ABSTRACT

The Impact of Student Mobility on School Accountability in Texas

Alfred Lynn Pulliam, Ed.D.

Mentor: Weldon E. Beckner, Ed.D.

In recent years, school accountability increasingly has become an important issue to the public. As this trend continues to escalate, there is a need to examine the effects of student mobility as on school performance and accountability ratings.

Many schools in Texas are affected by student mobility. When large numbers of mobile students are involved, tremendous pressure is placed on the receiving institutions to assess, instruct, and sometimes intervene academically. As it now stands, school accountability ratings include the performance of students who are enrolled prior to the October data submission of the current year.

In the State of Texas, public schools are assigned accountability ratings based largely on the performance of their students on the Texas Assessment of Knowledge and Skills (TAKS). The TAKS assesses students' proficiency of the state standards, the Texas Essential Knowledge and Skills. Students are assessed annually in grades three through eleven.

This study examined the impact high student mobility has on grade three performance scores and the accountability ratings of regular instructional, non-charter

campuses. Using data obtained from the Texas Education Agency, 3,447 campuses were analyzed. A significant negative relationship was found between mobility rate and school accountability ratings. Mobility was also found to be a significant factor in explaining the variance of the All Tests performance of those campuses.

When comparing the score means of 20 identified high-mobility campuses to the scores from the same campuses, but excluding mobile students, significant differences were found. For both the Math and All Tests values, the group from which mobile students had been excluded had significantly higher score means.

This study suggests that school accountability ratings and school performance scores are negatively related to high student mobility rates. Consequently, it also suggests that state accountability standards and ratings should be adjusted to fairly assess the performance of schools with large numbers of mobile students.

The Impact of Student Mobility on School Accountability in Texas

by

Alfred Lynn Pulliam, B.S., M.Ed.

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____
Robert C. Cloud, Ed.D., Acting Chairperson

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Approved by the Dissertation Committee

____
Weldon E. Beckner, Ed.D., Chairperson

____
Elden R. Barrett, Ph.D.

____
Larry J. Browning, Ed.D.

____
Patricia A. Sharp, Ph.D.

____
Robert F. Darden III, M.J.

Accepted by the Graduate School
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J. Larry Lyon, Ph.D., Dean

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CHAPTER ONE

Introduction

This research study examined the effect that high rates of student mobility had on the performance accountability ratings of schools serving highly mobile student populations. As the federal and state accountability systems have taken on greater importance as they relate to school governance and funding, it is crucial that schools be evaluated and rated both accurately and fairly. This study explored the extent to which student mobility affected the rating of a school's academic program. Additionally, it investigated the relationship between high student mobility and a school's ability to educate its stable, non-mobile students.

Background of the Study

Mobility

Student mobility is a measure of how often a child makes non-promotional school changes (Rumberger, 2003). In the United States and in Texas, mobility is an issue, both in terms of residential mobility and, more specifically, school mobility. In 2002, more than 40 million Americans changed residences. Of those, minorities were found to be more likely to move than whites, and those living below the poverty level were more likely to move than those living above the poverty level (Schachter, 2004).

School mobility, frequently a function of residential instability, is often disruptive to both students and schools. These students are largely disengaged, with little or no vested interest in the school or the educational process (Sanderson, 2003).

Student mobility affects both the mobile students and the schools that serve highly-mobile populations. These schools must struggle to assess incoming students and provide needed review and intervention even as they try to maintain instructional pacing and subsequent achievement of the existing students (Rumberger, 2003).

Accountability

The current practice of assigning a school accountability rating to a school based on the performance of that school's population and characterizing subpopulations provides a means of evaluating the effectiveness of that institution's academic program. As such, the accountability rating is viewed by many, both inside and outside the school, as the impetus driving many crucial decisions. Federal and state education agencies gauge the success of schools by their accountability rating and make funding and governing decisions based on the degree to which schools are making adequate progress and whether they are performing proficiently.

Parents consider school ratings when choosing where to reside, both in terms of putting their children in the best possible schools and also by how it affects the property value and resale potential of prospective homes. Realtors use high ratings to market their listings within the district or attendance zones of highly rated schools.

For the purpose of this study, accountability refers to the assignment of school effectiveness ratings based upon the performance of a school's students on standardized tests. The accountability phenomenon can be linked to the downward score trends of American students on college entrance exams first observed in the 1960s. When comparisons with students from other developed countries showed that American students were lagging behind, a national education commission was formed, from which came the 1983 report, *A Nation at Risk*, providing much of the momentum in the escalating accountability movement (Peterson & Martin, 2003). In Texas, the accountability movement is evident in the series of state assessments implemented over the course of the past 25-plus years, each test more rigorous, more comprehensive, and containing more high-stakes attributes than the previous versions.

Assumptions

A review of the literature shows that a high rate of student mobility is generally associated with depressed student achievement (Kerbow, Azcoitia, & Buell, 2003). Subsequently, those schools that serve highly mobile populations may be inherently prone to lower student performance accountability ratings (Texas Education Agency, 1997), especially when student mobility is not sufficiently accounted for by the governing body's rating system.

The effects of high mobility on schools are two-fold. First, the school is directly affected by the achievement scores of students who may have not been in the system long enough to benefit from the existing academic program. Secondly, efforts to review, re-teach, and provide required intensive intervention for mobile students identified as "at-risk" for failing tends to disrupt and slow the instructional and curricular pacing for affected classrooms and schools, thus adversely affecting achievement of the existing non-mobile student population (Kerbow et al., 2003; Rothstein, 2004; Sanderson, 2003).

Assumption 1. Schools which serve a high percentage of high mobility students are unfairly rated by the current Texas accountability system. The academic performance scores of these schools are inclusive of a significant percentage of students who have received a considerable portion of their instruction at institutions other than the schools in which they are currently enrolled; therefore, the earned accountability rating may not accurately reflect the collective effort and quality of education being provided by high mobility schools.

Assumption 2. Schools which serve a high percentage of high mobility students are hindered in their efforts to educate their stable students because of the continual assessment, review, and re-teaching necessitated by incoming mobile students.

Purpose of the Study

The Texas Education Agency assigns accountability ratings to public schools based in large part on the collective performance of a school's student body on the Texas Assessment of Knowledge and Skills (TAKS). The purpose of this research was to study the relationship of student mobility to certain academic achievement factors related to schools and students. To achieve this purpose, the following objectives were pursued:

1. To determine if there is a relationship between student mobility and the accountability ratings of elementary schools in Texas.

2. To determine if there is a relationship between student mobility and the academic performance scores of campuses when controlling for economic status and the ethnicity groups used in determining accountability ratings. The ethnicity groups considered are: African American, Hispanic, and White.

3. To determine if there is a significant difference in the overall academic performance scores of the highest mobility schools and the academic performance scores of those same schools when the scores of high mobility students are deleted.

4. To determine if there is a significant difference in the overall academic performance scores of the highest mobility schools, minus the scores of high mobility students, and the scores of stable schools with similar accountability student groups, minus the scores of high mobility students.

Professional Significance of the Study

As school accountability ratings take on increasing importance on national, state, and local fronts, it has become imperative that the assigned ratings be truly indicative of the effectiveness of the academic programs in place. In Texas, the current system of rating schools is inclusive of students who are enrolled prior to the current year fall PEIMS (Public Education Information Management System) submission in October (Texas Education Agency, 2006a). Therefore, any student enrolled in a Texas public school prior to the October data submission is included in the calculations to determine that school's accountability rating. Currently, testing for many subjects and grade-levels begins in February, meaning that for high-mobility schools, a time frame of only a few months might exist in which to assess and provide re-teaching or intervention to mobile students before the first round of state testing. Because of the high student-mobility impacting some schools, the accuracy and fairness of such a system in rating the academic program of these schools should be brought into question. This study will contribute to the body of knowledge that currently exists pertaining to the assignment of school accountability ratings.

Overview of the Methodology

This study explored the relationship between student mobility and school effectiveness, as indicated by school performance on the Texas Assessment of Knowledge and Skills (TAKS) test. Correlational in nature, it involved comparisons of student performance in low and high mobility schools, compared the performance of certain highly mobile student groups, as identified in the Texas accountability system, and compared the performance of those schools when including and excluding high mobility students.

Limitations and Delimitations of the Study

This study only examined the relationship between high student mobility and school performance and performance accountability ratings. The study was conducted using existing data from identified Texas elementary schools, specifically third grade reading, math, and All Test score data. The results, therefore, may not necessarily be generalized to other states, demographic settings, or grade levels. Only TAKS assessment data were analyzed. Alternative assessment data were not studied outside of comparing mobility to school accountability ratings. The available mobility data used in this study do not allow for the determination of why a student changes schools or whether there is a corresponding residential change. The aim of this study was simply to determine if non-promotional student mobility appears to hamper the current accountability system in accurately rating a school's academic program. The information gathered for this study may have policy implications regarding the use of student mobility data in assigning performance accountability ratings.

Definition of Terms

1. *Academic Excellence Indicator System* (AEIS) − A comprehensive Texas system for grouping a wide range of information about districts and schools into district and campus reports. AEIS reports include detailed information about student performance and student groups, staffing details, and financial particulars.

2. *Accountability Rating System* − In Texas, four base indicators are used to rate public schools for 2006: Spring performance on the Texas Assessment of Knowledge and Skills; Spring performance on the State Developed Alternative Assessment II; completion rate for the class of 2005; and the 2004-2005 annual dropout rate for grades 7 and 8. The accountability rating labels are: Exemplary; Recognized; Academically Acceptable; and Academically Unacceptable.

3. *Economically Disadvantaged Students* – Students who quality for free or reduced school meals, based on a sliding scale of the total household income and the household size (Food and Nutrition Service, 2007).

4. *High-Mobility Schools* – Schools which serve large percentages of mobile students.

5. *PEIMS Data* − The Public Education Information Management System for the state of Texas. PEIMS encompasses all data requested and received by the Texas Education Agency (TEA) about public education, including student demographic and academic performance, personnel, financial, and organizational information.

