

DETERMINANTS OF PRINCIPAL PAY IN THE STATE OF TEXAS

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The purpose of the study was to examine district, campus, and community determinants of principal's salaries using a spatial econometric framework. Among the district variables business tax ( $p = 0.001$ ), property tax ( $p < .01$ ), and the Herfindahl Index (measure of competition) were statistically significant indicators of principal salaries. The results suggest that more affluent districts tend to pay principals higher salaries, which was expected. Regarding campus characteristics, the percent of economically disadvantaged was not a statistically sound indicator ( $p = 0.468$ ), but campus enrollment was significant ( $p = <.01$ ). Interestingly as the percentage of economically disadvantaged students increased, the principal salary decreased. In contrast, as student enrollment increases the salary of principals increases, suggesting that principals of larger campuses earn higher salaries. Interestingly, student achievement was not a statistically significant predictor of principals' salary given that pay for performance in Texas is at the forefront of political debate. Among the variables examined at the community level, only the percentage of homes owner occupied ( $p = 0.002$ ) was found to be a statistically significant indicator of principal salary ( $p = .002$ ). The lack of evidence on reforms, such as determinants of principal salary, points to data and research deficiencies to be addressed in order to learn more about their effects and make sound public policies. The paper utilized a spatial regression approach to examine the determinants of principal salary using data from the local, state, and national data sources. Principal salaries are viewed from several lenses in this study by

considering effective outcomes of pay defined by actual salaries and market considerations for pay as defined by community, organizational, and human capital variables. Literature from the private sector as well as from the public school setting was used as a theoretical underpinning for the hypotheses set forth in this study. Because of the chosen research approach, the research results may lack generalizability. Therefore, researchers are encouraged to test the proposed propositions further. The paper includes implications for educational policy development related to pay for contribution, rather than pay based on tenure, experience, or district wealth. The research also fulfils an identified policy need to study how principal salaries are determined.

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Elizabeth Ann Asbury

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## CHAPTER 1

### INTRODUCTION

The passage of No Child Left Behind (NCLB) Act in 2002 focused the nations' attention on the need to reform public education. As a result, state and federal accountability systems are increasingly placing the burden of school success - and individual student achievement - squarely on the shoulders of school administrators. A proposal to institute merit pay plans for teachers, which historically have not met with such success in public education, was among the most hotly debated recommendations in the report. There is a revived interest in performance-related pay (PRP) in the United States to recruit and retain highly effective teachers (Podgursky & Springer, 2007). Liang and Akiba (2015) refer to the 2012 State of the Union address when President Barack Obama reiterated a strong desire to improve teacher quality through reforming teacher compensation, saying, "Teachers matter. So instead of bashing them, or defending the status quo, let's offer schools a deal. Give them the resources to keep good teachers on the job, and reward the best ones" (Obama, 2012). Although greater attention has been paid to teacher labor markets and teaching quality than to principal labor markets and principal quality, the two are highly interconnected. This is partly because most principals rise from the ranks of teachers but also because principals may influence teacher assignments across schools, teacher hiring, and retention (Beteille, 2011). In a time of high stakes testing and morphing educational philosophy to educate students who are vastly different from their counterparts 10 years ago, it is imperative that school districts attract and hire administrators who can successfully lead the academic initiatives. Principal role changes frequently cited in the literature include

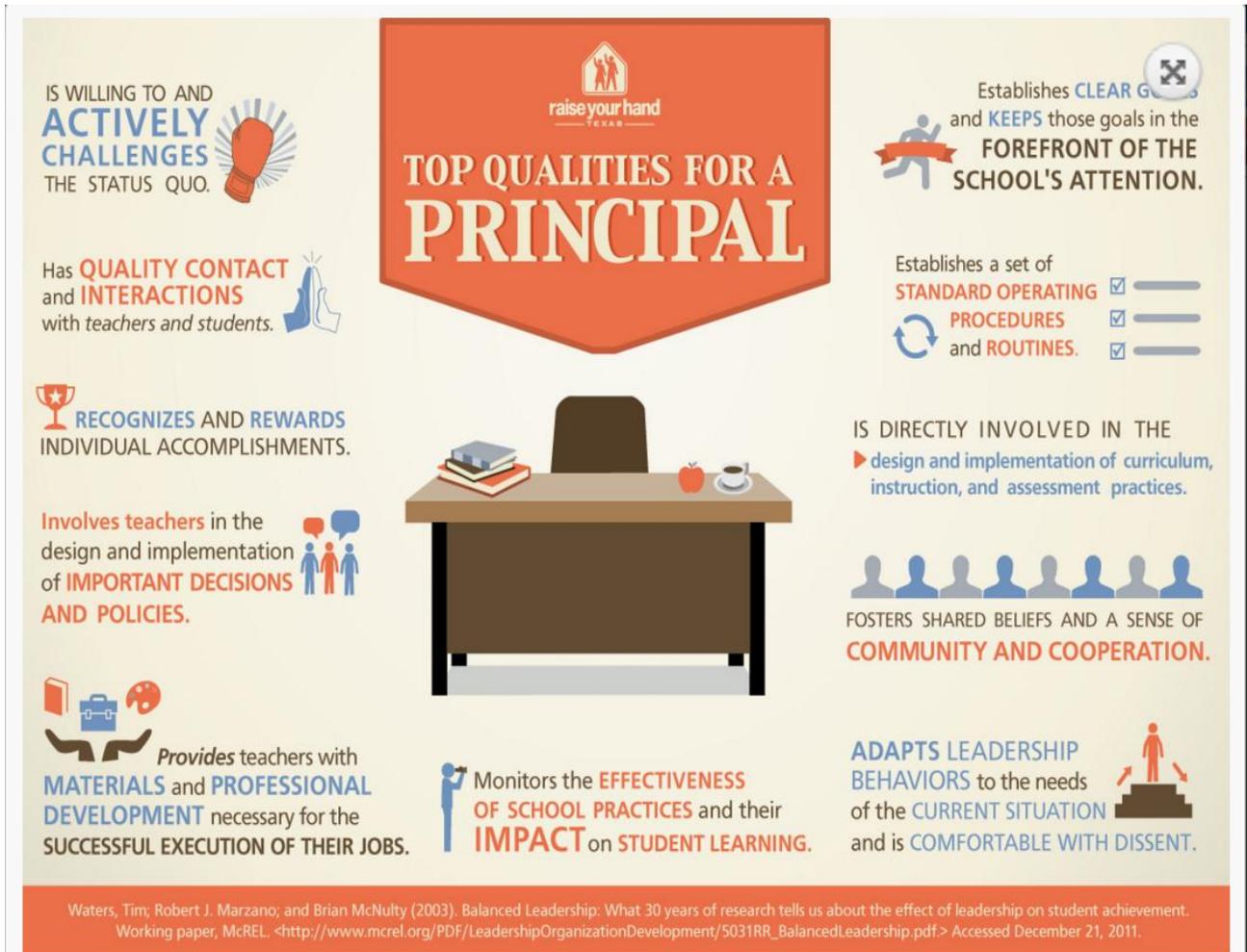
site-based or collaborative decision making, increased pressures related to high stakes testing and accountability, the increased role of management, altered relationships with community, and dilemmas related to school choice, to name a few (Williams & Portin, 1997; Murphy, 1994; Hart & Bredesen, 1996; Whitaker, 1999). Despite some of their positive impacts, these role changes have led to an increase in overall workloads and have contributed to increased stress for principals (Pounder & Merrill, 2011; Whan & Thomas, 1996). During the past four decades, the roles and duties of principals have changed. Historically, principals focused on hiring budget decisions, scheduling, and basic building maintenance (Colden & Spillane, 2007). However, principals today are expected not only to undertake managerial functions but also to be instructional leaders (Carraway & Young, 2015). Because there are fewer principals than teachers involved in public education systems and because principals may exert influence over teacher labor markets, principals are a potentially critical leverage point for influencing school improvement through state education policies (Baker, Punswick, & Belt, 2010). The principal, coming in only second to the teacher, influences student learning (Anderson & Reynolds, 2015; Leithwood, Day, Sammons, Harris, & Hopkins, 2006; Leithwood & Jantzi, 1999). Moreover, the principal's impact on student learning comes indirectly from establishing a culture in which teaching and learning takes place (Williams, 2015). Given the impact of a stable principal on student achievement, and the role of compensation in determining the quality of people who pursue this career path, it is striking how little is known about the structure of principal compensation.

Today's principal must be so much more than a manager or 'task master'. While principals have advanced degrees, average 10 years of classroom teaching experience

and manage huge staffs, they trade their 180-190 day work year for one that exceeds 220 days; take on enormous responsibilities and headaches; lose their job security; and they earn just a little more or even less on a day-to-day basis than they do as a teacher (Whitaker, 2003). Waters, Marzano, and McNulty, (2003) focus on a framework of 21 key leadership responsibilities, which if carried out effectively will impact positively on student achievement. The state of Texas has developed a new evaluation system for Principals, the Texas Principal Evaluation and Support System (TPESS) based on those 21 leadership responsibilities. McRel International and the Texas Education Agency (2014) produced research regarding principal effectiveness, and those traits, are what formed the appraisal instrument. Some may argue that 21 leadership responsibilities are too many and how can someone be strong in those many areas? First, they did not find sufficient inter-correlations among the 21 responsibilities to warrant eliminating or combining any of them. They found that each responsibility is distinct enough to include it in the 21 responsibilities. This finding indicates strong construct validity in the results of the meta-analysis (Waters & Cameron, 2007). This type of research proved that principals must be multi-talented and ready for many different levels of job responsibility. Second, they found an empirical relationship between the 21 leadership responsibilities and change. That is, principals reported varying their emphasis of the 21 responsibilities based on their estimates of the order of magnitude of change associated with improvement initiatives. Keeping this research in mind, there is still little to no correlation to a school leader who can learn these 21 leadership responsibilities and be compensated for that task. Principals appear to evenly balance their emphasis of all 21 leadership responsibilities when leading change

perceived as routine or first-order, but this is not evident in their levels of salary.

(Waters & Cameron, 2007). Figure 1 illustrates the top qualities for a principal based on the work of Waters, Marzano, and McNulty (2003).



