.62	*	1.46	
	(0.20)		(0.21)		(0.22)		(0.22)		(0.37)		(0.39)	
Percent Minority												
Quartile 1	1.12		1.87	**	1.51	*	2.59	***	0.66		1.11	
	(0.19)		(0.42)		(0.31)		(0.71)		(0.18)		(0.39)	
Quartile 4	1.60	**	1.38	+	1.81	**	1.60	*	1.30		1.10	
	(0.25)		(0.25)		(0.34)		(0.36)		(0.31)		(0.30)	
Percent Low Achievers- Math												
Quartile 1	0.53	***	0.47	**	0.56	**	0.40	**	0.47	*	0.59	
	(0.10)		(0.12)		(0.12)		(0.13)		(0.15)		(0.25)	
Quartile 4	1.52	**	1.74	**	1.58	*	1.73	*	1.39		1.70	+
	(0.23)		(0.34)		(0.30)		(0.42)		(0.33)		(0.52)	
Percent Low Achievers- Reading												
Quartile 1	0.69	*	0.81		0.86		0.97		0.45	*	0.59	
	(0.12)		(0.22)		(0.18)		(0.31)		(0.14)		(0.26)	
Quartile 4	1.59	**	1.72	**	1.92	***	2.14	**	1.17		1.26	
	(0.24)		(0.35)		(0.36)		(0.54)		(0.27)		(0.39)	
School Accountability Grades												
A	0.93		1.71	**	0.96		1.61	*	0.90		1.84	*
	(0.14)		(0.31)		(0.17)		(0.37)		(0.21)		(0.51)	
D/F	0.75		0.41	***	0.80		0.41	***	0.67		0.41	**
	(0.13)		(0.08)		(0.18)		(0.11)		(0.18)		(0.13)	
Other School Measures	No		Yes		No		Yes		No		Yes	
Individual Measures	Yes		Yes		Yes		Yes		Yes		Yes	
Events	325		325		205		205		120		120	
Unique Individuals	457		457		457		457		457		457	
Observations (Principal Years)	2616		2616		2616		2616		2616		2616	

Significance levels: + .10, * .05, ** .01, ***.001

Note: All models include dummy variables for the number of years spent as principal, spell number, and school level. Models with individual characteristics also include principal race, gender, highest degree, age, age^2, and years of district experience when first becoming principal. Models with all school measures include those listed above as well as enrollment.

Table 5. Attributes of Individuals Filling Principal Vacancies

	Prior Position				*College Attributes*			
	Staff-Same School	AP-Other School	Prin-Other School	Acceptance Rate	SAT/ACT Average	Selectivity Scale	MA Degree	# of Vacancies
Percent Free/Reduced 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
Percent 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
Percent 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
Percent 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

Table 6. Difference in School Attributes among Principals who Transfer

(with Comparisons of School Attributes for Non-Transfers)

	Transfers					Non-Transfers	
	Sending	Receiving	Difference	N		Stayed in Same School	Left District
Percent Free/Reduced Lunch	0.73	0.63	-0.10	110		0.65	0.68
Percent Minority	0.91	0.87	-0.04	110		0.86	0.89
Percent Low Achievers-Math	0.27	0.22	-0.05	110		0.21	0.28
Percent 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
Percent First-Year Teachers at School	0.12	0.13	0.01	86		0.13	0.15
School Average Teacher Years of Exp	9.7	9.9	0.02	86		9.6	9.3
Percent Teachers W/Masters Degree at School	0.32	0.34	0.02	86		0.36	0.34

Table 7. Descriptive Statistics for Preferences for Working at Schools with Different Characteristics

	Principals				*Assistant Principals*			
	Mean	SD	Most Important	Prefer Not	Mean	SD	Most Important	Prefer Not
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

Table 8. Logistic Regression Predicting Principals'' and APs' Preferences for School Characteristics (odds ratios/standard errors)

