The Labor Market Consequences of Principal Performance Pay *

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Job Market Paper

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Abstract

I study whether test-based performance pay for public-school principals affects principals' labor market transitions. I leverage a policy change in North Carolina, which implemented a test-based performance pay system for school principals in 2017. I provide evidence that performance pay's financial incentives induce positive sorting of principals throughout the traditional public school labor force. Principals with characteristics that are not rewarded by performance pay are more likely to leave their positions. The principals who left are more experienced but less effective at improving test-score growth. Principals rewarded by performance pay are more likely to remain a principal but transfer to a different school. These transfers are driven by principals moving from small schools and to larger, recurring low-performing, and Title I schools. My results demonstrate that principal performance pay can push ineffective principals out of their positions and attract effective and experienced principals to traditionally harder-to-staff schools.

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1 Introduction

There have been numerous pushes to alter educator compensation schemes in recent years to induce more effort and attract higher quality educators by tying pay directly to measurable student achievement growth. For instance, the United States Department of Education's Teacher Incentive Fund provides grant funding for school districts to offer performance-based teacher and principal compensation systems. Standard theory in personnel economics predicts two main consequences of performance pay. Employees will respond by increasing their level of effort, and more productive employees will sort into positions offering performance pay (see, e.g. Lazear, 2000). Both predictions follow from employees maximizing expected future earnings. In the context of teachers, prior research supports these predictions: a move to performance-based pay increases average levels of teacher effort relative to seniority pay by attracting high value-added teachers and increasing the effort teachers exert (Biasi, 2018). Performance-based compensation for principals is not as wide-spread and, therefore, not as well studied.

In this paper, I focus on the labor market sorting effects of principal performance pay. I examine whether principal performance pay affects the labor market transition decisions of principals. I then provide evidence about how performance pay-induced changes in principals' labor market decisions affect the composition of the principal labor force and the distribution of principals across schools. I assess principal performance pay's success as a policy by answering the following questions: (1) How did performance pay's financial incentives affect principals' decisions to continue working at the same school, switch schools, or exit the principalship? (2) If performance pay induces exits, are these from effective or ineffective principals? (3) Does performance pay attract principals to traditionally harder-to-staff schools?

Understanding how changing principals' financial incentives will impact the principal labor market is crucial because principals play an important role in students' human capital development. Prior research has shown that public school principals are critical to student

success, even though they do not typically directly instruct students (Horng et al., 2010; Branch et al., 2012; Coelli and Green, 2012; Corcoran et al., 2012; Grissom et al., 2015; Dhuey and Smith, 2018; Bacher-Hicks et al., 2019). Principals' roles as middle managers in the public school system make them responsible for schools' day-to-day operations. They play a direct role in hiring, firing, and evaluating teachers, assigning students to classrooms, assigning classrooms to teachers, determining teacher schedules, allocating school resources, and disciplining students. They are accountable to school district officials, the school board, and, informally, their students' parents.

The transitions of principals within and from the public school labor force are also pertinent outcomes from an education policy perspective. The impact of principal performance pay on students is ambiguous. Whether performance pay is beneficial or detrimental to students depends on how principals' labor market decisions change. If, as economic theory predicts, performance pay retains and attracts high-quality principals while pushing out less effective principals, performance pay could benefit students. On the other hand, if performance pay pushes highly experienced principals out of their positions, and there is a positive correlation between principals' experience and effectiveness, students may suffer.

I leverage the introduction of principal performance pay in North Carolina to estimate the effects of performance pay on principals' labor market decisions, the composition of the principal labor force, and the distribution of principals to schools. In 2015, a public school principal's average salary in North Carolina was the third-lowest in the United States. The average salary for a principal in North Carolina was $68,530 compared to the national average of $93,120. Earnings were markedly low for inexperienced principals in small schools. In response, policymakers in North Carolina sought to increase principal pay while incentivizing effort, recruiting and retaining high performing principals, and rewarding principals for high performance by implementing a test score-based performance pay system (Generasl Assembly of North Carolina, 2016). Before the policy change, a principal's education, experience, and school size determined their salary. Principals could expect an increase in pay of roughly

$1,500 for each additional year of experience or around $3,000 more per year after completing a Ph.D. The new performance-based pay schedule eliminated both of these dimensions and tied principal salaries directly to school test-score growth. Average principal salaries increased to $71,740; moving from the lowest to the highest test-score growth category could increase a principal's yearly salary by nearly $15,000.

Estimating the causal effects of principal performance pay in North Carolina is challenging for two key reasons. First, the policy affected all principals at the same time. Before and after comparisons of labor market transition probabilities will not only reflect the policy's effect because it is impossible to disentangle the policy effects from any trends in transitions over time. Second, principals are affected by performance pay differently as determined by endogenous characteristics. For instance, inexperienced principals are more likely to receive a pay raise and are less likely to retire. I use a difference-in-differences framework to identify the causal effect of principal performance pay. I construct an approximation of the counterfactual for principals using a sample of experienced, career teachers. Teachers in North Carolina are paid primarily based on experience and did not face significant changes during the analysis period.[1] Most school principals were formerly teachers, meaning the groups will be similar in observable and unobservable characteristics. The data support that principals and teachers followed similar labor market transition trends and are similar across several observable characteristics. I compare labor market transition rates between teachers and principals before and after principal performance pay using multinomial logit models.

I find evidence that principals respond to the financial incentives of performance pay. Those with attributes rewarded by performance pay, who would see their salaries increase, are less likely to leave the traditional education sector but are more likely to transfer to be a principal at a different school. I find this increase in transfers is driven by principals moving out of smaller schools and to larger, underperforming, and Title I schools. Principals whose salaries would fall or remain constant with performance pay are less likely to remain

[1]Teachers in North Carolina can earn small bonuses based on the test score growth of their students, but this makes up only a small proportion of their compensation.

a principal at their current school and are more likely to move to other full- or part-time positions. A concern of policymakers and the public is that performance pay-induced exits will be primarily from highly experienced principals (Hui, 2017). These exits might be detrimental to students if years of experience positively correlates with effectiveness. While I find principals with more experience are more likely to leave the principalship under performance pay, these principals were less effective. Principal performance pay pushes out principals who had previously failed to meet test-score growth expectations while increasing retention for principals with a history of exceeding expectations. Performance pay also attracts effective principals to switch to persistently underperforming and Title I schools.

My results are consistent with the predictions of standard personnel economic models of performance pay. Principals respond to performance pay's financial incentives by positively sorting throughout the traditional public education labor force. My results also suggest that policymakers in North Carolina successfully achieved their goals. Principal performance pay retains effective principals while pushing ineffective principals out of their positions. Performance pay's financial incentives also induce effective principals into transferring to traditionally harder-to-staff, persistently underperforming and Title I schools.

My paper contributes to prior research examining principal performance pay in two ways. First, I study one of the largest implementations of principal performance pay to date. This implementation is large in two ways. All principals in traditional public schools in North Carolina are affected, and principal salaries are almost entirely determined by student test-score growth. I benefit from examining a more comprehensive principal performance pay policy in several ways. First, I have more statistical power to detect the effect of performance pay. Second, my results are more generalizable and have stronger external validity because I have a diverse and representative sample of principals. Finally, my results can provide evidence to inform policymakers who may use North Carolina's principal performance pay policy as a model for their area.

My research also builds upon the prior literature by providing causal evidence regard-

ing the impacts of principal performance pay on principal labor markets. Prior research, such as Hamilton et al. (2012), provides correlational evidence about the impacts principal performance pay on principal labor markets. While this evidence is informative, endogeneity concerns make placing a causal interpretation of these results difficult. For example, principals who have characteristics rewarded by performance pay might also be more likely to move into higher-level positions even in the absence of performance pay. By providing plausibly causal evidence of principal performance pay's effects by approximating principals' counterfactual outcomes, I provide robust evidence to policymakers about the impacts of principal performance pay on principal labor markets.

Other related research examining school-principal pay has focused on measuring the impacts of compensation changes on student outcomes or understanding whether principal performance determines their compensation (Billger, 2007; Lavy, 2008). However, these studies do not examine principal performance pay systems. My paper is more closely related to research studying the impacts of teacher performance pay on teacher labor markets (e.g. Adnot et al., 2017; Biasi, 2018; Brehm et al., 2017; Goldhaber et al., 2011; Hanushek et al., 2005; Henry et al., 2011; Imberman and Lovenheim, 2014). However, because principals play a distinctly different role in education production than teachers, my research provides new insight into the efficacy of performance pay for educators.

My paper proceeds as follows. First, I provide background on educator performance pay and the compensation of principals in North Carolina. Next, I describe the data and empirical methods I use to analyze principal performance pay. Then, I present my results regarding the impacts of principal performance pay on principals' labor market transitions, the composition of the principal labor force, and the distribution of principals to schools. Finally, I conclude.

2 Background

2.1 Performance Pay

In the US, educator salaries are traditionally determined using centrally planned salary schedules based on experience and education; teachers with the same experience and education level will earn the same salary regardless of their quality or effort (Podgursky, 2006). In recent years, with shortages of teachers and public perceptions of inadequate teacher pay (Berge, 2019), many policymakers are pushing for policies that increase educator salaries while also tying compensation to measurable student achievement growth. Test score-based performance pay systems for teachers are relatively common. By 2007, 25 states had implemented test score-based performance pay systems (Bond and Mumford, 2018).[2]

Performance pay for school principals is less common than for teachers. The Teacher Incentive Fund (TIF), a federal program provided by the United States Department of Education, provides grant funding for test score-based performance pay systems for principals. However, only high-need schools and districts receive grants.[3] North Carolina's shift to performance pay for principals represents one of the largest implementations of principal performance pay to date. Compared to the literature on teacher performance pay, relatively few studies have examined the effects of principal performance pay. Chiang et al. (2015) compared schools receiving Teacher Incentive Fund grants for performance pay arrangements to a set of control schools where principals received an unconditional bonus. They found that only 30 percent of schools provided performance bonuses that were difficult to earn and large enough to change principal behavior. Hamilton et al. (2012) studied a performance-based bonus plan for principals implemented by Pittsburgh Public Schools, funded by the TIF, and found evidence of a correlation between the amount of the bonus principals received and the principal's labor market decisions. They found that, while retention remained relatively

[2]Bond and Mumford (2018) find there were seven state-wide programs, 138 district-wide programs, and 2,925 school-specific programs implemented in at least one academic year between 1986 and 2007.

[3]The TIF has funded performance pay programs in roughly 300 school districts in 36 states and the District of Columbia. `https://www2.ed.gov/programs/teacherincentive/index.html`[accessed May 2020]

stable, principals who received a larger bonus were more likely to subsequently become central office administrators, while those who earned smaller bonuses were somewhat more like to become assistant principals.

A closely related literature does examine the causal labor market consequences of performance pay for teachers (e.g. Adnot et al., 2017; Biasi, 2018; Brehm et al., 2017; Goldhaber et al., 2011; Hanushek et al., 2005; Henry et al., 2011; Imberman and Lovenheim, 2014). Recently, Biasi (2018) exploited the introduction of performance pay in some school districts in Wisconsin in 2011. Biasi (2018) finds that effective teachers, in terms of value-added, were more likely to move to school districts offering performance pay than their lower-performing peers. Furthermore, switching to performance pay led to increased teacher effort, as measured by their value-added.

2.2 Principal Pay in North Carolina

In North Carolina, before the 2017-18 school year, a principal's salary was determined by a traditional experienced-based system that accounted for years of eligible service, the number of teachers employed at the school they managed, and their highest level of education. Years of service affected principal pay in two ways: their position in the pay schedule and their longevity pay. Longevity pay is an annual lump sum paid to state government employees with more than ten years of eligible service. In July of 2017, North Carolina legislators implemented a test-score growth-based performance pay system to determine principal salaries. Experience or education no longer determines a principal's salary. The test-score growth status of the school(s) they have managed over the last three years is now the critical determinant of a principal's salary. In each school year since 2014-15, the North Carolina Department of Public Instruction, as a part of their school accountability system, uses a test-score value-added model to assign schools a test-score growth score. Depending on the level of a school's test-score growth score, schools are classified as not meeting, meeting, or exceeding test-score growth expectations. Principals who have exceeded growth expectations

in each of the last three years will earn the most, while those who have not met expectations in the previous three years will make the least. All else equal, moving from the lowest test-score growth expectation class to the highest will result in around a $15,000 increase in yearly pay.