Note: Retrieved from [www.raiseyourhandtexas.org](http://www.raiseyourhandtexas.org)

Figure 1. Top qualities for a principal.

This type of research makes it very clear what a principal looks like and how their leadership skills affect their campus. However, it is not clear how market forces related to the choice of neighborhood and school provide strong incentives for principals to act in ways to foster highly effective schools. Rothstein (2008) discusses a number of

potential impediments to such market forces and reports evidence consistent with absence of strong demand for effective schools in some communities.

The implementation of accountability standards for educators, as established nationwide in NCLB, reveals an assumption that educators impact student outcomes. In high performing schools, principals play a crucial role in establishing high expectations for state and federal standards. As the era of accountability looms large in education, it appears that the role of the principal has become even more tightly coupled to that of teachers and students. Principals have always been deemed to establish a culture that supports teaching and learning, but their job security has not always depended on it (Williams & Portin, 1997). They also work to create an environment where everyone has a stake in school improvement. Building level principals, like classroom teachers, are responsible for the achievement of students under their watch (Cunningham & Cordeiro, 2006; Sergiovanni, 2006), but the results are typically not determinants of their salary. In addition, a large percentage of this influence on student performance is a function of a given principal's role in recruiting and retaining a quality teaching force in their school. While principals are not always directly involved in curricular decisions, their ability to function as effective leaders can translate to improved higher performance on high-stakes standardized testing. The influences of how a principal is paid can range from the impending shortage of professionals willing to take on the arduous job to increasing responsibilities in the position National Association for Secondary School Principals (NASSP, 2014). The first factor mentioned, a shortage in principals, stems from the fact that teachers are not willing to apply for those leadership positions. As reported by Hancock and Müller

(2014), the motivation of teachers to pursue the principalship and of serving principals to remain in their positions is significantly influenced by factors that enhance satisfaction with the role of principal. Failure to be appropriately recognized for one's good efforts can serve as a disincentive for a principal to continue to serve in that position. This finding suggests that persons responsible for hiring school principals may need to find ways to recognize principals more overtly and aggressively in order to attract and retain qualified principals in the profession (Hancock & Müller, 2014). According to Marzano, Waters, and McNulty (2005), principal and teacher quality account for nearly 60% of a school's total impact on student achievement, while principals alone account for a full 25% of the variance in student achievement. A plausible explanation for these findings, as reported by the Hirsch (2004), is that many of the critical issues within the area of professional development involve principals acting as strong instructional leaders, prioritizing and providing resources, and allowing teachers to direct their own learning (Emerick, Hirsch, & Berry, 2005). However, school districts throughout the country are realizing the difficult task of not just recruiting good administrators, but also of retaining them. The attrition rates of principals leaving their positions are high in many nations of the world (Battle & Gruber, 2010; Huber, 2010). Taking all of these issues into account, a number of factors contribute to this state of affairs that include: salary, compensation and benefits, student accountability, time requirements, job stress, increased instructional responsibilities, and changes in student demographics, and they affect schools situated in urban, suburban and rural areas alike (Burdette & Schertzer, 2005). Further noted in this body of literature, individuals as employees have a vested interest in pay (Heneman, 1985), and "pay matters to most employees" (Terpstra & Honoree,

2003, p.67). Because salary determines a person's quality of life, it can also have an effect on how that individual performs their duties and job responsibilities. Not only does pay determine economic benefits for quality of life associated with goods and services, but it also has psychological implications for the employee. For many organizations, pay is the largest line-item category in an operational budget. In fact it has been suggested that pay may account for as much as 85% of a total operational budget, especially in public school districts (Owings, Kaplan, Nunnery, Marzano, Myran, & Blackburn, 2006; Webb & Norton, 2003).

Billger (2007) explores the relationship between school accountability and principal salaries to find, interestingly, that principals receive lower salaries in schools that are under improvement required to meet state, local, and district accountability goals. There are a number of explanations offered to account for this, namely that lower performing schools are often in lower funded districts. Further, Cullen and Mazzeo (2008) investigate the link between principal and salary growth, employment transitions and principal effectiveness as measured by state accountability rating, achievement, and productivity using Texas administrative data. In their study, they found a positive relationship between salary, accountability, and student achievement. In addition, Cullen and Mazzeo (2008) report that principals of highly rated and higher achieving schools are more likely to persist in their current positions. These results suggest that a higher accountability rating and higher achievement raises salary and job security, but the possible influences of confounding factors such as peer composition suggest caution in interpretation of the results.

Past research has found that the principal is a key player in school effectiveness (Brookover, 1978) and in the everyday operation of the school and in school change (Fullan, 1991, 2008). Principals may also separately affect classrooms within schools by manipulating such variables as class size, efficient allocations of teachers to students and student ability grouping and by monitoring the content and nature of instruction and student assessments (Dhuey & Smith, 2014). School leadership has become even more critical over the last decades as the public school system responds to the changing conditions of the 21st century (Finnigan & Stewart, 2009). With this information, why aren't our school leaders being paid based on the amount of work or performance levels from their campuses? Financially speaking, a school district allocates 80 to 85% of its budget for salaries and personnel costs. In order to ensure the leader has the ability to do all of the tasks previously mentioned, compensation reviews and separate salary schedules for the campus leaders may be a driving force to produce higher academic achievement.

Papa, Lankford, and Wyckoff (2002) did explore the fact that salary could have a positive effect by controlling several school measures, such as the number of students, percentages of at-risk students, limited English proficiency (LEP) students, non-White students, and uncertified teachers. Papa et al. (2002) set school measures at one standard deviation below the mean and then above the mean. This technique proved that the *disadvantaged school* was over eight times more likely to lose their principal to another school than the *advantaged school*. However, when salary was set to one standard deviation above the mean at the *disadvantaged school*, it became just as likely as the mean school to retain its principal. When the salary was increased to two

standard deviations above the mean for the *disadvantaged school*, the probability of retaining the principal equals that of the *advantaged school*. Papa's findings demonstrate how salary can be a contributing factor in principal retention even if the campus has negative connotations regarding student achievement, student demographics, or staff make-up. These findings indicate the difference salary can make when hiring and/or retaining a principal to lead a low performing or high at-risk campus.

Compensation of principals is often cited as a reason why candidate pools are low and by providing more fiscal incentive has been proposed as a way to entice more qualified people into school leadership (Pijanowski & Brady, 2009). Larger, wealthier districts may not experience a shortage in qualified candidates primarily because of their salary schedules and the compensation they offer their school administrators. Certain larger school districts have the ability to not only pay more, but also establish programs that provide incentive based compensation to their administrators. Pittsburgh Public Schools have implemented the Pittsburgh Urban Leadership System for Excellence (PULSE) Initiative which works toward improving school leadership and student learning. A key component of PULSE is the Pittsburgh Principal Incentive Program (PPIP), a system of performance-based evaluation and compensation through which the district provides principals with support, assistance, and performance-based financial awards tied to measures of their leadership practices and student achievement growth (Hamilton, Engberg, Steiner, Nelson, & Yuan, 2012). The system allowed for an annual salary increase of up to \$2000 based on performance and an annual bonus of up to \$10,000 based on student achievement growth. The final recommendations for

the Rand Report (Hamilton, et.al., 2012) indicates that the purpose of the incentive plan was helpful mostly based on the professional learning that allowed the principal to grow as a campus leader. This incentive plan is only one example of a larger, urban district having the ability to implement a pay-for-performance versus a smaller, rural district that wouldn't have that ability.

Given the importance of principals, and the role of compensation in determining the quality of people who opt to pursue this career path, it is shocking that we know so little about principal compensation beyond average salaries and how they compare to those for teachers (Goldhaber, 2007). It is known how much principals are paid nationally on average and relative to teacher strategies, and how this has changed over time. The National Association of Elementary School Principals reports that many factors discourage teachers from pursuing a principal's job. Many teachers, however, are expressing reluctance to move out of classrooms and into the main office (Stone-Johnson, 2009a, 2009b; Howley, Andrianaivo, & Perry, 2005; Jordan, McCauley, & Comeaux, 1994).

There are people who are qualified for the job, yet fewer people continue to pursue it. Stone-Johnson (2014) argues that the reasons for this discrepancy are multifold and complex: some argue that teachers do not want to move into leadership because of the increased workload; others look to the loss of classroom time with students as teachers transition into more administrative roles (Donaldson, 2007), or the complex relationships involved with leadership (Cooley & Shen, 2000; Walker & Kwan, 2009) as inhibiting factors. In a national poll, superintendents replied that these top the list: compensation insufficient for responsibilities, too much time required for the job, and too stressful. The

difficult task is to understand how school principals are paid and if or why those numbers are different based on difficult assignments, population of students, campus rating due to assessments, or their measure of performance. This information is arduous to find because there are few studies that focus on the determinants of principal pay. This study focused on those factors by examining district and community factors that influence the principal's base salary. Within the research, the Herfindahl Index was used to measure the size of a school district (student enrollment) in relation to the total enrollment among all school districts in a given county and is an indicator of the amount of competition. This allowed the salary data to be compared among districts in order to correlate a positive impact on pay. The lack of evidence on the efficacy of reforms, such as determinants of principal salary, point to research deficiencies that must be addressed in order to learn more about their effects and make sound public policies.

## CHAPTER 2

### REVIEW OF LITERATURE

The amount of educational data and research is overwhelming. Studies are conducted on everything from the gender achievement level of students to the nutritional level of cafeteria lunches. Studies are conducted to find solutions to challenges in the educational arena for many different reasons, such as: to test the validity of stand-alone products to service students, find solutions to educating a low-socioeconomic population and to find teacher professional learning. Those listed are a minuscule sampling of what type of subject can steer an educational study.

