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## Policy and Principal Turnover: The Impact of the Texas Special Education Cap

*Zoë Mandel*

Penn State University  
United States



*Andrew Pendola*

Auburn University  
United States

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**Abstract:** Accountability policies in education play a significant role for the principals tasked with facilitating the implementation of these reforms at the school-level. While these policies are most often intended to improve student outcomes, this is not always the case. In some instances, these policies can prove detrimental to schools, yet principals are still responsible for compliance. In Texas, a federal investigation found the Texas Education Agency (TEA) was restricting access to special education services by incentivizing districts to enroll fewer than 8.5% of students, utilizing these numbers as a measure of district performance. The implementation of the “8.5% cap” in 2004 resulted in a sharp decline in special education enrollment. Employing a sample of all principals in Texas before and after the 2004 law, this paper examines how the 8.5% cap impacted school leader attrition during its implementation. Prior to the implementation of the cap in 2004, we find little association between the proportion of students receiving services and

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principal turnover. After its implementation however, we find that principals in schools enrolling more than 8.5% of students in special education had a .39 higher odds ratio of switching districts and a .14 higher odds ratio of exiting the profession. We conclude by highlighting the scarcity of school labor market research that accounts for state-level education policies and note that policy may be more associated with principal turnover than student characteristics themselves.

**Keywords:** principal turnover; attrition; special education policy; role conflict

### **Política y rotación de directores de escuela: El impacto del límite máximo de educación especial de Texas**

**Resumen:** Las políticas de accountability en educación juegan un papel importante para los directores encargados de facilitar la implementación de estas reformas a nivel escolar. Si bien estas políticas suelen estar destinadas a mejorar los resultados de los estudiantes, no siempre es así. En algunos casos, estas políticas pueden resultar perjudiciales para las escuelas, pero los directores de las escuelas siguen siendo responsables del cumplimiento. En Texas, una investigación federal encontró que la Agencia de Educación de Texas (TEA) restringió el acceso a los servicios de educación especial al incentivar a los distritos a inscribir a menos del 8.5% de los estudiantes, utilizando estos números como una medida del desempeño del distrito. La implementación del “límite del 8.5%” en 2004 resultó en una fuerte disminución en la matrícula de educación especial. Empleando una muestra de todos los directores de escuelas en Texas antes y después de la ley de 2004, este documento examina cómo el límite del 8.5% afectó la deserción de líderes escolares durante su implementación. Antes de la implementación del límite en 2004, encontramos poca asociación entre la proporción de estudiantes que reciben servicios y la rotación de directores. Sin embargo, después de su implementación, encontramos que los directores en las escuelas que matriculan a más del 8.5% de los estudiantes en educación especial tenían una razón de probabilidades .39 más alta de cambiar de distrito y una razón de probabilidades .14 más alta de salir de la profesión. Concluimos destacando la escasez de investigación del mercado laboral escolar que tenga en cuenta las políticas educativas a nivel estatal y notamos que la política puede estar más asociada con la rotación de directores de escuela que con las características de los estudiantes.

**Palabras-clave:** rotación de directores de escuela; deserción; política de educación especial; conflicto de roles

### **Política e rotatividade de diretores de escolas: O impacto do Texas special education cap**

**Resumo:** As políticas de accountability na educação desempenham um papel significativo para os diretores encarregados de facilitar a implementação dessas reformas no nível da escola. Embora essas políticas tenham, na maioria das vezes, o objetivo de melhorar os resultados dos alunos, nem sempre é esse o caso. Em alguns casos, essas políticas podem ser prejudiciais às escolas, mas os diretores das escolas ainda são responsáveis pelo cumprimento. No Texas, uma investigação federal concluiu que a Texas Education Agency (TEA) restringiu o acesso aos serviços de educação especial, incentivando os distritos a matricularem menos de 8,5% dos alunos, utilizando esses números como uma medida do desempenho distrital. A implementação do “limite de 8,5%” em 2004 resultou em uma queda acentuada nas matrículas em educação especial. Empregando uma amostra de todos os diretores de escolas no Texas antes e depois da lei de 2004, este artigo examina como o

limite de 8,5% impactou a perda de líderes escolares durante sua implementação. Antes da implementação do limite em 2004, encontramos pouca associação entre a proporção de alunos que recebem serviços e a rotatividade de diretores. Após a sua implementação, no entanto, descobrimos que os diretores em escolas que matriculam mais de 8,5% dos alunos em educação especial tiveram uma razão de chance de mudar de distrito 0,39 e uma razão de chance de deixar a profissão 0,14 mais alta. Concluímos destacando a escassez de pesquisas de mercado de trabalho escolar que levem em consideração as políticas de educação em nível estadual e observamos que a política pode estar mais associada à rotatividade do diretor da escola do que às características dos alunos.

**Palavras-chave:** Rotatividade do diretor da escola; atrito; política de educação especial; conflito de papéis

## **Policy and Principal Turnover: The Impact of the Texas Special Education Cap**

Effective school leaders are essential for the academic and administrative success of schools. Despite the importance of school leaders, the ability to retain quality principals has proven to be a substantial challenge, resulting in leadership disruptions that profoundly impact both faculty and students. For example, frequent and persistent principal turnover is associated with increased teacher turnover and decreased student achievement (Béteille et al., 2012; Branch et al., 2009; Loeb et al., 2012). Moreover, disruptions in quality leadership often have a long-term impact on school culture and climate (Bartanen et al., 2019; Louis et al., 2010; Mascall & Leithwood, 2010). Nationwide, school leader turnover impacts nearly 20% of schools annually and costs an estimated \$75,000 per departure (Levin & Bradley, 2019; School Leaders Network, 2014). Moreover, school leader turnover disproportionately plagues schools that serve the highest proportion of minoritized students, further exacerbating opportunity gaps (DeAngelis & White, 2011; Fuller et al., 2007). Provided the essential role that principals play in the success of schools; it is important to understand what drives turnover.

The extant literature finds that school context, specifically student demographics, is significantly associated with principal turnover (Béteille et al., 2012; Loeb, 2010). Despite a preponderance of evidence on turnover's association with student demographics, much of this research fails to account for accountability policies that may serve as a confounding factor. Indeed, studies accounting for policy-related mandates such as No Child Left Behind's (NCLB) Annual Yearly Progress (AYP) mandate, find that policy, not students, drive principal turnover (Mitani, 2018; NCLB, 2001). Fully examining the factors associated with principal turnover is increasingly difficult in light of the evolving education policy landscape shaping school leader responsibilities. At the center of these growing shifts in school leader roles are federal accountability movements like NCLB and The Individuals with Disabilities in Education Act (IDEA, 1997, 2004; NCLB, 2001) which require school leaders to focus on the academic achievement of minoritized students. IDEA, specifically focuses on the education of students with disabilities, mandating that schools provide fair and adequate special education services to students, prioritizing the educational setting and supports that ensure success for students with disabilities. In many cases, school leaders must reconceptualize scheduling, staffing, and resources to accommodate IDEA mandates (Lynch, 2012; Naraian et al., 2020).

Further complicating school compliance with federal policy are conflicting state and local funding decisions for students with disabilities (Aron & Loprest, 2012). Texas' special education cap

offers a prime example, with accountability pressures and special education policy colliding. In this case, the Texas Education Agency (TEA) created a district performance indicator determined by special education enrollment. The “8.5% cap”, as it became known, was implemented to reduce special education expenditures by incentivizing districts to reduce the percentage of students receiving services (Knight & DeMatthews, 2018). School districts where more than 8.5% of the student population qualified for special education services received adverse scores on this indicator, impacting the district’s overall performance assessment. As a result, special education enrollment was drastically reduced. In 2004, 11.6% of students in Texas qualified for special education services while only 8.6% qualified in 2016 (U.S. Department of Education, 2018). The cap was exposed in 2016 by the *Houston Chronicle* and ultimately deemed illegal by the United States Department of Education in 2018 (Rosenthal, 2016a). The monitoring report from the Department of Education found that TEA failed to provide students with disabilities a free, appropriate education and failed to monitor and evaluate students in accordance with IDEA. While the Department of Education report and *Houston Chronicle* coverage shed light on the extreme actions taken by TEA to reduce special education expenditures, research is just beginning to uncover the array of detrimental outcomes associated with the policy (DeMatthews & Knight, 2019; DeMatthews & Serafini, 2019).

Provided the frightening decrease in support for special education in the state of Texas alongside federal mandates aimed at adequate educational access for students with disabilities, it is important to understand how this policy dilemma influenced principal career patterns. While research on principal turnover has often cited increased accountability pressures as influencing dissatisfaction and intent to leave (Clotfelter et al., 2006; Pinto, 2015), few studies address how special education policies in particular have impacted school leader turnover (Mitani, 2018). Furthermore, while a plethora of studies have examined how specific student demographics influence principal turnover, few studies have examined this relationship for students with disabilities (Rangel, 2017). Finally, research on the impact of policy on principal turnover is often limited to federal-level mandates, with few studies accounting for state and local policy (Fuller et al., 2017; Mitani, 2019; Tekleselassie & Choi, 2019). In fact, only a few studies have examined the adverse outcomes related to the Texas special education cap (DeMatthews & Serafini, 2019). However, these studies primarily focus on the students who were denied services (Knight & DeMatthews, 2018; DeMatthews & Knight, 2019).

Provided the essential role that school leaders have in ensuring special education services and adhering to state mandates, it is important to uncover how these accountability pressures are associated with school leader retention. Thus, this paper aims to address several critical gaps in the field by exploring how state-level education policy—in this case the special education cap in Texas—influences school leader career decisions. Our inquiry is guided by the following research questions:

- (1) Is there an association between the percentage of special education students and principal turnover? and
- (2) During the time of the special education cap, was failure to meet the “8.5% indicator” associated with increased principal turnover?