A principal's salary is still determined in part by the size of the school they manage. In the 2016-17 school year and before, the number of teachers employed in the principal's school determined school size. This system was problematic because it only counted state-funded teachers. Federally funded teachers, most commonly found in Title I schools with many economically disadvantaged students, did not count toward this total. This discrepancy meant that principals a Title I schools were earning less than their counterparts managing the same number of state-funded teachers. I show an excerpt from the 2016-17 salary schedule for a school with 33-43 teachers in Table 1.

After the pay schedule change in 2017-18, the salary schedule used the highest average daily membership over the first two months of the school year to measured school size. Most importantly, for this study, after this policy change, principal pay became tied to student growth scores, which are measured by the difference in students' performance on standardized tests from year to year. Specifically, a principal's position on the performance-based salary schedule was determined by their students' test-score growth scores in their previous three years as principal. Table 2 shows the full 2017-18 salary schedule.

The pay schedule change resulted in a compression of the principal pay distribution, with the lowest salary rising from $52,656 to $61,751 and the highest salary decreasing from $111,984 to $88,921. This change in the salary extrema was essentially a redistribution of wages from experienced principals in lower performing schools to inexperienced principals in higher performing schools. In response to a potential $30,000 pay cut to experienced principals, the state legislature established a "hold harmless" guarantee that a principal's salary would not fall below 2016-2017 levels under the new pay structure. However, this guarantee did not include supplements from local school districts.

In North Carolina, both the state and school districts provide funding for principal salaries. The state legislature sets a principal salary schedule that acts as a minimum salary, while school districts supplement the state-level salary. There is significant variation in the size of the supplement provided by school districts ranging from several districts offering no supplement at all to Wake County Public Schools, offering an average supplement of $27,701 in the 2016-17 school year. The average local supplement received by school principals in the 2014-2015 school year was $12,403.41. School districts also varying in how they provide supplements. Some districts, such as Orange County Public Schools and Wake County Public Schools, provision supplements based on fixed rules regarding school grade level or years of experience.[4] Other districts, such as Charlotte-Mecklenburg Schools, offer flexible systems that can be individualized for each principal.[5]

School districts may use their local salary supplements to circumvent the state's performance-based pay structure. The press (Hui, 2018) even expressed this concern. However, even in the worst-case scenario, where all districts circumvent performance pay, my difference-in-differences estimate of the performance pay treatment effect would be biased toward zero, representing the policy's real impact in that hypothetical. I provide some evidence about how prevalent school district circumvention might be by examining how principal salary supplements changed relative to teachers'. Each year the North Carolina Association of County Commissioners publishes average educator salary supplements for each school district. I use salary supplement data from the 2014-15 to 2018-19 (three years before and two years after the policy change) and perform a difference-in-differences analysis of the changes in salary supplements of principals relative to teachers. I present average salary supplements for principals and teachers before and after performance pay in Appendix Ta-

[4]See `https://www.orangecountyfirst.com/Page/94` [Accessed October 2020] and `https://www.wcpss.net/cms/lib/NC01911451/Centricity/Domain/35/Principal%20and%20Assistant%20Principal.pdf` [Accessed October 2020] for information about salary supplements in Orange County and Wake County, respectively.

[5]See `https://www.cms.k12.nc.us/cmsdepartments/humanresources/Documents/2019-20%20Market%20Pay%20Plan%2012%20month%20Principal%20and%20AP.pdf` for information about Charlotte-Mecklenburg Schools' principal salary supplement.

ble A1. Before the policy change, the average salary supplement for principals and teachers was $12,971.33 and $3917.66, respectively. Following principal performance pay, average principal and teacher supplements rose by $1,090.67 and $540.83, respectively. This implies a difference-in-differences of $549.83. So, average principal salary supplements increased $549.83 more than teacher supplements over the same period. This estimate is not statistically significantly different from zero, but, because there are relatively few school districts, this analysis does not have much power. This result provides evidence that the circumvention of performance pay by school districts was not detectable on average. However, it is possible that school district circumvention is changing the distribution of principal salary supplements, but not the average. This could happen, for instance, if school districts are redistributing principal salary supplements after the policy change.

3 Data and Methodology

3.1 Data

I use administrative records from the North Carolina Education Research Data Center (NCERDC) regarding all public school personnel in North Carolina from the 2011-12 through 2017-18 school years. These data include information regarding an individual's position, salary, experience, demographics, education, and school. I use this data to construct repeated cross-sections of public school principals and teachers. I examine six cohorts of principals and teachers who worked full-time at a single, regular school during the academic year.[6]

I restrict the sample of teachers to include experienced, career teachers, with a master's degree or higher, a requirement for being a school principal. North Carolina abolished tenure for teachers in 2013. New teachers are employed on one-year contracts. North Carolina

[6]I refer to regular schools as defined in the NCES Common Core Data. I omit individuals working in alternative education schools, career and technical education schools, and special education schools.

defines a career teacher as a teacher who has worked for five or more years at the same school. Administrators can offer career teachers multi-year contracts. Since principals are generally drawn from the teacher labor force and have considerable teaching experience on average, I restrict my sample of teachers to those with five or more years of experience. Additionally, to better match principals in salary, I restrict my sample to individuals earning more than $50,000 per year. Table 3 compares the observable characteristics of principals and teachers. Between 2011-12 and 2016-17, there are 9,461 principals and 35,483 teachers. On average, career teachers are older, have more years of experience, and are more likely to be female. Teachers are also more likely to have a master's degree. These differences in observable characteristics motivate a regression approach.

I then track these individuals' labor market transitions into the following academic year (year t). I define five possible labor market transitions: same-school retention, switching schools, other full-time employment changes, other part-time employment changes, and separations. I define same-school retention as continuing to work in the same position at the same school in the next academic year. I define switching schools as continuing to work in the same position, but at a different school than in the prior year. An individual experiences an other full-time employment change in year t if they moved to a different job, but continued to work full time. This transition can include any change to a different position within the North Carolina public school system. Other part-time employment changes include changes to other positions or working in the same position, but only part-time. A separation occurs when an individual leaves the traditional North Carolina public educator labor force.

I supplement the NCERDC personnel data with data from North Carolina school report cards, the Department of Education National Center for Education Statistics' Common Core Data, and salary schedules from the North Carolina Department of Public Instruction (NCDPI) to impute the change in base salary of principals potentially impacted by performance pay (those in 2016-17). For each principal who is exposed to the performance pay treatment, those in the 2016-17 cohort, I impute the effect of the principal performance pay

on their state-provided, base salary by computing the difference between what that principal would earn under the performance-based salary schedule in 2017-18 and what that principal would have earned if their salary continued to be determined by the experienced-based, 2016-17 salary schedule in 2017-18. If this difference is positive, meaning the principal would earn more under the performance-based 2017-18 schedule, I say they receive a salary increase.

For example, let us consider an average principal in terms of experience, education, school size, and test score growth in the 2016-17 cohort. Tables 1 and 2 show the 2016-17 and 2017-18 salary schedules respectively. I present summary statistics for the 2016-17 cohort of principals affected by the change to performance pay in Appendix Table A2. An average principal in 2016-17 has 22 years of experience, a master's degree, managed 40 teachers, 607 students, and met growth expectations. If in 2017-18, the 2016-17 salary schedule determined their salary, this principal would earn a base salary of \$62,352[7], while under the 2017-18 salary schedule, they would earn \$71,322. So, this principal would have experienced a salary increase of \$8,970. 72.8 percent of principals in 2016-17 would receive a salary increase. Those principals whose salary would rise would see an average increase of \$7,187.

Figure 1 plots hypothetical pay in 2017-18 under the performance-based, 2017-18 pay schedule versus the hypothetical, counterfactual pay in 2017-18 under the experienced-based, 2016-17 pay schedule. Points above the dashed 45-degree line represent principals who experience a pay increase under the 2017-18 pay schedule. This figure accounts for hold harmless rules implemented by North Carolina legislators in response to potentially large decreases in principal salaries due to performance pay. The hold-harmless rule guarantees that a principal will not earn less in 2017-18 than their salary in 2016-17. This figure suggests significant variation in the salary changes induced by the switch to a performance-based salary schedule. I expect that how a principal's salary is impacted will introduce significant heterogeneity in the effect of principal performance pay.

[7]To compute this value, I add one additional year of experience to the 2016-17 average

3.2 Empirical Methods

To identify the effect of the salary schedule change, I construct an approximation of principals counterfactual using experienced, career teachers. I utilize a difference-in-differences approach to compare labor market transitions before and after implementing principal performance pay between principals and the teachers. Additionally, I include controls for principal characteristics correlated with the salary effect of performance pay and principals' labor market decisions.

Teachers offer a natural comparison group for principals. Although not a requirement for being a principal in North Carolina, most principals were previously teachers. Therefore, it is likely that experienced teachers will be similar to principals in terms of both observable and unobservable characteristics and will make similar labor market transition decisions, all else equal. My treatment and comparison groups must satisfy some identifying assumptions to claim I am identifying a causal effect of principal performance pay. First, it ought to be that in the absence of the policy change, the trends in labor market transitions over time would be the same for principals and teachers, all else equal. This is the parallel trends assumption. Second, there should not have been any contemporaneous shocks that differentially impact principals and teachers.

To test the plausibility of the parallel trends assumption, Figure 2 plots sample average same-school retention rates for principals and teachers by year. I present only trends in same-school retention rates for simplicity. I provide comparable figures for each of the other labor market transitions in Appendix Figures A1 to A4. These figures also suggest that the parallel trends assumption plausibly holds for each transition. The solid vertical line between 2017 and 2018 represents the implementation of principal performance pay in July of 2017. The dashed vertical line between 2016 and 2017 represents when legislators began discussions about changing the structure of principal pay in October of 2016.[8] The Figure 2

[8]See `https://www.ncleg.gov/documentsites/committees/BCCI-6680/October%2024/1.%20Oct_24_Joint_SBA_Pay_agenda.pdf` for the agenda of the first meeting where legislatures discuss change school principal pay.

suggest there may have been anticipatory effects of the principal performance pay discussion. My results are robust to excluding the year before policy implementation.

In Figure 2, teachers have higher same-school retention rates than principals throughout, but the trends in same-school retention match quite well in the pre-policy change period for teachers and principals. This figure provides some evidence that the common trends assumption is satisfied. Notably, there is a sharp decrease in retention in the 2014-15 school year for both teachers and principals. In these years, the structure of the NCERDC personnel data changed, which made tracking individuals difficult. This change in file structure affected both teachers and principals, so the parallel trends assumption is still valid and my results are robust to excluding 2014-15 from my sample. I show this in Figure 3, where I difference out common time components of the retention rates.[9] Additionally,

During my analysis period, teacher pay policies in North Carolina were stable. In 2013, the state eliminated multi-year contracts for teachers, but state legislators reinstated them in 2016. Performance-based bonuses of $1,500 to $2,000 were available to teachers from 2010 to 2014 through the Race to the Top program (Lauren and Kozlowski, 2014). Performance incentives were reintroduced for teachers in grades and courses subject to End of Grade testing for the 2017-18 school year.[10] These $2,000 bonuses are available to teachers who are in the top 25% of the state or district in test-score growth. These teacher performance pay policies may impact teachers' labor market transitions. However, these performance bonuses are relatively small compared to the treatment experienced by principals, and if teachers respond to performance incentives similarly to principals, then my estimate of the principal performance pay treatment effects would be biased toward zero. Furthermore, Figure 3

[9]To time de-mean the data, I compute the sample average of the outcome, denoted as y_{it}, in each year, defined as $\bar{y}_t$. I then compute $\tilde{y}_{it} = y_{it} - \bar{y}_t$ for each observation and take the average of $\tilde{y}_{it}$ in each year separately for principals and teachers. This value gives a measure of deviations from $\bar{y}_t$ for principals and teachers. These deviations will be symmetric around zero. This approach is equivalent to regressing y_{it} on a full set of year fixed effects, then averaging the residuals of that regression by year separately for principals and teachers.

[10]See the North Carolina Department of Education's funding allotment policy manual for more details: `https://files.nc.gov/dpi/documents/fbs/allotments/general/2017-18policymanual.pdf` [accessed August 2020]

shows that time-demeaned retention rates for teachers are relatively stable over the analysis period, even with these changes in teacher pay.