Unfortunately the data and knowledge regarding principal pay is low on the level of concern, and it is shocking that we know so little about the structure of principal compensation (Goldhaber, 2007). The Wallace Foundation (2010) concluded that leadership is second only to classroom instruction as an influence on student learning. With that being understood, why then is there not more attention paid to principal compensation? Theories, empirical evidence, and common sense all point to principals as a key factor in establishing the conditions that form successful schools (Marzano, Waters, & McNulty, 2005). Recent economical literature has given much attention to the salary determinants of the chief executive officers of American industrial corporations as well as empirical tests of the relationship between executive salaries and market structure variables. Indeed, companies frequently employ workers across the nation, but how do they decide what to pay their workers located in different regions? Should they focus on a set of fixed geographical pay offsets? In other words, if pay for a software developer is 30% higher in New York than Chicago, should the

same pay difference exist for financial analysts? A smaller but growing body of literature exists for the academic-sector including but not limited to, salary differences in the Principalship by gender and ethnicity. However, investigations of salary as a motivating factor for career advancement are largely confined to teachers and superintendents. For example, in a study of superintendents in Texas schools, Meier and O'Toole (2002) found that revenue per pupil, experience, education, and past school performance on test scores are important salary determinants. Further in their work, Ehrenberg, Chaykowski, and Ehrenberg (1998) revealed that New York superintendents moved between districts for salary increases more than any other factor, and their pay structure was surprisingly tied to tax rates more than anything else. Notably, their study demonstrated that student achievement, school performance, and standardized test score results had little to no bearing on superintendent mobility. In fact, no measure of successful outcomes influenced superintendent mobility more than increase in salary. Keeping that in mind, it is important to understand the determinants of principal salaries and how that one factor can change an entire leadership component on a campus. In more recent work, Akiba and Reichardt (2004) revealed those findings hold constant for Colorado principals, who in their study, were motivated to change schools by pay and advancement possibilities more than their ability to improve student performance. Nevertheless, "student achievement" was a minor motivating factor in mobility.

School level leadership plays a role in the school culture, the teachers' perception of their work environment, the quality of the teaching staff, and student outcomes (Baker, Punswick, & Belt, 2010). Baker et al., (2010) argue that because

principals may exert influence over teacher labor markets, principals can easily influence school improvement through state education policies. Principals are the final stop during the decision making process. The men and women who serve in these positions can determine the achievement level of their campus by leading effectively and making difficult decisions that will have positive outcomes for their students. The Wallace Foundation (2013) determined that effective principals are *leaders of learning* with five key responsibilities within their schools:

- Shaping a vision of academic success for all students
- Creating a climate hospitable to education
- Cultivating leadership in others
- Improving instruction
- Managing people, data, and processes

Efforts to improve educator quality and to attract the most effective teachers and principals to high-need schools have caused policymakers at the federal, state, and local levels to promote pay-for-performance plans. While some of these proposals offer higher compensation or other financial incentives for educators to work in the neediest schools, others reward high-level performance focused on improved student achievement and other identified criteria (NASSP, 2014). Knowing that stable principal leadership has a positive impact on the school's performance (Seashore Louis, Wahlstrom, Leithwood, & Anderson, 2010), it is unfortunate that the lowest performing schools serving the most disadvantaged students have the least stable leadership. Campuses with large amounts of at-risk, low socioeconomic, or diverse ethnicities, need the strongest leaders in the field. A study by the National Center for Analysis of

Longitudinal Data in Education Research (CALDER Center) found that the impact of principals, as measured by the value-added scores based on student test scores was nearly twice as large in high-poverty schools as in low-poverty schools (Branch, Hanushek, and Rivkin, 2013). These are campuses that demand professionals who are committed to the academic and social cause of each student that walks its halls, but because of its pressing demands these schools are being led by less experienced, less qualified, and less effective principals (Loeb, Kalogrides, & Horng, 2010). The rigors of a demanding campus take a physical and mental toll on the campus administrators. A campus with high-poverty and large amounts of at-risk students require a different approach to leadership. Branch et al., (2013) research show that along with teacher turnover, instability of leadership is often cited as an impediment to improving high-poverty and low-performing schools.

Finnigan (2012) examined leadership in three of Chicago's low-performing elementary schools involved in the Chicago School Probation Study between 1999 and 2001. Two of the schools moved off the probation status and teachers cited that instructional leadership was one of the most important areas of leadership. Teachers discussed the instructional leadership of their principals in terms of the vision or direction they provided; the articulation of expectations; the interpretation of the policy and focus on collective action; and the coherence or consistency during these stressful and uncertain times (Finnigan, 2012). The majority of the responses from teachers and students in Finnigan's work noted that the expectation was for the principal to have a vision for the school, be clear about his/her expectations for the campus, have strong communication skills, possess a non-threatening leadership style, and finally the ability

to provide consistency to the instructional programs. Taking all of these expectations into account, it is apparent that the role of a principal in a low performing school or impoverished area is not an 8:00 to 5:00 job, so why is the pay still scheduled in that manner? Consistent with these concerns, we find that Texas schools with a high proportion of low-income students are more likely to have first-year principals and less likely to have principals who have been at the school at least six years than those serving a less-disadvantaged population. Figure 2 reflects principal tenure based on Texas Education Agency data.

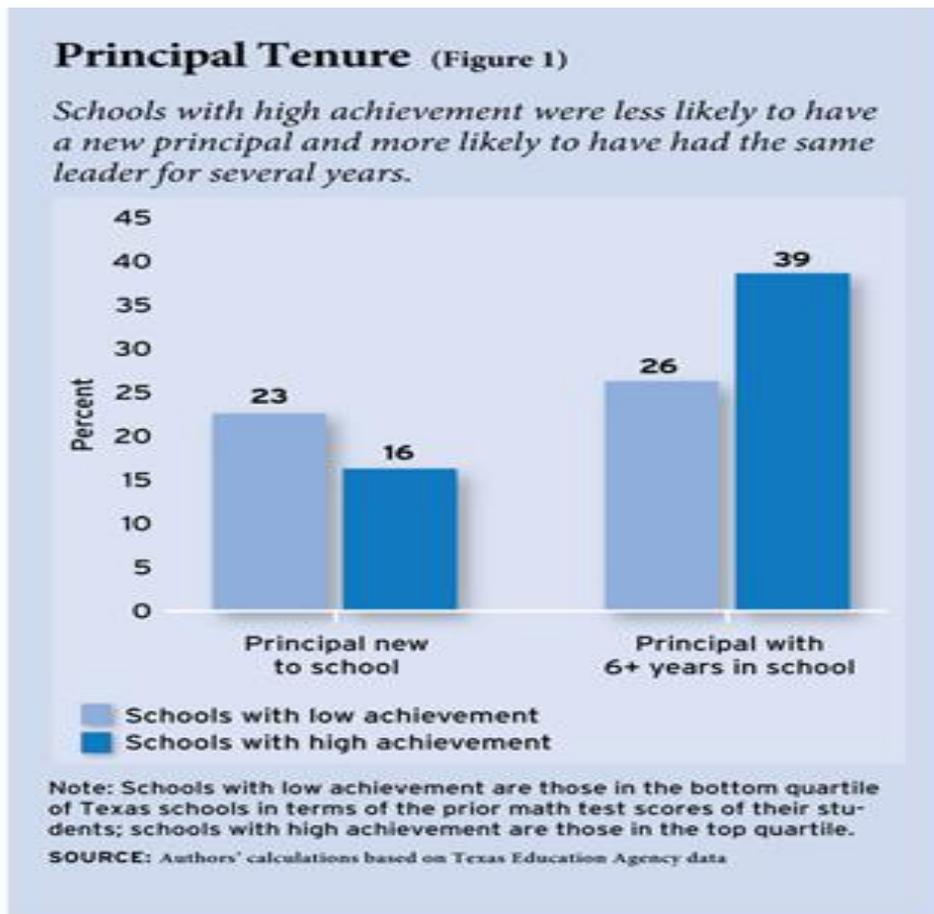


Figure 2. Principal tenure.

Once an administrator serves a low performing school he/she gains experience and credibility, they tend to move to schools that are higher-performing, serve a less diverse population, and are higher performing with more compensation (Hull, 2012). Principal turnover is particularly common at low performing schools (Besley & Machin, 2008; Branch et al., 2013; Cullen & Mazzeo, 2008; Fuller et al., 2007); schools located in high poverty communities (Partlow & Ridenour, 2008), and schools with more minority and LEP students (Gates et al., 2006; Papa et al., 2002). Understanding the changes that accompany principal turnover is important not only because it is widespread, but also because any ill effects are disproportionately borne by disadvantaged students (Miller, 2013). This type of frequent turnover can have severe and lasting effects on numerous aspects of a school climate and culture, including student achievement and teacher turnover. Beteillie (2011) argues that teacher turnover might be higher in years when schools have a new principal because of the relative inexperience of new principals. A new principal might be more likely than a more experienced principal to bring a new approach to the school that is in conflict with teacher's preferences, thus causing teachers to seek other positions. If school districts were to provide more stable leadership for the most disadvantaged and low-performing campuses, this would likely have a substantial impact on the final student product from these schools. Dr. Edward Fuller and The University Council for Educational Administration (2008) studied principal five-year turnover rates in schools with more than 50% economically disadvantaged students and found that schools and school reform efforts simply cannot be successful unless high-quality principals remain at the same school for extended periods of time. Ensuring comparable pay for the amount of

time worked and effort produced may have an impact on a principal's decision to stay or leave a high-need campus. Actual pay and pay satisfaction are found to relate to the academic performance of students for a selected group of employees (teachers) within a particular state having a common funding formula for public school districts (Currall, Towler, Judge, & Kohn, 2005). Given the outcomes of the research of Currall et al. (2005), additional attention is needed in this important area relative to actual pay, market value of employees, and to satisfaction with pay of other employee groups within the public school setting who are responsible also for student achievement. Feeling satisfied for the compensation received may have a lasting effect on a school administrator and entice them to stay on the same campus (Barry, 2002). This would in turn produce low turnover rates for teachers and a stable environment where students and staff would know what direction the campowards for a number of years. Survey and case-study research suggests that teachers greatly value competent, supportive, innovative, and fair principals who place the well-being of students at the forefront of a school's agenda (Goldhaber, et.al.).

Empirical research has been conducted using national data to investigate principals and their salaries to determine whether there appears to be significant shifts in the way principals are paid. The findings over a ten-year period from the 1993-94 school year to the 2003-04 school year show that principals are rewarded for: having more experience, leading a secondary school, leading an urban or suburban school, leading a larger school, and being in a larger school district (Carlson & Johnson, 2010). Interestingly, there is relatively little change over time in the factors that explain principal salaries, which provides suggestive evidence that there have not been major shifts over

time in the structure of principal compensation. However, the study did not include basic information about the structure of how principals are paid, namely how principal salaries (base pay) within districts are determined.