We find that the proportion of students receiving special education services had little to no association with principal turnover before 2004. However, after the implementation of the special education cap, we find that principal in schools with more than 8.5% of students identified as receiving special education services had a considerably higher risk of turnover when compared to principals in schools that were able to meet the 8.5% indicator. While our findings are unable to account for other unobserved predictors of turnover such as familial obligations, we find evidence

supporting an association between the special education cap in Texas and principal turnover. Moreover, these findings support a burgeoning conclusion within school labor market research, that specific minoritized student populations are less of a driving factor, but rather the context, funding, and policy at play have a more significant bearing on turnover (Loeb et al., 2010; Mitani, 2018). In the next section, we provide a detailed overview of the 8.5% cap.

## **Background and Context**

### **Texas Education Policy**

In order to present a clear picture of the policy landscape school leaders in Texas faced during the special education cap, we begin by discussing the federal accountability policies in place. Following this brief overview, we provide context for Texas' special education cap including what it mandated, who it impacted, and the consequences of the cap.

Across the nation, accountability movements like NCLB, ESSA, and IDEA have significantly altered the roles and responsibilities of school personnel. These sweeping education policies increasingly require school leaders to meet growing demands, especially for specific student demographics. For instance, in 2005, NCLB required that all schools meet AYP in reading and math and have a 95% test participation rate for all subgroups of students, including those receiving special education services (Nichols et al., 2005; U.S. Department of Education, 2002). Less than five years later, IDEA required that students with disabilities receive differentiated instruction in the least restrictive environment (LRE), an initiative that required many schools to focus extensively on the programming of their classes to ensure students with disabilities were mainstreamed into general education classes (Crockett & Kauffman, 2013; IDEA, 2004; Obiakor et al., 2012). As instructional leaders within the school, these policies have required principals to become increasingly involved in the delegation of special education services. Moreover, the Professional Standards for Educational Leaders explicitly states that effective school leaders should be prepared to confront and alter biases that impact students with disabilities (National Policy Board for Educational Administration, 2015). In Texas, school leaders were charged with meeting the increasing demands of students with disabilities that were outlined by IDEA, while simultaneously facing the pressures related to the 8.5% cap.

In 2017, the United States Department of Education's Office of Special Education Programs (OSEP), launched an investigation into TEA's compliance with IDEA. TEA monitors the performance of school districts through an automated data system that assigns a performance level for several indicators (Knight & DeMatthews, 2018). Beginning in 2004, the percentage of students receiving special education services became one of these indicators. School districts where more than 8.5% of the student population qualified for special education services received adverse scores on this indicator, impacting the district's overall performance assessment. School districts across the state strived to meet the "8.5% cap", an indicator many of them believed to be a mandate (Rosenthal, 2016a). As a result, in 2004, 11.6% of students in Texas qualified for special education services while only 8.6% qualified in 2016 (ED, 2018). The OSEP report reviewed documents, conducted interviews, and observed schools, ultimately finding that TEA systematically failed to comply with IDEA. According to the report, barriers were implemented at various levels to systematically decrease special education enrollment. One way to decrease enrollment was to limit the number of students who could be referred to special education. For instance, Response to Intervention (RTI), which is a process that includes multiple steps to identify and support struggling learners, was used to slow down, and in some cases, prevent new special education referrals (Rosenthal, 2016a). While this is a commonly accepted practice, its purpose is to aid the special education referral process, not hinder it. Though OSEP's document review revealed compliance

with federal mandates, listening sessions and interviews revealed a different story. According to the report, parents and teachers had a general understanding that students had to complete all tiers of the RTI process in order to be eligible for a special education review, which is not the case. Moreover, interviews revealed that teachers had limited understanding of the tiers, timeline, and procedures associated with the RTI process. The report concluded that the ambiguity surrounding this process contributed to the delay and denial of evaluations for students who may have needed special education services. TEA also prevented access to special education evaluations by supplemental support to students through a 504 plan. A 504 plan is designed to aid students with disabilities who do not require specialized instruction but do need academic accommodations (Lee & Ritchotte, 2018). According to the report, OSEP interviews found numerous cases where students who were receiving 504 supports experienced both delays and barriers to scheduling a special education evaluation. The most startling example of this is the implementation of a state-wide dyslexia program. Students with dyslexia had to present a second disability in order to be eligible for a special education referral. The report found that some school districts wouldn't even complete dyslexia testing until students were in a certain grade.

While the OSEP report revealed illegal practices used to adhere to the 8.5% cap, the *Houston Chronicle* ran an expose that provided many disheartening revelations surrounding the systematic denial of special education services. In one of these stories, Jenny Gurag<sup>1</sup> was told by her child's teacher that dyslexia services would likely never be provided, despite a designation. She immediately pulled her child out of school and looked for a private school to meet their needs. Little did she know, she was joining a staggering number of parents who had done the same. In fact, the number of parents moving their children from public to private schools increased by 30% after the implementation of the 8.5% cap. The *Houston Chronicle* also detailed the extent to which staff were expected to comply with the cap. For example, a teacher who suspected her student might be struggling due to a disability reached out for information on referring the student for special education services, her colleague told her not to bother because they wouldn't take the request due to the cap. The coverage also revealed the intricate ways school districts facilitated these denials by involving personnel throughout the district. For example, Henderson ISD moved all of the evaluation forms to the central office, where supervisors had to grant permission in order to receive a form (Rosenthal, 2016a). Other districts implemented lengthy review panels where special education referrals were cut in half over two years. Without adequate services, many students exhibited behaviors that led to exclusionary discipline, further decreasing access to educational support. Indeed, these circumstances left school leaders facing a conundrum that was both impossible and unethical. For example, after facing pressure and hearing that other school leaders were fired for failing to meet the indicator, Rachel Christie left her job as a principal to work for the Houston Health Department (Rosenthal & Barned-Smith, 2016f). Other school leaders appeared to comply with the mandate. For example, Heidi Walker verbally requested a special education evaluation after a 504 plan failed to improve her child's meltdowns and academic performance, only to have the administrator deny the request because her child's IQ was too high (Rosenthal, 2016a). In some cases, entire families relocated to another state to receive better educational support (Rosenthal & Barned-Smith, 2016a).

This illegal (and immoral) mandate had profound consequences on students with disabilities who were unable to receive adequate services and supports to be successful. Referrals for special education services were denied and schools were striving to declassify students, disproportionately impacting English language learners and minoritized students (DeMatthews et al., 2019). Some

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<sup>1</sup> All names used are pseudonyms.

parents turned to private schools and some parents even relocated to other states to ensure the academic success of their children (DeMatthews et al., 2019; Rosenthal, 2016e). In many cases, principals played an essential role in the systematic denial of services by forcing students out of schools, slowing referral and review processes, and encouraging declassification (Rosenthal, 2016a). Amidst growing documentation of the problematic situation school leaders faced with the 8.5% cap, it is unclear if this policy substantially led to a greater rate of principals leaving their positions. Though no clear consequence was documented for lack of compliance from districts or schools, it is evident by both the sharp decrease in special education enrollment and anecdotal reports in the OSEP report and *Houston Chronicle*, that efforts to reduce enrollment were made at great cost. As a result, we aim to examine if the 8.5% indicator was associated with an increase in principal turnover and attrition, provided the intense increases in demands to reduce special education expenditures.

### **Ethical Dilemmas, Role Conflict, and Dissatisfaction**

To further situate this investigation, we recognize two main frameworks to detail how the effects of the 8.5% cap may operate on turnover. First, we discuss conflicts of ethical leadership in carrying out TEA's goals. Next, we draw on how the conflict between role and ethical commitments may lead to workplace dissatisfaction and higher turnover risk.

As boundary spanners between educational policy directives and student needs (Honig, 2006), many principals faced significant conflicts from the 8.5% cap. In their study on principal decisions during this time, DeMatthews and Serifini (2019) noted that compliance with the 8.5% cap placed many leaders into an ethical dilemma affecting their personal and professional identity. School leaders interviewed reported feeling overwhelmed and lonely while trying to make the best decisions for students in light of accountability pressures. Ethical leadership emphasizes student wellbeing and success as a primary goal of leadership decisions (Bass et al., 2018; Stefkovitch & Begley, 2007). However, shifts in public administration have led to an increased focus on measuring schooling outcomes and accountability pressures, setting up a scenario for conflicts between student success and measured outcomes.

Research has repeatedly emphasized that role conflicts are a major factor in principal dissatisfaction and turnover (Hom & Griffeth, 1995; Mowday et al., 2013), particularly with principals who note contradictory organizational directives (Farley-Ripple et al., 2010; Friedman, 2002). Attending to the abovementioned stories of principal actions, the ethical conflicts under 8.5% cap may be seen as 'image violation,' whereby an event conflicts with an individual's perception of themselves and triggers turnover intent (Hom et al., 2016; Lee et al., 1999). As noted, while it is clear that there were some instances whereby principals were placed in unethical situations and left the position (DeMatthews & Serafini, 2019), we aim to see if this situation played out on a large scale. Below, we review the relevant literature on factors influencing turnover.

### **School-Level Predictors of Principal Turnover**

At the school-level, student demographics prove to be a significant predictor of principal turnover (Hanushek, 2004; Scafidi et al., 2007). For example, schools with higher proportions of Black and Latinx students have higher rates of principal turnover (Gates et al., 2006; Loeb et al., 2010). Similarly, schools with higher proportions of students scoring persistently low on standardized assessments have higher rates of turnover for school leaders (Miller, 2013; Loeb et al., 2010). As we will expand upon later, much of the extant literature fails to account for the impact of increased accountability pressures that may conflate this association.

Interestingly, literature is just beginning to uncover how students receiving special education services impact principal turnover. However, this research finds that principals are more likely to leave or transfer from schools with higher proportions of students with disabilities (Ni et al., 2015;

Solano, 2010). Problematically, the increased principal turnover within schools serving higher proportions of minoritized students often results in the hiring of inexperienced school leaders, further marginalizing students and exacerbating opportunity gaps (Grissom & Bartanen, 2019; Loeb et al., 2010).