Another concern with using teachers as a comparison group is that the change in principal pay policy might impact teachers' labor supply decisions. This would violate the stable unit treatment value assumption. I will consider an example regarding same-school, same-position retention for simplicity. Principals pushed out by principal performance pay must be replaced. If their replacement is a teacher, then same-school, same-position retention rates for principals and teachers will fall following the policy change. This will bias my estimates of retention effects toward zero. A similar issue will arise if teachers respond to their principals' labor supply decisions, regardless of the principal pay schedule. A teacher may decide to leave teaching or move to a new school, potentially following their principal, if their principal decides to leave their position. Again, this will decrease the same-school retention rates of both principals and teachers and will bias my same-school retention effect estimates toward zero.

I estimate principal performance pay's impact on these five labor market transitions using a multinomial logit model. Specifically, I estimate the following model:

$$\begin{aligned} Pr(\text{Transition}_{itds} = T) = & f(\alpha_0 + \alpha_1 \text{Principal}_{it-1ds} + \delta \text{Principal}_{it-1ds} \times \text{Perf Pay}_t \\ & + X_{it-1}\beta + S_{t-1s}\psi + \tau_t + D_d + \epsilon_{itds}) \end{aligned} \tag{1}$$

Where i indexes individual employees, t indexes the year, d indexes school districts, and s indexes schools. With transitions $T \in \{$Same-School Retainion, Switch Schools, Other – Full-Time, Other – Part-Time, Separated$\}$. I formally define these labor market transitions in Section 3.1. $f()$ is the multinomial logit probability density function. $\text{Principal}_{it-1ds}$ is an indicator of being a principal in the prior year. Perf Pay_t is an indicator of being affected by principal performance pay in year t. X_{it-1} are individual-specific characteristics. S_{t-1s}

are school-specific characteristics. τ_t are year fixed effects. Because I include year fixed effects, I do not include an additional indicator for performance pay implementation. D_d are school district fixed effects. ϵ_{itds} are idiosyncratic errors. In all models, heteroskedasticity- and cluster-robust, at the school district-level, standard errors are estimated. δ is the main parameter of interest. The average marginal effect estimate of δ represents the difference-in-differences estimate of the average treatment effect of principal performance pay on retention rates. The average marginal effect measures how much more, or less, the principal labor market transition rates changed after introducing principal performance pay relative to the teacher labor market transition rates, all else equal. Positive values of the marginal effect of δ indicate that performance pay increased the probability a given labor market transition, while negative values suggest that it decreased the probability a given labor market transition.

The multinomial logit model relies on the assumption of independence of irrelevant alternatives (IIA) to model choices. In this context, IIA implies that an individual's odds of choosing one transition over another, say same-school retention over separation, do not depend on the presence, or absence, of other alternatives. A violation of the IIA assumption might occur if two alternatives are close substitutes. For instance, if principals use other, part-time changes as transitions to retirement, then the availability of complete separation from the labor force might affect the odds of choosing retention over other, part-time changes. I perform the Small-Hsiao test of the IIA assumption, and I fail to reject the null hypothesis of independence.

4 Results

4.1 Performance Pay and Labor Market Transitions

I present average marginal effect estimates from the multinomial logit model of Equation 1 in Table 4. This model is estimated with same-school retention as the baseline category and

includes all covariates and school district fixed effects.[11] Estimates in each cell of the Table 4 come from a single multinomial logit model. The columns in Table 4 each represent a labor market transition, and I interpret the average marginal effect estimates as measuring how each covariate changed the probability of a given transition.

The main estimates of interest are the average marginal effects of the interaction of principal and performance pay. This represents the difference-in-differences estimate of the average treatment effect of principal performance pay on each labor market transition. The average treatment effect in this model specification can be interpreted as either assuming a constant performance pay treatment effect for all principals or the weighted average of each principal's treatment effect. I find suggestive evidence of a decrease in the probability of same-school retention for principals, on average, by 2.3 percentage points due to performance pay. This result implies a 2.9 percent increase relative to the mean same-school retention rate of 80.2 percent. This estimate is not statistically significant at traditional levels, but the p-value equals 0.113. I find performance pay increased the probability that principals would switch schools by 1.2 percentage points. Relative to the mean of 5.7 percent, this suggests a 21 percent increase in principals' probability of switching schools. This result is statistically significant at the less than 10 percent level. I find suggestive evidence that performance pay impacted principals' other full- or part-time changes or separations, on average. However, these average marginal effect estimates are imprecise, and I fail to reject the null hypothesis of no performance pay effect at any conventional level.

These initial results assume a constant treatment effect for all principals. This assumption is likely to be violated because the changes in principals' financial incentives induced by performance pay will vary based on principal characteristics. One way principals' performance pay treatment intensity varies is through contemporaneous salary changes. As I demonstrated before, some principals will experience a salary increase while others will not.

[11] I present average marginal effect estimates from analogous, more parsimonious models with and without controls, but no school district fixed effects, in Appendix Tables A3 and A4. The results are quantitatively similar to my preferred specification.

To understand how performance pay induced salary changes affect principals labor market transitions, I estimate Equation 2, where the principal performance pay treatment effect is allowed to differ for principals who experience a salary increase and those who do not.

$$\begin{aligned} Pr(Transition_{itds} = T) = & f(\alpha_0 + \alpha_1 \text{Principal}_{it-1ds} + \delta_1 \text{Principal}_{it-1ds} \times \text{Perf Pay}_t \times \text{No Salary Inc}_t \\ & + \delta_2 \text{Principal}_{it-1ds} \times \text{Perf Pay}_t \times \text{Salary Inc}_t + X_{it-1}\beta + S_{t-1s}\psi + \tau_t + D_d + \epsilon_{itds}) \end{aligned} \tag{2}$$

The multinomial logit model in Equation 2 is analogous to Equation 1, but I add interactions of the $\text{Principal}_{it-1ds} \times \text{Perf Pay}_t$ term with an indicator for experiencing a salary increase and an indicator for not experiencing a salary increase. The indicator variable Salary Inc_t equals one if a principal would experience a salary increase while No Salary Inc_t equals one if a principal would not experience a salary increase. I define what it means to experience a salary increase in Section 3.1. It is important to note that my imputation of a principal's salary change assumes that a principal's school characteristics remain constant. This assumption implies that a principal who experiences a salary increase, by my definition, would see their salary increase if they stay at the same school.

I present average marginal effect estimates of the multinomial logit model of Equation 2 in Table 5. I find that principal performance pay reduces same-school retention rates for principals who would not experience a salary increase. For those principals, the probability of same-school retention falls by 4.6 percentage points. Relative to the mean same-school retention rate of 80.2 percent, this represents a 5.7 percent decrease. This estimate is statistically significant at the less than 5 percent level. On the other hand, I find no evidence that performance pay changes retention rates if a principal's salary increases. The average marginal effect estimate is close to zero, -0.01 percentage points, though the estimate is fairly imprecise, and the confidence intervals contain economically meaningful effect sizes.

I find that principals who would experience a salary increase are 1.7 percentage points more likely to switch to a different school with performance pay. This estimate represents a 30 percent increase relative to the sample average of 5.7 percent and is statistically significant at the less than 5 percent level. However, I do not find any evidence that performance pay affected the school switching rates for principals who would not experience a salary increase. This result raises the question, why would a principal who would potentially earn more with performance pay at their current school decide to switch to a different school? With performance pay, principals face a flatter future salary trajectory than when salaries increased with each year of experience. With performance pay, principals have two key ways to increase their future salary: switch to a larger school or switch to a school where they expect their potential to increase test scores in the future is high. I will consider both of these mechanisms and provide evidence that principal behavior is consistent with both of these explanations in Section 5.1.

Principals who would not experience a salary increase are more likely to make other full- and part-time changes after principal performance pay is introduced. Performance pay increased the probability of other full-time changes by 1 percentage point and the probability of other part-time changes by 3.3 percentage points for those principals. These average marginal effect estimates are statistically significant at the less than 10 and less than 1 percent levels, respectively. Principals who would experience a salary increase show no significant change in other full- or part-time changes in position.

Finally, neither principals who would experience a pay increase, nor those who would not, faced a statistically significant change in separation rates. Nevertheless, principals who would experience a salary increase saw a decrease in the probability of separations similar in magnitude to the increase in the probability of switching schools. This result provides some suggestive evidence that principals who would experience a pay increase were potentially induced to switch to a different school rather than separate from the traditional public education system entirely.

Overall, these results suggest that principals are responding to the financial incentives introduced by principal performance pay. There was a decrease in same-school retention and an increase in switching schools in aggregate. When I allow this effect to vary by treatment intensity, I find significant heterogeneity in how principals respond to performance pay. If principals have attributes that are not rewarded by the performance pay system and would see a salary decrease or no change at all, they are more likely to leave their position and transition to another occupation in the public education system or part-time employment. If performance pay would reward a principal and their salaries would rise, they are more likely to continue working as a principal, but at a different school. In the next two sections, I will examine how principal performance pay's impact on principals' labor market transitions has affected the composition of the principal labor force and the distribution of principals to schools.

5 Distribution of Principals and Labor Force Composition

5.1 Distribution of Principals to Schools

I have provided evidence that when principals would earn more under the performance pay system, they are more likely to continue working as a principal, but at a different school. Why would potentially earning more at their current school induce principals into transferring to a different school? I propose two potential mechanisms: principals switch to larger schools to increase their salary even more, and principals switch to schools where they expect to have the best potential for improving students' future test scores. Both of these mechanisms assume principals respond to financial incentives in order to maximize their expected future earnings. The results in Table 6 provide some insight into these mechanisms and the broader impacts of performance pay on the distribution of principals to schools.

First, I estimate how the effect of principal performance pay varies by the size of a school. School size has been a determinant of a principal's salary throughout my analysis period. Principals at larger schools earn more than those at smaller schools. Before performance pay, legislators measured school size by the number of state-funded teachers employed at the school. Along with the introduction of principal performance pay, legislators began measuring school size using student enrollment. In Table 6, Panel A, I split the school enrollment of principals affected by performance pay into three terciles. I use school enrollment for the prior year, before principal performance pay. I interact indicators for managing a school in a given tercile with the $Principal_{it-1ds} \times PerfPay_t$ difference-in-differences term. The average marginal effect for each of these triple interactions indicates the average treatment effect for principals managing schools in the given tercile.

In Table 6, Panel A, Column (2), I find that performance pay increases the probability of switching schools for principals who were managing schools in the first and second tercile of student enrollment, but there is no detectable change for principals from schools in the third tercile. Principals whose school was in the first and second tercile of student enrollment are 1.1 and 2.1 percentage points more likely to switch schools under performance pay, respectively. This effect is only statistically significant, at the less than five percent level, for the principals from schools in the second tercile. This 2.1 percentage point increase in school switching roughly matches the increase in switching experienced by principals who would earn more with performance pay, as seen in Table 5, Column (2). This result shows that principals from smaller schools drove the school switching effect, providing evidence that performance pushes principals out of smaller schools.

Next, I estimate whether principals were attracted to larger schools. For this analysis, I model the school switching decision using a logit model. The logit models I estimate have the same covariates as Equation 2. In this model the dependent variable is an indicator for switching to a larger school. This indicator equals one if an individual transfers to a school with 100 or more students enrolled than the school at which they previously worked. I use a

100 student increase in student enrollment to ensure I am capturing meaningful switches to larger schools. My results are robust to using different cut-offs. This model estimates how performance pay changes the odds of switching to a larger school. I present average marginal effect estimates of this model in Table 7, Column (1), Panel A. I find that principals who would receive a salary increase with performance pay are 0.64 percentage points more likely to switch to a larger school. This result demonstrates performance pay attracts principals to larger schools. Where did these principals come from? Were they transferring from smaller schools?

I examine these questions in Table 7, Column (1), Panel B, where I estimate a similar logit model where I allow the effect of principal performance pay on switching to a larger school to vary by prior year school size. This exercise parallels Table 6, Panel A. I find that principals from schools in the first and second enrollment terciles are around one percentage point more likely to switch to a larger school after the policy change, while principals from larger, third enrollment tercile schools are 0.7 percentage points less likely to switch to a larger school. The marginal effect estimates are only statistically significant for principals from first and second enrollment tercile schools. Together, these results provide evidence that performance pay pushes principals out of smaller schools and pulls them into larger ones.