6. *School Mobility Rate* − For campus reporting purposes, the Texas Education Agency uses the following rule to determine a school's mobility rate: A student is considered to be mobile if he or she has been in membership at the school for

less than 83% of the school year (i.e., has missed six or more weeks at a particular school). For purposes of this study, the state-calculated mobility rates were used to identify high-mobility schools.

7. *Stable Students* − For the purposes of this study, stable students are the third grade students who have been continuously enrolled in a Texas public school since the Fall PEIMS submission of their first grade year.

8. *Student Mobility* − Rate at which students make non-promotional school changes.

9. *Texas Assessment of Knowledge and Skills* (TAKS) − Current state assessment for Texas.

10. *Texas Essential Knowledge and Skills* (TEKS) − Standards for which every public school in the state is responsible for teaching.

CHAPTER TWO

Review of Literature

Overview

School accountability has increasingly become an important issue over the past 15 years. As this trend continues to escalate and take on greater importance with both state and federal components, there is a need to examine the effects that student mobility has on school performance and accountability ratings.

This literature review seeks to explore the scale of student mobility in the U.S. and Texas, the effects of mobility on school accountability ratings, the characteristics of mobile students, and the causes of mobility. Additionally, this literature review investigates the social effects of student mobility, the effects that student mobility has on academic achievement, and the influence mobility has on a school's ability to adequately provide a seamless, consistent curriculum.

Accountability

Federal Accountability

The accountability movement is rooted in the belief that standardized tests are an accurate measure of educational quality. Post World War II development of the Scholastic Aptitude Test (SAT) gave Americans a tool with which to evaluate the quality of public schooling and data upon which to gauge academic progress. When statistically significant declines in SAT scores occurred during the 1960s and 1970s, Americans were effectively put on notice that the U.S. educational system once though to be academically superior, might be flawed. To provide a more comprehensive and accurate evaluation, the federal government, in the late sixties, funded the development of a new test, the National Assessment of Educational Progress (NAEP), which would be administered to a random sample of all students at ages 9, 13, and 17. The NAEP confirmed the declines indicated by the SAT. Comparisons of American students with those from other industrialized countries intensified concerns when results showed that U.S. students lagged behind their international peers. The combined effects of these trends resulted in the appointment of a national education commission in 1982 and the subsequent 1983 report, *A Nation at Risk* (Peterson & Martin, 2003). This report claimed that the quality of American education was leaving the country endangered by other industrialized nations.

Under pressure from the Clinton administration, Congress required mandatory state accountability systems in 1994. However, it was not until after George W. Bush took office in 2000 that accountability legislation became part of a political agenda. Members of both parties crafted and passed a reauthorization of the Elementary and Secondary Act (ESEA), known as No Child Left Behind Act (NCLB), which was signed into Law by President Bush in January of 2002.

As a result of NCLB, states are required to:

- Assess the performance of all students, and student subgroups that meet minimum size requirements, in both math and reading in grades 3-8 each year and at some point in grades 10-12.
- Release the test results to the public.

Schools are required to show that students, and student subgroups, are making Adequate Yearly Progress (AYP) toward full educational proficiency. Schools failing to do so will be identified as "in need of improvement" and parents of children who attend those schools will have the option to move their child to another public school within the district. Schools that fail to make progress after a period of five years will be reconstituted (Peterson & Martin, 2003).

Texas Accountability

State assessment in Texas began in 1980 with instruments that measured what were considered to be basic skills. Over the course of the past 25 years, the state assessments have increased in both rigor and depth of knowledge required to meet the minimum passing standards (Texas Education Agency, 2001). The following is a timeline of testing in Texas:

- 1980 – Texas Assessment of Basic Skills (TABS), a measure of minimum competencies in math, reading, and writing for grades 3, 5, and 9. Results were reported, thus TABS represented the beginning of "high stakes" accountability for schools in Texas.
- 1985 – Texas Educational Assessment of Minimal Skills (TEAMS), a revamped version of the TABS, measured "minimal skills" rather than "basic skills competencies." This was administered to students in grades 1, 3, 5, 7, 9, and 11. The 11^{th} grade test was an "exit level" assessment which students were required to pass in order to receive a diploma.
- 1990 – Texas Assessment of Academic Skills (TAAS), a criterion-referenced exam, represented a change in focus from minimum skills to the academic skills

addressed by the state-mandated curriculum, called the Essential Elements. The TAAS test was designed to measure higher-order thinking skills and problem-solving in math, reading, and writing for grades 3, 5, 7, 9, and 11 (exit level). The TAAS provided information specific to students, campuses, and districts.

- During the 1992-93 school year, state testing was moved from fall to the spring and expanded to include grades 3-8 in reading and math, the writing test was moved to grades 4 and 8, and the exit-level test was moved down from grade 11 to grade 10 and became a requirement for graduation.
- In 1993, a new state-wide accountability system included TAAS performance in assigning schools and districts accountability ratings.
- In 1995, science and social studies were added to the 8th grade TAAS.

- 2003 – Texas Assessment of Knowledge and Skills (TAKS). The TAKS test assesses students' proficiency of the overhauled state curriculum, now called the Texas Essential Knowledge and Skills (TEKS). Students are assessed in grades 3-11 in the following areas: 3-9 reading; 4 and 11 writing; 10 and 11 English Language Arts; 3-11 mathematics; 5, 10, and 11 science; and 8, 10, and 11 social studies. In its efforts to end social promotion, the Texas legislature passed into law the requirement that students demonstrate proficiency on state assessments in order to be promoted to the next grade level and to graduate. Thus, students must now meet minimum proficiency standards in grade 3 (reading), grades 5 and 8 (reading and math), and grade 11 (reading, writing, math, science, and social studies). (Texas Education Agency, 2001)

According to the Texas Education Agency (2001), performance is evaluated for All Students and for the following student groups: African American, Hispanic, White, and Economically Disadvantaged. For a student group to count toward the earned rating, minimum size requirements of 30-49 students that comprise 10% of the student population, or 50 students in the student group regardless of the percentage of the overall student population, must be met. The Texas accountability rating system for public schools and districts currently uses four base indicators:

- Exemplary
  - At least 90% of students tested passing for every subject for All Students and each student group that meets the minimum size requirements.
  - State Developed Alternative Assessment II (SDAA II) results on at least 90% of tests taken meet Annual Review and Dismissal (ARD) committee expectations for All Students group.
- Recognized
  - At least 70% of students tested passing for every subject for All Students and each student group that meets the minimum size requirements.
  - SDAA II results on at least 70% of tests taken meet ARD expectations for All Students group.
- Academically Acceptable - Varies by subject
  - Reading/ELA – At least 60% of students tested passing for All Students and each student group that meets the minimum size requirements.
  - Writing - At least 60% of students tested passing for All Students and each student group that meets the minimum size requirements.

- Social Studies – At least 60% of students tested passing for All Students and each student group that meets the minimum size requirements.
- Mathematics – At least 40% of students tested passing for All Students and each student group that meets the minimum size requirements.
- Science - At least 35% of students tested passing for All Students and each student group that meets the minimum size requirements.
- SDAA II results on at least 50% of tests taken meet ARD expectations for All Students group.

- Academically Unacceptable

The Texas Essential Knowledge and Skills (TEKS) are the standards for which every public school in the state is responsible for teaching. As such, the TEKS are essentially a default curriculum, with components that are specific to each grade level and subject area. The state assessment, the TAKS test, assesses students' proficiency of the TEKS. While such standards provide for commonality and consistency between schools, the state allows districts and schools to exercise local control in determining when and how the standards are taught during a school year (Texas Education Agency, 2006c).

Scale of Mobility

A 1994 U.S. General Accounting Office report revealed that the United States has one of the highest mobility rates of developed countries. Approximately one-fifth of Americans change residences each year. Educationally, school mobility translates to about one in three third graders who had attended at least three schools since beginning the first grade (Health, Education, & and Human Services Division, 1994). According to Schachter (2004), 14%, or about 40.1 million Americans, changed residences between

2002 and 2003. In many of the schools serving large urban centers across the country, mobility rates exceed 70%, with the surrounding suburban schools exhibiting rates up to 40% and 50% (Kerbow, 1996). In a study conducted within the Los Angeles Unified School District, Bruno and Isken (1996) constructed a statistical model that estimated that, of the students who started in the district in first grade, only 33% would remain at the same elementary school for six years.

Texas students are also on the move. According to the latest report on mobility in Texas Public Schools, the Texas Education Agency (1997) found that one out of six students changed schools at least once during the 1994-95 school year and that during a four year span, two-thirds of the first grade students in 1991-92 moved at least one time.

Mobility and School Accountability

The Adequate Yearly Progress component of the No Child Left Behind federal legislation and the accountability measures levied by individual states have redefined school reform and placed tremendous pressure on schools to meet academic performance goals without fully considering the impact that high student mobility has on the ability of schools to meet those goals. The NCLB act does attempt to address student mobility for schools, districts, and states, however, the regulations require that students only be enrolled for one academic year and allow the states to determine what constitutes an academic year (Weckstein, 2003). In Texas, students are counted toward the school's and district's accountability rating if they are enrolled prior to the October PEIMS submission (Texas Education Agency, 2006a).

Offenberg (2004) contends that NCLB and other current reform policies take an oversimplified approach by viewing the academic performance of successive cohorts as valid indications of school and district effectiveness. According to the Texas Education Agency (1997), a strong negative relationship exists between student turnover rate and the campus and district performance indicators. The report found that student turnover rates for *Low-performing* schools were double those for schools which achieved the *Exemplary* rating. With the high rates of student turnover experienced by many schools within large, urban districts, assessment of a school's academic program cannot simply be based on the performance of the students who happen to be attending that year (Offenberg, 2004).

Offenberg (2004) goes on to offer suggestions for NCLB school evaluative measures that address the effects of student mobility: Multiple Program Effectiveness Measures that directly assess a school's implementation of specified standards and instructional strategies, Aggregation of Scores to allow for regional goals instead of school goals, Student Mobility Weighting to account for the amount of time a student has been at that campus, and Value-Added Approaches that focus on student-by-student gains.