Furthermore, while literature generally supports evidence that student demographics affect school leader turnover, few studies have examined how policy and limited resources drive this phenomenon (Rangel, 2017). This is especially pertinent in light of accountability policies that target specific demographics and the additional expenditures required to address these requirements. For example, the literature finds that principals are less likely to remain in a school with higher proportions of students living in poverty (Béteille et al., 2012). However, these students are also less likely to meet standardized testing goals, requiring additional school resources to raise their achievement. The emphasis on meeting standardized testing goals derives from the implementation of No Child Left Behind's (NCLB) Annual yearly progress (AYP) mandate. Indeed, DeAngelis & White (2011) find that accountability pressures, not student demographics, were driving school leader turnover in light of AYP guidelines. It is important to understand how student demographics influence school leader turnover while also considering the policy landscape.

### **Increased Accountability for School Leaders**

Prior research on accountability movements have found that many federal initiatives have a negative impact on school leaders. For example, Mitani (2016) found that the implementation of NCLB increased job stress for school leaders and subsequently led to higher rates of turnover, particularly among novice school leaders. Similarly, the extant literature finds overwhelming evidence that principal turnover is higher in schools that consistently fail to meet AYP, a key mandate within NCLB (Teklesalassie & Villareal, 2011). Another goal of NCLB centered around more rigorous training and preparation for teachers, introducing new set of standards to increase the number of "highly qualified" teachers. Similar to AYP's effect on school leader turnover, schools with fewer teachers who are highly qualified were more likely to experience principal departures (DeAngellis & White, 2011). While there are a several studies that address the increased demands associated with the implementation and reauthorization of IDEA on principals, we are unable to find any studies that address how federal special education policies impact principal turnover (Lynch, 2012; Patterson et al., 2000; Sumbera et al., 2014).

While some research has addressed how federal initiatives have affected factor related to principal turnover, less has focused on state and district level policy. Beckett (2018) demonstrated that districts utilizing principal rotation schedules led to increased turnover, while Tran (2016) and Yan (2019) have shown how district salary policy can also affect turnover. Furthermore, district policies aimed at incentivizing teacher retention have also shown to improve principal retention (Teklesselassie & Choi, 2019). More broadly, Grissom et al., (2015) have shown that principals are increasingly allocating time to address state and local policies such as teacher evaluation systems. As such, while there is some evidence that local policies have a significant impact on principal behaviors and retention, this remains a comparatively understudied field.

Overall, prior literature supports the notion that accountability pressures increase stress and rates of turnover for school leaders. First, the student characteristics associated with school leader turnover, such as race and socioeconomic status, often disappear once researchers control for accountability pressures (Loeb et al., 2010). Next, there is a significant base of research that documents the increased stress that school leaders face in light of increased accountability policy. Research also shows that principals are more likely to leave schools that are failing to meet new mandates, such as AYP. Finally, district and state policies have a tremendous impact on school



leader turnover, both directly, by impacting principal salary and school resources, and indirectly, by incentivizing teacher retention (Tekleselassie & Choi, 2019). Yet, there are few inquiries examining how state and local policies impact principal turnover.

## **Method**

### **Data**

To explore the above questions, we utilize data collected through the Elementary and Secondary Information System (ELSI) from the National Center for Education Statistics (NCES) as well as the Public Education Information Management System (PEIMS) from the Texas Education Agency (TEA). This data covers the population of professional educators in Texas from 1995-2012. Across these datasets, we matched longitudinal information including individual principal characteristics (gender, race/ethnicity, age, certification, experience, salary), school-level student characteristics (enrollment, demographic makeup, percentage eligible for free- or reduced-price meals (FARM), percentage identified as Limited English Proficient (LEP), percentage identified as special educational needs (SPED), and student achievement on standardized tests), and school characteristics (elementary, middle, or high school, school accountability score, locale). These observations allow for annual observations of a principal and their school, as well as movement between districts, schools, or out of the principalship. We were therefore able to follow the career behaviors of all principals in Texas along with the school environments in which they served.

To gain a better measure of principal turnover, we instituted several adjustments to the data. First, we excluded those principals that exited the profession after they had met the state retirement requirements, given that retirement may be less dependent upon school and policy factors (Teacher Retirement System of Texas, 2018). Second, we excluded observations for principals that had entered the Texas system from out-of-state, given that we did not have background information on their certification or years of service. We also excluded those principals with FTE status below 50% given that being less than a half-time principal is a substantively different role. Third, we excluded observations where a school closed or was consolidated (0.4% of schools annually), considering that this would not represent a voluntary turnover event. It should be noted that principals who left the position also exited the dataset, and we cannot observe if they moved to central office or into another instructional position, moved to another state, or exited the profession altogether. However, we can observe principals that moved between schools and between districts. The resulting set covers 18,267 principals at 7,982 schools for 104,159 employment-years over the 12-year sampling window.

We present sample characteristics in Table 1, presenting the whole sample, as well as divided by observation that were either above or below the 8.5% cap after 2004. Notably, from Table 1, we see that while the average turnover rate was 22% per year, it was slightly lower for schools below the 8.5% cap after 2004. Over the entire sample period, 66% of principal-year observations were in schools above 8.5%, and special education enrollment was on average 12% of a school's student composition.

**Table 1***Principal and School Sample Characteristics in Texas*

|                                  | Full Sample |             | < 8.5% after 2004 |             | > 8.5% after 2004 |             |
|----------------------------------|-------------|-------------|-------------------|-------------|-------------------|-------------|
|                                  | Mean        | <i>SD</i>   | Mean              | <i>SD</i>   | Mean              | <i>SD</i>   |
| Turnover Rate                    | 22%         |             | 19%               |             | 22%               |             |
| Switch Rate                      | 7%          |             | 6%                |             | 7%                |             |
| Exit Rate                        | 12%         |             | 9%                |             | 12%               |             |
| > 8.5% Special Ed                | 66%         |             | 0%                |             | 100%              |             |
| <i>Principal Characteristics</i> |             |             |                   |             |                   |             |
| Female                           | 57%         |             | 68%               |             | 55%               |             |
| Black                            | 10%         |             | 12%               |             | 10%               |             |
| Latinx                           | 19%         |             | 25%               |             | 16%               |             |
| Other                            | 1%          |             | 1%                |             | 1%                |             |
| White                            | 70%         |             | 61%               |             | 72%               |             |
| Age                              | 48.88       | 7.96        | 48.76             | 8.59        | 48.68             | 8.43        |
| Teaching Experience              | 4.87        | 4.77        | 6.45              | 4.61        | 6.84              | 4.9         |
| A.P. Experience                  | 2.79        | 3.01        | 3.29              | 3           | 3.24              | 3.04        |
| Salary (Non-Adjusted)            | \$67,206.65 | \$15,500.23 | \$77,020.79       | \$14,931.63 | \$73,364.96       | \$15,554.06 |
| <i>School Characteristics</i>    |             |             |                   |             |                   |             |
| % SPED                           | 12%         | 8%          | 7%                | 2%          | 14%               | 8%          |
| Accountability                   |             |             |                   |             |                   |             |
| Low-Performing                   | 81%         |             | 74%               |             | 84%               |             |
| Recognized                       | 2%          |             | 2%                |             | 4%                |             |
| Exemplary                        | 17%         |             | 23%               |             | 12%               |             |
| Achievement (STD)                | 0           | 0.99        | 0.02              | 1.05        | -0.01             | 0.93        |
| Enrollment                       | 622.68      | 494.19      | 657.96            | 479.27      | 613.52            | 530.25      |
| % Black                          | 14%         | 19%         | 13%               | 18%         | 14%               | 17%         |
| % Latinx                         | 42%         | 32%         | 51%               | 32%         | 42%               | 29%         |
| % White                          | 42%         | 31%         | 31%               | 30%         | 42%               | 29%         |
| % LEP                            | 14%         | 18%         | 22%               | 23%         | 11%               | 14%         |
| % FARM                           | 56%         | 27%         | 62%               | 29%         | 58%               | 24%         |
| Elementary                       | 59%         |             | 74%               |             | 47%               |             |
| Middle                           | 21%         |             | 13%               |             | 27%               |             |
| High                             | 20%         |             | 13%               |             | 26%               |             |
| Suburban                         | 37%         |             | 43%               |             | 38%               |             |
| Urban                            | 31%         |             | 32%               |             | 28%               |             |
| Town                             | 14%         |             | 14%               |             | 13%               |             |
| Rural                            | 18%         |             | 11%               |             | 21%               |             |
| <i>Principal-Year</i>            |             |             |                   |             |                   |             |
| Observations                     | 104,159     |             | 26,480            |             | 34,034            |             |
| # Principals                     | 18,267      |             | 7,171             |             | 8,770             |             |
| # Schools                        | 7,892       |             | 1,447             |             | 5,909             |             |

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*Note.* Sample unit of analysis set at the principal level for fixed individual characteristics (gender, race, experience), principal-year level for variant characteristics (salary), school level for fixed school characteristics (level, locale), and school-year for time variant characteristics (demographics, size, achievement, accountability, turnover rate, switches, exits). # Principals and # Schools represent unique observations of principals and schools that were either never > 8.5% or always > 8.5%. during the post-2004 period.

## Variables

Given that types of turnover can result from different processes (Farley-Ripple et al., 2012), we differentiated turnover into five categories: (1) All Turnover, which is any turnover event, including transfers and exits; (2) All Transfer, which is any type of transfer from one school to another; (3) In-District Transfer, which is a move from one school to another within the same district; (4) Out-District Transfer, which is a move from one school to another but in a different district, and (5) Exit Profession, which is leaving the profession for any reason.<sup>2</sup>

It is important to clarify some of our covariates. First, given that salaries differ by regional costs of living and over time, we adjusted salaries with the Comparative Wage Index (CWI) to account for regional variation (Taylor, 2016), then adjusted for inflation and logarithmically transformed the variable. Second, we include measures of student achievement scores based on the Texas Assessment of Academic Skills (TAAS) and the Texas Assessment of Knowledge Skills (TAKS). The TAKS replaced the TAAS after 2003, and so we standardized yearly school-level performance on each test to make them comparable. Third, we included accountability scores through the TEA's Academic Excellence Indicator System (AEIS), which categorizes schools as low-performing, acceptable, recognized, or advanced. While the AEIS does include academic achievement in its rating, it also includes scores based on academic progress, graduation rates, completion rates, and growth for the lowest performing sub-group. Therefore, although achievement and accountability scores are related, they are substantively distinct measures, so we include both in our data to get a wider picture of school performance (e.g. schools with high average achievement may also have large sub-group gaps).<sup>3</sup> Third, several variables have demonstrated curvilinear relationships with turnover, including age and experience (Gates et al., 2003; Papa et al., 2002). For example, both younger and older principals are more likely to leave. To account for this, we included squared regressors alongside age and experience.