Next, consider Table 6, Panel B, where I examine how the treatment effect varied across principals by their school's test-score growth scores. In North Carolina, schools are assigned test score growth targets each year by the NCDPI. Schools can either not meet, meet, or exceed these targets. The performance pay system rewards principals for meeting or exceeding test score growth targets. In Table 6, Panel B I estimate a multinomial logit model paralleling Equation 1, but replacing the $\text{Principal}_{it-1ds} \times \text{Perf Pay}_t$ and $\text{Principal}_{it-1ds} \times \text{Perf Pay}_t \times \text{Salary Inc}_t$ terms with interactions of $\text{Principal}_{it-1ds} \times \text{Perf Pay}_t$ with not meeting, meeting, and exceeding test score growth expectations. Average marginal effect estimates from Column (2) suggest that the switch to principal performance pay in-

creases the probability of switching schools for principals who managed schools that met but did not exceed test-score growth expectations. This estimate is an increase of 1.3 percentage points, or 22.9 percent relative to the mean, and is significant at the less than five percent level. There is no statistically significant impact on principals who did not meet or exceed these expectations. However, the average marginal effect estimate's magnitude is similar for principals who did not meet expectations, and I fail to reject the null hypothesis that these average marginal effect estimates are equal.

Now, I examine whether principal performance pay attracts principals to underperforming and Title I schools. For this analysis, I again model theses school switching decisions using a logit models. I specify the logit models identically to Table 7, Panel A. In these models, the dependent variable is either switching to a recurring underperforming school, in Table 8, Column (1), or switching to a Title I school, in Table 8, Column (2). These models estimate the impact of performance pay on the odds of choosing to switch to an underperforming school or switch to a Title I school relative to all other alternatives.

First, I examine how performance pay affected the probability of switching to an underperforming school. The NCDPI classifies a school as recurring low-performing if it earned a school performance grade of "D" or "F" for two or three of the last three years. NCDPI releases a list of recurring low-performing schools each year. I define recurring low-performing schools using the list from the 2014-15 school year, the first year this data is available. Principal performance pay might affect principals' propensity to switch into underperforming schools since principals are now financially incentivized to raise student test scores, and there is more room for improvement in schools that are recurring low-performing. I examine the impacts of principal performance pay on the probability of switching to a recurring low-performing school in Table 8, Column (1). The dependent variable in 8, Column (1), Panel A, is an indicator of whether an individual switched to a recurring low-performing school in the past year. Overall, principals and teachers in my analysis sample had about a 1.1 percent probability of switching to a low-performing school. I find that principals who

would receive a salary increase experience a 0.36 percentage point increase in the probability of switching to a low-performing school. While this is not statistically significant at conventional levels, the p-value is 11.5%, and it does represent an economically significant increase in the probability of switching to a low performing school. This average marginal effect estimate implies a 33.3 percent increase relative to the average probability of switching to a recurring low-performing school.

Next, I consider the impact of performance pay on attracting principals to Title I schools. Title I schools have a high proportion of economically disadvantaged students and receive funding from the federal government. There are two main reasons principal performance pay might change principals' propensities to switch into a Title 1 school. First, Title I schools are more likely to be recurring low-performing. In 2016-17, 10 percent of all the schools in my analysis sample were classified as recurring low-performing, but among Title 1 schools, 32 percent were recurring low-performing. Since principal performance pay incentivizes raising test scores, principals may be attracted to schools with more growth potential. Second, the principal performance pay system in North Carolina also changed how principals are compensated for the size of the school they manage. Previously, school size affected principal pay through the number of state-funded teachers employed at the school. Title I schools are more likely to have fewer state-funded teachers and more teachers funded by the federal government. Under the performance pay system, school size now affects principal pay through student enrollment. Now, all else equal, principals in Title I schools will receive more compensation from the salary schedule's school size component.

I estimate the effect of principal performance pay on the probability of switching to a Title I school in 8, Column (2), Panel A. I find that principals who would receive a salary increase with performance pay are 0.72 percentage points more likely to switch to a Title 1 school after implementing principal performance pay. This estimate is statistically significant at the less than five percent level and represents a 37.2 percent increase in the probability of switching to a Title I school relative to the mean of 1.92 percent. Principals who would

not receive a pay raise under performance pay do not experience a significant change in the probability of switching to a Title I school.

I have demonstrated that principal performance pay attracts principals to recurring low-performing and Title I schools, now I will examine which principals are transferring into these positions. In 8, Panels B and C, I examine whether the effect of performance pay on switching to a recurring low-performing and Title I school varies by a principal's prior year test-score growth and experience, respectively. In Table 8, Panels B, I allow the effect of performance pay to vary by prior year test-score growth. In Column (1), I find suggestive evidence that performance pay increases the probability of switching to underperforming schools for principals who had met or exceeded test-score growth expectations in the prior year. On the other hand, performance pay decreases the probability that principals who failed to meet expectations switched into underperforming schools. While these average marginal effect estimates are not statistically significant at conventional levels, they represent economically meaningful effect sizes. In Table 8, Panel B, Column (2), I find no evidence that performance pay differentially affects the probability of switching to Title I school by prior year test-score growth. The probability of switching to a Title I school increases, though not statistically significantly, regardless of a principal's prior year test-score growth status.

In Table 8, Panels C, I examine how principals' years of experience changes the effect of performance pay on the probability of transferring to underperforming and Title I schools. My estimates suggest more experienced principals, in the second and third experience terciles, are more likely to switch into underperforming and Title I schools under performance pay. Principals in the third experience tercile are 0.58 percentage points more likely to switch to an underperforming school. Principals in the second and third experience tercile are 0.88 and 0.75 percentage points more likely to move to a Title 1 school.

Together, these results support the hypothesis that principals are switching schools to take advantage of performance pay's financial incentives. Principals are switching from smaller schools and to larger, persistently underperforming, and Title I schools. The princi-

pals most likely to switch are also those with a history of meeting but not exceeding test-score growth expectations. Principals from smaller schools are incentivized to move into larger schools, principals with a history of meeting or exceeding test-score growth expectations are pulled into underperforming schools, and more experienced principals are induced into transferring to persistently underperforming and Title I schools.

5.2 Labor Force Composition

The evidence I have presented so far shows that the switch to performance pay pushes principals who would not receive a pay increase out of the principalship. How does this change the composition of the principal labor force? The new performance pay system benefits principals who have worked in schools that met or exceeded their test score growth targets and removes rewards for extended service and higher education. So, the principals adversely affected by the policy change will likely be from lower-performing schools and have more years of experience. To test these hypotheses, I examine the performance-pay treatment effect heterogeneity by these characteristics.

First, consider again Table 6, Panel B, where I examine how the treatment effect varied across principals by their school's test-score growth scores. I find that principals in schools that do not meet expectations experience a statistically significant decrease in retention of 6.2 percentage points, and an increase in other, part-time employment changes of 2.3 percentage points. On the other hand, principals in schools that exceed expectations experience an increase in retention, though not statistically significant, and a significant decrease in separations, by 4.9 percentage points.

These estimates are possibly capturing the policy change's differential impact by school characteristics correlated with labor market decisions and school test score growth. I can control for these characteristics that are fixed over time by estimating models with school fixed effects. Including school fixed effects in a multinomial logit model may lead to the problem of incidental parameters. Since there is one principal per school and schools require

teachers, the sample size increases with the number of schools. This fact implies that including school fixed effects will lead to inconsistent estimates of the treatment effect. In future work, I will address this issue in two ways. First, I will estimate separate linear probability models for each transition and include school fixed effects.[12] Second, I will estimate a multinomial logit model with fixed effects using methods from Chamberlain (1980).

Next, I estimate how experience impacts the effect of NC's performance pay system. I group principals affected by the policy change, in the 2016-17, cohort into years of experience terciles. The first, second, and third terciles span 7 to -18, 19 to 23, and 24 to 46 years of experience, respectively. I estimate a model with a specification that parallels the test score growth results above. I present estimates of average marginal effects in Table 6 Panel C. I find that the switch to performance pay reduces the probability of retention and increases the probability of other, full- and part-time changes for principals in the third quartile of the experience distribution while increasing the probability of retention and decreasing the probability of separations for principals in the first tercile of experience. The effects are statistically significant for the third experience tercile, but not for the first experience tercile.

These results suggest the switch to performance pay resulted in a systematic change in the composition of the existing stock of principals. Principals who were working in schools with higher test score growth or with fewer years of experience experienced an increase in the probability of retention, while those managing schools that failed to meet test score growth criteria and who have more years of experience were more likely to leave. The result ought to be a stock of continuing principals who are less experienced but have a record of improving student test scores than before principal performance pay. While school test score growth is an imperfect measure of principal effectiveness, effective principals ought to be the ones that improve their students' academic performance. These results suggest that the switch to performance pay helps retain principals who have been effective at raising student test scores while pushing out experienced principals who have a record of missing test growth

[12] I find quantitatively similar marginal effect estimates when I estimate separate LPMs with the baseline specification without school fixed effects

targets.

6 Conclusion

In this paper, I estimate the effect of principal performance pay on principals' labor market transitions by exploiting a comprehensive implementation of test score-based principal performance pay in North Carolina. I find that school principals respond to the new financial incentives created by performance pay. Principals who would face stagnant or falling wages in the year following the policy change are more likely to move into another public education system position. At the same time, principals who would see their salaries increase are more likely to continue working as a principal but switch to a different school.

When implementing principal performance pay, policymakers in North Carolina sought to increase principal pay while incentivizing effort, recruiting and retaining high performing principals, and rewarding principals for high-performance (Generasl Assembly of North Carolina, 2016). A concern for policymakers and the public was that performance-pay-induced exits would be from highly experienced principals and that students would suffer (Hui, 2017). I find highly experienced principals are more likely to exit the principalship under performance pay, but the principals that left were less effective. Performance pay pushes out principals with a history of failing to meet test-score growth expectations while retaining principals who exceeded expectations.

I also find evidence that policymakers induced a redistribution of principals across schools using performance pay's financial incentives. Performance pay increases both the probability of switching schools for principals who previously managed smaller schools and the probability that principals from smaller schools switch into larger schools. Performance pay also increases the probability that effective principals would move into persistently underperforming schools, suggesting the potential for future student test-score growth induces principals to switch schools. These results are consistent with principals responding to changes in their

financial incentives to maximize expected future earnings.

Economic models of performance pay predict it will incentivize workers to exert more effort and result in more effective workers sorting into positions with performance pay. In this paper, I provide evidence of positive sorting following the implementation of performance pay. Performance pay retained effective principals and pushed out less effective principals, as measured by school test-score growth. The performance pay scheme is too new to estimate its impacts on principals' effort reliably, and any direct effects of principal sorting on student outcomes make this analysis difficult. However, this component is essential to evaluate whether principal performance pay was a successful policy. In future work, I intend to extend my analysis of this principal performance pay quasi-experiment in North Carolina to estimate principal performance pays' net effect on public school students and principal effort, as measured by principal value-added.

My results add to a growing literature examining the impacts of performance pay for educators. Performance pay for teachers has become more common, and research examining its impacts on student achievement and the teacher labor force has flourished. Principal performance pay is less common and less studied. I provide new causal evidence on the effects of performance pay on principal labor markets. Since North Carolina's implementation represents the first large-scale principal performance pay program in the United States, policymakers may look to North Carolina as a model. The evidence I provide suggests that policymakers can use performance pay to induce positive sorting of principals within and from the principal labor force.