Characteristics of Mobility

Student mobility patterns vary by social class. Students from poor families have a higher incidence of mobility than do students from families who are not financially at-risk (Texas Education Agency, 1997). However, even after controlling for previous test performance and socioeconomic status (SES), the Texas Education Agency found that mobile students still performed lower on the state assessments. Similarly, Rumberger and Larson (1998) found that both school and residential mobility were higher among students from low SES families, with stability rates of almost two-thirds for high SES students compared to only 43% for the low SES students. Alexander and Entwisle (1996) distinguish between those students who exit urban systems and those who simply shift between different schools but remain within the same urban system. The students who exit the system tend to be relatively advantaged white students, while those who move frequently within the system are the most disadvantaged, primarily minority students.

Schools that serve mobile student populations compose a very unstable context, with students moving both in and out during the school year. In tracking a cohort of students in Chicago elementary schools, Kerbow (1996) found that mobile students tend to come from poor families and from families with nontraditional parent structures, e.g., single mother, parent-stepparent, or neither parent in household.

As noted by Kerbow (1996), when students do transfer, they tend to show up in similar types of schools. The study conducted by Kerbow shows mobility stratification characterized by school achievement level, racial composition, and economic status. Students who leave high-achieving, low-mobility schools usually end up in schools which have those same characteristics. Similarly, schools that serve a large percentage of at-risk students and have high mobility rates are the recipients of transfers with similar risk factors. Wright (1999) carried out a study showing that student mobility and other risk factors such as ethnicity and family income have a confounding influence on each other and on academic achievement. A study conducted by Alexander and Entwisle (1996) in the Baltimore public schools found the following mobility trends: Students who come from advantaged, white backgrounds tend to exit the inner city schools, whereas poor, minority students are much more likely to shift within the system.

Causes of Mobility

The magnitude of student mobility currently being experienced, and the effects on high-mobility schools, indicates a need to determine the cause. A survey conducted by Kerbow, Azcoitia, and Buell (2003) of more than 13,000 Chicago sixth grade students revealed that the majority of school changes (58%) are due to residential changes, which are often caused by family instability or the limited availability of adequate affordable housing. The second factor associated with school changes, identified by this survey, involved school-related concerns (42%), such as limited academic opportunities and a lack of safety. Dissatisfaction with the current school or the chance of greater satisfaction at another school generated a significant element of mobility. Parent responses to a survey by Mantzicopoulos and Knutson (2000) revealed that 65.6% moved because "they were seeking a better place" (p. 305). Other reasons noted in this survey included: employment change, cost considerations, forced move, new household formed, sale or purchase of home, and expired lease. Rothstein (2004) also discusses the shortage of available affordable housing and the discrepancy that exists between escalating urban rents and working-class incomes.

Social Effects

As might be expected, mobility has a deep social impact on the lives of the mobile students. Additionally, schools that serve large numbers of mobile students are themselves socially affected by the mobility phenomenon. The analysis conducted by South and Haynie (2004) of the data from the *National Longitudinal Study of Adolescent Health* reveals that mobile students are less popular, have smaller networks of friends, and experience greater isolation than their more stable peers. Within their networks of friends, these students have less status and are less likely to nominate a best friend who reciprocates the nomination. The parents of mobile students are also less likely to be knowledgeable about their children's networks. In schools which serve high numbers of mobile students, all students, mobile and stable, tend to have smaller networks of friends, have less prestige, and are less likely to have parents who are familiar with their friends or their friends' parents.

Student behavior also appears to be related to high mobility. In a study conducted by Nelson, Simoni, and Adelman (1996), students who did not move, or moved only once, received higher behavior ratings than did students who had moved two or more times. Additionally, the mobile students had more absences than their stable counterparts. Also, Rumberger and Larson (1998) found that students who changed schools at least once between the eighth and twelfth grades were twice as likely to drop out of school when compared to their stable counterparts.

Effects on Academic Growth and Achievement

Although the effects of mobility, by reducing the curricular and instructional pace, have been shown to result in a lessening of academic achievement for all students in a high-mobility school, the effects of mobility are acutely experienced by the mobile students themselves. Changing schools results in a disruption of a child's learning experiences, requiring a period of adjustment that is reflected in test scores during the year following the change. In examining a six year period, students who move only once do not suffer dramatic losses and are able to recover academically. However, frequent movers require adjustment periods that extend across years and different schools. These students suffer from the cumulative effects of sustained instability (Kerbow et al., 2003).

Kerbow et al. (2003) specifically describe three factors that might contribute to the cumulative effects attributed to the instability of mobile students. First, students who move between schools experience academic gaps because they miss out on exposure to key concepts. Because such skills and concepts are prerequisites for future learning, the consequences may be delayed as students move across grade levels. Second, students' opportunities to learn are affected by the pace of instruction. Mobile students are not able to benefit from a consistent and sustained instructional pace, but instead experience divergent pacing across classrooms and schools, limiting their ability to learn, even when entering a classroom at a similar point in the curriculum. Lastly, mobile students are particularly impacted by ability grouping. Due to the limited information that teachers typically have for new students, placement into ability groups may be inaccurate. High mobility, even for students of high aptitude, usually restricts access to the higher ability groups that often receive greater instructional time and enhanced opportunities.

In looking at student mobility from a classroom perspective, Lash and Kirkpatrick (1990) found that mobile students face substantial challenges in making academic progress due to the fragmented curriculum and instruction resulting from multiple school to school moves. The same study found that mobile students also suffer from delays in transferring student records, resulting in an uninformed placement of students into classes and academic groups. Engec (2006) found that a negative relationship exists between student mobility and student performance on academic achievement tests. When looking at mobile versus stable students, the stable students outperformed the mobile students on the Iowa Test of Basic Skills. These results held true even when mobility was due to obligatory school changes.

Even when considering students' background characteristics, mobile students show less academic progress than their stable classmates. While the impact of a single move is not large, the cumulative effects of mobility for students with multiple school changes are significant and extend across years (Kerbow, 1996). Students who change schools three or more times during their first through sixth grade years are almost one academic year behind their non-moving peers (Kerbow et al., 2003). Similarly, Heinlein and Shinn (2000), in comparing early mobility to later mobility, found that high student mobility had a strong negative association with both math and reading achievement. Students who exhibited early mobility, two or more moves prior to grade three, were shown to score lower than their peers in reading and math in grade three. These students were also less likely to be performing at grade level, a pattern that held constant through grade six. Additionally, students who had moved at least three times before grade three were found to be more than twice as likely to be over-age by grade six than students with no moves before grade three.

In looking at how mobility affects students in their early years, Mantzicopoulos and Knutson (2000) conclude that an adverse relationship exists between school mobility and academic competence. Students with greater stability in their early years tended to perform better on both reading and mathematics achievement tests than students with less stable environments. Comparable results came out of a study conducted by Brent and Diobilda (1993), which found that student mobility has a negative effect on student achievement, especially in reading, which may be more affected by continuity of instruction than other subject areas.

In a study involving the Pittsburgh Public School system, Dunn, Kadane, and Garrow (2003) found that a negative correlation existed between mobility and academic achievement, as measured by standardized test scores for the 1998-99 and 1999-2000 school years. In comparing mobility to attendance, the harm associated with mobility was found to be equivalent to missing 32 days of school during the 1998-99 school year or 14 days of school during the 1999-2000 school year.

In Texas, high mobility students achieved lower Texas Learning Index (TLI) scores at all tested grade levels on both reading and mathematics tests (Texas Education Agency, 1997). Similarly, Alexander and Entwisle (1996) found that those students who move frequently within an urban system scored the lowest on achievement tests when compared to students with no moves or who move less frequently, and especially when compared to their more advantaged peers whose mobility is largely represented by an exit from the inner city school systems.

The effects of mobility may be amplified for students who also are dealing with other at-risk conditions. Malmgren and Gagnon (2005) found that students who had been diagnosed as emotionally disturbed and who were also involved with child welfare and juvenile corrections agencies have very high rates of school mobility, further amplifying the academic and social problems faced by these students.

The negative effects of mobility are not limited to Texas, or even the U.S. In an analysis of London schools, Demie (2002) found the average performance of mobile students to be substantially below that of their stable classmates at all key stages, even when the background characteristics of students are considered.

Effects on Providing Curriculum and Instruction

Part of the turbulence inherent to high mobility is manifested in a school's ability to provide a seamless curriculum and aligned instructional programs. According to Kerbow et al. (2003), schools generally lack a systematic, organizational level approach in responding to student mobility. The default approach typically falls to the classroom teacher, who usually has limited information about the new arrival's academic background and performance history. Subsequently, the teacher feels obligated to spend time reviewing previously covered material, thereby slowing down the curricular pace, which has the effect of limiting the learning opportunities for all students, including the new student (Kerbow, Azcoitia, & Buell, 2003; Lash & Kirkpatrick, 1990; Rothstein, 2004).

Kerbow et al. (2003) found that students in Chicago schools with high mobility rates, even those students who have remained in that school, are a year behind students in more stable schools in terms of the instruction and content they receive. Sanderson (2003) also discusses the loss of instructional time due to reviewing because of learning gaps or an inadequate academic foundation for mobile students in their new classrooms. Compounding the problem, as indicated by Sanderson's interviews, is the lack of a "vested interest in the classroom, school, or more widely, in learning" (p. 603).

High mobility rates also affect classroom instruction. Both long-term planning and the adoption of innovative practices are adversely affected. Teachers' ability to plan beyond the immediate grading period is mitigated by the influx and exit of students over the course of an instructional unit. The unstable context within high-mobility classrooms discourages the use of innovative instructional practice and decreases collaboration amongst teachers as they focus on a “generic” student rather than trying to meet the needs of an ever-changing classroom composition (Kerbow, 1996). Similar results were observed in the study conducted by Bruno and Isken (1996), who found that a loss of instructional time accompanied the enrollment of new students. Surveys from affected teachers showed that instructional time was disrupted due to efforts to assess, review, and re-teach subject area content and teach procedures and rules specific to the classroom and the school.