	"Failing" School		Students of Poverty		English Learners		High Perf		Close to Home		Well Resourced		Collegial Culture	
Level (Elementary Omitted)														
Middle School	0.87		0.79		1.02		0.85		1.15		0.89		1.18	
	(0.21)		(0.19)		(0.25)		(0.22)		(0.36)		(0.33)		(0.34)	
High School	1.03		0.76		0.52	**	0.94		0.48	*	0.75		1.45	
	(0.25)		(0.19)		(0.13)		(0.25)		(0.15)		(0.29)		(0.45)	
Combination School	0.72		0.32	*	0.49		0.51		0.21	*	0.25	*	0.54	
	(0.41)		(0.18)		(0.28)		(0.29)		(0.13)		(0.17)		(0.33)	
Female	0.76		0.94		0.93		1.00		1.30		1.57		0.98	
	(0.15)		(0.18)		(0.18)		(0.20)		(0.32)		(0.45)		(0.23)	
Race (White Omitted)														
Black	2.06	**	1.59	*	1.11		1.63	*	0.96		1.93	+	1.06	
	(0.46)		(0.37)		(0.25)		(0.40)		(0.27)		(0.70)		(0.28)	
Hispanic	1.47		0.99		1.61	+	1.37		2.62	**	1.73		1.55	
	(0.35)		(0.24)		(0.39)		(0.35)		(0.88)		(0.63)		(0.45)	
Other	0.64		0.85		0.30		0.61		1.36		0.79		0.69	
	(0.56)		(0.67)		(0.26)		(0.48)		(1.51)		(0.89)		(0.60)	
Percent Free Lunch														
Bottom Quartile	0.97		1.22		1.43		0.62	+	1.69		1.20		0.96	
	(0.25)		(0.32)		(0.37)		(0.17)		(0.56)		(0.48)		(0.30)	
Top Quartile	1.63	+	1.05		0.65	+	0.84		0.71		0.63		0.90	
	(0.41)		(0.27)		(0.16)		(0.22)		(0.24)		(0.24)		(0.27)	
Percent Low Achieving-Reading														
Bottom Quartile	1.25		1.10		0.72		2.01	*	0.53	+	1.13		1.08	
	(0.32)		(0.29)		(0.19)		(0.60)		(0.17)		(0.48)		(0.34)	
Top Quartile	1.59	+	1.53	+	1.33		1.01		2.52	**	1.52		1.12	
	(0.38)		(0.38)		(0.32)		(0.26)		(0.84)		(0.58)		(0.33)	
Less than 2 years Exp in Job	0.99		1.03		0.87		0.78		1.31		1.15		1.24	
	(0.17)		(0.18)		(0.15)		(0.15)		(0.31)		(0.32)		(0.27)	
Principal (vs AP)	0.61	*	0.74		0.86		1.06		1.17		1.32		1.53	+
	(0.12)		(0.15)		(0.17)		(0.23)		(0.31)		(0.42)		(0.38)	
Constant	0.83		1.79	*	1.90	*	2.30	**	2.96	**	4.04	**	2.42	*
	(0.24)		(0.53)		(0.56)		(0.72)		(1.09)		(1.73)		(0.83)	
N	581		581		581		581		581		581		581	

Significance levels: + .10, * .05, ** .01, ***.001

Note: Dependent variable is whether individuals at least prefer a given item (prefer, strongly prefer, and most important are given a value of 1 while not a consideration and do not prefer are given a value of 0).

Table 9. Pair-Wise Correlations between School Climate Measures and Student Demographics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) School Climate Scale	1.00								
(2) %Agree School is Safe	0.92	1.00							
(3) %Agree Students Get Good Education	0.96	0.84	1.00						
(4) %Agree Climate Helps Learning	0.96	0.85	0.91	1.00					
(5) Average Grade Given to School	0.94	0.77	0.86	0.88	1.00				
(6) Percent Free/Reduced Lunch	-0.30	-0.24	-0.26	-0.26	-0.43	1.00			
(7) Percent Minority	-0.36	-0.28	-0.33	-0.33	-0.48	0.73	1.00		
(8) Percent Low Achieving in Math	-0.62	-0.49	-0.60	-0.57	-0.71	0.40	0.44	1.00	
(9) Percent Low Achieving in Reading	-0.67	-0.53	-0.67	-0.60	-0.73	0.37	0.49	0.88	1.00

Note: School climate scale is a standardized scale (mean of 0, SD of 1) comprised of items 2-5.