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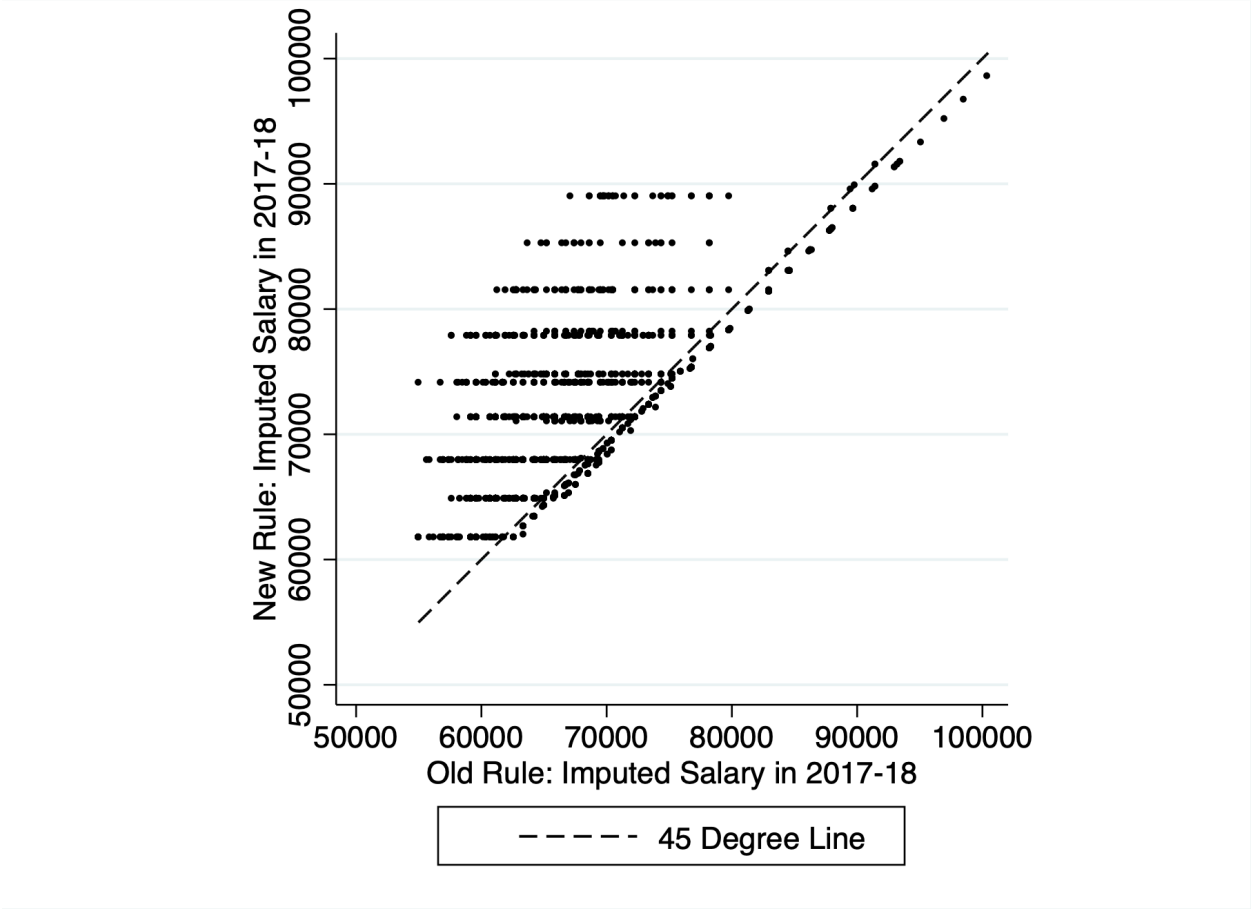
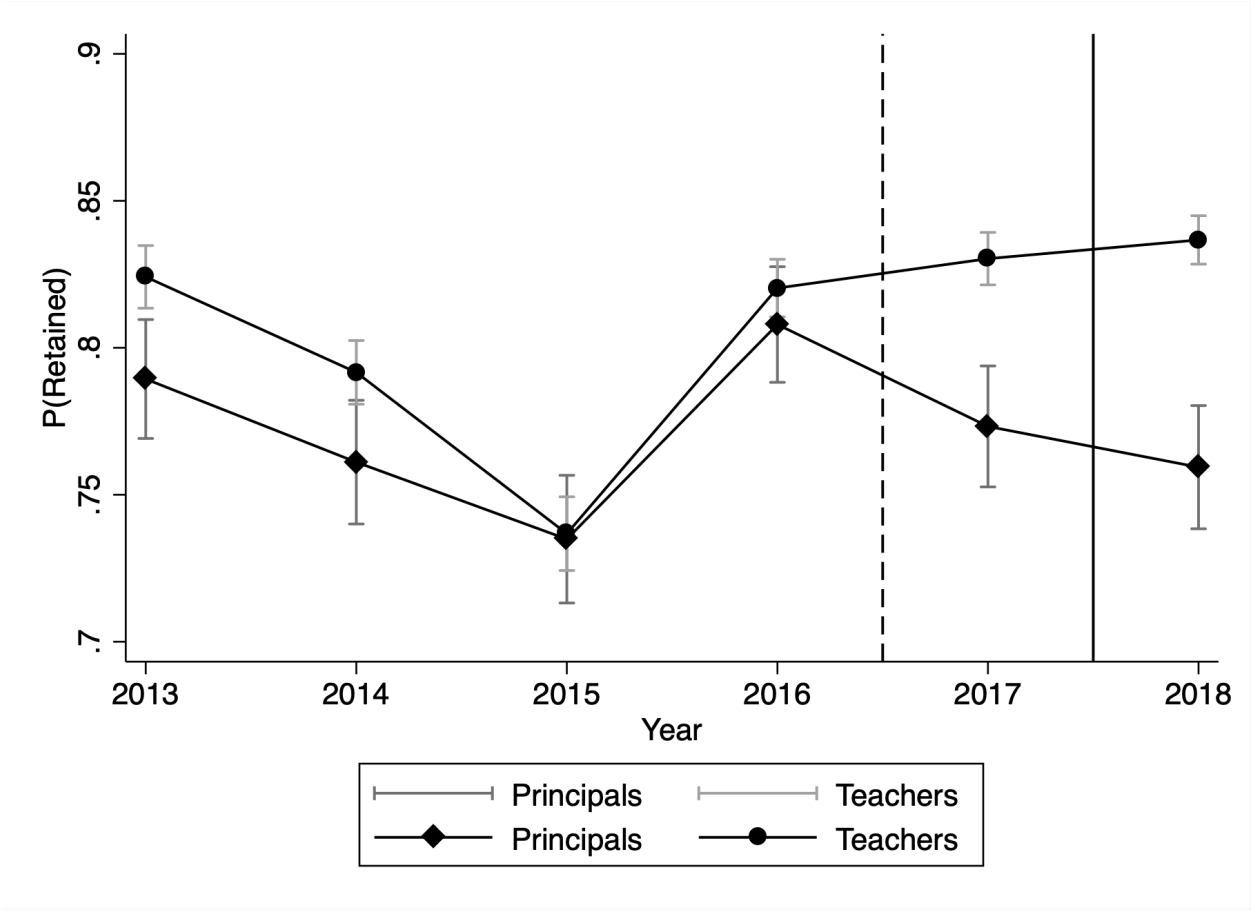
Figure 1: Imputed Pay in 2017-18 Under 2017-18 Schedule vs Imputed Pay in 2017-18 Under 2016-17 Schedule (Accounting for Hold Harmless)



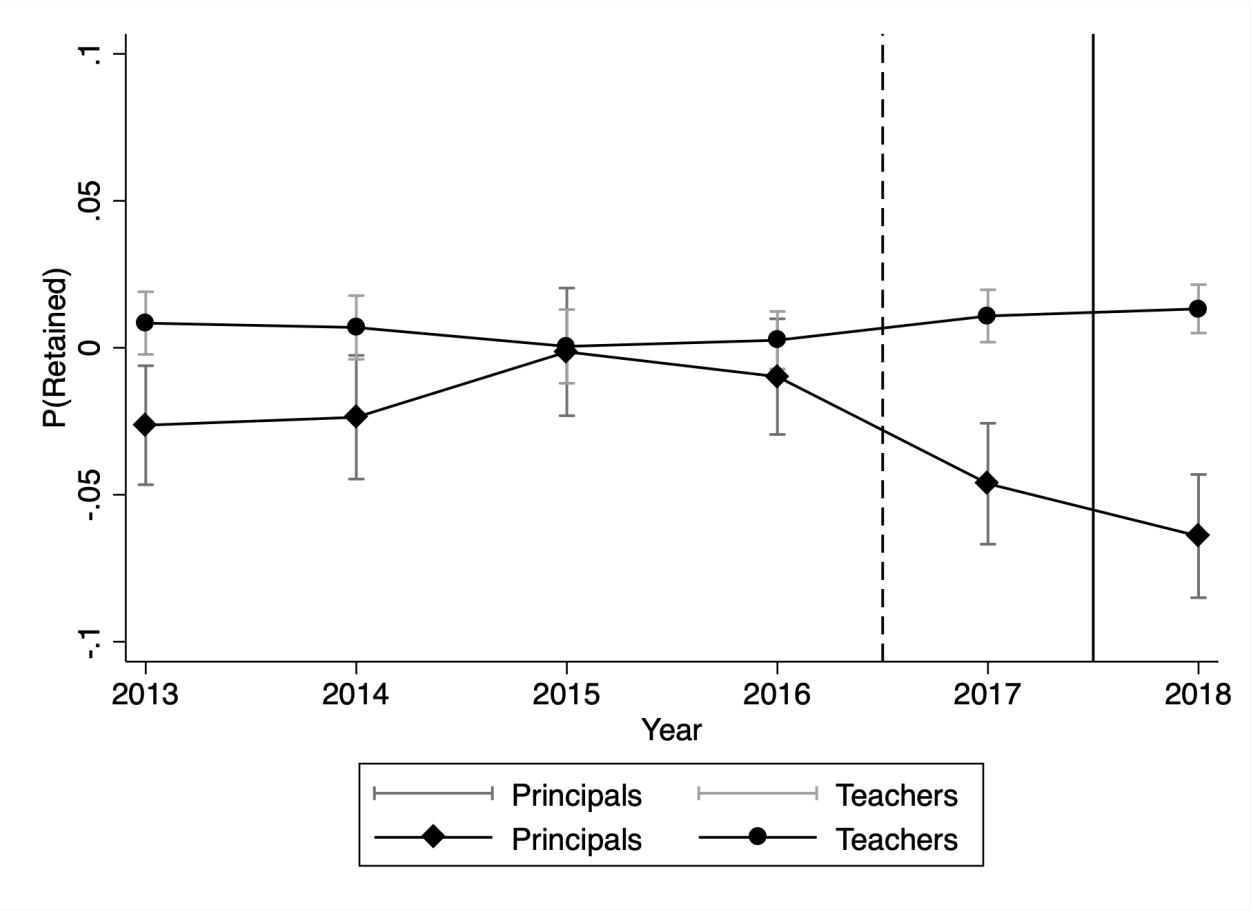
Note: Salary is imputed using the 2016-17 and 2017-18 principal pay schedules published by the North Carolina Department of Public Instruction and principal characteristics from NCERDC personnel pay files.

Figure 2: Trends in Same-School Retention from 2012-13 to 2017-18



Note: Data are from the NCERDC. Retention is defined as being in the same position at the same school as in the prior year. The dashed vertical line represents when legislators began to discuss changes to principal pay policy. The solid vertical line represents when principal performance pay was introduced.

Figure 3: Time De-Meaned Trends in Same-School Retention from 2012-13 to 2017-18



Note: Data are from the NCERDC. Retention is defined as being in the same position at the same school as in the prior year. The data was time de-meaned by subtracting the yearly sample average from each observation, then plotting binned averages by year and occupation. The dashed vertical line represents when legislators began to discuss changes to principal pay policy. The solid vertical line represents when principal performance pay was introduced.