Addressing Mobility

Student mobility is clearly a multifaceted and complex issue, one which requires a comprehensive approach to ensure that schools are able to meet the challenges associated with it. The instability created by high student mobility presents challenges for the mobile students themselves and more generally it also adversely affects the schools in which the unstable context manifests itself, disrupting classroom processes and the overall operations of the school (Kerbow, 1996).

Fisher, Matthews, Stafford, Nakagawa, and Durante (2002) use a “cycle of mobility” framework that examines how the causes and effects of mobility are linked by looking at the mobility antecedents, the effects of mobility on school processes, and the consequences of mobility (p. 317). The results from the study conducted by Fisher et al. suggest that program and intervention efforts should be inclusive of all three aspects of the mobility cycle, as opposed to separate programs that target specific components of the cycle: causes, effects, or consequences.

Rumberger (2003) recommends that schools and teachers be proactive in dealing with mobile students by facilitating the flow of information between schools, by putting induction measures in place to ease the transitions socially and academically, and by developing a local assessment system to gauge student competencies and determine appropriate placement. Similarly, Lash and Kirkpatrick (1990) recommend that teacher training programs acknowledge the mobility issue and address it by implementing strategies used successfully by teachers in high-mobility schools. The authors also suggested that teachers in those schools familiarize themselves with curricula to aid them in understanding instructional differences, making them better able to assist students in making school transitions.

Analyses conducted by Kerbow (1996) suggest a two-pronged discussion of policy issues, those that address strategies to decrease mobility, as well as initiatives to help schools lessen the impact of mobility on learning and support schools which are affected. In urban districts, mobility has been shown to be an internal phenomenon of students shifting within the system. According to Kerbow, in these cases, efforts to *hold students* should include tactics that focus on building links between the schools and the families and communities which they serve. Schools should work to build meaningful relationships with the parents of the students served and keep those parents informed as to the importance of school stability. Also, because the majority of mobile urban students cycle among schools within a geographic cluster, principals within these clusters could work together to refer students back to the originating schools when transfers are requested. For students who experience residential instability, transportation policies could be reviewed and changes implemented to allow the affected students to remain at their current schools.

Policies to lessen the impact of mobility should address the expeditious transfer of student records between schools, the use student portfolios to facilitate the exchange of information and accurately inform the receiving school and teachers, a school-wide approach that includes an initial assessment to evaluate where incoming students are in regards to the curriculum and provide needed intervention and classroom support, and commonality in curriculum and instruction (Hartman & Franke, 2003; Kerbow, 1996). Similarly, Malmgren and Gagnon (2005) advocate a multi-system approach in which transfer policies of the local education agency are adopted to allow students to remain in their current schools when child-service agencies must make decisions that affect students' residential placement, necessitating open channels of communication between the schools, the LEA, and representatives from the child-serving agencies. Also, the finding by Norford and Medway (2002) that parental attitudes about relocating are positively correlated with student depression indicates that school-based efforts to address mobility should involve the parents of affected students.

CHAPTER THREE

Methodology

Student mobility is the practice of students making non-promotional school changes and is a phenomenon that has detrimental effects on both the mobile student and the classrooms and schools involved (Rumberger, 2003). Students who change schools frequently tend to experience instructional gaps that affect both current and future learning. They are subjected to divergent pacing across classrooms and schools, and typically do not have access to high ability groups, both of which serve to limit the mobile students' ability to achieve minimum state achievement standards (Kerbow et al., 2003). Efforts to assess, review, and re-teach mobile students serves to slow the instructional and curricular pace of the affected classrooms (Bruno & Isken, 1996). In schools that serve large numbers of mobile students, the ability to achieve desired accountability measures is adversely affected by the unstable context of high student mobility rates.

This chapter provides an explanation of the methods used in this study and the procedures for analyzing the data gathered. The performance expectations and annual progress goals outlined in both state and federal legislation justify a need for understanding the impact that student mobility has on academic performance accountability ratings. The accountability movement and the high stakes associated with school accountability ratings have increased the interest in studying the determinants of achievement ratings. Many previous studies reveal that student mobility adversely influences the primary measures used in assigning performance accountability ratings to schools. Chapter three is an overview of the study hypotheses, research design, participants, methodology, and data analysis procedures.

The purpose of this research was to study the relationship of student mobility to certain academic achievement factors related to schools and students by addressing the following four null hypotheses:

1. There will be no significant relationship between student mobility and the accountability ratings of elementary schools in Texas.

2. There will be no significant relationship between student mobility and the academic performance scores of elementary schools in Texas when controlling for economic status and ethnicity, using the reported accountability ethnic groups: African American, Hispanic, and White.

3. There will be no significant difference in the overall academic performance scores of the identified highest mobility schools and the academic performance scores of those schools when the scores of high mobility students are deleted.

4. There will be no significant difference in the overall academic performance scores of the identified highest mobility schools, excluding high mobility student scores, and identified similar schools with the lowest incidences of mobility, excluding high mobility student scores.

Research Design

This correlational study investigated existing relationships between student mobility and student achievement. School mobility rates were compared to school performance accountability ratings and mobile student performance on the Texas Assessment of Knowledge and Skills (TAKS) test with the performance of stable students. Additionally, using third grade TAKS data from the 2005-2006 school year, this research compared the reported school performance under the current system, including all students enrolled prior to the October PEIMS submission, to the school performance excluding all students who were not continuously enrolled from the Fall PEIMS submission of their first grade year through their third grade testing cycle.

Data from all regular instructional, non-charter school, third grade-inclusive Texas public elementary schools with third grade enrollments of 22 or more students were analyzed to address Hypotheses 1 and 2. The grade 3 enrollment figure of 22 was chosen as the minimum, because it represents the maximum number of enrolled students allowed per class for Kindergarten through grade four (Texas Education Code, 2006). Using this figure as a minimum limit ensured that the study only analyzed data from schools having at least the equivalent of one full third grade class. To ensure a manageable scale, Hypothesis 3 focused on the third grade TAKS reading and math results of 20 Texas elementary schools with the highest mobility rates, while Hypothesis 4 included the 20 highest mobility campuses along with 20 similar elementary schools with the lowest incidences of mobility. Schools newer than the 2004-2005 school year were not considered, because mobility rates do not exist for those schools. This chapter describes the participants, the instrumentation utilized in the study, the procedures that were used to collect the data, and the data analysis.

Participants

The target population was all of the regular instructional, non-charter school, third grade-inclusive public elementary schools in the state of Texas (3,447) with third grade enrollments of 22 or more students that were in operation prior to the 2005-2006 school year. This population was chosen because of the accessibility of assessment data through the Performance Reporting Division of the Texas Education Agency. The participant pool encompassed all student subgroups.

The initial download of campus level data returned 7,956 schools. After filtering to exclude campuses that did not include grade three, charter schools, and non-regular instructional campuses, the campus total was reduced to 3,769. The data were then sorted by grade 3 enrollment and schools with less than 22 students were excluded, further reducing the campus total to 3,447. The 3,447 campuses were then sorted by the state-calculated mobility percentage in order to run statistical analyses for Hypotheses 1 and 2. Additionally, sorting by mobility served to identify the 20 highest mobility campuses, within the parameters described above, to be used to test Hypotheses 3 and 4. Using school-specific information included in the datasets, aggregate totals were calculated to create a mobile study group from the 20 identified, high mobility campuses. The aggregate totals for the high mobility group are as follows:

- Aggregate total enrollment = 8,607
- Aggregate total grade 3 enrollment = 1,123
- Aggregate mobile enrollment/mobility percentage = 3,718/43%
- Aggregate African American (AA) enrollment/percentage = 2,926/34%
- Aggregate Hispanic (H) enrollment/percentage = 3,425/40%
- Aggregate White (W) enrollment/percentage = 2,041/24%
- Aggregate Economically Disadvantaged (EcD) enrollment/percentage = 7,081/82%

Using the aggregate demographic accountability student group percentages of the identified high mobility campus group shown above, filters were set for a range of plus or minus ten percentage points for each group: AA, H, W, and EcD. The filters returned 37 campuses out of the original 3,447 that fit the specified, student group ranges. Using student group ranges based on the highest mobility campuses ensured that only similar low-mobility campuses were compared. Those campuses were then sorted by mobility percentage in ascending order, with the top 20, least mobile campuses identified to comprise the comparison group for Hypothesis 4. The aggregate totals for the identified, low mobility group are as follows:

- Aggregate total enrollment = 10,107
- Aggregate total grade 3 enrollment = 1,697
- Aggregate mobile enrollment/mobility percentage = 2,104/21%
- Aggregate African American (AA) enrollment/percentage = 3318/33%
- Aggregate Hispanic (H) enrollment/percentage = 4,057/40%
- Aggregate White (W) enrollment/percentage = 2,391/24%
- Aggregate Economically Disadvantaged (EcD) enrollment/percentage = 8,081/80%

For Hypotheses 3 and 4, bilingual campuses administering the Spanish versions of the TAKS were excluded due to the unavailability of combined performance data at the level of specific grades. The combined performance data are only reported at the campus level for all tested grades. After sorting for mobility, four bilingual campuses were excluded for the mobile group and two were excluded for the matched, less mobile group.

Instrumentation and Procedures

The following data were utilized for this study.

1. Campus Mobility Rate.

2. Campus Accountability Rating.

3. Campus TAKS Performance Data.

4. Campus TAKS Performance Data (overall and excluding students not continuously enrolled for three years).

This proposal was submitted to the Baylor University Institutional Review Board and approved for exemption based upon the public accessibility of the data to be used. The data were collected by: (a) gathering campus-specific information (campus enrollment, grade 3 enrollment, demographic student counts and percentages, mobility rates, campus performance accountability ratings, and school TAKS performance scores from the on-line Performance Reporting Division at the Texas Education Agency's website, www.tea.state.tx.us/), (b) making a request to the TEA Student Assessment Division to remove TAKS performance data of non-continuously enrolled, and non-naturally progressing students from the 20 identified highest mobility third grade inclusive elementary schools and the 20 matched less mobile, but demographically similar schools (Appendix A, B), (c) downloading and merging the appropriate datasets, (d) importing the data into the SPSS 15 statistical analysis program, and (e) running the appropriate statistical tests.