Tracing principal's effects on student achievement is difficult because there are multiple avenues through which their actions may have an impact. For example, principals may directly affect the quality of teachers in their schools through hiring, as in Milwaukee. Brewer (1993) finds that principals' selection of teachers is a key influence on student achievement. His study suggests that student achievement rises when a greater share of teachers are appointed to the school during a principals' tenure. Specifically, a 10% increase in the percentage of teachers appointed during a principal's term is predicted to increase the gain in student achievement by over 10%. Given the important connections between principals and teachers, those focusing energy on teacher pay should also pay attention to the structure of principal pay.

The most highly politicized, hotly debated, and constantly evolving aspect of education policy is teacher compensation, which is directly applicable to this study. In their exhaustive study of Texas public schools and teachers, Hanushek and Rivkin (2007) determine that salaries have a significant impact on both teacher retention and long-term student performance, leading the researchers to advocate for compensation tied more closely to student performance, rather than traditional metrics like education level and experience. Interestingly, teachers that demonstrated the most trust in their principal were more likely to favor pay-for-performance programs, as was found in a recent survey of public school teachers in the state of Washington. These findings suggest that teachers are more willing to have their effectiveness (via student

achievement in this case) evaluated if they believe in the person leading them - a strong case for the effect of principal leadership on faculty outcomes (Goldhaber et al.,2007).

International studies have shown that like the United States, *head teacher*, or principal pay differs from those of teachers. The normal trend is that principal compensation is more than teachers, but in some instances, highly qualified expert teaches may receive a salary that is comparable to school administrators (Sclafani & Tucker, 2006). Korea has a strong principal role. Only one percent of teachers ever get to be vice-principals or principals, so it is a very competitive and esteemed role, and the principal salaries are much higher than any other role in the school. Promotions are based on points, and since 45% of the points are based on length of service, most principals have had long careers before entering the principalship and are usually between 50-55 years old (Coolahan, Santiago, Phair, & Ninomiya, 2004). Korea utilizes school councils (similar to site-based decision-making committees in the U.S.) and they have somewhat changed the principals role on their campuses, but he/she still make the final decisions and how much influence the council has (Coolahan et al., 2004). Some countries, like Sweden, choose to pay principals individually like the private sector Sclafani and Tucker (2006) also examined the principal compensation system in Australia. The Victoria government established a performance management system for principals that is based on specifications of competencies. The first-year administrator participates in a year-long professional development program and then an accreditation process. These steps are used to develop the administrator into a strong leader who will then participate in two components of evaluation: accreditation and assessment. The report shows that all principals are appointed on five-year performance contracts

and if they successfully complete the evaluation process it can result in a bonus of up to 15%. When investigating the Netherlands, the researchers (Sclafani & Tucker, 2006) discovered that the principals (head teacher) and teacher pay scales were separate and the administrators were paid based on the size of the school. The starting salary and salary schedule for head teachers and deputy heads (principal and assistant principal) depends on the salary earned prior to promotion. The minimum salary of school heads corresponds to the level on the salary scale immediately above the one they had previously reached as teachers. Finally, in the United Kingdom, the research showed that the head teacher (manager of day-to-day operations of the school and enjoys greater autonomy and authority than many North American principals) can receive performance pay based on sustained high quality of performance, leadership, management, and student progress at the school. The Organization for Economic Cooperation and Development team recommended that principals in various countries receive specific training and annual evaluations along with better salaries linked to performance outcomes and renewable fixed term contracts (McKenzie, Emery, Santiago, & Sliwka, 2004). Sclafani and Tucker (2006) feel as if the most advanced industrialized countries will move toward a conception of the job that emphasizes leading the school toward higher student performance rather than smooth relations among the adults; more training for school leaders that focuses on instruction and leadership; and finally, compensation that increasingly mimics the private sector with respect to the level of compensation and the incentives provided for raising student performance.

Hancock and Müller (2014) surveyed 159 German principals from schools in the

area of Stuttgart, Germany and 134 principals in North Carolina, examining the level of job satisfaction they were experiencing as a school administrator. Although Hancock, Hary, and Müller (2012) found that the lack of increased salary sometimes serves as a disincentive for German teachers to pursue the principalship, the current study extends that finding by noting that despite the higher pay experienced by U.S. principals, in both countries principals become displeased with their salary levels after having gained some experience in the role of principal. In other words, in both the U.S. and Germany, principals believe that their salaries are not high enough once they experience the demands of the position (Hancock & Müller, 2014). The findings in this study indicate that the principal's salaries are not compensating for the demands of the job. The authors did suggest that other incentives, outside of salary, may be a good way to retain principals. The clear implications of this study is that in order to entice principals to remain in their positions, the gap between principals' current job satisfaction and the expectations that they have for the position of principal must be narrowed in at least four areas - salary, hours worked per week, time spent with family, and recognition received for doing a good job (Hancock & Müller, 2014).

In 1997, Israel's Ministry of Education and the Ministry of the Treasury announced a new experimental program that would allow paying teachers and school principals a 50% salary hike (Lavy, 2008). Forty secondary schools and a similar number of primary schools participated in the initiative. The additional pay was unconditional on any performance measures and was extended from year to year. The data gathered from a four year study, 1997-2001, includes test scores and outcomes of matriculation exams administered at the conclusion of high school. School principals

play a major role in the preparation for matriculation exams, from motivating teachers and students through allocation of resources for additional instruction time, and special preparation activities prior to exams (Lavy, 2008). The success of schools in Israel are based upon the outcome of these assessments and therefore the study used them as an outcome for school productivity improvements. After analyzing data and end results from student outcomes, the evidence suggests that increasing school principal's salaries can lead to an increase in student achievement and productivity. Based on Lavey's results, it may be concluded that a first priority should be to pay school principals higher wages because this will not only lead to better school performance, but also motivate more stringent use of their ability to identify good teachers. Overall the study revealed data that suggested principals are held accountable for the hiring, retention, and other managerial decisions that have a major impact on student achievement. These type of findings can further the conversation regarding policies, structures, and motivating factors to re-evaluate the salaries of principals based on their influence over student academic success.

Recent role changes have affected the number of individuals applying for the principalships in Ireland as well. A survey conducted on behalf of the Ireland Primary Principal's Network found that 67% of teachers do not wish to apply for the principalship (Ireland Primary Principals' Network, IPPN, 2002). Teachers in Ireland did not seek the principalship because of the stress, lack of professional learning and support, selection procedures, salary and conditions, and excessive responsibility. The IPPN (2002) found that one of the major reasons a large majority of teachers did not want to apply for principal positions was salary and conditions.

According to Whitaker (2002), the roles for international school leaders have changed dramatically during the past decade or so. Given the overwhelming evidence that salaries have not kept pace with responsibilities, districts, states, and regions must better ensure that teachers moving into school leadership positions are compensated adequately for increased responsibilities, longer contract, and longer working hours (Whitaker, 2002). Hirsh and Groff (2002) also recommend other incentives such as signing bonuses, housing options, state and federal/national income tax credits, or property tax relief which would be attractive to promising candidates.

Despite the range of investigations from 2000-2012, little attention has been paid to the determinants of salaries of principals. These individuals perform largely a managerial function, but do so in educational institutions. Prior research has demonstrated that the determinants of business executives' salaries are, not surprisingly, often different from those determining either faculty salaries or the wages of specific labor groups. School principals are essential to improvements in school quality, presumably acting as agents for parents, school boards, and communities. In order to align the interests of all constituents, accountability standards have been implemented in many schools, tying compliance to school resources, reputation, and at times, educator pay (Billger, 2007).

Principal pay is an important issue in Texas. For the 2011-2012 fiscal year, the 1,022 public school districts in Texas combined to spend 42.8 billion on primary and secondary education, with principal salaries accounting for 5.6% of total expenditures (Texas Education Agency, 2013). The average salary for full-time public school principals in Texas was \$81,184.12 during the 2011-2012 school year, ranging from

\$56,203 in Cherokee ISD to \$167,425.00 in Highland Park ISD. But there is a great deal of variation in principals' salaries both within and across school districts. The standard deviation of principal salaries in Texas for the 2011-2012 school year was \$13,942.61, with most of the variation occurring within school districts. The standard deviation of principal salaries within individual school districts ranged from \$96.42 to \$43,470.80. In general, the findings for principal salaries in Texas are broadly consistent with prior literature where Stone (1985) found that more experience is rewarded; urban and suburban principals receive substantially higher salaries than those in rural schools: principals in larger districts or leading larger schools receive higher salaries; and secondary school principals receive higher salaries than those leading elementary schools.

Ultimately a property wealthy district, years of experience, larger student enrollment, and gender play a role in the determinants of pay for campus principals. Goldhaber (2007) notes findings which show principals are rewarded for: having more experience, leading a secondary school, leading an urban or suburban school, leading a larger school, and being in a larger school district. Personal characteristics such as a Doctorate degree may or may not have a bearing on the salary, but gender and experience tend to favor the male administrator based on the findings in this study. Research has shown that women neither make the same earnings as men nor do they attain the higher-level positions at the same rate as men. Dowell and Larwin (2013) found significant differences in the salaries of female and male superintendents with the female respondents showing at least one salary range below their male counterpart.

Females in urban areas were three salary ranges below the males in the same geographic area.

In spite of the importance of pay in determining the quality of people who opt to pursue the principalship and the theoretical appeal of tying principal pay to performance, we know little about the structure of how principals are paid, namely how district and community factors influence the principal's base salary, which is the focus of this study. More specifically, using a spatial econometric approach, this study examined external district and community factors that have been investigated in determining teacher salaries in prior studies.

## CHAPTER 3

### METHOD

#### Research Design

This study utilized a spatial regression to examine the determinants of principal salary. This type of analysis was utilized to determine why something is happening. Regression analysis allowed this study to model, examine, and explore spatial relationships that determine principal salaries. Spatial data does not often fit traditional regression requirements because they are auto correlated; features near each other are more similar than those further away. Spatial data is also non-stationary and features behave differently based on their location and/or regional variation. This type of analysis allowed the study to measure how much two variable change together. In practice, it is rarely seen that a perfect positive or negative correlation exists (i.e., correlations of exactly 1 or -1), and there might be confounding factors that explain a strong positive or negative correlation between variables.