Table 1: Excerpt From the 2016-17 Salary Schedule (School Size: 33-43 Teachers)

	Yearly Salary		
Years of Experience	Masters	Sixth Yr Adv	Doctorate
0-18	$58,320	$59,832	$61,356
19	$59,088	$60,600	$62,124
20	$59,904	$61,416	$62,940
21	$60,696	$62,208	$63,732
22	$61,512	$63,024	$64,548
23	$62,352	$63,864	$65,388
24	$63,192	$64,704	$66,228
25	$64,104	$65,616	$67,140
26	$64,980	$66,492	$68,016
27	$65,880	$67,392	$68,916
28	$66,780	$68,292	$69,816
29	$67,728	$69,240	$70,764
30	$68,712	$70,224	$71,748
31	$69,696	$71,208	$72,732
32	$70,572	$72,084	$73,608
33	$71,976	$73,488	$75,012
34	$73,416	$74,928	$76,452
35	$74,880	$76,392	$77,916
36	$76,380	$77,892	$79,416
37	$77,904	$79,416	$80,940
38	$79,464	$80,976	$82,500
39	$81,048	$82,560	$84,084
40	$82,668	$84,180	$85,704
41	$84,324	$85,836	$87,360
42+	$86,016	$87,528	$89,052

Table 2: 2017-18 North Carolina Principal Salary Schedule (Complete)

	Yearly Salary		
Enrollment	Base	Growth Met	Growth Exceeded
0 to 400	$61,751	$67,926	$74,101
401 to 700	$64,839	$71,322	$77,806
701 to 1,000	$67,926	$74,719	$81,511
1,001 to 1,300	$71,014	$78,115	$85,216
1,300+	$74,101	$81,511	$88,921

Note: Principal salary schedules are published by the North Carolina Department of Public Instruction here `https://www.dpi.nc.gov/districts-schools/district-operations/financial-and-business-services/compensation-public-school-employees`[Accessed October 2020]

Table 3: Summary Statistics by Occupation

	(1) Teachers	(2) Principals
Age	52.727	47.532
	(7.465)	(7.826)
Experience	25.620	21.702
	(6.278)	(7.031)
Female	0.823	0.598
	(0.382)	(0.490)
masters	0.959	0.763
	(0.198)	(0.425)
Sixth Yr Adv Degree	0.018	0.135
	(0.133)	(0.342)
Doctorate	0.023	0.101
	(0.149)	(0.302)
Ret Elig Early	0.631	0.348
	(0.482)	(0.476)
Ret Elig Full	0.327	0.164
	(0.469)	(0.371)
Elementary School	0.464	0.586
	(0.499)	(0.493)
Middle School	0.207	0.202
	(0.405)	(0.401)
High School	0.316	0.199
	(0.465)	(0.399)
Other Grades School	0.013	0.013
	(0.114)	(0.114)
New School	0.004	0.006
	(0.063)	(0.079)
Title I School	0.350	0.484
	(0.477)	(0.500)
Total Enrollment	813.889	611.327
	(478.892)	(360.175)
Observations	35483	9461

Note: Data are from the NCERDC from the years 2012-13 to 2017-18. Standard deviations are in parentheses.

Table 4: Performance Pay and Labor Market Transitions: Baseline Multinomial Logit Model

	(1) Same-School Retention	(2) Switch Schools	(3) Other - Full Time	(4) Other - Part Time	(5) Separated
Principal	-0.0361***	0.0131***	0.0249***	0.0042	-0.0061
	(0.0121)	(0.0046)	(0.0022)	(0.0066)	(0.0047)
Principal x Performance Pay	-0.0229	0.0118*	0.0044	0.0088	-0.0022
	(0.0144)	(0.0062)	(0.0031)	(0.0077)	(0.0101)
2013	0.0094	-0.0145***	-0.0033	-0.0021	0.0106**
	(0.0080)	(0.0045)	(0.0026)	(0.0057)	(0.0043)
2014	-0.0224***	-0.0078	0.0023	-0.0058	0.0337***
	(0.0074)	(0.0053)	(0.0027)	(0.0038)	(0.0038)
2015	-0.0711***	0.0020	0.0084**	0.0349***	0.0258***
	(0.0106)	(0.0059)	(0.0039)	(0.0058)	(0.0048)
2016	-0.0036	-0.0028	0.0021	0.0021	0.0022
	(0.0088)	(0.0044)	(0.0023)	(0.0043)	(0.0046)
2017	-0.0055	0.0042	0.0042*	0.0024	-0.0053
	(0.0060)	(0.0045)	(0.0025)	(0.0036)	(0.0038)
Age	0.0083**	0.0035	0.0061***	0.0021	-0.0200***
	(0.0039)	(0.0022)	(0.0016)	(0.0018)	(0.0027)
Age Sq	-0.0001**	-0.0000	-0.0001***	-0.0000	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Experience	0.0028	-0.0034*	-0.0006	-0.0024*	0.0036*
	(0.0032)	(0.0019)	(0.0009)	(0.0014)	(0.0021)
Experience Sq	-0.0001	0.0000	0.0000	0.0000	-0.0000
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Female	-0.0108**	-0.0002	0.0008	0.0056**	0.0046
	(0.0043)	(0.0026)	(0.0015)	(0.0022)	(0.0030)
Sixth Yr Adv Degree	-0.0167	0.0145***	0.0072***	0.0052	-0.0102
	(0.0119)	(0.0054)	(0.0024)	(0.0064)	(0.0076)
Doctorate	-0.0151	0.0050	0.0087***	0.0072	-0.0058
	(0.0098)	(0.0046)	(0.0026)	(0.0044)	(0.0078)
Ret Elig Early	-0.0628***	-0.0114***	-0.0068***	-0.0033	0.0844***
	(0.0074)	(0.0041)	(0.0022)	(0.0036)	(0.0083)
Ret Elig Full	-0.0590***	-0.0039	0.0030	0.0034	0.0565***
	(0.0074)	(0.0045)	(0.0035)	(0.0045)	(0.0040)
Middle School	-0.0061	0.0098***	0.0023	-0.0002	-0.0058**
	(0.0060)	(0.0034)	(0.0015)	(0.0035)	(0.0029)
High School	0.0226***	-0.0167***	0.0020	0.0003	-0.0081***
	(0.0050)	(0.0035)	(0.0016)	(0.0032)	(0.0032)
Other Grades School	0.0195	-0.0256**	0.0064	-0.0002	0.0000
	(0.0216)	(0.0129)	(0.0042)	(0.0083)	(0.0102)
New School	0.0057	0.0060	-0.0045	-0.0064	-0.0009
	(0.0211)	(0.0181)	(0.0076)	(0.0137)	(0.0191)
School District FE	Yes	Yes	Yes	Yes	Yes
Observations	44944	44944	44944	44944	44944
Mean of Transition	0.8023	0.0574	0.0205	0.0378	0.0819

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. The dependent variable is a categorical variable indicating a labor market transition $T \in \{$Same School Retained, Switch Schools, Other – Full-Time, Other – Part-Time, Separated$\}$. Average marginal effect estimates from a multinomial logit model where the baseline category is Retained. Includes school district fixed effects. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Performance Pay and Labor Market Transitions: Multinomial Logit Model By Salary Change

	(1) Same-School Retention	(2) Switch Schools	(3) Other - Full Time	(4) Other - Part Time	(5) Separated
Principal	-0.0357***	0.0134***	0.0248***	0.0037	-0.0062
	(0.0120)	(0.0046)	(0.0022)	(0.0066)	(0.0047)
Principal x Performance Pay x No Salary Inc	-0.0458**	-0.0059	0.0099*	0.0327***	0.0091
	(0.0217)	(0.0107)	(0.0053)	(0.0093)	(0.0128)
Principal x Performance Pay x Salary Inc	-0.0002	0.0168**	0.0030	-0.0042	-0.0155
	(0.0166)	(0.0067)	(0.0034)	(0.0087)	(0.0147)
Covariates	Yes	Yes	Yes	Yes	Yes
School District FEs	Yes	Yes	Yes	Yes	Yes
Observations	44944	44944	44944	44944	44944
Mean of Transition	0.8023	0.0574	0.0205	0.0378	0.0819

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. The dependent variable is a categorical variable indicating a labor market transition $T \in \{\text{Same-School Retained, Switch Schools, Other – Full-Time, Other – Part-Time, Separated}\}$. Average marginal effect estimates from a multinomial logit model where the baseline category is Retained. A full list covariates is available in Table 4. Includes school district fixed effects. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Performance Pay and Labor Market Transitions: Compositional and Distributional Effects

	(1) Same-School Ret	(2) Switched Sch	(3) Other - Full Time	(4) Other - Part Time	(5) Separated
			Panel A: School Size: Student Enrollment		
Principal x Performance Pay x Enroll 1st Tercile	-0.0582***	0.0111	0.0054	0.0136	0.0281**
	(0.0176)	(0.0098)	(0.0045)	(0.0098)	(0.0128)
Principal x Performance Pay x Enroll 2nd Tercile	-0.0181	0.0207**	0.0032	0.0090	-0.0148
	(0.0211)	(0.0090)	(0.0051)	(0.0110)	(0.0165)
Principal x Performance Pay x Enroll 3rd Tercile	0.0268	0.0034	0.0049	0.0036	-0.0387*
	(0.0256)	(0.0081)	(0.0049)	(0.0101)	(0.0217)
			Panel B: School Test-Score Growth		
Principal x Performance Pay x Growth Not Met	-0.0591**	0.0107	0.0048	0.0236**	0.0199
	(0.0271)	(0.0116)	(0.0051)	(0.0108)	(0.0206)
Principal x Performance Pay x Growth Met	-0.0254	0.0139**	0.0054	-0.0032	0.0093
	(0.0175)	(0.0067)	(0.0035)	(0.0098)	(0.0125)
Principal x Performance Pay x Growth Exceeded	0.0212	0.0097	0.0026	0.0137	-0.0472**
	(0.0239)	(0.0104)	(0.0052)	(0.0104)	(0.0212)
			Panel C: Principal's Years of Experience		
Principal x Performance Pay x Exp 1st Tercile	0.0347	0.0093	-0.0018	-0.0068	-0.0354
	(0.0342)	(0.0101)	(0.0047)	(0.0111)	(0.0332)
Principal x Performance Pay x Exp 2nd Tercile	-0.0392	0.0223***	0.0052	0.0167*	-0.0050
	(0.0284)	(0.0075)	(0.0046)	(0.0100)	(0.0278)
Principal x Performance Pay x Exp 3rd Tercile	-0.0344**	0.0049	0.0111**	0.0150	0.0035
	(0.0174)	(0.0086)	(0.0047)	(0.0098)	(0.0111)
Observations	44944	44944	44944	44944	44944
Mean of Transition	0.8023	0.0574	0.0205	0.0378	0.0819

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. The dependent variable is a categorical variable indicating a labor market transition $T \in \{$Same-School Retained, Switch Schools, Other – Full-Time, Other – Part-Time, Separated$\}$. Average marginal effect estimates from a multinomial logit model where the baseline category is Retained. A full list covariates is available in Table 4. Includes school district fixed effects. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Distribution of Principals: Switching to Larger

	(1) Switch to Larger School
	Panel A: Salary Change
Principal x Performance Pay x No Salary Inc	0.0016 (0.0062)
Principal x Performance Pay x Salary Inc	0.0064* (0.0035)
	Panel B: Prior School Size (Student Enrollment)
Principal x Performance Pay x Enroll 1st Tercile	0.0093* (0.0048)
Principal x Performance Pay x Enroll 2nd Tercile	0.0102* (0.0053)
Principal x Performance Pay x Enroll 3rd Tercile	-0.0071 (0.0068)
Observations	44944
Mean of Dep. Var	0.0210

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. This table presents average marginal effect estimates from separate logit models. The dependent variable is an indicator of switching to a larger school. A larger school is defined as a school with 100 or more students enrolled than an individuals prior school. A full list covariates is available in Table 4. Includes school district fixed effects. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