Data Analysis

The variables used in this study are quantitative; that is, they are continuous, differing in degree, not kind (Glass & Hopkins, 1996). School mobility was the key independent variable for all four hypotheses. School mobility rate was selected as the key independent variable because this study was interested in the effect that mobility had on accountability ratings and academic performance scores of schools.

The school performance accountability rating was the dependent variable in Hypothesis 1. The ratings of Exemplary, Recognized, Academically Acceptable, and Academically Unacceptable were coded as 1, 2, 3, and 4. An analysis of variance (ANOVA) was performed to determine if a relationship existed between performance accountability ratings and student mobility rates.

In addition to using school mobility rate as the key independent variable, Hypothesis 2 was tested utilizing economic status and ethnicity as control variables. Academic performance on the TAKS served as the dependent variable. Using performance data from all third grade-inclusive public schools, a multiple linear regression analysis was performed to calculate a regression coefficient and to determine which variables were the primary predictors of academic performance. To test this hypothesis, six linear regression analyses were performed with the reported TAKS performance values for the following areas serving as the dependent variables: All Tests, All Tests SPANISH, Math, Math SPANISH, Reading, and Reading SPANISH.

Hypothesis 3 involved the comparison of combined aggregate academic performance scores of the 20 identified highest-mobility schools to aggregate scores of those same schools after removing the scores of high mobility students. A *t* test was performed to compare the performance score means of these two groups for TAKS Math, Reading, and All Tests.

Hypothesis 4 involved the comparison of combined aggregate academic performance scores of the identified highest mobility schools, excluding the scores of high mobility students, to aggregate scores of the least mobile, demographically similar schools, also excluding the scores of high mobility students. As with Hypothesis 3, a *t* test was performed to assess the statistical differences between the means of these two groups for TAKS Math, Reading, and All Tests.

Summary

This chapter aspired to explain the methodology used to analyze the relationship between student mobility and school achievement and between student mobility and school accountability ratings. The data used were obtained through publicly available downloads from the TEA website and from TEA through Public Information Requests.

Table 1

Methodology Summary

Research Null Hypotheses	Location	Analysis
There will be no significant relationship between student mobility and the accountability ratings of elementary schools in Texas.	TEA Website	ANOVA
There will be no significant relationship between student mobility and the academic performance scores of elementary schools in Texas when controlling for economic status and ethnicity, using the reported accountability ethnic groups: Black, Hispanic, and White.	TEA Website	Multiple Linear Regression

(*table continues*)

Research Null Hypotheses	Location	Analysis
There will be no significant difference in the overall academic performance scores of the identified highest mobility schools and the academic performance scores of those schools when the scores of high mobility students are deleted	TEA Public Information Request	*t* test of independent samples
There will be no significant difference in the overall academic performance scores of the identified highest mobility schools, excluding high mobility student scores, and identified similar schools with the lowest incidences of mobility, excluding high mobility student scores.	TEA Public Information Request	*t* test of independent samples

CHAPTER FOUR

Results and Findings

The purpose of this research was to determine if high student mobility is related to school performance and campus accountability ratings in Texas. Student mobility is the practice of students making non-promotional school changes and is a phenomenon that has detrimental effects on both the mobile student and the classrooms and schools involved (Rumberger, 2003). Campus accountability ratings in Texas are determined largely by the collective performance of a campus' students, overall and by ethnicity and economic status. The accountability student groups are: African American, Hispanic, White, and Economically Disadvantaged. This chapter contains a description of the population and results from the statistical analyses. The study is organized by research hypotheses, stated as null hypotheses.

Hypothesis 1

Null Hypothesis 1

There will be no significant relationship between student mobility rates and the accountability ratings of elementary schools in Texas.

The population consisted of all regular instructional, non-charter, third grade-inclusive public elementary schools in the state of Texas with third grade enrollments of at least 22 students that were in operation prior to the 2005-2006 school year. By eliminating schools not meeting the above criteria, 3,447 campuses were identified.

The original TEA download used text to indicate accountability ratings (E = Exemplary, R = Recognized, A = Academically Acceptable, and L = Academically Unacceptable), a feature incompatible with the statistical software used for the data analyses. The accountability ratings were recoded as: 1 = Exemplary; 2 = Recognized; 3 = Academically Acceptable; and 4 = Academically Unacceptable. The data were then sorted by the campus mobility percentage and analyzed by conducting a one-way analysis of variance (ANOVA) to evaluate the relationship between mobility, the key independent variable, and school accountability rating, the dependent variable.

Table 2

Descriptive Statistics - Campus Mobility Percentage

Variable	N	Mean	Std. Deviation	Std. Error
Exemplary	461	13.6080	6.81978	.31763
Recognized	1788	19.0550	6.65456	.15737
Academically Acceptable	1153	21.8055	7.06823	.20816
Academically Unacceptable	45	23.4267	5.75450	.85783
Total	3447	19.3036	7.27908	.12398

As can be seen in Table 2, the one-way ANOVA for all campuses (N = 3,447) calculated a total mobility rate mean of 19.30%. By accountability rating, the Exemplary schools (N = 462) had a mean mobility rate of 13.61%. Schools achieving the Recognized rating made up the largest group (N = 1,788) and had a mobility rate mean of 19.06%. Academically Acceptable campuses (N = 1,153) had a mobility rate mean of

21.81%. The Academically Unacceptable group included the smallest number schools (N = 45) and had a mean mobility rate of 23.43%.

Figure 1 is a visual representation of the mobility rate mean for each campus accountability rating.

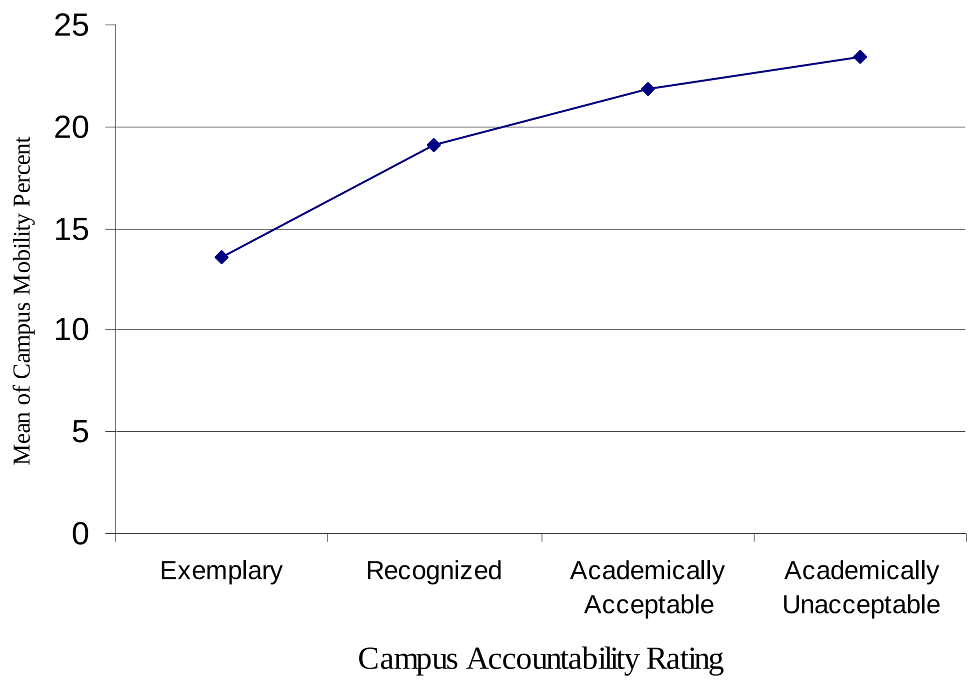

Figure 1. Plot of Accountability Rating Mobility Means

The ANOVA *F*-ratio, calculated by dividing the Mean Square Between Groups (7,682.37) by the Mean Square Within Groups (46.34), is 165.79 at a significance level of $p = 0.00$. The ANOVA test provides the first indication of a relationship between mobility and student academic performance.

Table 3

ANOVA – Campus Mobility Percentage

	Sum of Squares	df	Mean Square	*F*	Sig.
Between Groups	23047.096	3	7682.365	165.793	.000
Within Groups	159539.009	3443	46.337		
Total	182586.105	3446			

Hypothesis 2

Null Hypothesis 2

There will be no significant relationship between student mobility and the academic performance scores of elementary schools in Texas when controlling for economic status and ethnicity, using the reported accountability ethnic groups: Black, Hispanic, and White.

As with Hypothesis 1, the population consisted of all the regular instructional, non-charter, third grade-inclusive public elementary schools in the state of Texas with third grade enrollments of at least 22 students that were in operation prior to the 2005-2006 school year. By eliminating schools not meeting the above criteria, 3,447 campuses were identified. The data were then sorted by the campus mobility percentage and analyzed to evaluate the relationship between mobility and academic performance scores on the TAKS test, while controlling for economic status and the accountability ethnic groups: African American; Hispanic; and White. Using third grade performance data, a series of multiple linear regression analyses were performed to calculate regression coefficients and to determine which variables were the primary predictors of academic performance. For these analyses, student mobility was the key independent variable, economic status and ethnicity were the control independent variables, and TAKS performance was the dependent variable. Separate regressions were run for the *Met Minimum Passing Standard* rates for: All Tests, All Tests Spanish, Math, Math Spanish, Reading, and Reading Spanish. The All Tests rate represents the percentage of students meeting minimum passing standards for both the Reading and Math tests. The reported Spanish TAKS performance results were also included in the analyses to evaluate the effect of mobility on the TAKS performance of bilingual campuses that administer the Spanish version to their qualifying Limited English Proficient students.