The participants in the study included 611 Texas high school principals from all Texas high school campuses that enrolled at least 500 students in Grades 9 through 12. Only those individuals who are principals, not assistant principals or otherwise were isolated in the data set. Among the participants, 199 (32.6%) were female, while 415 (67.4%) were male. In addition, the majority of participants in the study were White ( $n = 389$ , 63.7%), while 135 participants (22.1%) were identified as Hispanic/Latino, 69 (11.3%) as Black or African American, 5 (.08%) as American Indian, 3 (.05%) as Asian, and 10 participants (1.6%) were identified as having an ethnic origin of two or more

degrees. Regarding educational background, 26 participants (4.3%) held a bachelor's degree, 536 (87.7%) held a master's degree, while 48 (7.9%) held a doctorate degree.

High school principals are responsible for all aspects of the administration of a high school. They provide leadership and are the final authority within their campus. Among their roles is that they provide educational planning by assessing and updating the curriculum, as well as supervising teachers and providing feedback regarding performance. High school principals make priority decisions regarding various departments and funding options to either stretch their limited budget or find alternative ways to bring in funding (fundraisers, grants, etc.) One of his/her main priorities, at all times, is to seek continuous improvement in the educational efficiency and quality of the campus. They oversee the student body and provide conflict resolution and ultimate disciplinary decisions once issues have surpassed the teacher, counselor, and assistant principal level. Additionally, they are responsible for ensuring their school meets all necessary academic and safety regulations/guidelines, make hiring and firing decisions regarding all staff, and work closely with students, parents, and teaching staff to ensure quality education and conduct standards are met. They work full-time and in most cases over-time to attend extra-curricular activities and participate in meetings outside of the normal school day. They mentor and lead other school administrators and often mentor individual students who need additional support. They must hold a bachelor's degree and in many cases a master's degree in education or a related field. A state certification is required and years of teaching and previous administrative work is also a pre-requisite.

Related to district location, the majority of the 611 participants ( $n = 186$ , 30.40%)

were high school principals in districts classified as major suburban, while 118 were high school principals in central city suburban districts (19.3%), 111 (18.2%) were in major urban districts, 91 (14.9%) in central city districts, 52 (8.5%) were in districts located in independent towns, and the remaining ( $n = 53$ , 8.7%) were located in districts classified as non-metropolitan stable. See Appendix A for the definition of Texas school district classifications.

## Variable Examined

### *Dependent Variable*

Base Principal Pay - principal pay is defined as the total actual salary amount of pay for regular duties only and does not include supplemental payments for coaching, band and orchestra assignments, and/or club sponsorships. Base salary was measured as a continuous variable. Principal pay covers the salary for the year, not hours worked or time spent on duty.

### Independent Variables and Rationale for Inclusion

Drawing on a variety of analyses of teacher labor market behavior, the following groups of factors most likely to determine principal salary were identified: (a) district characteristics, (b) community characteristics, (c) personal characteristics, and (d) campus environment characteristics. It is anticipated that larger districts are expected to pay higher salaries, and the log of district enrollment is included and is expected to have a positive coefficient (Walden & Newmark, 1995). Some studies Lentz (1998) and Winters (2009) have suggested that districts with a greater property tax base pay higher

salaries. Property taxes are a major source of school financing and a measure of the wealth in a district, which means that the property tax base will have an important effect on principal salary (see Figure 3).



Source: Texas Comptroller of Public Accounts

Figure 3. Texas comptroller of public accounts.

Public education also controls much local government spending, as Texas homeowners recognize when they pay their annual property taxes. In 2013, school district property tax levies totaled an estimated \$25 billion, which represented 55% of all property taxes levied that year. The school district property tax includes two

components, a maintenance and operation (M&O) tax used to fund daily operations and an interest and sinking (I&S) tax used to pay debt service on any bonds issued to fund the construction of schools and other facilities. Therefore, the log of the per-pupil property tax base and the percentage of tax base related to business and commercial property in the district is included and each is expected to have a positive coefficient. The Herfindahl Index<sup>1</sup> is included as a measure of competition among districts to attract quality principals. The Herfindahl Index is the sum of squared enrollment shares for all public and private school districts in a labor market. In 2003-2004, it ranged from below 0.10 in five metropolitan areas (Dallas, Fort Worth, Houston, Longview, and San Antonio) to above 0.90 in four micropolitan areas and one metropolitan area (Taylor & Fowler, 2006). It is anticipated that districts in areas with increased competition (greater Herfindahl Index values) will pay higher salaries to attract and retain quality principals (Hanushek & Rivkin, 2007) and therefore, the Herfindahl Index is expected to have a positive influence on principal salaries. The log of the comparable wage index (CWI) is included to control for the relative cost of living in a particular labor market and to serve as a proxy for the opportunity cost of teaching in a given market (Stoddard, 2005). The CWI measures the wages in the local labor market of occupations comparable to teaching based on micro data from the 2000 decennial census that is available for every district. A higher level of comparable wages is expected to increase principal salaries. In addition, more educated residents are thought to have greater demand for education, so the share of adults (25+) living in the district with at least a

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<sup>1</sup> Herfindahl Index - The Herfindahl index is a measure of the size of a school district (student enrollment) in relation to the total enrollment among all school districts in a given county and is an indicator of the amount of competition. The Herfindahl index for school districts in county k was calculated as:

$$1 - \sum \left( \frac{\text{enrollment}_i}{\text{enrollment}_k} \right)^2$$

high school degree and the share of adults with at least a bachelor's degree are expected to have positive coefficients (Taylor & Springer, 2010). In his research, Teale and Sulzby (1986) concludes that "Home background plays a significant role in a young child's orientation to literacy [and to education]. But home background is a complex of economic, social, cultural, and even personal factors." (p. 1). Family income may have a direct impact on a family choosing a more expensive neighborhood, which in turn may result in an area where good schools are likely to be. Parents play an immense and significant role in the academic performance of their children. Educated parents would have increased emphasis on educational excellence. Educated parents are equipped by virtue of their education to take cognizance of the fact that parent-student-school-community relationship is important in order to promote educational attainment and academic achievement of their children, thus they make the partnership a priority (Okantey, 2008). Further, residents with children are expected to demand greater spending on education, so the share of households with at least one child under age 18 is expected to have a positive effect (Easton, 1988). Renters are thought to be more likely than homeowners to support spending on education, perhaps in part because renters do not believe that they bear the burden of local property taxes to finance education, so the share of households who are homeowners is expected to have a negative effect (Martinez-Vasquez & Sjoquist, 1988). Property taxes largely fund school districts, therefore those not paying those local taxes don't worry about them increasing to fund more education. The unemployment rate in the county in which each school district is located will also be included to capture local labor market conditions. Higher unemployment is likely to make it more difficult to find a well-paying career outside of

working in the school district and is expected to have a negative effect on principal salaries (Taylor & Springer, 2010). In recent presidential elections, Republican and Democratic voters have shown differences in their preferences on school spending and teacher salaries, with a larger percentage of Democrats for increased spending and raising educator salaries compared to Republicans (Howell, West, & Peterson, 2013). The percentage of registered voters voting Republican in the 2012 presidential election will be included and is expected to have a negative effect on principal base salaries. One of the party gathers a majority while the other splits in regards to raising teachers' pay. This topic shows a majority of Democrats (71%) favor a raise while only 52% of their Republican counterparts feel the same. Based on research by Stone (1985), O'Toole (2002), and Carlson and Johnson (2010), regarding principal demographic variables, in addition to race and education level, the number of years as a principal is included and is expected to have a positive relation with principal base salary, who all found that more experience is rewarded in the principalship. Principal gender will also be included, as prior research has found female principals continue to be underrepresented among public-school administrators (Gates, 2004). In terms of compensation, differences in annual salaries between female and male principals is anticipated to seem to be statistically insignificant. Gates (2004) notes that she uncovered no evidence of salary discrimination by race/ethnicity or gender in the public sector. However, it takes women longer to become principals, and they are less likely to be paid as high as their male counterparts (Zheng & Carpenter-Hubbin, 1999). Concerning student demographics at the campus level, this study included student characteristics such as the percentage of low socio-economic students, special

education students, at-risk students and the percentage of White students. These are also the sub-groups that campuses are rated on academically each school year. It is anticipated that principals working in high-need campuses (e.g., greater number of English language learners and students classified as at-risk of dropping out of school) earn greater base salaries (Jacobson, Johnson, Ylimaki, & Giles, 2005). Finally, student results on the state-mandated assessments (i.e., the percentage of all students pass all tests that included reading, math, science, social studies, and writing) will be included to determine if principal base pay is aligned to student outcomes (Billger, 2007; Cullen & Mazzeo, 2008; Goldhaber, DeAmrond, & DeBurgomaster, 2008; Currall et al., 2005). The State of Texas Assessments of Academic Readiness (STAAR) program, which was implemented in the spring of 2012, includes annual assessments at the high school level in English I, English II, Algebra I, Biology and U.S. History, all referred to as end-of-course (EOC) exams. These EOC assessments are criterion-referenced tests used to evaluate student mastery of grade-specific subject matter. Cullen and Mazzeo (2008) studied a correlation to principal pay and student achievement. They uncovered there was no direct reward, such as a bonus or stipend, but a long-term career reward. Cullen and Mazzeo (2008) explain, "because the principals who have had successful schools have a better chance of getting higher-paying principal jobs in other districts, or jobs as superintendent of schools, that are much higher paid" (pg. XX). The pair analyzed Texas data from 1987-2006 because it is well organized and detailed to conduct research on. The state assessments were mandatory and given throughout the public school system, which provided uniformity in research within the dataset. They were even able to track individual principals as they moved from school to school or

district to district, which produced more data based on the principal's salary being in line with student achievement. The findings indicated that even though salaries did not increase while leading the same school, those administrators from schools that had improved often earned higher-paying jobs when they moved to other districts or obtained promotions to the central office level. They also uncovered that school principals who had a record of low test scores often moved to districts that paid less or to a lower paying administrative job within the district.