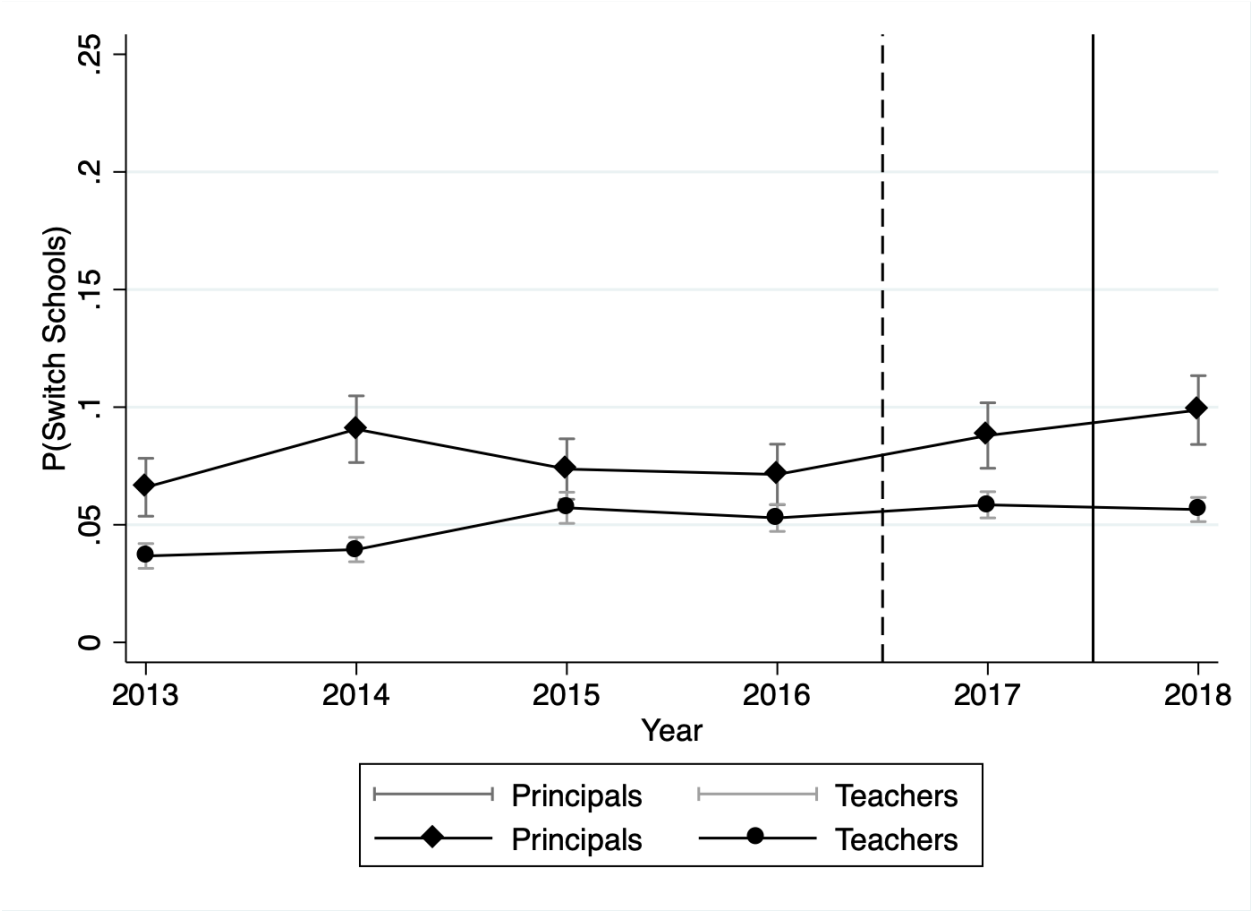
Table 8: Distribution of Principals: Switching to Underperforming and Title I Schools

	(1) Switch to Low Performing School	(2) Switch to Title I School
	Panel A: Salary Change	
Principal x Performance Pay x No Salary Inc	-0.0013	-0.0015
	(0.0044)	(0.0062)
Principal x Performance Pay x Salary Inc	0.0036	0.0072**
	(0.0023)	(0.0032)
	Panel B: Prior School Test-Score Growth	
Principal x Performance Pay x Growth Not Met	-0.0029	0.0065
	(0.0047)	(0.0049)
Principal x Performance Pay x Growth Met	0.0041	0.0041
	(0.0025)	(0.0038)
Principal x Performance Pay x Growth Exceeded	0.0044	0.0077
	(0.0035)	(0.0048)
	Panel C: Principal's Years of Experience	
Principal x Performance Pay x Exp 1st Tercile	0.0005	0.0008
	(0.0033)	(0.0050)
Principal x Performance Pay x Exp 2nd Tercile	0.0026	0.0088**
	(0.0034)	(0.0042)
Principal x Performance Pay x Exp 3rd Tercile	0.0058*	0.0075
	(0.0032)	(0.0048)
Observations	44944	44944
Mean of Dep. Var	0.0109	0.0192

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. Each column presents average marginal effect estimates from separate logit models. The dependent variables are indicators of switching to a recurring underperforming school and a Title I school in Columns (1) and (2) respectively. A full list covariates is available in Table 4. Includes school district fixed effects. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

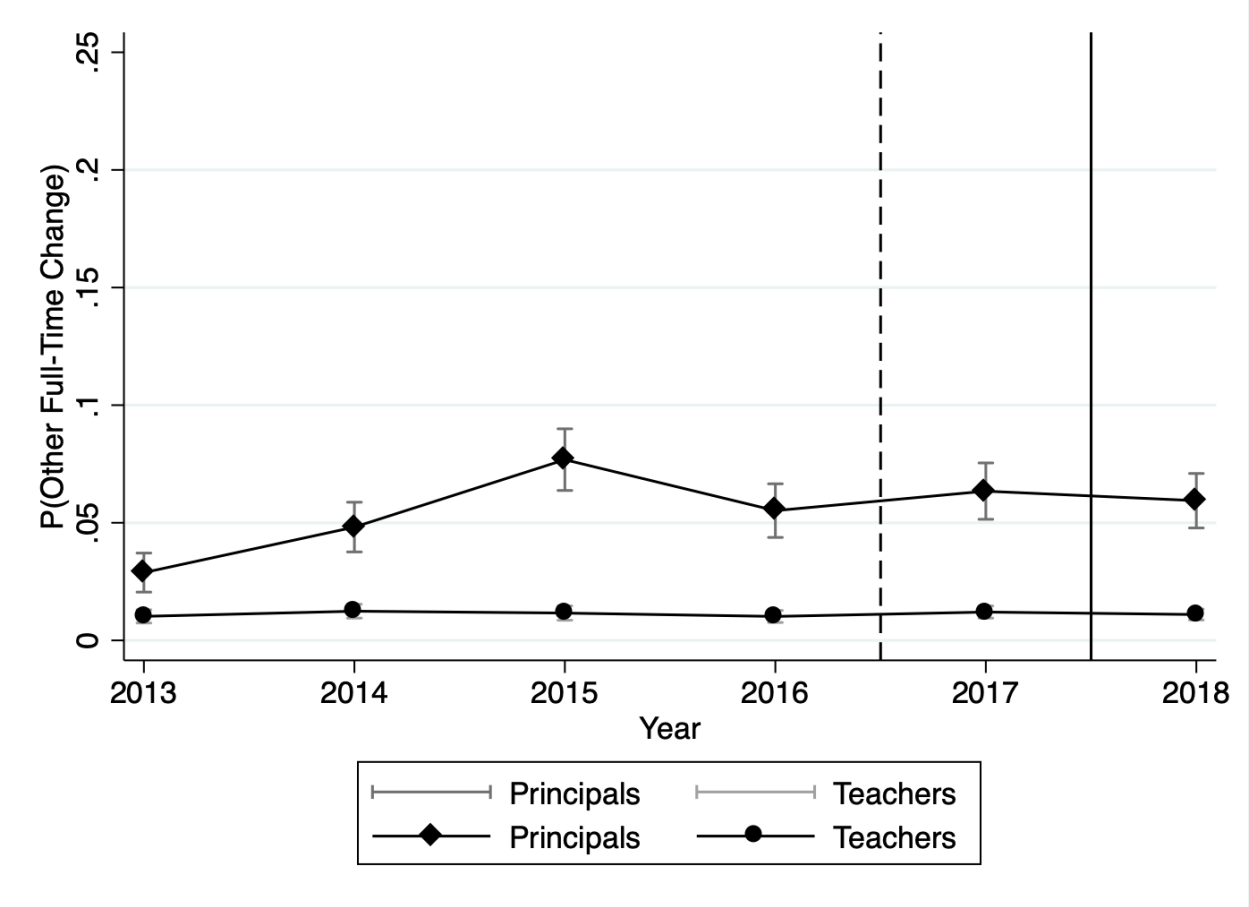
A Appendix

Figure A1: Trends in Switching Schools from 2012-13 to 2017-18



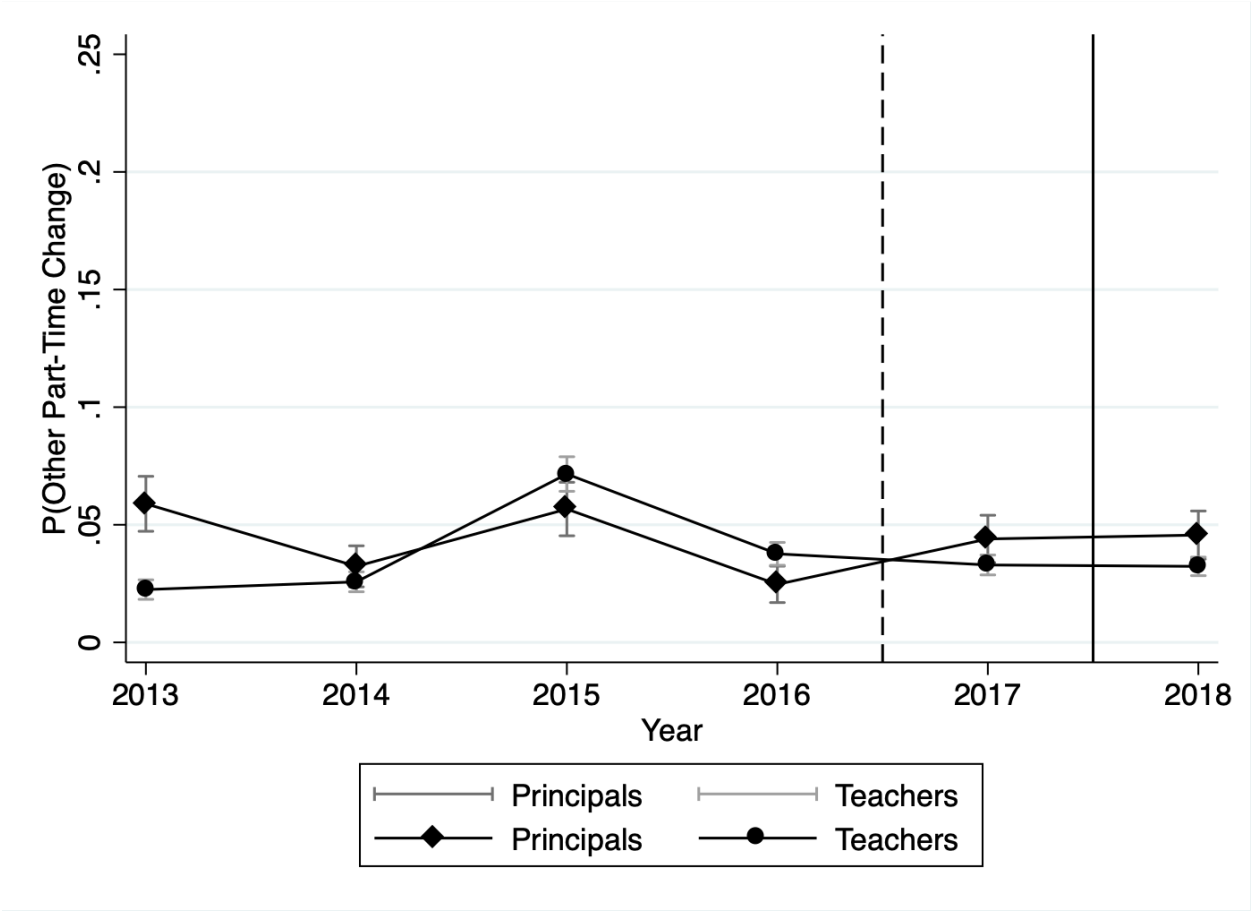
Note: Data are from the NCERDC. Retention is defined as being in the same position at the same school as in the prior year. The dashed vertical line represents when legislators began to discuss changes to principal pay policy. The solid vertical line represents when principal performance pay was introduced.