Results from the multiple regression analyses performed for each reported area (All Tests, All Tests Spanish, Reading, Reading Spanish, Math, and Math Spanish) are described in the following paragraphs. For each regression analysis, several indices were studied to interpret the output relative to variance, predication strength, and significance.

In reporting campus TAKS results, the Texas Education Agency (TEA) takes measures to protect the confidentiality of students whose scores comprise reported student groups with very small numbers or for student groups in which all students pass or all students fail. These efforts to comply with the federal Family Educational Rights and Privacy Act (FERPA) are carried out through the use of masking (Appendix C). Generally, “masking” refers to the use of symbols on reports and within datasets to conceal performance results. Texas Education Agency (2006b) masks results for the following conditions:

1. When less than five students in a group are assessed.
2. When all students pass or all students fail. (Texas Education Agency, 2006)

Since this study objective analyzed only the results of schools with at least 22 grade-three students and only included the All Students values (test results for specific student groups were not part of these analyses), the effects of masking on the data analyses were minimized. Specifically, some of the bilingual campuses administering the Spanish TAKS were affected by the masking for less than five students in a group. Those results for which the All Students values were comprised of less than five students were not included in this study. For the All Students values in which all students passed or all students failed (distinguished in the original dataset by separate, identifying symbols), the data were recoded as either 100% or 0% for the purpose of the study.

For campuses with bilingual programs serving Spanish-speaking Limited English Proficient (LEP) students, qualifying students might take either the regular English version of the TAKS or the Spanish TAKS. The Language Proficiency Assessment Committee (LPAC) considers each student individually and decides on the most appropriate assessments for Math and Reading. Based on the LPAC decision, Spanish-speaking LEP students may take the Spanish TAKS for both Reading and Math; the English TAKS for both Reading and Math; or the Spanish TAKS for one of the tested areas and the English TAKS for the other tested area. For each student, the LPAC must consider the following information when making the decision to test in Spanish or English:

- The language of instruction and the language in which the student is best able to demonstrate his or her academic skills.
- Whether the student has already taken the Spanish-version state assessment for three years.

- Whether the student's years of LEP exemptions combined with administrations of the Spanish-version state assessment already total three years. (Texas Education Agency, 2006c)

As discussed in the review of literature, economic status has been shown to be related to mobility. Rumberger and Larson (1998) found that mobility, both school and residential, was higher for students from low socioeconomic status families when compared to students from families with adequate financial resources. While not the focus of this study, an analysis of the relationship between economic status and student mobility is helpful in understanding the interaction between these two factors. Using the mobility and Economically Disadvantaged data from the regression sample, a Pearson correlation coefficient was computed. Table 4 shows the results of a bivariate correlation using mobility percentage and Economically Disadvantaged as variables. The correlation between mobility and economic status was significant with a Pearson's $r=.57$ ($p<.001$). While the correlation is quite high, it is not high enough to warrant concern that the two variables are measuring the same phenomenon.

Regression 1: All Tests

For this analysis, mobility is the key independent variable, All Tests performance is the dependent variable, and the control independent variables are Black, Hispanic, White, and Economically Disadvantaged. As seen in Table 4, of the 3,447 campuses identified, 3,445 had reported values for All Tests performance. Rationale for omitting the All Tests results of the other two campuses was not available on the TEA Performance Reporting website.

Table 4

Mobility & Economically Disadvantaged Correlation

Variable	Mobility %	Economically Disadvantaged
Mobility %		
Pearson Correlation	1	.570(**)
Sig. (2-tailed)		.000
N	3447	3447
Economically Disadvantaged		
Pearson Correlation	.570(**)	1
Sig. (2-tailed)	.000	
N	3447	3447

Note: ** Correlation is significant at the 0.01 level (2-tailed).

The R squared (squared multiple correlation) explains how much variance in the dependent variable is explained by the independent variables. As can be seen in Table 6, the All Tests regression reveals an R square of .408, meaning that 40.8% of the All Test variance can be explained by the independent variables. Also, as can be seen in Table 6, the ANOVA meets a significance level of p = .0001, indicating that the model is significant.

The standardized Beta coefficients in Table 6 show the predictive, or explanatory, strength of each of the independent variables, at the indicated significance level. The strongest predictor of All Tests performance is Economically Disadvantaged, with a Beta equal to -.465, at a significance level of p = .000. The relationship represented by the negative Beta signifies that as the percentage of economically disadvantaged students

Table 5

All Tests – Descriptive Statistics

Variable	Mean	Std. Deviation	N
All Tests – English	75.96	15.024	3445
Mobility %	19.311	7.2745	3445
Black	14.127	18.7377	3445
Hispanic	47.977	32.4333	3445
White	34.691	30.3017	3445
Economically Disadvantaged	62.56	27.764	3445

Table 6

All Tests – Regression of Academic Performance on Mobility and Control

Variables	Beta	P
Mobility %	-.064	.000
Black	-.285	.000
Hispanic	-.235	.015
White	-.139	.094
Economically Disadvantaged	-.465	.000

Note: R^2=.408, Adj. R^2=.407, p=.0001, N=3445

increases, the All Tests academic performance decreases. In order of descending prediction strength, the Beta coefficients for the other independent variables are: Black at a Beta = -.285 (p=.000); Hispanic at Beta = -.235 (p=.015). White at Beta = -.139 and a significance of p = .094, above the .05 level of significance; and Mobility Percentage at Beta = -.064 and a significance level of p = .000.

The test-generated Beta coefficients indicate that all of the independent variables, except White, are significant predictors of All Tests performance.

Regression 2: All Tests SPANISH

As in the previous analysis, mobility is the key independent variable, All Tests SPANISH performance is the dependent variable, and the control independent variables are Black, Hispanic, White, and Economically Disadvantaged. Table 7 shows that the N decreased substantially when only considering the campuses that have a reported All Tests Spanish performance. Of the 3,447 campuses meeting the study parameters, only 1,047 have All Tests SPANISH performance values. Also, the All Tests SPANISH varies considerably from the All Tests described above in regards to the calculated mean rates of the control independent variables (Black, Hispanic, White, and Economically Disadvantaged).

Table 7

All Tests SPANISH – Descriptive Statistics

Variable	Mean	Std. Deviation	N
All Tests – SPANISH	52.73	24.622	1047
Mobility %	21.694	6.4198	1047
Black	10.895	14.0072	1047
Hispanic	76.807	21.7764	1047
White	76.807	21.7764	1047
Economically Disadvantaged	10.498	14.4487	1047

The calculated R squared (squared multiple correlation), shown in Table 8, of 0.015 indicates that just 1.5% of the All Test SPANISH variance can be explained by the independent variables. The table shows an acceptable significance level of p = .007 for this regression model; however, this indice's relevance is mitigated by the small variance effect (R square) of the independent variables on the All Tests SPANISH performance. Likewise, the predictor strength indicated by the Beta coefficients loses importance due to the low R square.

Table 8

All Tests SPANISH – Regression of Academic Performance on Mobility and Control Variables

Variables	Beta	P
Mobility %	-.062	.067
Black	-.178	.300
Hispanic	-.406	.108
White	-.326	.050
Economically Disadvantaged	-.023	.714

Note: R^2=.015, Adj. R^2=.011, p=.007, N=1047

Regression 3: Math

Of the original study population of 3,447 schools, Math results were not reported for two of the campuses, leaving a sample size of 3,445. Rationale for omitting the Math results of the two campuses was not available on the TEA Performance Reporting website. The means for each independent variable group can be seen in Table 9. For this regression, Math performance is the dependent variable. The key independent variable is the mobility percentage and the control independent variables are again: Black; Hispanic; White; and Economically Disadvantaged.

Table 9

Math – Descriptive Statistics

Variable	Mean	Std. Deviation	N
Math-English	82.14	13.399	3445
Mobility %	19.311	7.2745	3445
Black	14.127	18.7377	3445
Hispanic	47.977	32.433	3445
White	34.691	30.3017	3445
Economically Disadvantaged	62.56	27.764	3445

The R square of 312 means that 31.2% of the Math performance variance can be explained by the independent variables. Additionally, the analysis of variance shown in the regression returned an F test of 312.055 at a significance level of p = .0001, indicating significance.

The prediction strength of the independent variables can be seen in the calculated Beta coefficients shown in Table 10. The independent variable with the greatest prediction strength is Economically Disadvantaged, with a Beta of -.412 at a significance level of p = .000. The negative Beta means that as the percentage of Economically Disadvantaged students increases, the campus math performance decreases. The Beta coefficients for the other significant independent variables are: Black at a Beta = -.326 (p = .000); Hispanic at a Beta = -.262 (p = .011); and White at a Beta = -.194 (p = .031).

Mobility percentage, at a Beta = -.035, is close to being significant at p = .052, just over the .05 acceptable level of significance.

Table 10

Math – Regression of Academic Performance on Mobility and Control Variables

Variables	Beta	P
Mobility %	-.035	.052
Black	-.326	.000
Hispanic	-.262	.011
White	-.194	.031
Economically Disadvantaged	-.412	.000

Note: R^2=.312, Adj. R^2=.311, p=.0001, N=3445

The test-generated Beta coefficients indicate that all of the independent variables, except Mobility, are significant predictors of All Tests performance.

Regression 4: Math SPANISH

For this regression, Math SPANISH performance served as the dependent variable with mobility percentage the key independent variable and Black, Hispanic, White, and Economically Disadvantaged as the control independent variables. As can be seen in Table 11, the sample size for this regression was N = 972, which is the number of schools within the original parameters that had at least five students taking the Math SPANISH TAKS.

Table 11

Math SPANISH – Descriptive Statistics

Variable	Mean	Std. Deviation	N
Math-Spanish	67.81	21.118	972
Mobility %	21.791	6.4658	972
Black	11.189	14.2208	972
Hispanic	76.588	21.7392	972
White	10.402	14.3250	972
Economically Disadvantaged	83.08	15.468	972

According to Table 12, the regression analysis performed to test the hypothesis returned an R square value of .020, meaning that only 2% of the Math SPANISH performance variance can be explained by the independent variables.