Table 10. Logit Models of Principal Turnover by School Characteristics

	Model 1		Model 2		Model 3		Model 4	
	Left School in Following Year vs Stayed							
Percent Free Lunch								
Quartile 1	0.81		0.89		0.87		0.84	
	(0.153)		(0.170)		(0.176)		(0.184)	
Quartile 4	1.36	*	1.26		1.33	+	1.46	*
	(0.195)		(0.185)		(0.210)		(0.255)	
School Climate Scale			0.81	**	0.74	**	0.72	**
			(0.055)		(0.073)		(0.093)	
Quartile 1*School Climate					1.20		1.34	
					(0.239)		(0.271)	
Quartile 4*School Climate					1.22		1.10	
					(0.180)		(0.187)	
Percent Minority								
Quartile 1	0.99		1.10		1.01		1.21	
	(0.156)		(0.175)		(0.165)		(0.222)	
Quartile 4	1.37	*	1.21		1.19		1.29	
	(0.204)		(0.189)		(0.204)		(0.239)	
School Climate Scale			0.80	**	0.77	*	0.78	+
			(0.056)		(0.082)		(0.102)	
Quartile 1*School Climate					1.26		1.14	
					(0.221)		(0.220)	
Quartile 4*School Climate					1.00		0.87	
					(0.156)		(0.148)	
Percent Low Achievers in Math								
Quartile 1	0.69	*	0.77		0.88		0.80	
	(0.130)		(0.148)		(0.179)		(0.191)	
Quartile 4	1.36	*	1.10		0.96		1.00	
	(0.190)		(0.188)		(0.200)		(0.239)	
School Climate Scale			0.81	*	1.04		1.02	
			(0.074)		(0.137)		(0.150)	
Quartile 1*School Climate					0.67	+	0.70	
					(0.141)		(0.163)	

Quartile 4*School Climate				0.66	*	0.65	*
				(0.121)		(0.131)	

Percent Low Achievers in Reading

Quartile 1	0.87		0.98		0.90		0.94
	(0.158)		(0.187)		(0.368)		(0.352)
Quartile 4	1.55	**	1.28		1.13		1.20
	(0.212)		(0.206)		(0.207)		(0.252)
School Climate Scale			0.82	*	0.95		0.93
			(0.071)		(0.128)		(0.139)
Quartile 1*School Climate					0.99		0.93
					(0.506)		(0.432)
Quartile 4*School Climate					0.74	+	0.73
					(0.131)		(0.145)
N	1270		1270		1270		1270
Individual Controls	No		No		No		Yes

Significance levels: + .10, * .05, ** .01, ***.001

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 2004-05

and 2008-09.

Appendix. Full Models from Discrete-Time Hazard of Leaving Principal Position (standard errors)

	Odds Ratios					Marginal Effects				
		Competing Risks					Competing Risks			
		Reference=Stayed					Reference=Stayed			
	Ever Left vs Stayed		Left-No Transfer		Left-Transfer		Ever Left vs Stayed		Left-No Transfer		Left-Transfer
Years as Principal											
Year 2	1.84	**	2.16	*	1.54		0.05	*	-0.01	+	-0.01
	(0.41)		(0.66)		(0.47)		(0.02)		(0.01)		(0.00)
Year 3	2.00	**	2.57	**	1.47		0.06	*	-0.01	*	0.00
	(0.47)		(0.81)		(0.49)		(0.02)		(0.01)		(0.00)
Year 4	2.45	***	3.46	***	1.42		0.08	**	-0.02	*	0.00
	(0.62)		(1.12)		(0.56)		(0.03)		(0.01)		(0.01)
Year 5	3.20	***	4.38	***	1.95		0.11	**	-0.03	**	-0.01
	(0.86)		(1.50)		(0.83)		(0.03)		(0.01)		(0.01)
Year 6	2.62	**	3.58	**	1.68		0.09	*	-0.02	*	-0.01
	(0.84)		(1.43)		(0.89)		(0.04)		(0.01)		(0.01)
Year 7	2.51	**	2.89	*	2.25		0.08	*	-0.02		-0.01
	(0.87)		(1.28)		(1.14)		(0.04)		(0.01)		(0.01)
Year 8	3.35	***	3.57	**	3.32	*	0.12	*	-0.02	+	-0.02
	(1.16)		(1.61)		(1.64)		(0.05)		(0.01)		(0.01)
Year 9	3.32	**	3.96	**	2.98	+	0.11	*	-0.02	+	-0.02
	(1.23)		(1.84)		(1.66)		(0.05)		(0.01)		(0.01)
Year 10	3.16	**	4.09	**	2.38		0.11	*	-0.03	+	-0.01
	(1.32)		(2.09)		(1.62)		(0.05)		(0.02)		(0.01)
10 Years or More	9.31	***	14.81	***	2.33		0.29	***	-0.09	***	-0.01
	(3.12)		(5.90)		(1.63)		(0.06)		(0.03)		(0.01)
School Level (Elementary Omitted)											
Middle School	1.20		1.32		1.02		0.02		-0.01		0.00