## Analysis

For each research question, we utilize discrete time hazard modeling (DTH) with fixed effects to estimate the risk of a principal turnover event in a given time period. Given that principals generally work by annual contract, career transitions usually take place at the completion of the term, DTH offers an appropriate estimation technique for estimating risk situated in one-year intervals. DTH calculates the conditional probability that an individual will experience a turnover event in a certain time interval, given that she or he did not experience it in the prior time interval,

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<sup>2</sup> This may include transfers to central office, leaving public education, or retiring. Farley-Ripple et al. (2012) emphasize the importance of distinguishing between turnover types. For example, in-district transfers may result district reorganization or reassignments, while out-district transfers are more likely to be initiated by the candidate. As noted in the limitations below, our data only observes behaviors and not intentions, so differentiating between turnover types helps to differentiate between systematic processes that may bias results.

<sup>3</sup> While some variables were correlated, such as % Latinx and % Limited English Proficient, tests of multicollinearity demonstrated no substantial effect on the models, with no variance inflation factor (VIF) coefficient above 3.

incorporating the duration of an individual's career spell as an estimator. This approach allows for more complete information to be utilized at the edges of the sampling window with less censoring, and as a yearly estimate avoids systematic bias of interdependence present in longitudinal data (Singer & Willett, 2003).

While we include several covariates commonly recognized in the principal turnover literature as controls (see: Rangel, 2017) we also recognize that unobserved factors may have significant bearing on turnover behaviors. To account for this, we include fixed effects for school, district, and time period. School fixed effects leverage in-school variation to compare turnover events within the same school to hold constant time-invariant unobserved school characteristics, such as working climate, that may influence turnover behaviors (Allison, 2009). District fixed effects similarly compare within-district turnover events to control for unobserved factors, such as policies regarding reassignment or salaries that may account for turnover variation. Finally, we include period-fixed effects to hold constant temporal variation, such as the Great Recession (Knight, 2017), or other state policy trends that may have affected turnover across the state.

For our first research question, *Is there an association between the percentage of special education students and principal turnover?* we present a series of descriptive analyses to explore the bivariate relationship between special education and principal turnover rates. Next, we run a series of DTH models for each type of turnover (All Turnover, All Transfer, In-District Transfer, Out-District Transfer, and Exit) with our list of covariates as controls. We run these in panels first with period fixed effects, followed by subsequent models that add in district and then school fixed effects. We use this to establish the baseline association between special education students and principal turnover.

For our second question, *During the time of the special education cap, did failure to meet the "8.5% indicator" impact school leader attrition?* we run two related analyses. First, we run a set of DTH models with a binary indicator for those schools above the 8.5% special education threshold,<sup>4</sup> a binary indicator of pre- and post- 2004 observations, and an interaction term between the two.<sup>5</sup> With this, we estimate the extent to which the 8.5% cap was associated with principal turnover over and above the level of special education students, and if that association was more or less pronounced after 2004. As with RQ1, all models are run with period fixed effects, then with the inclusion of school fixed effects, and then with district fixed effects. For these models, we use the general form:

$$\text{logit } h(t_{ij}) = [\alpha_1 D_1 + \dots \alpha_j D_{ij}] + \beta_1 \% \text{ special education}_{ij} + [\beta_2 \text{ post '04}_{ij} + \beta_3 \text{ 8.5\% cap}_{ij} + \beta_2 \text{ post '04}_{ij} * \beta_3 \text{ 8.5\% cap}_{ij}] + \beta_4 \text{ .13principal characteristics}_{ij} + \beta_{14-21} \text{ school characteristics}_{ij} + \gamma + \eta + \varepsilon$$

were  $\alpha$  stands for the intercept in a given time period  $j$  with  $D$  representing a dummy indicator for time period  $j$  and individual  $i$ .  $\beta$  represents the slope parameter for a substantive predictor for individual  $i$  in time period  $j$ .  $\gamma$  represents period fixed effects for each year, with  $\eta$  as either school or district fixed effects. We present model coefficients as odds ratios for ease of interpretation. Next, we run two panels of DTH models, this time divided into pre-

<sup>4</sup> Given that the 8.5% cap was calculated at the district level, we have run a parallel set of models indicating districts above the cap (rather than schools). Results were substantively similar and are provided in Appendix A.

<sup>5</sup> It may also be instructive to consider the distance from the 8.5% cap as a measure associated with turnover, rather than a binary indicator of being above or below the threshold. For ease of interpretation and because of the way the policy was implemented, we employ the binary indicator here, but ran parallel models with our independent variable of interest the distance—positive or negative—from the 8.5% cap. Results were substantively similar, and we have included these in Appendix B.

and post- 2004 samples of the above demonstrated model without the interaction term. Within the pre- and post-2004 samples, we estimate the effect of the 8.5% cap on principal turnover, while holding the actual proportion of special education students in a school constant. While similar to the above models, dividing the sample allows us a more intuitive means to interpret an association between the 8.5% cap and principal turnover.

### Limitations

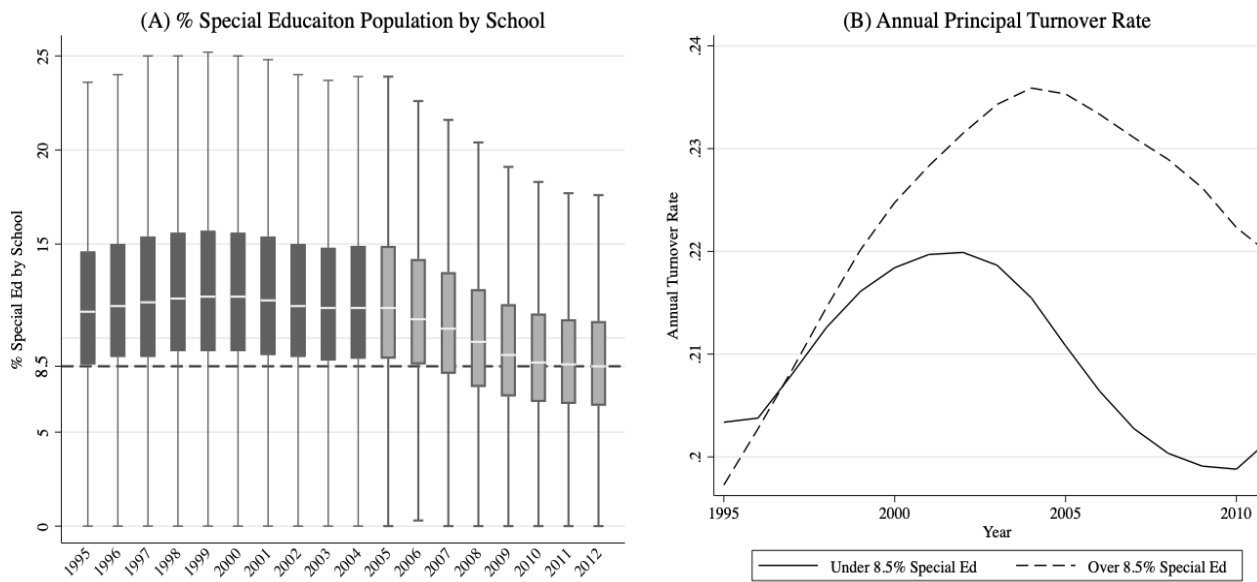
Before proceeding, it is important to note limitations in both interpretation and measurement of our results. First, it must be recognized that our observations of turnover are behavioral only, we cannot observe if a principal left because they were dissatisfied with their environment, if they had a spousal move, or if they were reassigned or promoted by their district (Farley-Ripple et al., 2012). Certain aspects may be endogenous as well. For example, the type of principal that selects into a school with a high percentage of special education students may be more or less prone to turnover for a variety of reasons. Furthermore, the decision to leave based on resource-based dissatisfaction generally requires the availability of an alternative option (i.e. a more attractive open position), which may not be the case. The decision to leave may therefore not determine the type of turnover, meaning that turnover is not necessarily a reflection of principal dissatisfaction or preferences (Hom et al., 2016; March & Simon, 1958). More importantly, our study design is correlational and not causal. Schools above the 8.5% indicator are not randomly distributed, and we do not apply a quasi-experimental set of methods to simulate random assignment. While we use fixed effects in an effort to remove between school and district heterogeneity, it should be noted that our results should be interpreted as associations rather than causes.

## Results

### **RQ1: Is there an association between the percentage of special education students and principal turnover?**

We begin our analysis by asking if there is any association between the proportion of special education students and principal turnover, given our resource dependence framework. To provide a better view of the context of special education and turnover, we examine how the proportion of special education students changed after the 8.5% cap. First, looking at Figure 1, panel A, we plot the average annual proportion of special education students by school. Notably, we see that after 2004, there was a steady decline in special education identification towards the 8.5% mark, demonstrating that schools and districts did cut special education identification drastically following the enactment of the 8.5% cap. For example, in 2002, the average special education percentage was 12.8. In 2010, it was down to 9.7%. We also note that prior to 2004, 75% of principal-year observations were in schools with special education enrollment above 8.5%, whereas after 2004, 56% of principal-year observations were in schools above 8.5%, demonstrating that while there was a clear effort to reduce special education identification, many schools were still above the cap.

Next, in panel B, we plot the annual principal turnover rate, differentiating between principals serving in schools below and above 8.5% special education enrollment. Notably, while those principals serving in schools above 8.5% special education enrollment had higher turnover rates prior to 2004, this difference is magnified at around 2005 to roughly a 2.5 point difference in turnover, which continues on after 2005. However, we find a weak direct relationship between the % of special education students and school principal turnover rates, with a nonsignificant correlation coefficient of 0.10.