Table 12

Math SPANISH - Regression of Academic Performance on Mobility and Control Variables

Variables	Beta	P
Mobility %	-.086	.014
Black	.001	.996
Hispanic	-.110	.669
White	-.134	.425
Economically Disadvantaged	-.102	.128

Note: R^2=.020, Adj. R^2=.015, p=.002, N=972

The results of the analysis of variance, as shown in the table, met an acceptable level of significance (p = .002) and the Beta coefficient for Mobility percentage was -.086 at an acceptable level of significance (p = .014); however, because of the low R square, the other indices have low relevance, even at acceptable levels of significance and are not helpful in predicting Math SPANISH performance.

Regression 5: Reading

Of the original 3,447 schools meeting the parameters of this study analysis, the number of campuses with reported Reading performance values is 3,445. Again, the rationale for omitting the results of two campuses was not available on the TEA Performance Reporting website. The dependent variable for this regression analysis is TAKS Reading performance. The means for the independent variables (Black; Hispanic; White; and Economically Disadvantaged) can be seen in the Descriptive Statistics shown in Table 13.

Table 13

Reading – Descriptive Statistics

Variable	Mean	Std. Deviation	N
Reading-English	89.38	8.993	3445
Mobility %	19.311	7.2745	3445
Black	14.127	18.7377	3445
Hispanic	47.977	32.433	3445
White	34.691	30.3017	3445
Economically Disadvantaged	62.56	27.764	3445

The model summary for Reading performance, represented by Table 14, shows an R square of .374, which means that 37.4% of the Reading performance variance can be explained by the independent variables. Additionally, the analysis of variance produced an F ratio of 410.615 at an acceptable significance level (p = .0001), meaning that the model is significant, and thus helpful in explaining the variance in Reading performance.

Table 14

Reading - Regression of Academic Performance on Mobility and Control Variables

Variables	Beta	P
Mobility %	-.031	.073
Black	-.224	.000
Hispanic	-.080	.420
White	.027	.752
Economically Disadvantaged	-.438	.000

Note: R^2=.374, Adj. R^2=.373, p=.0001, N=3445

The strongest predictor of Reading performance, as indicated by the Beta coefficients, is Economically Disadvantaged, with a Beta coefficient of -.438 at a significance level of p = .000. So, as the percentage of economically disadvantaged students increases, performance on the Reading TAKS decreases. The other significant predictor is the percentage of Black students, with a Beta of -.224 (p = .000). Mobility percentage has a low Beta coefficient of -.031 and falls short of the acceptable .05 level of significance with a p = .073, and, as such, is not a good predictor of Reading performance.

Regression 6: Reading SPANISH

This regression analyzed performance on the Spanish version of the TAKS reading test as the dependent variable. As with the other regressions for Hypothesis 2, mobility percentage was the key independent variable while the control independent variables were Black, Hispanic, White, and Economically Disadvantaged. The number of campuses with reported values for Reading SPANISH was 1,044, which represents the number of campuses meeting the original study requirements and which have at least five bilingual students taking this assessment. Table 15 shows the mean values for each of the variables.

Table 15

Reading SPANISH – Descriptive Statistics

Variable	Mean	Std. Deviation	N
Math-English	74.44	17.280	1044
Mobility %	21.678	6.4303	1044
Black	10.923	14.0280	1044
Hispanic	76.727	21.7881	1044
White	10.537	14.4582	1044
Economically Disadvantaged	82.77	15.807	1044

As can be seen in Table 16, the analysis returned a low R Square of .012, meaning that only 1.2% of the variance on the Reading SPANISH TAKS can be explained by the independent variables. The analysis of variance did meet an acceptable level of significance ($p = .027$), but the low R Square minimizes its importance. As for the predictability strength of the independent variables, Table 16 shows that only the White student group met an acceptable level of significance, with a Beta coefficient of -.397 (p = .018).

Table 16

Reading SPANISH - Regression of Academic Performance on Mobility and Control Variables

Variables	Beta	P
Mobility %	-.010	.781
Black	-.230	.182
Hispanic	-.358	.157
White	-.397	.018
Economically Disadvantaged	-.105	.097

Note: R^2=.012, Adj. R^2=.007, p=.027, N=1044

The low R square, even at an acceptable level of significance, indicates that performance on the Spanish version of the TAKS reading test cannot be explained by the independent variables.

Hypotheses 3 and 4 General Information

The testing of Hypotheses 3 and 4 involved the following comparative analyses of campus performance score means:

- Hypothesis 3: The comparison of the actual TEA reported scores of the identified highest mobility campuses to the same campuses but with the scores of mobile students excluded.

- Hypothesis 4: The comparison of the identified highest mobility campuses, excluding mobile students, to the scores of similar campuses with the lowest incidences of mobility, excluding mobile students.

For the purposes of these analyses, mobile students are defined as students not continuously enrolled or naturally progressing, starting with the Fall data submission of October 2003 and ending with the Fall data submission of October 2005. The TAKS data studied are from the Spring 2006 assessments. Mobile students enrolling in these schools after the Fall data submission are not included in the TEA-generated Academic Excellence Indicator System reports and are not used in determining accountability ratings.

The 20 high-mobility campuses were identified by sorting the original 3,447 schools, whose data were analyzed to test Hypotheses 1 and 2 of this study, by mobility. Once sorted, the 20 campuses with the highest student mobility rates were selected to test Hypotheses 3 and 4.

The low-mobility campuses were identified using the aggregate demographic accountability student group percentages of the identified high mobility campus group (see Table 17). Using an electronic spreadsheet, filters were set for a range of plus or minus ten percentage points for each student group: Black, Hispanic, White, and Economically Disadvantaged. The filters returned 37 campuses, out of the original 3,447, that fit the specified, student group ranges. Those campuses were then sorted by mobility percentage in ascending order, with the top 20, least mobile campuses identified to comprise the low-mobility comparison group for Hypothesis 4.

Table 17 displays aggregate information for both the high-mobility campuses and the low-mobility campuses.

Table 17

Aggregate Information – High-Mobility and Low-Mobility Campuses

	High-Mobility Campuses		Low-Mobility Campuses	
Variable	#	%	#	%
Aggregate Total Enrollment	8607		10107	
Aggregate Total Grade 3 Enrollment	1123		1697	
Aggregate Mobile Enrollment	3718	43	2104	21
Aggregate Black Enrollment	2926	34	3318	33
Aggregate Hispanic Enrollment	3425	40	4057	40
Aggregate White Enrollment	2041	24	2391	24
Aggregate Economically Disadvantaged Enrollment	7081	82	8081	80

When identifying the campuses to be studied in testing Hypotheses 3 and 4, bilingual campuses with reported Spanish TAKS scores were excluded due to the lack of combined English and Spanish data at specific grade levels. Four bilingual campuses were excluded from the high-mobility group and two bilingual campuses were excluded from the low-mobility group.

The data to compare the campus performance means were gathered from TEA using:

- Website downloads of the actual reported campus scores.
- Public Information Request (PIR #7468) for campus scores with the mobile students excluded.

Hypothesis 3

Null Hypothesis 3

There will be no significant difference in the overall academic performance scores of the identified highest mobility schools and the academic performance scores of those schools when the scores of high mobility students are deleted.

Testing Hypothesis 3 involved the comparison of academic performance scores of the 20 identified highest-mobility schools to the scores of those same schools after deleting the scores of high mobility students. A series of paired-sample *t* tests were performed to compare the grade 3 performance score means of these two groups for All Tests, Math, and Reading. The 20 high-mobility campuses were identified by sorting the original 3,447 schools, whose data were analyzed to test Hypotheses 1 and 2 of this study, by mobility. A public information request was submitted to TEA to calculate the percent of students meeting minimum passing standards for each of the identified campuses, exclusive of students not continuously enrolled, nor naturally progressing, from the October 2003 data submission through the 2005 October data submission.

For Hypothesis 3, bilingual campuses administering the Spanish versions of the TAKS were excluded due to the unavailability of combined performance data at the level of specific grades. The combined performance data is only reported at the campus level for all tested grades. After sorting for mobility, four bilingual campuses were excluded from the high mobility group.

The aggregate totals for the identified, high mobility group are as follows:

- Aggregate total enrollment = 8,607
- Aggregate total grade 3 enrollment = 1,123
- Aggregate mobile enrollment/mobility percentage = 3,718/43%
- Aggregate Black enrollment/percentage = 2,926/34%
- Aggregate Hispanic enrollment/percentage = 3,425/40%
- Aggregate White enrollment/percentage = 2,041/24%
- Aggregate Economically Disadvantaged enrollment/percentage = 7,081/82%

Paired-sample *t* tests were conducted to compare the actual TEA-reported performance score means of high-mobility campuses to the study-generated performance score means for those same campuses, but exclusive of the study-defined mobile students. Analyses were performed for three TAKS values: All Tests; Math; and Reading.

As seen in Table 18, the All Tests results from these analyses indicated that the mean for the group exclusive of mobile students (M = 75.60, SD = 17.46) was significantly greater than the mean for the actual reported scores (M = 69.60, SD = 18.72). Table 19 displays a *t* value of -3.99, which is significant at a probability value of .001 and much lower than the .05 acceptable level of significance.

The *t* test conducted to evaluate Math performance values also indicated a significant difference between the pairs of means. The mobile student-exclusive group mean (M = 80.30, SD = 17.55) is significantly greater than that of the reported scores mean (M = 74.70, SD = 18.89). The analysis returned a *t* value of -4.89 at a probability value (p<.001) well under the acceptable .05 significance level.