### *Procedure/Data Analysis*

Initially, primary data that included principal base salary data and campus level demographic data for the 2011-2012 academic year were obtained from the Texas Education Agency (Texas Education Agency, TEA, 2013). In addition, the research obtained county level data from the Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics (LAUS), the U.S. Census Bureau, and the National Center for Education Statistics Comparable Wage Index (CWI) developed by Taylor and Fowler (2006). Principal salary and campus-level demographic data were linked together using the state assigned campus identification number. Next, the county level data were merged with the campus data using a unique county number as the yoke variable, which was common in both datasets. Once the data was merged, descriptive measures were calculated to examine the distribution and shape of the data to determine if data transformations were needed and to screen for erroneous data entries. Next, bivariate correlations were examined. Finally, consider the possibility that principal salaries are spatially correlated after controlling for other determinants of principal salaries. The

primary concern is that principal salaries in one district may be affected by principal salaries in neighboring districts. That is, there might be wage spillovers. This type of spatial dependence is likely to occur as school districts likely compete with nearby districts for quality principals. If one district offers salary levels substantially below that of nearby districts, they will likely have greater difficulty hiring and retaining quality principals. Thus, school district administrators have incentives to keep principals salaries competitive with those in nearby districts. Offering long-term school leaders salary policies that are market sensitive and competitive can be a large factor to retaining quality administrators. Research suggests that inadequate compensation can be a deterrent to entering or remaining in the principalship and school districts should determine if this is the case in their local district and if other close districts are already implementing these type of remedies for retention. School leaders' compensation can improve teacher recruitment, retention, and quality in the short and long term, ensuring that supply meets demand. Networking with local education agencies to determine salaries may help curb attrition and generally will increase the number of applicants for each open administrative position. Many districts are even considering relocation assistance, signing bonuses, tuition reimbursement, and nonfinancial incentives to recruit and retain quality school leaders.

Prior studies of teacher and principal salaries do not account for the effect of principals salaries in nearby districts. The usual estimation equation in these studies is given by (1)  $Y = X\beta + u$ , where  $Y$  is an  $n \times 1$  vector of teacher salaries (usually measured in logs),  $X$  is an  $n \times K$  matrix of explanatory variables,  $\beta$  is a  $k \times 1$  vector of parameters, and  $u$  is a mean zero error term assume to be i.i.d. across observations. If

there is spatial correlation in the dependent variable, then methods that do not account for this are likely to produce inconsistent coefficient estimates (Anselin 1988). A second concern is that there may be spatial correlation in the error term, possibly from spatially correlated unobservable characteristics or spatially correlated measurement error in the explanatory variables (Kalenkoski and Lacombe, 2008). Failing to account for this in the error term may result in standard errors that are inconsistently estimated. Although a spatially correlated dependent variable and a spatially correlated error term are similar, there are important differences. Spatial correlation in the dependent variable suggests that districts are directly responding to each other either through competition or in an attempt to maintain comparability. Spatial correlation in the error term is more indirect and results from nearby districts responding to similarly to common nearby forces.

The spatial model in this paper can be represented by:

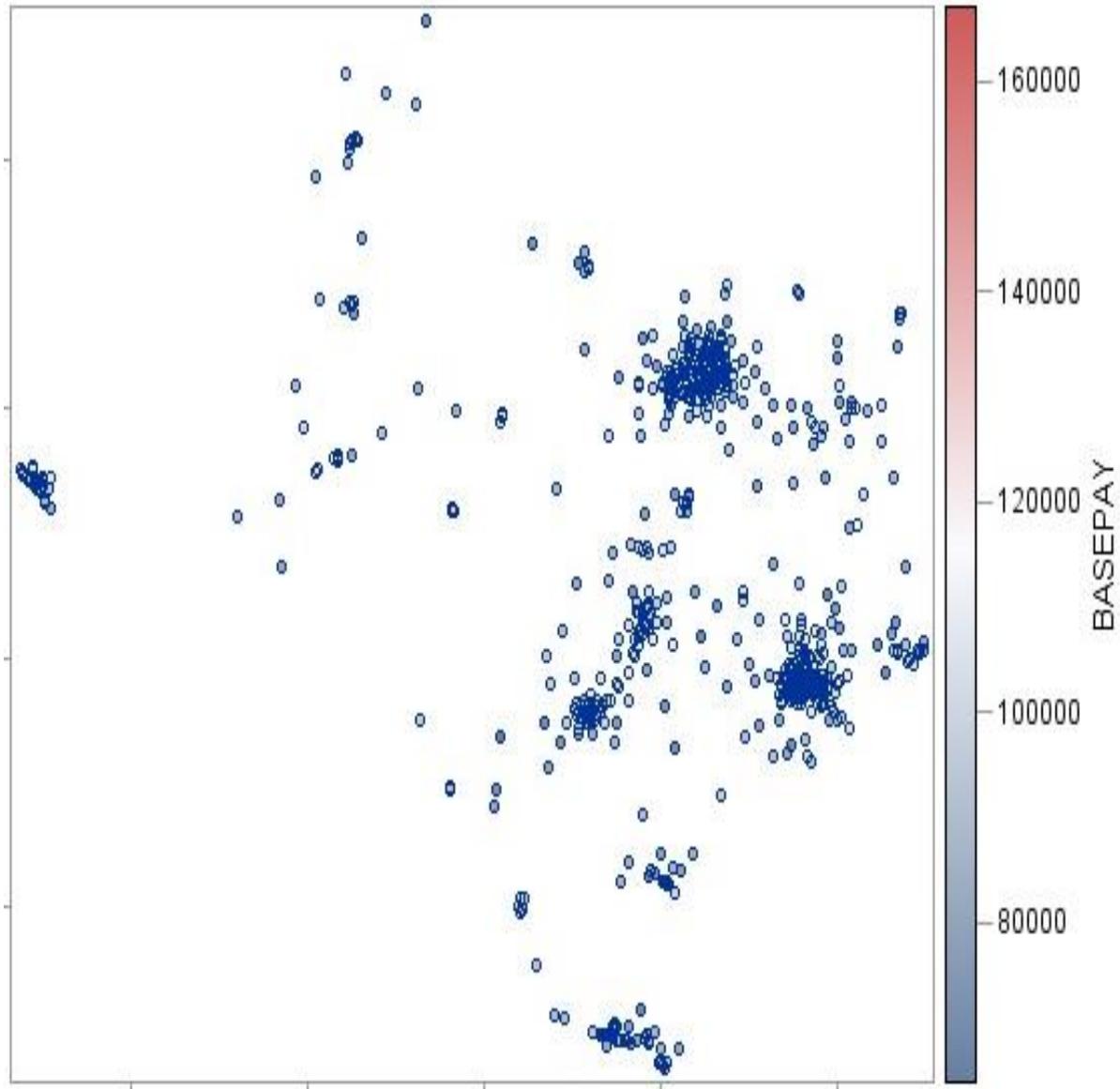
$$2) \quad Y = \rho W_1 Y + X\beta + u$$

$$u = \lambda W_2 u + \varepsilon,$$

where  $Y$  is again an  $N \times 1$  vector of teacher salaries that now appears on both the left and right hand side of the equation,  $X$  is again an  $n \times k$  matrix of explanatory variables including union activity variables,  $W_1$  and  $W_2$  are  $n \times n$  weighting matrices that specify the structure of the spatial correlation for the dependent variable and the error term,  $\rho$  and  $\lambda$  are spatial autocorrelation coefficients for the dependent variable and the error term, and  $\varepsilon$  is a mean zero error term that is i.i.d. across observations. Some spatial econometric studies only model spatial correlation in the dependent variable (by assuming that  $\lambda = 0$ ) or in the error term (by assuming that  $\rho = 0$ ). After conducting

numerous spatial econometric tests suggest by Anselin, Bera, Florax, & Moon (1996), it was concluded appropriate to account for spatial correlation in both the dependent variable and in the error term.

In determining district neighbors, the researchers specified the weight matrix ( $W_1$ ) based on the distance between school districts. For row  $i$  of the  $W_1$  matrix, districts that were more than 50 miles away from  $i$  were given zero weight. In other words, districts were only considered neighbors if their centroids, that is, their geographic centers, were within 50 miles of each other. Districts within 50 miles of  $i$ , so that nearer districts were given more weight than districts farther away. Several additional weight matrices for  $W_1$ , were explored, such as altering the distance cut-off to 30 miles and 100 miles and equally weighting all districts within the cutoff. Ultimately, the 50-mile cutoff was chosen to keep the group of neighbors as tight as possible while minimizing the number of districts that must be excluded due to not having any neighbor in the sample. Figure 4 displays the spatial distribution of the high school principals investigated in the current study.



*Figure 4.* Spatial distribution of high school principals with campus enrollment of 500 students or greater (N = 611).

Based on the results displayed in Figure 4, principal salaries in neighboring districts are hypothesized to be simultaneously determined. For example, salaries in District j affect salaries in District i affect salaries in District j. Preliminary evidence on the presence of spatial autocorrelation in the log of principal salaries can be obtained

from Moran's (1950) I statistic. In the current study, the log of principal salaries returned an "I" statistic of 0.031 ( $z=24.45$ ,  $p = .0001$ ), which means that the null of no spatial autocorrelation can be rejected at the .01 level of significance.

Because of the simultaneity involved, as indicated by the statistically significant Moran's I, using Ordinary Least Squares (OLS) to estimate the spatial model is inappropriate. Instead, instrumental variable methods were used. More specifically, I estimated the spatial models by the Generalized Method of Moments (GMM) estimator developed by Kelejian and Prucha (1998) using the generalized spatial Two-Stage Least Squares (g2sls) command in stata.  $W_1X$  and  $W_1^2X$  were used as instruments for  $W_1Y$  in the GMM estimator. In other words, the estimator instruments for salaries in nearby districts using the distance-weighted averages of the other explanatory variables in nearby districts along with the distance-weighted averages of their neighbor's characteristics. Stata version 11.2 was used for all analyses.