**Figure 1***Special Education Population and Principal Turnover Rates*

To gain a better understanding of the association between special education students and turnover, we present results from DTH models estimating the risk of a principal leaving their school at any given time in Table 2, with the standardized percentage of special education students in school as our predictor of interest. Risk is estimated for each type of turnover (All Turnover, All Transfer, In-District Transfer, Out-District Transfer, Exit). Each model includes individual and school controls, as well as year fixed effects. Panel B additionally includes district fixed effects and Panel C includes school fixed effects for comparison. We only present the coefficients for special education students, with full results available upon request.

In looking at Panel A, we see that a standard deviation increase in special education students (7.9 percentage points) is associated with a slight increase in the odds ratio of principal transfers, and a slight reduction in principal exits. Here, a 7.9 percentage point increase in special education students is associated with a 1.035 times higher odds ratio of an In-district principal transfer, while principal exits are only 0.97 times as likely to occur for each standard deviation increase in special education students.

The relation between special education students and in-district transfers holds in panel B with the inclusion of district fixed effects but does not hold in panel C with school fixed effects, suggesting that either this association is partially explained by time invariant school characteristics, or that the within-school variation in special education enrollment is not associated with turnover risk. Broadly then, there is little overall direct relationship between the proportion of special education students in a school and the risk of principal turnover.

**Table 2***Principal Turnover by % Special Education*

| <i>Panel A: No Fixed Effects</i>       | All      | All      | In-      | Out-     | Exit       |
|--|----------|----------|----------|----------|------------|
|  | Turnover | Transfer | District | District | Profession |
|  | 1        | 2        | 3        | 4        | 5          |
| % Special Education                    | 0.995    | 1.027*   | 1.035**  | 1.00     | 0.973**    |
|  | -0.008   | -0.011   | -0.014   | -0.017   | -0.01      |
| Individual & School Controls           | X        | X        | X        | X        | X          |
| Baseline Hazard                        | X        | X        | X        | X        | X          |
| Year Fixed Effects                     | X        | X        | X        | X        | X          |
| Observations                           | 104159   | 98038    | 98038    | 97776    | 98038      |
| Pseudo R-squared                       | 0.0293   | 0.0225   | 0.0215   | 0.0744   | 0.033      |
| BIC                                    | 104062   | 54283    | 41940    | 21558    | 70786      |
| Log Likelihood                         | -51661   | -26785   | -20614   | -10440   | -35037     |
| <i>Panel B: District Fixed Effects</i> | 6        | 7        | 8        | 9        | 10         |
| % Special Education                    | 1.01     | 1.031*   | 1.031*   | 1.025    | 0.996      |
|  | -0.009   | -0.013   | -0.016   | -0.024   | -0.011     |
| Individual & School Controls           | X        | X        | X        | X        | X          |
| Baseline Hazard                        | X        | X        | X        | X        | X          |
| Year Fixed Effects                     | X        | X        | X        | X        | X          |
| District Fixed Effects                 | X        | X        | X        | X        | X          |
| Observations                           | 103952   | 95401    | 89833    | 89257    | 97702      |
| Pseudo R-squared                       | 0.0523   | 0.0466   | 0.0498   | 0.122    | 0.0598     |
| BIC                                    | 113001   | 62399    | 47705    | 28575    | 80010      |
| Log Likelihood                         | -50315   | -25896   | -19547   | -9694    | -33955     |
| <i>Panel C: School Fixed Effects</i>   | 11       | 12       | 13       | 14       | 15         |
| % Special Education                    | 1.014    | 1.037+   | 1.027    | 1.042    | 1.003      |
|  | -0.013   | -0.019   | -0.024   | -0.032   | -0.016     |
| Individual & School Controls           | X        | X        | X        | X        | X          |
| Baseline Hazard                        | X        | X        | X        | X        | X          |
| Year Fixed Effects                     | X        | X        | X        | X        | X          |
| School Fixed Effects                   | X        | X        | X        | X        | X          |
| Observations                           | 98615    | 68272    | 53913    | 28086    | 83857      |
| Pseudo R-squared                       | 0.0436   | 0.0457   | 0.0419   | 0.0698   | 0.0743     |
| BIC                                    | 75288    | 34542    | 25046    | 11650    | 47306      |
| Log Likelihood                         | -37310   | -16948   | -12207   | -5528    | -23324     |

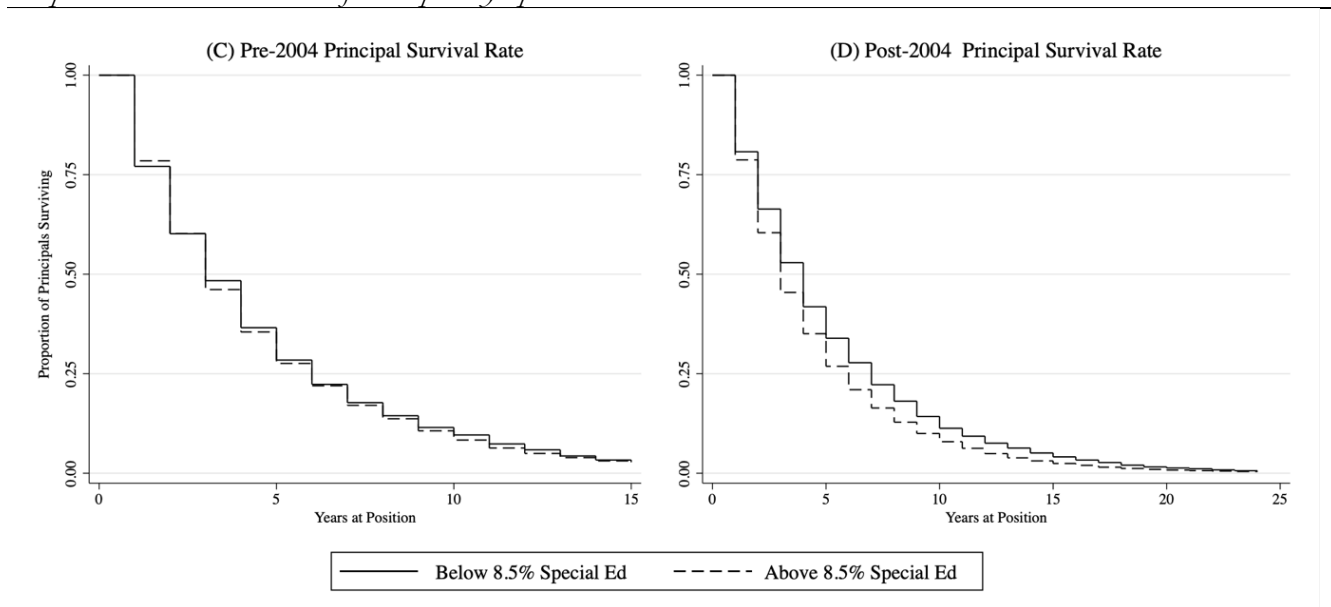
\*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$ . Coefficients in Odds Ratios. Individual and school controls include principal gender, race, age, age squared, years experience, years experience squared, adjusted salary, school accountability rating, student achievement, enrollment, racial composition, % LEP, % FARM, level, and locale. Full results available upon request.

## RQ2: During the time of the special education cap, was failure to meet the “8.5% cap” associated with principal turnover?

Given weak evidence of a direct association between special education students and turnover, we now aim to see if the 8.5% cap mattered. In Figure 2, we present the survival rate for principals below and above the 8.5% special education enrollment cap, split into pre- and post-2004 time frames. The Kaplan-Meier Survival rate plots the proportion of the total sample “surviving” (not having turned over) in a given duration of their employment. Notably, in panel C, we see that there is little separation in the survival rates of principals below the 8.5% cutoff and those above. However, in panel D, we see that there is a greater level of separation. For example, at the end of their fourth year in a position, 53% of principals in below 8.5% special education enrollment schools “survived,” while only 46% of those in schools above 8.5% survived.

**Figure 2**

*Kaplan Meier Survival Rate of Principals by Special Education Enrollment*



Given this preliminary indication of a post-2004 difference in the association between being above the 8.5% cap and increased turnover risk, we next present Table 3 which provides estimates of principal turnover risk with an indicator for being in a school above the 8.5% cap and an interaction term with the 8.5% cap and being in the post-2004 period. As in the first research question, we see that the percentage of special education students has little association with turnover risk. In addition, being in a school above the 8.5% cap also has little effect,<sup>6</sup> while the risk of turnover was lower after 2004, most significantly for out-district transfers. However, when looking at the interaction between the 8.5% cap and post-2004 observations with district and school fixed effects, we see a significant effect on turnover risk, with a .10-.15 increase in the odds ratio. This effect is strongest for in-district transfers, demonstrating a .24-.28 increase in the odds ratio of a principal transfer event if the school had more than 8.5% special education students after 2004.

<sup>6</sup> Throughout our analysis, we use terms such as ‘effect,’ ‘explanation,’ and ‘relationship’ in the statistical sense, and do not intend to imply causal relationships but rather how variance is accounted for in the models.