	(0.20)		(0.27)		(0.27)		(0.02)		(0.01)		(0.00)	
High School	1.26		1.00		1.71		0.02		0.00		-0.01	
	(0.29)		(0.29)		(0.59)		(0.02)		(0.01)		(0.01)	
Spell Number as Principal												
Spell: 2	2.50	***	1.66	*	3.95	***	0.11	***	-0.01	+	-0.03	***
	(0.41)		(0.37)		(0.91)		(0.02)		(0.01)		(0.01)	
Spell: 3-5	5.48	***	3.47	**	11.27	***	0.25	***	-0.04	+	-0.07	*
	(2.02)		(1.65)		(5.41)		(0.07)		(0.02)		(0.03)	
Percent Free/Reduced Lunch												
Bottom Quartile	0.71		0.75		0.62		-0.03	+	0.01		0.01	
	(0.17)		(0.22)		(0.24)		(0.02)		(0.01)		(0.00)	
Top Quartile	1.16		0.95		1.46		0.02		0.00		-0.01	
	(0.21)		(0.22)		(0.39)		(0.02)		(0.01)		(0.00)	
Percent Minority												
Bottom Quartile	1.87	**	2.59	***	1.11		0.07	*	-0.02	*	0.00	
	(0.42)		(0.71)		(0.39)		(0.03)		(0.01)		(0.01)	
Top Quartile	1.38	+	1.60	*	1.10		0.03		-0.01	+	0.00	
	(0.25)		(0.36)		(0.30)		(0.02)		(0.01)		(0.00)	
Percent Low Achievers-Math												
Bottom Quartile	0.47	**	0.40	**	0.59		-0.06	***	0.02	***	0.01	
	(0.12)		(0.13)		(0.25)		(0.02)		(0.00)		(0.00)	
Top Quartile	1.74	**	1.73	*	1.70	+	0.07	*	-0.02	+	-0.01	
	(0.34)		(0.42)		(0.52)		(0.03)		(0.01)		(0.01)	
Percent Low Achievers-Reading												
Bottom Quartile	0.81		0.97		0.59		-0.02		0.00		0.01	
	(0.22)		(0.31)		(0.26)		(0.02)		(0.01)		(0.00)	
Top Quartile	1.72	**	2.14	**	1.26		0.06	*	-0.02	*	0.00	
	(0.35)		(0.54)		(0.39)		(0.03)		(0.01)		(0.01)	
Accountability Grades												
A	1.71	**	1.61	*	1.84	*	0.06	**	-0.01	+	-0.01	+
	(0.31)		(0.37)		(0.51)		(0.02)		(0.01)		(0.01)	

D or F	0.41	***	0.41	***	0.41	**	-0.07	***	0.02	***	0.01	***
	(0.08)		(0.11)		(0.13)		(0.01)		(0.00)		(0.00)	
School Enrollment, in 1000s	1.15		1.24		0.98		0.02		-0.01	+	0.00	
	(0.13)		(0.18)		(0.17)		(0.01)		(0.00)		(0.00)	
Principal Attributes												
Age	0.69	***	0.59	***	1.06		-0.04	***	0.01	***	0.00	
	(0.07)		(0.08)		(0.19)		(0.01)		(0.00)		(0.00)	
Age^2	1.00	**	1.01	***	1.00		0.00	**	0.00	***	0.00	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Black	1.23		1.41		0.95		0.02		-0.01		0.00	
	(0.22)		(0.31)		(0.26)		(0.02)		(0.01)		(0.00)	
Hispanic	1.12		1.36		0.86		0.01		-0.01		0.00	
	(0.21)		(0.31)		(0.24)		(0.02)		(0.01)		(0.00)	
Female	0.80		0.90		0.68	+	-0.02		0.00		0.01	*
	(0.12)		(0.16)		(0.15)		(0.01)		(0.00)		(0.00)	
Masters Degree or Higher	2.13	***	2.27	***	2.01	***	0.08	***	-0.02	***	-0.01	**
	(0.29)		(0.38)		(0.42)		(0.02)		(0.00)		(0.00)	
Years District Exp. When becoming Principal	0.88	**	0.88	**	0.88	*	-0.01	***	0.00	**	0.00	+
	(0.04)		(0.04)		(0.05)		(0.00)		(0.00)		(0.00)	
(Years District Exp. When becoming Principal)^2	1.00	***	1.00	**	1.00		0.00	***	0.00	***	0.00	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Unique Individuals	457		457		457		457		457		457	
Events	325		205		120		325		205		120	
Observations	2616		2616		2616		2616		2616		2616	