Figure A2: Trends in Other Full-Time Changes from 2012-13 to 2017-18



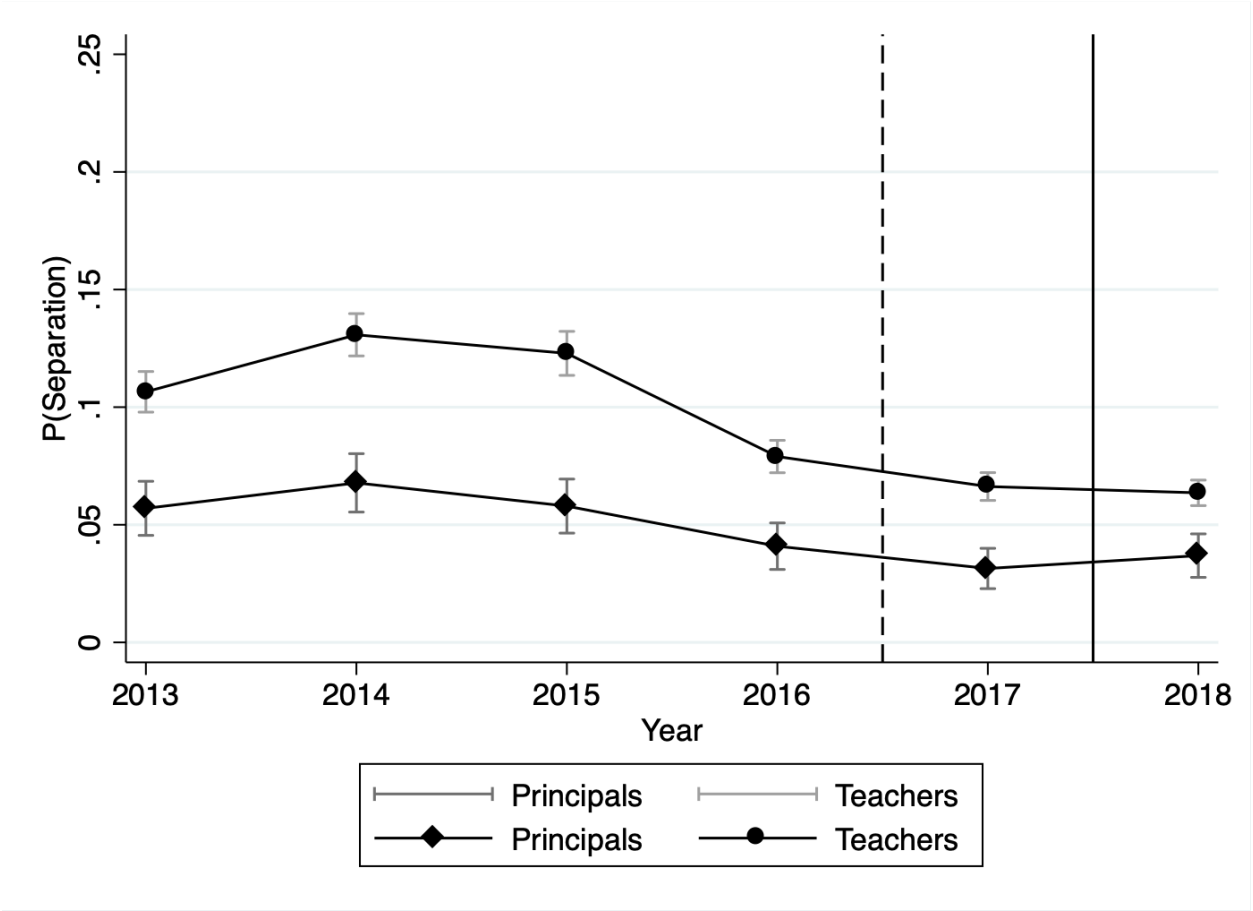
Note: Data are from the NCERDC. Retention is defined as being in the same position at the same school as in the prior year. The dashed vertical line represents when legislators began to discuss changes to principal pay policy. The solid vertical line represents when principal performance pay was introduced.

Figure A3: Trends in Other Part-Time Changes from 2012-13 to 2017-18



Note: Data are from the NCERDC. Retention is defined as being in the same position at the same school as in the prior year. The dashed vertical line represents when legislators began to discuss changes to principal pay policy. The solid vertical line represents when principal performance pay was introduced.

Figure A4: Trends in Separations from 2012-13 to 2017-18



Note: Data are from the NCERDC. Retention is defined as being in the same position at the same school as in the prior year. The dashed vertical line represents when legislators began to discuss changes to principal pay policy. The solid vertical line represents when principal performance pay was introduced.

Table A1: Local School District Salary Supplements: Difference-in-Differences

	Pre-Performance Pay	Post-Performance Pay	Difference (Post-Pre)
Average Teacher Supplement	\$3917.66	\$4458.50	\$540.83*
	(147.72)	(121.5)	(211.11)
Average Principal Supplement	\$12,971.33	\$14,062.00	\$1,090.67
	(328.98)	(263)	(467.77)
			Diff-in-Diff
Difference (Principal-Teacher)	\$9,053.67***	\$9603.50***	\$549.83
	(360.63)	(289.71)	(513.21)

Note: School-district level data on average salary supplements for principals and teachers in North Carolina from the 2014-15 to 2018-19 school years come from the North Carolina Association of County Commissioners. Pre-performance pay includes the 2014-15 through 2016-17 school years. Post-performance pay includes the 2017-18 and 2018-19 school years. Standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Summary Statistics by Salary Increase: Principals in the 2016-17 Cohort

	(1) All	(2) No Salary Increase	(3) Salary Increase
Salary Increase	0.728	0.000	1.000
	(0.011)	(0.000)	(0.000)
Salary Increase Amount	5233.092	0.000	7187.079
	(133.272)	(0.000)	(146.440)
Age	47.311	53.651	44.943
	(0.188)	(0.296)	(0.191)
Experience	21.986	28.784	19.448
	(0.165)	(0.272)	(0.143)
Female	0.614	0.680	0.590
	(0.012)	(0.022)	(0.014)
Masters Degree	0.776	0.761	0.781
	(0.010)	(0.020)	(0.012)
Sixth Yr Adv Degree	0.111	0.083	0.122
	(0.008)	(0.013)	(0.010)
Doctorate	0.113	0.156	0.097
	(0.008)	(0.017)	(0.009)
Ret Elig Early	0.331	0.724	0.184
	(0.012)	(0.021)	(0.011)
Ret Elig Full	0.138	0.395	0.042
	(0.009)	(0.023)	(0.006)
Elementary School	0.589	0.625	0.576
	(0.012)	(0.023)	(0.014)
Middle School	0.193	0.186	0.195
	(0.010)	(0.019)	(0.012)
High School	0.201	0.156	0.218
	(0.010)	(0.017)	(0.012)
Other Grades School	0.017	0.032	0.011
	(0.003)	(0.008)	(0.003)
New School	0.010	0.009	0.010
	(0.002)	(0.005)	(0.003)
Title I School	0.478	0.529	0.459
	(0.012)	(0.024)	(0.015)
Growth Not Met	0.225	0.362	0.174
	(0.011)	(0.023)	(0.011)
Growth Met	0.491	0.481	0.495
	(0.013)	(0.024)	(0.015)
Growth Exceeded	0.283	0.157	0.331
	(0.011)	(0.018)	(0.014)
Total Enrollment	607.756	531.048	636.397
	(9.482)	(15.877)	(11.486)
Number of Teachers	39.913	36.386	41.229
	(0.536)	(0.936)	(0.644)
Observations	1600	435	1165

Note: Data are from the NCERDC. The sample include full-time principals who worked in a single school during the 2016-17 school year. Salary Increase equals one if a principal would earn more in the 2017-18 school year under the new, performance-based salary schedule than they would have if the previous, experience-based salary schedule was still in place in 2017-18 and zero otherwise. Salary Increase Amount measures how much a principal's salary would increase under performance pay and equals zero if the principal would not receive a salary increase. Standard errors are in parentheses.

Table A3: Multinomial Logit Model: No Controls

	(1) Same-School Retention	(2) Switch Schools	(3) Other - Full Time	(4) Other - Part Time	(5) Separated
Principal	-0.0114	0.0273***	0.0320***	0.0056	-0.0534***
	(0.0112)	(0.0044)	(0.0031)	(0.0057)	(0.0043)
Principal x Performance Pay	-0.0314**	0.0065	0.0026	0.0088	0.0135
	(0.0153)	(0.0060)	(0.0031)	(0.0077)	(0.0108)
2013	-0.0113	-0.0202***	-0.0060**	-0.0020	0.0395***
	(0.0085)	(0.0048)	(0.0026)	(0.0057)	(0.0049)
2014	-0.0424***	-0.0127**	0.0001	-0.0060	0.0610***
	(0.0076)	(0.0055)	(0.0028)	(0.0038)	(0.0044)
2015	-0.0900***	-0.0032	0.0061	0.0347***	0.0524***
	(0.0112)	(0.0059)	(0.0041)	(0.0063)	(0.0055)
2016	-0.0097	-0.0064	-0.0000	0.0019	0.0142***
	(0.0084)	(0.0044)	(0.0024)	(0.0044)	(0.0041)
2017	-0.0089	0.0016	0.0031	0.0020	0.0022
	(0.0060)	(0.0047)	(0.0027)	(0.0036)	(0.0035)
School District FEs	No	No	No	No	No
Observations	44944	44944	44944	44944	44944
Mean of Transition	0.8023	0.0574	0.0205	0.0378	0.0819

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. The dependent variable is a categorical variable indicating a labor market transition $T \in \{$Same-School Retained, Switch Schools, Other – Full-Time, Other – Part-Time, Separated$\}$. Average marginal effect estimates from a multinomial logit model where the baseline category is Retained. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Multinomial Logit Model: All Covariates, No School District Fixed Effects

	(1) Same-School Retention	(2) Switch Schools	(3) Other - Full Time	(4) Other - Part Time	(5) Separated
Principal	-0.0385***	0.0150***	0.0265***	0.0029	-0.0058
	(0.0124)	(0.0046)	(0.0030)	(0.0065)	(0.0045)
Principal x Performance Pay	-0.0234	0.0117*	0.0047	0.0096	-0.0026
	(0.0143)	(0.0062)	(0.0031)	(0.0076)	(0.0101)
2013	0.0087	-0.0151***	-0.0035	-0.0019	0.0118***
	(0.0082)	(0.0049)	(0.0027)	(0.0058)	(0.0043)
2014	-0.0231***	-0.0083	0.0026	-0.0057	0.0345***
	(0.0076)	(0.0055)	(0.0028)	(0.0039)	(0.0038)
2015	-0.0714***	0.0018	0.0087**	0.0352***	0.0257***
	(0.0109)	(0.0060)	(0.0042)	(0.0061)	(0.0047)
2016	-0.0030	-0.0028	0.0016	0.0022	0.0021
	(0.0087)	(0.0045)	(0.0024)	(0.0044)	(0.0045)
2017	-0.0058	0.0042	0.0043*	0.0023	-0.0050
	(0.0061)	(0.0045)	(0.0026)	(0.0036)	(0.0038)
Age	0.0079**	0.0041*	0.0060***	0.0015	-0.0195***
	(0.0038)	(0.0022)	(0.0016)	(0.0017)	(0.0029)
Age Sq	-0.0001**	-0.0000*	-0.0001***	-0.0000	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Experience	0.0038	-0.0040**	-0.0007	-0.0024*	0.0034*
	(0.0031)	(0.0018)	(0.0009)	(0.0014)	(0.0021)
Experience Sq	-0.0001	0.0001	0.0000	0.0000	-0.0000
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Female	-0.0106**	0.0003	0.0015	0.0040*	0.0049
	(0.0044)	(0.0026)	(0.0014)	(0.0022)	(0.0030)
Sixth Yr Adv Degree	-0.0162	0.0118**	0.0056**	0.0075	-0.0087
	(0.0124)	(0.0054)	(0.0024)	(0.0061)	(0.0077)
Doctorate	-0.0119	0.0032	0.0074***	0.0086*	-0.0074
	(0.0099)	(0.0046)	(0.0025)	(0.0044)	(0.0077)
Ret Elig Early	-0.0646***	-0.0109**	-0.0068***	-0.0038	0.0860***
	(0.0085)	(0.0043)	(0.0022)	(0.0035)	(0.0096)
Ret Elig Full	-0.0586***	-0.0036	0.0025	0.0039	0.0559***
	(0.0075)	(0.0044)	(0.0036)	(0.0044)	(0.0040)
Middle School	-0.0098	0.0108***	0.0025	0.0010	-0.0045
	(0.0061)	(0.0037)	(0.0016)	(0.0035)	(0.0028)
High School	0.0198***	-0.0161***	0.0030*	-0.0003	-0.0064*
	(0.0049)	(0.0033)	(0.0016)	(0.0033)	(0.0033)
Other Grades School	0.0030	-0.0198*	0.0059	0.0082	0.0027
	(0.0205)	(0.0105)	(0.0041)	(0.0098)	(0.0095)
New School	0.0023	0.0099	-0.0063	-0.0033	-0.0026
	(0.0223)	(0.0169)	(0.0076)	(0.0145)	(0.0174)
School District FEs	No	No	No	No	No
Observations	44944	44944	44944	44944	44944
Mean of Transition	0.8023	0.0574	0.0205	0.0378	0.0819

Note: Data are from the NCERDC. The sample includes principals and teachers from 2012-13 to 2017-18. The dependent variable is a categorical variable indicating a labor market transition $T \in \{$Same-School Retained, Switch Schools, Other – Full-Time, Other – Part-Time, Separated$\}$. Average marginal effect estimates from a multinomial logit model where the baseline category is Retained. Standard errors clustered at the school district level and robust to heteroskedasticity are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$