**Table 3***8.5% Cap with Pre and Post 2004 Interaction*

|  | All<br>Turnover    | All<br>Transfer   | In-<br>District<br>Transfer | Out-<br>District<br>Transfer | Exit<br>Profession |
|--|--------------------|-------------------|-----------------------------|------------------------------|--------------------|
| <i>Panel A: No Fixed Effects</i>       | 1                  | 2                 | 3                           | 4                            | 5                  |
| 8.5% Cap                               | 0.965<br>(0.030)   | 0.988<br>(0.045)  | 0.947<br>(0.051)            | 1.089<br>(0.091)             | 0.953<br>(0.037)   |
| After 2004                             | 0.656**<br>(0.039) | 0.816*<br>(0.068) | 0.892<br>(0.086)            | 0.646**<br>(0.101)           | 0.942<br>(0.070)   |
| After 2004 X 8.5% Cap                  | 1.049<br>(0.036)   | 1.094+<br>(0.059) | 1.219**<br>(0.075)          | 0.868<br>(0.090)             | 1.031<br>(0.046)   |
| % Special Education                    | 0.998<br>(0.010)   | 1.021<br>(0.013)  | 1.026<br>(0.017)            | 0.997<br>(0.020)             | 0.980<br>(0.013)   |
| Individual & School Controls           | X                  | X                 | X                           | X                            | X                  |
| Baseline Hazard                        | X                  | X                 | X                           | X                            | X                  |
| Year Fixed Effects                     | X                  | X                 | X                           | X                            | X                  |
| District Fixed Effects                 |                    |                   |                             |                              |                    |
| Observations                           | 104,159            | 98,038            | 98,038                      | 97,776                       | 98,038             |
| Pseudo R-squared                       | 0.0294             | 0.0226            | 0.0218                      | 0.0744                       | 0.0330             |
| BIC                                    | 104083             | 54302             | 41950                       | 21579                        | 70808              |
| Log Likelihood                         | -51660             | -26783            | -20607                      | -10439                       | -35036             |
| <i>Panel B: District Fixed Effects</i> | 6                  | 7                 | 8                           | 9                            | 10                 |
| 8.5% Cap                               | 0.935*<br>(0.030)  | 0.960<br>(0.046)  | 0.920<br>(0.051)            | 1.049<br>(0.096)             | 0.928+<br>(0.037)  |
| After 2004                             | 0.650**<br>(0.041) | 0.850+<br>(0.073) | 1.002<br>(0.100)            | 0.599**<br>(0.098)           | 0.901<br>(0.070)   |
| After 2004 X 8.5% Cap                  | 1.103**<br>(0.040) | 1.126*<br>(0.062) | 1.243**<br>(0.079)          | 0.927<br>(0.101)             | 1.093+<br>(0.051)  |
| % Special Education                    | 1.015<br>(0.010)   | 1.028+<br>(0.015) | 1.028<br>(0.018)            | 1.022<br>(0.028)             | 1.004<br>(0.013)   |
| Individual & School Controls           | X                  | X                 | X                           | X                            | X                  |
| Baseline Hazard                        | X                  | X                 | X                           | X                            | X                  |
| Year Fixed Effects                     | X                  | X                 | X                           | X                            | X                  |
| District Fixed Effects                 | X                  | X                 | X                           | X                            | X                  |
| Observations                           | 103,952            | 95,401            | 89,833                      | 89,257                       | 97,702             |
| Pseudo R-squared                       | 0.0524             | 0.0467            | 0.0494                      | 0.122                        | 0.0600             |
| BIC                                    | 113017             | 62417             | 47743                       | 28598                        | 80018              |
| Log Likelihood                         | -50311             | -25894            | -19554                      | -9694                        | -33948             |
| <i>Panel C: School Fixed Effects</i>   | 11                 | 12                | 13                          | 14                           | 15                 |
| 8.5% Cap                               | 0.904**<br>(0.034) | 0.908+<br>(0.050) | 0.887+<br>(0.058)           | 0.962<br>(0.099)             | 0.937<br>(0.044)   |

| <i>Panel C: School Fixed Effects</i> | 11                 | 12                | 13                 | 14               | 15                |
|--------------------------------------|--------------------|-------------------|--------------------|------------------|-------------------|
| After 2004                           | 0.615**<br>(0.041) | 0.000<br>(0.000)  | 0.000<br>(0.000)   | 0.000<br>(0.000) | 0.000<br>(0.000)  |
| After 2004 X 8.5% Cap                | 1.146**<br>(0.045) | 1.161*<br>(0.070) | 1.282**<br>(0.089) | 0.996<br>(0.117) | 1.136*<br>(0.058) |
| % Special Education                  | 1.023<br>(0.014)   | 1.044*<br>(0.022) | 1.031<br>(0.027)   | 1.050<br>(0.037) | 1.005<br>(0.018)  |
| Individual & School Controls         | X                  | X                 | X                  | X                | X                 |
| Baseline Hazard                      | X                  | X                 | X                  | X                | X                 |
| Year Fixed Effects                   | X                  | X                 | X                  | X                | X                 |
| School Fixed Effects                 | X                  | X                 | X                  | X                | X                 |
| Observations                         | 98,615             | 68,272            | 53,913             | 28,086           | 83,857            |
| Pseudo R-squared                     | 0.0437             | 0.0459            | 0.0424             | 0.0698           | 0.0744            |
| BIC                                  | 75298              | 34558             | 25055              | 11670            | 47323             |
| Log Likelihood                       | -37304             | -16945            | -12200             | -5528            | -23321            |

Note: \*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$ . Coefficients in Odds Ratios. Individual and school controls include principal gender, race, age, age squared, years experience, years experience squared, adjusted salary, school accountability rating, student achievement, enrollment, racial composition, % LEP, % FARM, level, and locale. Full results available upon request.

To gain a more intuitive understanding of the association between the 8.5% cap after its 2004 implementation, we present Table 4 which compares the association of the 8.5% cap with principal turnover risk, split into pre- and post-2004 observations. Here, across every iteration, we see that having more than 8.5% special education students had little association with principal turnover risk prior to 2004. However, after 2004, we see a considerable effect of the 8.5% cap on turnover risk, even while holding the actual proportion of special education students constant. For All Turnover, principals in schools above the 8.5% cap had a roughly .07 times higher odds ratio of leaving their position than those below the 8.5% cap after 2004. When looking at Panel C, which includes school level fixed effects and demonstrates the best BIC model fit, we see that overall, principals within the same school have a .39 higher odds ratio of switching districts and a .14 higher odds ratio of exiting the profession if they were above the 8.5% cap after 2004 than if they were below the cap.

**Table 4**

*8.5% Cap Pre- and Post-2004 on Principal Turnover*

|  | Pre-2004 |          |          |          |            | Post 2004 |          |          |          |            |
|--|----------|----------|----------|----------|------------|-----------|----------|----------|----------|------------|
|  | All      | All      | In-      | Out-     | Exit       | All       | All      | In-      | Out-     | Exit       |
|  | Turnover | Transfer | District | District | Profession | Turnover  | Transfer | District | District | Profession |
| <i>Panel A: No Fixed Effects</i>       | 1        | 2        | 3        | 4        | 5          | 6         | 7        | 8        | 9        | 10         |
| 8.5% Cap                               | 0.925*   | 0.963    | 0.974    | 0.977    | 0.918+     | 1.073*    | 1.177**  | 1.153**  | 1.213*   | 1.095*     |
|  | (0.034)  | (0.051)  | (0.061)  | (0.092)  | (0.043)    | (0.034)   | (0.055)  | (0.060)  | (0.106)  | (0.045)    |
| % Special Education                    | 1.010    | 1.022    | 1.021    | 1.013    | 1.001      | 1.011     | 1.062**  | 1.079**  | 1.010    | 1.017      |
|  | (0.014)  | (0.018)  | (0.023)  | (0.026)  | (0.018)    | (0.015)   | (0.019)  | (0.021)  | (0.030)  | (0.018)    |
| Individual & School Controls           | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| Baseline Hazard                        | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| Year Fixed Effects                     | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| Observations                           | 45,654   | 45,654   | 45,654   | 45,574   | 45,654     | 52,392    | 52,360   | 52,360   | 52,000   | 52,360     |
| Pseudo R-squared                       | 0.0250   | 0.0186   | 0.0195   | 0.0772   | 0.0366     | 0.0306    | 0.0268   | 0.0260   | 0.0664   | 0.0307     |
| BIC                                    | 46395    | 26194    | 19654    | 11091    | 33845      | 51706     | 25984    | 20678    | 9609     | 33599      |
| Log Likelihood                         | -22988   | -12888   | -9618    | -5342    | -16713     | -25592    | -12736   | -10084   | -4566    | -16544     |
| <i>Panel B: District Fixed Effects</i> | 11       | 12       | 13       | 14       | 15         | 16        | 17       | 18       | 19       | 20         |
| 8.5% Cap                               | 0.926+   | 0.987    | 0.983    | 1.020    | 0.889*     | 1.077*    | 1.204**  | 1.173**  | 1.216*   | 1.118*     |
|  | (0.036)  | (0.056)  | (0.065)  | (0.112)  | (0.043)    | (0.036)   | (0.061)  | (0.068)  | (0.115)  | (0.050)    |
| % Special Education                    | 1.022    | 1.019    | 1.027    | 0.997    | 1.025      | 1.043**   | 1.084**  | 1.088**  | 1.062    | 1.064**    |
|  | (0.015)  | (0.022)  | (0.027)  | (0.039)  | (0.019)    | (0.016)   | (0.022)  | (0.026)  | (0.040)  | (0.020)    |
| Individual & School Controls           | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| Baseline Hazard                        | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| Year Fixed Effects                     | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| District Fixed Effects                 | X        | X        | X        | X        | X          | X         | X        | X        | X        | X          |
| Observations                           | 45,334   | 42,898   | 38,652   | 36,301   | 44,950     | 52,074    | 47,811   | 43,929   | 39,184   | 51,219     |
| Pseudo R-squared                       | 0.0603   | 0.0589   | 0.0562   | 0.134    | 0.0751     | 0.0669    | 0.0573   | 0.0619   | 0.141    | 0.0651     |
| BIC                                    | 54027    | 32451    | 23638    | 15972    | 41497      | 59842     | 32069    | 24651    | 13608    | 41757      |
| Log Likelihood                         | -22023   | -12113   | -8841    | -4752    | -15885     | -24485    | -12005   | -9268    | -3943    | -15766     |