## CHAPTER 4

### RESULTS

Average base pay among principals in this study was \$99,619.74 ( $SD =$  \$14,265.27) and ranged from a low of \$64,859 to a high of \$167,125. The median income in the counties where participant high schools were located averaged \$49,826.40 ( $SD =$  \$12,498.67) and ranged from \$20,525.00 to \$80,638.00. Regarding campus characteristics, the high schools included in the study were quite diverse. The percentage of low socio-economic (SES) students enrolled in the campuses ranged from 0% to 99.9%, with an overall average of 51.6% ( $SD =$  24.03%), while the percentage of White students ranged from 0% to 92.4%, with an overall average of 34.49% ( $SD =$  27.27%). Concerning student enrollment, the campuses varied in size from 510 to 4,492 students enrolled in Ggrades 9-12. The average enrollment was 1685 ( $SD =$  834). Student academic achievement, as measured by the percentage of students passing state-mandated assessments varied considerably. The percentage of students passing the high-stakes exams ranged from a low of 41% to a high of 99%, while the overall average was 71.25 ( $SD =$  11.31). The descriptive measures of the continuous variables examined in the study are displayed in Table 3.

Table 1

## Descriptive Measures of Continuous Variables Investigated

Variables	N	Mean	Std. Deviation	Minimum	Maximum
Principal Pay	611	\$99,619.74	\$14,265.27	\$64,859.00	\$167,125.00
<b>Direct Characteristics</b>					
% Business Tax	611	32.94	14.55	0.00	85.00
% Commercial Tax	611	.69	.76	0.00	9.00
Dist. Per-pupil Property Tax Value	611	\$355,269.59	\$220,405.70	\$38,377.00	\$2,177,701.00
Herfindahl Index	611	.69	.21	.00	.89
2005 Comparable Wage Index	611	1.221	.15	.85	1.39
<b>Community Characteristics</b>					
% Homes Owner Occupied	611	65.31	8.52	45.20	85.30
% > 25 Years Old with Bachelor's Degree	611	24.49	8.89	7.00	47.00
Median Income	611	\$49,826.40	\$12,498.67	\$20,525.00	\$80,638.00
% Voted Republican in 2012 Presidential Election	611	61.88	9.06	50.20	91.70
% Unemployed	611	6.92	1.57	3.30	15.00
% Children Under 18 at Home	611	39.65	5.69	18.30	57.60
<b>Personal Characteristics*</b>					
Years' Experience as Principal	611	21.79	8.70	1.00	48.00
<b>Campus Characteristics</b>					
% Low SES	611	51.61	24.03	.00	99.90
% White	611	34.50	27.27	.00	92.40
Student Enrollment	611	1685.00	834.00	510.00	4492.00
% Passing all TAKS	611	71.25	11.31	41.00	99.00

## Spatial Regression Results

### *District Characteristics*

As expected, the results displayed in Table 4 indicate that high school principal salaries are indeed related to salaries paid to principals in high schools in neighboring districts ( $\rho = .269, p < .01$ ). Rho reflects the spatial dependence inherent in the sample data, measuring the average influence on observations by neighboring observations. According to this estimate, a 1% increase in the distance-weighted average of high school principal salaries in nearby districts increases salaries for high school principals in a given district by  $\sim 0.27\%$ . Districts in metro Atlanta confirm that they compare salaries annually in order to stay competitive. The salary philosophies are nearly as varied as the districts themselves (Farner, 2015). Because of the high concentration of school districts in North Texas, the area has traditionally offered among the highest salaries in the state (Ayala, 2015). Each budget cycle meant one district trying to one-up a neighboring district on salary, even if only by small amounts such as five to ten dollars. During an interview in 2009, June Keel, Assistant Superintendent for Human Resources at Metropolitan Nashville Public Schools, was quoted the following:

I cannot stress enough that it is important that our salaries remain competitive with the neighboring school systems, we have dropped two steps in comparison to the area around us, and these are the school systems we primarily compete with....I think this is a warning sign to us, something that we need to look at in looking at our priorities in figuring budget and plans.

At Metropolitan Nashville Public Schools, teacher salaries increase with each year of experience and with additional degrees earned. Keel's department is working on an analysis of the competitiveness of metro salaries with other counties at various levels along the schedule (Graydon, 2009). Salaries are *market-driven* in the sense that

school districts are not only competing with neighboring districts but also with local companies for qualified employees. Statistically the Dallas/Fort Worth metroplex covers more than 400 square miles, and includes more than 100 public school districts, plus many more smaller districts throughout the North Texas region. Many of these districts are within miles of each other (Coppell, Irving, Dallas, and Lewisville) and must stay competitive with salaries to continue to attract qualified administrators. Regarding statistically significant external predictors (outside of district control) of high school principal base salary, principals in high schools located in districts with higher property values (per-pupil property tax value) earn higher salaries. Property taxes are a major source of school financing and a measure of the wealth in a district, so we might also suspect the property tax base to have an important effect on principal salary. Property taxes are local taxes that provide the largest sources of money local governments use to pay for schools, streets, roads, police, fire protection, and many other services. Depending on the property wealth of a community, its schools might boast gleaming buildings and equipment, or they might be dilapidated – struggling with the burden of outdated equipment and unpaid bills. In addition, while the percentage of the district tax base related to commercial property was not statistically significant, increased business tax base was associated with lower high school principal salaries, which suggests that residents are largely able to escape the burden of property taxes levied on commercial property. Concerning competition among districts to hire quality principals, the statistically significant Herfindahl Index suggests that districts in areas with increased competition for employees pay higher salaries in order to attract and retain quality principals. As for the CWI, we would expect comparable wages to have a positive effect

on principal salaries as found by Taylor (2008) in her study of Texas teachers. The results, however, suggest that while the coefficient for the comparable wage index is positive, it is not statistically significant. To an extent, the small and insignificant coefficient on comparable wages may result from including principal salaries in nearby districts in the regression equation. CWI reflects wage differentials across regions, but does not address differences in wage levels between principals and other occupations. Factors that may affect principal wage costs that are not reflected in the CWI include the supply of administrators, composition of administrator work force, and district characteristics. A CWI intended for adjusting principal salaries can be calculated using wages of all college-educated workers, workers most comparable to principals in skills and job duties, and workers in occupations that are leadership intensive. In other words, the wages of principals in nearby districts appear to be a better measure of the cost of employing principals than the wages of non-principals in comparable occupations as indicated by the statistically significant *rho* coefficient.

### *Community Characteristics*

Regarding community characteristics, the percentage of owner-occupied homes was associated with decreased salaries. A plausible explanation is that renters may be more likely than homeowners to support spending on education due to their belief that they do not bear the burden of local property taxes to finance education. Renters tend to support higher levels of expenditures with tax dollars because they do not realize the home-owners financial load.

The regression model also includes the percentage of the adult population 25 years and up with a bachelor's degree. The coefficient has an unexpected negative sign but is not statistically significant. While the log of the median income in the district had a positive relationship with principal pay, suggesting that wealthier wage earners demand greater spending on education (translating into higher principal salaries), the coefficient was not statistically significant. Wealthier parents have been stepping up education spending so aggressively that they're widening the nation's wealth gap. The Dallas Morning News reported in 2014 that when the recession struck in late 2007 and squeezed most family budgets, the top 10% of earners – with incomes averaging \$253,146 – went in a different direction: they doubled down on their kids' futures (*The Dallas Morning News, 2014*). Many of the factors that boost educational performance require resources. Hiring and retaining good teachers and principals takes money, as do supplies, enrichment programs, small class sizes, and high-quality facilities (Madland & Bunker, 2011).

Additionally, the political composition of the county in which the high school campus was located was included and measured by the percentage of voters in the county who voted for the Republican Party ticket in the 2012 presidential election. Previous research suggests that political liberals might support higher educator salaries compared to Republicans (Howell, West, & Peterson, 2013). The Republican Party disagrees with an approach to education reforms that involves increasing funds. Republicans believe in a higher accountability system on the part of students, teachers, administrators, and parents. These systems could involve merit pay for educators, which the party believes increases both motivation and accountability to perform at a

higher level. The coefficient estimate for the percentage of the adult population voting Republican, displayed in Table 4, is positive but not statistically significant. The share of households in a district with children under age 18 was associated with higher principal pay as expected. However, the coefficient was not statistically significant, which was in contrast to the researcher's expectations. Concerning county unemployment, the coefficient associated with the percentage of residents unemployed and principal salary was negative, as expected, but was not statistically significant.

### *Personal Characteristics*

Considering principal characteristics, while principal's race was not related to their salary, principal base salary was positively associated with years' experience as a principal, indicating that more experience is rewarded in the principalship. The effectiveness of a principal may be measured based on tenure and time on the job. A principals' impact may vary based on experience in their particular school, especially when referring to the hiring of staff over the time leading the campus, new initiatives and programs implemented, and the relationship built over time within the community outside of the campus. Just as teachers become more effective with experience, so do principals, especially in their first three years (Clark, Martorell & Rockoff, 2009). Furthermore, no matter how effective a principal was at his or her previous school, when he or she transfers to a new school it takes approximately five years to fully stabilize and improve the teaching staff as well as fully implement policies and practices to positively impact the school's performance (Seashore-Louis, et al., 2010). Effective principals still make significant improvements in their first few years; however, their

effectiveness definitely increases over time. Unfortunately, schools that serve the most challenging students are more likely to be led by less experienced principals than more advantaged schools (Loeb, Kalogrides, & Horng 2010). Even so, although both effective and ineffective principals typically transfer to less challenging schools within a district, effective principals are more likely to stay at challenging schools longer than their ineffective colleagues (Branch, Hanushek, & Rivkin, 2012). The good news is that the most effective principals are more likely to remain at a school for at least three years, even at challenging schools, than the least effective principals (Branch, Hanushek and Rivkin 2012). At more challenging high-poverty schools, 67 percent of the most effective principals return for a fourth year (Branch, Hanushek and Rivkin 2012). In contrast, less than two-thirds of the least effective principals return to those schools (Branch et al., 2012). So although more challenging schools have greater principal turnover, the most effective principals have longer tenures than ineffective principals (Branch et al., 2012, Seashore-Louis, et al., 2010).