|                                      | Pre-2004          |                   |                             |                              |                    | Post 2004         |                    |                             |                              |                    |
|--------------------------------------|-------------------|-------------------|-----------------------------|------------------------------|--------------------|-------------------|--------------------|-----------------------------|------------------------------|--------------------|
|                                      | All<br>Turnover   | All<br>Transfer   | In-<br>District<br>Transfer | Out-<br>District<br>Transfer | Exit<br>Profession | All<br>Turnover   | All<br>Transfer    | In-<br>District<br>Transfer | Out-<br>District<br>Transfer | Exit<br>Profession |
| <i>Panel C: School Fixed Effects</i> | 21                | 22                | 23                          | 24                           | 25                 | 26                | 27                 | 28                          | 29                           | 30                 |
| 8.5% Cap                             | 0.966<br>(0.050)  | 0.980<br>(0.072)  | 1.004<br>(0.088)            | 0.910<br>(0.123)             | 0.969<br>(0.063)   | 1.082+<br>(0.047) | 1.198**<br>(0.079) | 1.141+<br>(0.087)           | 1.394**<br>(0.178)           | 1.145*<br>(0.067)  |
| % Special Education                  | 1.056*<br>(0.025) | 1.058+<br>(0.036) | 1.073<br>(0.047)            | 1.035<br>(0.054)             | 1.053+<br>(0.031)  | 1.046+<br>(0.025) | 1.085*<br>(0.038)  | 1.066<br>(0.043)            | 1.135+<br>(0.075)            | 1.172**<br>(0.038) |
| Individual & School Controls         | X                 | X                 | X                           | X                            | X                  | X                 | X                  | X                           | X                            | X                  |
| Baseline Hazard                      | X                 | X                 | X                           | X                            | X                  | X                 | X                  | X                           | X                            | X                  |
| Year Fixed Effects                   | X                 | X                 | X                           | X                            | X                  | X                 | X                  | X                           | X                            | X                  |
| School Fixed Effects                 | X                 | X                 | X                           | X                            | X                  | X                 | X                  | X                           | X                            | X                  |
| Observations                         | 38,213            | 22,268            | 16,184                      | 8,394                        | 29,675             | 42,773            | 20,771             | 15,808                      | 6,619                        | 27,642             |
| Pseudo R-squared                     | 0.0813            | 0.0413            | 0.0371                      | 0.0635                       | 0.102              | 0.0897            | 0.0461             | 0.0407                      | 0.0911                       | 0.0718             |
| BIC                                  | 26846             | 13330             | 9293                        | 4763                         | 17858              | 28942             | 12378              | 9284                        | 3737                         | 16854              |
| Log Likelihood                       | -13249            | -6500             | -4487                       | -2237                        | -8759              | -14247            | -5980              | -4439                       | -1684                        | -8212              |

\*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$ . Coefficients in Odds Ratios. Individual and school controls include principal gender, race, age, age squared, years experience, years experience squared, adjusted salary, school accountability rating, student achievement, enrollment, racial composition, % LEP, % FARM, level, and locale. Full results available upon request.

## Discussion

The literature surrounding principal turnover often concludes that schools with higher proportions of minoritized students are less likely to retain school leaders, however these findings lack many crucial policy considerations. The purpose of this paper has therefore been to interrogate the assumption that particular student demographics, such as students with disabilities, drive turnover, and present an alternative explanation accounting for the policy landscape.

Our findings contribute to the research base in several ways. First, prior research on principal turnover infrequently accounts for policy mandates, and studies that do, largely focus on federal education policy. While we have considerable evidence that mandates like NCLB's AYP are negatively associated with principal turnover, this research fails to consider state and local education policy. Provided that school funding models reveal that most public schools receive considerably more funding from state and local contributions, the policies and mandates crafted at this level have significantly higher stakes for school leaders. By emphasizing the importance of state and local education policy, we shed light on accountability pressures that may supersede or further enforce federal mandates. We also contribute to the field's understanding of special education and school leaders. Prior research has concluded that increases in students receiving special education services are negatively associated with principal turnover. While our research finds that schools with higher proportions of students with disabilities are more likely to experience principal turnover, we examine this phenomenon in light of the policy surrounding these students, finding that policy, not students, drive turnover.

In many ways, literature has often placed the burden of turnover onto minoritized students. In fact, the commonly accepted narrative that specific student demographics drive turnover is dangerous without considering the policies that surround minoritized students. These narratives have infiltrated our field, impacting where teachers and school leaders ultimately serve. Our findings display a clear shift in how principal turnover is influenced by the proportion of special education students by observing this trend before and after the implementation of the special education cap. By shifting the conversation to the policies driving turnover, we can better focus on solutions to retain school leaders.

As boundary spanners, principals ensure that local policies are translated from theory to practice. For policies that positively impact the schools and students they serve, this role can improve overall job satisfaction, subsequently decreasing their likelihood for turnover. Unfortunately, school leaders are bounded to the facilitation of these policies even when they are inconsistent with their own personal beliefs. In such instances, the role conflict that emerges may prove detrimental for schools. In fact, the extant literature finds that role conflict, particularly as it relates to a misalignment of values between organizations and leaders, is a significant factor of job dissatisfaction, and a subsequent driver of turnover (Hom & Griffeth, 1995). The inconsistent values coupled with the ethical dilemmas faced by school leaders in Texas under the constraints of the 8.5% cap represent a clear image violation (Hom et al., 2016; Lee et al., 1999). Thus, our paper aimed to see if this relationship would be evident on a large scale. Our results, in conjunction with the anecdotal evidence from the OSEP report and *Houston Chronicle*, begin to shed light on how this image violation impacted school leader turnover. In the next section, we conclude our paper by discussing the policy implications of school leaders as boundary spanners.

### Policy Implications

While much of the extant literature on principal turnover has focused on the impact of sweeping national reforms like NCLB, there is a scarcity of research examining the impact of policies at the state and local level. Our study provides strong evidence that policy shifts at state-

level can influence principal career intentions. Indeed, state and local education policy often require shifts that are more immediately implemented than federal education policy. For example, curriculum decisions are made at the local level, a reform that requires administrators and teachers to immediately modify lessons, materials, and instruction (Coburn & Russel, 2008; Donaldson & Woulfin, 2018; Woulfin, 2018). While federal mandates may require achievement tests to track student progress, the testing requirements, distribution, and policies, are delegated at the state-level (McClain & Pfeiffer, 2012). Similarly, provided the minute portion of school funding delegated by the federal government, districts and administrators are more apt to focus on state and local mandates that could have a greater impact funding (Baker, 2014). Moreover, state and local policies often play a pivotal role in adapting federal mandates to a local context. For example, while *Race to the Top* incentivized more rigorous teacher evaluations, this implementation varied from state to state. Similarly, while many states adopted the Danielson Framework to achieve adequate teacher evaluations, the tenants and scoring varied significantly from state to state (Lavigne, 2020; Robertson-Kraft & Zhang, 2016). Provided the immediate relevance and significance of state and local education policy, it is imperative that we further investigate state-level education policy.

These results also shed light on policy mismatch at the state and local level. Federally, IDEA mandates that schools provide adequate special education services and serve students with disabilities in the least restrictive environment. This is often costly for schools tasked with addressing these mandates with initiatives such as team teaching, which require additional expenditures for staffing, professional development, and other resources (Pazey & Cole, 2012). While IDEA mandates increased focus and expenditures for students with disabilities, the Texas special education cap stands in stark contrast to this initiative by focusing on the of reduction special education expenditures. This clear policy mismatch presents several legal and moral dilemmas for school leaders tasked with addressing both state and federal mandates. The *Houston Chronicle's* coverage of the special education cap sheds light on the tactics school leaders engaged in to reduce the number of students receiving services (Rosenthal, 2016c). In many cases, principals essentially pushed students out of schools in an effort to reduce the proportion of students receiving special education services. In some instances, this spurred behavioral infractions resulting in expulsion as opposed to an IEP meeting as dictated by IDEA. In other instances, school leaders urged special education coordinators to declassify students with an obvious need for services, such as students who were visually impaired.

While some school leaders found ways to address the special education cap in unethical ways, this may not be the case for all school leaders. Our findings reveal that schools that failed to meet the 8.5% cap had higher principal turnover. It is unclear to what extent this policy pushed out principals who were unwilling to adhere to an ethically conflicting policy. This begs a larger question; did we retain school leaders who are willing to do *anything* to meet performance indicators? If so, does that also mean that we lost principals who were unwilling to adhere to discriminatory policies? This inquiry has tremendous implications for state and local education policy and is especially relevant now, as we enter a new recession and face looming school budget cuts. While this loss in school funding is inevitable, we must grapple with the unintended consequences of reducing expenditures for schools.

### Appendix A

#### Appendix Table A

*8.5% Cap Distance with Pre and Post 2004 Interaction*

| <i>Panel A: No Fixed Effects</i> | All Turnover       | All Transfer      | In-District Transfer | Out-District Transfer | Exit Profession   |
|----------------------------------|--------------------|-------------------|----------------------|-----------------------|-------------------|
|                                  | 1                  | 2                 | 3                    | 4                     | 5                 |
| 8.5% Cap Distance                | 0.999<br>(0.003)   | 1.007+<br>(0.004) | 1.001<br>(0.005)     | 1.009+<br>(0.005)     | 0.994+<br>(0.003) |
| After 2004                       | 0.678**<br>(0.038) | 0.855*<br>(0.065) | 0.964<br>(0.087)     | 0.627**<br>(0.089)    | 0.968<br>(0.068)  |
| After 2004 X 8.5% Cap Distance   | 0.998<br>(0.004)   | 1.001<br>(0.005)  | 1.018**<br>(0.006)   | 0.973**<br>(0.009)    | 0.996<br>(0.005)  |
| Individual & School Controls     | X                  | X                 | X                    | X                     | X                 |
| Baseline Hazard                  | X                  | X                 | X                    | X                     | X                 |
| Year Fixed Effects               | X                  | X                 | X                    | X                     | X                 |
| District Fixed Effects           |                    |                   |                      |                       |                   |
| Observations                     | 104,159            | 98,038            | 98,038               | 97,776                | 98,038            |
| Pseudo R-squared                 | 0.0293             | 0.0225            | 0.0217               | 0.0748                | 0.0330            |
| BIC                              | 104073             | 54295             | 41942                | 21560                 | 70797             |
| Log Likelihood                   | -51661             | -26785            | -20609               | -10435                | -35037            |

| <i>Panel B: School Fixed Effects</i> | 6                 | 7                  | 8                  | 9                  | 10                 |
|--------------------------------------|-------------------|--------------------|--------------------|--------------------|--------------------|
| 8.5% Cap Distance                    | 1.002<br>(0.002)  | 1.007+<br>(0.004)  | 0.999<br>(0.004)   | 1.017**<br>(0.006) | 1.006*<br>(0.003)  |
| After 2004                           | 0.998<br>(0.017)  | 0.958<br>(0.026)   | 1.043<br>(0.033)   | 0.812**<br>(0.043) | 0.730**<br>(0.016) |
| After 2004 X 8.5% Cap Distance       | 1.005*<br>(0.002) | 1.013**<br>(0.004) | 1.020**<br>(0.005) | 1.002<br>(0.008)   | 1.010**<br>(0.003) |
| Individual & School Controls         | X                 | X                  | X                  | X                  | X                  |
| Baseline Hazard                      | X                 | X                  | X                  | X                  | X                  |
| Year Fixed Effects                   | X                 | X                  | X                  | X                  | X                  |
| School Fixed Effects                 | X                 | X                  | X                  | X                  | X                  |

|  | All Turnover       | All Transfer       | In-District Transfer | Out-District Transfer | Exit Profession    |
|--|--------------------|--------------------|----------------------|-----------------------|--------------------|
| <i>Panel B: School Fixed Effects</i>   | 6                  | 7                  | 8                    | 9                     | 10                 |
| Observations                           | 98,615             | 68,272             | 53,913               | 28,086                | 83,857             |
| Pseudo R-squared                       | 0.0436             | 0.0457             | 0.0424               | 0.0701                | 0.0744             |
| BIC                                    | 75293              | 34552              | 25045                | 11656                 | 47313              |
| Log Likelihood                         | -37307             | -16948             | -12201               | -5526                 | -23322             |
| <hr/>                                  |                    |                    |                      |                       |                    |
| <i>Panel C: District Fixed Effects</i> | 11                 | 12                 | 13                   | 14                    | 15                 |
| 8.5% Cap Distance                      | 1.006**<br>(0.001) | 1.002<br>(0.002)   | 1.001<br>(0.002)     | 1.002<br>(0.004)      | 1.007**<br>(0.001) |
| After 2004                             | 0.942**<br>(0.015) | 0.852**<br>(0.021) | 0.910**<br>(0.026)   | 0.739**<br>(0.034)    | 0.709**<br>(0.014) |
| After 2004 X 8.5% Cap Distance         | 1.004*<br>(0.002)  | 1.008**<br>(0.003) | 1.008**<br>(0.003)   | 1.010*<br>(0.005)     | 1.007**<br>(0.002) |
| Individual & School Controls           | X                  | X                  | X                    | X                     | X                  |
| Baseline Hazard                        | X                  | X                  | X                    | X                     | X                  |
| Year Fixed Effects                     | X                  | X                  | X                    | X                     | X                  |
| District Fixed Effects                 | X                  | X                  | X                    | X                     | X                  |
| Observations                           | 103,952            | 95,401             | 89,833               | 89,257                | 97,702             |
| Pseudo R-squared                       | 0.0523             | 0.0466             | 0.0493               | 0.122                 | 0.0600             |
| BIC                                    | 113011             | 62410              | 47735                | 28583                 | 80006              |
| Log Likelihood                         | -50314             | -25896             | -19556               | -9692                 | -33948             |

\*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$ . Coefficients in Odds Ratios. Individual and school controls include principal gender, race, age, age squared, years experience, years experience squared, adjusted salary, school accountability rating, student achievement, enrollment, racial composition, % LEP, % FARM, level, and locale. Full results available upon request.



## Appendix B

## Appendix Table B

## 8.5% District Cap with Pre and Post 2004 Interaction

| <i>Panel A: No Fixed Effects</i>       | All Turnover       | All Transfer       | In-District Transfer | Out-District Transfer | Exit Profession   |
|--|--------------------|--------------------|----------------------|-----------------------|-------------------|
|  | 1                  | 2                  | 3                    | 4                     | 5                 |
| 8.5% Cap                               | 0.934+<br>(0.033)  | 0.806**<br>(0.041) | 0.736**<br>(0.043)   | 1.021<br>(0.107)      | 1.043<br>(0.048)  |
| After 2004                             | 0.656**<br>(0.041) | 0.727**<br>(0.064) | 0.773*<br>(0.079)    | 0.630**<br>(0.109)    | 1.030<br>(0.082)  |
| After 2004 X 8.5% Cap                  | 1.024<br>(0.042)   | 1.231**<br>(0.077) | 1.402**<br>(0.099)   | 0.900<br>(0.118)      | 0.900+<br>(0.050) |
| % Special Education                    | 1.001<br>(0.008)   | 1.039**<br>(0.011) | 1.051**<br>(0.014)   | 1.003<br>(0.018)      | 0.973*<br>(0.011) |
| Individual & School Controls           | X                  | X                  | X                    | X                     | X                 |
| Baseline Hazard                        | X                  | X                  | X                    | X                     | X                 |
| Year Fixed Effects                     | X                  | X                  | X                    | X                     | X                 |
| Observations                           | 104,158            | 98,037             | 98,037               | 97,775                | 98,037            |
| Pseudo R-squared                       | 0.0294             | 0.0229             | 0.0222               | 0.0744                | 0.0330            |
| BIC                                    | 104075             | 54284              | 41935                | 21580                 | 70805             |
| Log Likelihood                         | -51656             | -26774             | -20600               | -10439                | -35035            |
| <i>Panel B: District Fixed Effects</i> | 6                  | 7                  | 8                    | 9                     | 10                |
| 8.5% Cap                               | 0.902*<br>(0.043)  | 0.754**<br>(0.052) | 0.698**<br>(0.056)   | 0.906<br>(0.118)      | 1.053<br>(0.064)  |
| After 2004                             | 0.645**<br>(0.045) | 0.746**<br>(0.071) | 0.866<br>(0.095)     | 0.555**<br>(0.102)    | 0.997<br>(0.086)  |
| After 2004 X 8.5% Cap                  | 1.075<br>(0.052)   | 1.263**<br>(0.091) | 1.401**<br>(0.115)   | 1.005<br>(0.145)      | 0.943<br>(0.059)  |
| % Special Education                    | 1.013<br>(0.009)   | 1.039**<br>(0.013) | 1.040**<br>(0.016)   | 1.030<br>(0.025)      | 0.995<br>(0.011)  |
| Individual & School Controls           | X                  | X                  | X                    | X                     | X                 |

|  | All Turnover | All Transfer | In-District Transfer | Out-District Transfer | Exit Profession |
|--|--------------|--------------|----------------------|-----------------------|-----------------|
| <i>Panel B: District Fixed Effects</i> | 6            | 7            | 8                    | 9                     | 10              |
| Baseline Hazard                        | X            | X            | X                    | X                     | X               |
| Year Fixed Effects                     | X            | X            | X                    | X                     | X               |
| District Fixed Effects                 | X            | X            | X                    | X                     | X               |
| Observations                           | 103,952      | 95,401       | 89,833               | 89,257                | 97,702          |
| Pseudo R-squared                       | 0.0523       | 0.0469       | 0.0496               | 0.122                 | 0.0597          |
| BIC                                    | 113020       | 62405        | 47734                | 28597                 | 80042           |
| Log Likelihood                         | -50312       | -25888       | -19550               | -9693                 | -33960          |
| <hr/>                                  |              |              |                      |                       |                 |
|  | 11           | 12           | 13                   | 14                    | 15              |
| <i>Panel C: School Fixed Effects</i>   |              |              |                      |                       |                 |
| 8.5% Cap                               | 0.902*       | 0.729**      | 0.673**              | 0.875                 | 1.056           |
|  | (0.045)      | (0.053)      | (0.057)              | (0.119)               | (0.068)         |
| After 2004                             | 0.618**      | 0.000        | 0.000                | 0.000                 | 0.000           |
|  | (0.045)      | (0.000)      | (0.000)              | (0.000)               | (0.000)         |
| After 2004 X 8.5% Cap                  | 1.101+       | 1.349**      | 1.512**              | 1.066                 | 0.977           |
|  | (0.057)      | (0.103)      | (0.132)              | (0.161)               | (0.065)         |
| % Special Education                    | 1.019        | 1.051**      | 1.045+               | 1.050                 | 1.000           |
|  | (0.013)      | (0.020)      | (0.024)              | (0.033)               | (0.016)         |
| Individual & School Controls           | X            | X            | X                    | X                     | X               |
| Baseline Hazard                        | X            | X            | X                    | X                     | X               |
| Year Fixed Effects                     | X            | X            | X                    | X                     | X               |
| School Fixed Effects                   | X            | X            | X                    | X                     | X               |
| Observations                           | 98,615       | 68,272       | 53,913               | 28,086                | 83,857          |
| Pseudo R-squared                       | 0.0436       | 0.0462       | 0.0429               | 0.0699                | 0.0743          |
| BIC                                    | 75306        | 34544        | 25042                | 11669                 | 47328           |
| Log Likelihood                         | -37308       | -16938       | -12194               | -5527                 | -23324          |

\*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$ . Coefficients in Odds Ratios. Individual and school controls include principal gender, race, age, age squared, years experience, years experience squared, adjusted salary, school accountability rating, student achievement, enrollment, racial composition, % LEP, % FARM, level, and locale. Full results available upon request.

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## About the Authors

### Zoë Mandel

The Pennsylvania State University

[zrm9@psu.edu](mailto:zrm9@psu.edu)

Zoë Mandel is a doctoral candidate in the Department of Education Policy Studies at The Pennsylvania State University.

### Andrew Pendola

Auburn University

[pendola@auburn.edu](mailto:pendola@auburn.edu)

<https://orcid.org/0000-0002-3726-4072>

Andrew Pendola is an assistant professor of Educational Leadership in the department of Educational Foundations, Leadership, and Technology at Auburn University. Dr. Pendola's research centers on educator labor markets, specifically leadership recruitment, retention, and turnover.

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