Further, the findings indicate that male high school principals earn, on average, higher salaries than their female counterparts. The Pew Charitable Trusts (2014) reports that women, on average, are paid less than men, even when they are doing the same job. But where workers live also makes a difference. The group found that when comparing nine jobs, nine pay variances were also found. For example, an educational administrator male earned a median weekly salary of \$1,566 where as their female colleague earned only 67.2% of that amount. The pay of teachers was somewhat closer with males earning a median weekly salary of \$1,050 and the female teachers bringing in a closer 93.1% of that total amount (Milligan, 2014). Gender equity has been

studied extensively with mixed findings. However, the results from the current study support Zheng and Carpenter-Hubbin's (1999) and Gates' (2004) conclusions that females are less likely to be paid as highly as their male colleagues. Related to education, earning the doctorate degree was not statistically significantly associated with principal base salary. This finding could be attributed to the fact that only 48 of the study participants (7.9%) held the doctorate degree compare to 536 (87.7%) who held a master's degree.

### *Campus Characteristics*

The regression model also included two measures of student characteristics - the percentage of students enrolled in participating high schools that were eligible for free or reduced lunch and the percentage of student who are White. The percentage of students receiving free or reduced lunch had a positive coefficient, while the percentage of students who were White returned a negative coefficient - but only the percentage of White students was statistically significant. This is in contrast to Martin (2010) who finds that educators require positive compensating wage differentials to work in districts with a higher percentage of minority students. Nonetheless, the results indicate that an increase in the percentage of White students in the high school campuses was associated with lower principal salaries, indicating that principals are paid higher salaries in high-need campuses. Campus enrollment was positively related to high school principal salaries. The results indicate principals in larger districts or who lead larger high school campuses receive higher salaries. As for student achievement, the results indicate that principals' base pay is not related to student achievement. In an era where the improvement movement and pay-for-performance is at the forefront of

school reform debates, it is somewhat surprising that student achievement is not associated with principal pay. This is especially concerning as the principals' livelihood is based on accountability ratings and students passing high-stakes state mandated assessments. However a plausible explanation for this finding is that numerous difficulties arise when it comes to linking principal's pay to student academic performance. For example, principals' jobs are multi-dimensional and the linkage of pay to specific performance objectives may not align with the measure of student achievement in the current study. Further, the limited set of student, school, and district controls leaves open the possibility that unobserved student or school characteristics contribute to the higher achievement or accountability rating. Consequently, the outcomes (namely principal salary) may not provide meaningful measures of actual principal effectiveness. Nonetheless, in the current study, student achievement was not a statistically significant predictor of high school principal salary. Table 2 reflects the log salary regression results.

Table 2

## Log Salary Regression Results Examining the Impact of District, Community, Personal, and Campus Factors

Variable	Coefficient	Std. Error	z	p > z	95% CI	
					Lower	Upper
Spatial Lag ( $\rho$ )	0.2694	0.1217	2.21	0.027	0.0308	0.5080
Spatial Error ( $\lambda$ )	0.1816	0.0874	2.08	.038	0.0103	0.3530
% Business Tax	-0.0010	0.0003	-3.40	0.001	-0.0016	-0.0004
% Commercial Tax	0.0006	0.0061	0.10	0.923	-0.0113	0.0125
Log Per-Pupil Property Tax	0.0704	0.0096	7.37	p < .01	0.0517	0.0891
Herfindahl Index	0.0586	0.0255	2.30	0.022	0.0086	0.1086
Log Comparable Wage Index	0.0904	0.0579	1.56	0.119	-0.0231	0.2040
<u>Community Characteristics</u>						
% Homes Owner Occupied	-0.0028	0.0009	-3.06	0.002	-0.0045	0.0010
% > 25 Years old with Bachelor's Degree	-0.0007	0.0010	-0.69	0.489	-0.0025	0.0012
Log Median Income	0.0722	0.0430	1.68	0.093	-0.0121	0.1564
% Voted Republican in 2012	0.0011	0.0006	1.60	0.109	-0.0002	0.0023
% Unemployed	-0.0036	0.0042	-0.85	0.396	-0.0118	0.0047
% Children Under 18 at Home	0.0002	0.0010	0.23	0.818	-0.0017	0.0022
<u>Personal Characteristics</u>						
Experience	0.0028	0.0004	6.52	p < .01	0.0019	0.0036
Doctorate	0.0173	0.0134	1.29	0.197	-0.0090	0.0436
White	0.0091	0.0092	0.99	0.324	-0.0090	0.0271
Male	0.0178	0.0078	2.28	0.023	0.0025	0.0332
<u>Campus Characteristics</u>						
% Low SES	0.0003	0.0004	0.73	0.468	-0.0004	0.0009
% White	-0.0008	0.0003	-2.50	0.012	-0.0014	0.0002
Log Student Enrollment	0.1433	0.0083	17.32	p < .01	0.1271	0.1595
Student Achievement	0.0005	0.0005	0.90	0.368	-0.0006	0.0015
Constant	8.7439	0.4637	18.86	p < .01	7.8351	9.6529

## CHAPTER 5

### DISCUSSION

Using a spatial econometric framework, high school principal salaries were viewed from several lenses in this study by considering effective outcomes of pay defined by actual salaries and market considerations for pay as defined by community, organizational and human capital variables. All variables were taken into account including student demographics, gender of administrator, and even the most predominant political party in the school district.

For all approaches, literature from the private sector as well as from the public school setting was used as a theoretical underpinning for the hypotheses set forth in this study. By focusing on district, community, and personal factors that impact the principal's base salary, this study provides a different perspectives from which conclusions regarding the factors that determine a principal's base salary can be drawn. For example, principals located geographically close earn similar salaries. Specifically, a 1% increase in the distance-weighted average of high school principal salaries in nearby districts increases salaries for high school principals in a given district by ~0.27%. Studies that ignore spatial dependencies are likely to be mis-specified and prone to misleading conclusions. In addition to geographical proximity, experience is rewarded, districts with greater property wealthy pay substantially higher salaries than those in property poor schools, principals in larger districts or leading larger schools receive higher salaries, and males earn higher salaries than females, regardless of their impact on student achievement. The results of this study closely parallel Stone's (1985) research findings.

The literature and current findings are mixed with regards to high school principal pay and low performing schools, with regard to student achievement. Billger (2007) finds a salary differential for principals working in high need campuses, with principals receiving lower salaries in schools struggling to meet national, state, and local accountability standards. However, the literature points to funding as a factor which acknowledges that lower performing schools are often in lower funded districts. Lower performing schools in large metropolitan areas with a common funding formula may not experience the deficits in funding and may still not meet the accountability standards set for the school (Curall, Towler, Judge, & Kohn, 2005). Other studies (e.g., Cullen & Mazzeo, 2008) point to a positive link between a principal's salary and a principal's effectiveness as measured by the school's academic accountability ratings. From a policy perspective, pay for principals is determined unilaterally by a school board, unlike pay for teachers that is, in some states, bilaterally determined with unions through negotiations (Young, 2008). As such, pay amounts for school administrators are subjectively determined on an individual basis within the employment setting.

Another point to recognize is at a time of intensifying testing standards, when US Students are falling behind their international peers, schools need top-rate leaders more than ever. But lower salaries and higher pressure work environments are not an attractive package to school leaders, which increases the rate of turnover in performing and under-performing campuses. "Today's principals are in a senior management position," says Dr. Chester E. Finn, Jr., a former assistant secretary of education under Ronald Reagan and president of the Fordham Institute. "Demands are placed on them 24 hours a day, 7 days a week. They are the CEO of the school. As in any other field, if

you want qualified people, you are going to have to pay principals commensurate with the job that they currently have.” (Urist, 2014, p. 4).

The results of this study have implications for pay and for student achievement. The findings for market factors (statistically significant spatial lag with a positive sign, indicating that high school principal pay is positively related to principal pay in neighboring districts, statistically significant and a negative sign for the percentage of White students enrolled on a campus, and not statistically significant relationship between principal pay and student achievement) may well produce a quandary for the recruitment and for the selection of quality principal candidates at the high school level. The results suggest that policymakers should work to make principal pay more performance-and market driven, but within the context of a formulaic, schedule-based system. Policy changes could include pay-for-performance based on value-added test score growth, higher pay for working in hard-to-staff schools, or any number of other approaches to *paying for contribution* rather than pay based on tenure at the current campus, years of experience as a principal, or for obtaining a job in a wealthy district. Such changes would make the baseline system of principal compensation more likely to attract and retain effective principals and to place them where they are needed the most.

Like all studies, this one has certain limitations. The findings from this study are limited to Texas high school principals with campus enrollments of 500 or more students. Without a doubt, other research is needed both to replicate these findings and to expand on these findings in other ways before any broad generalizations are made relative to community and district determinants of principal pay.

## APPENDIX A

### DEFINITION OF TEXAS SCHOOL DISTRICT CLASSIFICATIONS

#### Definition of Texas School District Classifications

Major Urban (10 districts in Texas). A district is classified as major urban if: (a) it is located in a county with a population of at least 775,000; (b) its enrollment is the largest in the county or at least 75% of the largest district enrollment in the county; and (c) at least 35% of enrolled students are economically disadvantaged.

Major Suburban (78 districts in Texas). A district is classified as major suburban if: (a) it does not meet the criteria for classification as major urban; (b) it is contiguous to a major urban district; and (c) its enrollment is at least three percent that of the contiguous major urban district or at least 4,500 students.

Central City (38 district in Texas). A district is classified as other central city if: (a) it does not meet the criteria for classification in either of the previous subcategories; (b) it is not contiguous to a major urban district; (c) it is located in a county with a population of between 100,000 and 774,999; and (d) its enrollment is the largest in the county or at least 75% of the largest district enrollment in the county.

Central City Suburban (151 districts in Texas). A district is classified as other central city suburban if: (a) it does not meet the criteria for classification in any of the previous subcategories; (b) it is located in a county with a population of between 100,000 and

774,999; and (c) its enrollment is at least 15% of the largest district enrollment in the county.

Independent Town (68 districts in Texas). A district is classified as an independent town if: (a) it does not meet the criteria for classification in any of the previous subcategories; (b) it is located in a county with a population of 25,000 to 99,999; and (c) its enrollment is the largest in the county or greater than 75% of the largest district enrollment in the county.

Non-Metropolitan Stable (213 districts in Texas). A district is classified as non-metropolitan stable if: (a) it does not meet the criteria for classification in any of the previous subcategories; and (b) its enrollment exceeds the median district enrollment for the state.

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