Table 18

Descriptive Statistics

Variable	Mean	N	Std. Dev.	Std. Error Mean
All Tests				
Pair				
Reported All Tests Scores	69.60	20	18.721	4.186
Scores Excluding Mobile Students	75.60	20	17.455	3.903
Math				
Pair				
Reported Math Scores	74.70	20	18.891	4.224
Scores Excluding Mobile Students	80.30	20	17.553	3.925
Reading				
Pair				
Reported Reading Scores	83.80	20	10.991	2.458
Scores Excluding Mobile Students	86.15	20	12.394	2.771

Table 19

Paired Samples Tests

Pair – Reported Scores –	Paired Differences					
Scores Excluding Mobile Students	Mean	Std. Dev.	Std. Error Mean	t	df	Sig. (2-tailed)
All Tests	-6.000	6.728	1.504	-3.988	19	.001
Math	-5.600	5.134	1.148	-4.878	19	.000
Reading	-2.350	5.788	1.294	-1.816	19	.085

The analysis to compare reading means also computed a higher mean (M = 86.15, SD = 12.39) for the mobile student-exclusive group than for the reported scores group (M = 83.80, SD = 10.99). According to Table 19, the *t* value, however, fell outside of the .05

level of significance, with a probability value of .085, thereby limiting the usefulness of the Reading findings.

Hypothesis 4

Null Hypothesis 4

There will be no significant difference in the overall academic performance scores of the identified highest mobility schools, excluding high mobility student scores, and identified similar schools with the lowest incidences of mobility, excluding high mobility student scores.

The analyses for Hypothesis 4 involved the comparison of academic performance scores of the 20 identified schools with the highest student mobility rates, excluding the scores of mobile students, to the scores of 20 schools with the lowest incidences of mobility, but with similar student demographics, excluding the scores of mobile students. A series of independent-sample *t* tests were performed to compare the grade three performance score means of these two groups for All Tests, Math, and Reading.

The low-mobility campus group was identified using the aggregate demographic accountability student group percentages of the identified high mobility campus group (see Hypothesis 3 above). Filters were set for a range of plus or minus ten percentage points for each group: Black, Hispanic, White, and Economically Disadvantaged. The filters returned 37 campuses, out of the original 3,447, that fit the specified, student group ranges. Those campuses were then sorted by mobility rate in ascending order, with the top 20, least mobile campuses selected to comprise the comparison group for Hypothesis 4.

Again, bilingual campuses administering the Spanish versions of the TAKS were excluded due to the lack of combined performance data at the level of specific grades. After sorting for mobility, two bilingual campuses were excluded for the matched, less mobile group.

The aggregate totals for the identified, low mobility group are as follows:

- Aggregate total enrollment = 10,107
- Aggregate total grade 3 enrollment = 1,697
- Aggregate mobile enrollment/mobility percentage = 2,104/21%
- Aggregate Black enrollment/percentage = 3318/33%
- Aggregate Hispanic enrollment/percentage = 4,057/40%
- Aggregate White enrollment/percentage = 2,391/24%
- Aggregate Economically Disadvantaged enrollment/percentage = 8,081/80%

Independent-sample *t* tests were performed to compare the performance score means of high-mobility campuses, exclusive of the study-defined mobile students, to the performance score means of the study-identified low-mobility campuses, also exclusive of the study-defined mobile students. Analyses were performed for three TAKS values: All Tests, Math, and Reading.

As shown in Table 20, the score means for the high-mobility campuses are greater than the score means for the low-mobility campuses for each performance area (All Tests, Math, and Reading). Table 21, however, shows that none of the probability values met acceptable levels of significance and, therefore, the differences are not statistically significant.

The *t* test to compare All Tests means returned a mean of 75.6 for the high-mobility group and a mean of 71.2 for the low-mobility group. This comparative analysis computed a probability value of .347, well above the .05 acceptable level of significance.

The Math *t* test calculated means of 80.30 and 75.35 for the high-mobility and low-mobility groups, respectively. Levene's test for equal variances was met, but the probability value of .293 exceeds the acceptable level of significance.

The means for Reading were found to be closer, at 86.15 for the high-mobility group and 84.95 for the low-mobility group. The test for variance met the significance level for equal variance, but the *t* test probability value of .695 greatly exceeded the acceptable level of significance.

Table 20

Group Statistics

Mobility Status	N	Mean	Std. Dev.	Std. Error Mean
All Tests				
High Mobility	20	75.60	17.455	3.903
Low Mobility	20	71.20	11.000	2.460
Math				
High Mobility	20	80.30	17.553	3.925
Low Mobility	20	75.35	11.066	2.474
Reading				
High Mobility	20	86.15	12.394	2.771
Low Mobility	20	84.95	5.558	1.243

Table 21

Independent Samples Tests

	Levene's Test for Equality of Variances		t-test for Equality of Means				
Equal Variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.
All Tests							
Assumed	4.070	.051	0.954	38.000	.346	4.400	4.613
Not Assumed			0.954	32.036	.347	4.400	4.613
Math							
Assumed	4.254	.046	1.067	38.000	.293	4.950	4.640
Not Assumed			1.067	32.042	.294	4.950	4.640
Reading							
Assumed	8.260	.007	0.395	38.000	.695	1.200	3.037
Not Assumed			0.395	26.345	.696	1.200	3.037

CHAPTER FIVE

Summary and Conclusions

The purpose of this study was to examine the effect that mobile students have on the academic performance scores and performance accountability ratings of schools that serve high percentages of mobile students. To achieve this purpose, the following objectives were pursued.

1. To determine if there is a relationship between student mobility and the accountability ratings of elementary schools in Texas.

2. To determine if there is a relationship between student mobility and the academic performance scores of campuses when controlling for economic status and the ethnicity groups used in determining accountability ratings, which are: African American, Hispanic, and White.

3. To determine if there is a significant difference in the overall academic performance scores of the highest mobility schools and the academic performance scores of those same schools when the scores of high mobility students are deleted.

4. To determine if there is a significant difference in the overall academic performance scores of the highest mobility schools, minus the scores of high mobility students, and the scores of stable schools with similar accountability student groups, minus the scores of high mobility students.

If a negative relationship exists between mobility and student achievement, and the derived school accountability ratings, this study would contribute to the field by providing evidence for policy makers to consider when examining the current school accountability system in Texas. This chapter reports a summary of the findings as well as conclusions drawn from conducting the study, implications for educational leaders, and recommendations for further research.

This study used publicly accessible demographic and test performance data from the 2006-2007 school year. The data used to test Hypotheses 1 and 2 (as stated below) were downloaded in multiple datasets from the TEA website, sorted by campus number, and merged to create the requisite datasets. These data were then sorted to identify campuses that fell outside of the parameters of regular instructional, non-charter, third grade-inclusive campuses with grade three enrollments of at least 22 students that were in operation prior to the 2005-2006 school year. Campuses not meeting those study criteria were deleted, leaving a sample size of 3,447 schools.

Hypothesis 1 was tested using a one-way analysis of variance to compare mobility to performance accountability rating. Separate mobility means were calculated for the schools making up each rating group.

Hypothesis 2 was tested by using a series of linear regressions to explain variance. Beta coefficients were generated for the independent variables: Mobility, Black; Hispanic; White; and Economically Disadvantaged.

To test Hypothesis 3 (stated below), the identified 3,447 schools were sorted by the state-calculated mobility rates to identify the 20 highest mobility campuses. A public information request (PIR #7468) was made to TEA to: (1) Remove the TAKS performance data for all students not continuously enrolled nor naturally progressing starting with the Fall data submission of 2003; and (2) To calculate campus performance scores using the remaining non-mobile students' TAKS results. Score means were calculated for both the actual TEA-reported campus scores and the study-computed scores for those same high-mobility campuses, excluding their mobile students. The means were then compared using paired-sample *t* tests for All Tests, Math, and Reading values.

Hypothesis 4 (stated below) involved the comparison of those same identified 20 high-mobility schools, minus the mobile student scores, to 20 less mobile, but otherwise similar schools. Using the study-calculated aggregate demographic information for the 20 high-mobility campuses, ranges of plus or minus 10 percentage points were set as filters to identify the 20 campuses with similar student demographics but with the lowest incidences of mobility. Again, a request was made to TEA to remove the mobile students from these identified low-mobility campuses and calculate campus performance scores. To test hypothesis 4, independent-sample *t* tests were performed to compare the score means for the high-mobility schools, excluding mobile students, to the score means of the low-mobility schools, also excluding mobile students. As with Hypothesis 3, means for All Tests, Math, and Reading were compared.

Conclusions

This section is organized by hypothesis, with each of the four hypotheses stated as a null hypothesis.

Hypothesis 1

Null Hypothesis 1

There will be no significant relationship between student mobility rate and the accountability ratings of elementary schools in Texas.

Using data gathered from the Texas Education Agency's website, a one-way analysis of variance (ANOVA) was performed to evaluate the relationship between student mobility and school performance accountability ratings. The four accountability ratings for public schools in the state of Texas are: Exemplary, Recognized, Academically Acceptable, and Academically Unacceptable. Results from the analysis show that the mobility mean for the total sample (3,447) was 19.30%. Of the 3,447 schools studied, 461 were rated Exemplary, with a group mobility mean of 13.61%. Schools rated as Recognized numbered 1,788, with a mobility mean of 19.06%. Academically Acceptable schools totaled 1,153, with a mobility mean of 21.81%. Only 45 schools earned the lowest accountability rating of Academically Unacceptable, with a group mobility mean of 23.43%. These results indicate a negative relationship between student mobility and school accountability rating. As the mobility rate mean increases, the accountability rating decreases.

The ANOVA computed an F ratio of 165.79 at a significant probability value ($p<.001$), thus the results of the one-way ANOVA indicate a significant relationship between mobility and accountability rating and, therefore, a rejection of the null hypothesis. The ANOVA test provides the first indication of a relationship between mobility and student academic performance.

Hypothesis 2

Null Hypothesis 2

There will be no significant relationship between student mobility and the academic performance scores of elementary schools in Texas when controlling for economic status and ethnicity, using the reported accountability ethnic groups: Black, Hispanic, and White.

Hypothesis 2 was tested by conducting a series of linear multiple regressions using mobility rate as the key independent variable, economic status and ethnicity as control independent variables, and TAKS performance as the dependent variable. Specifically, reported TAKS performance for All Tests, All Tests SPANISH, Math, Math SPANISH, Reading, and Reading SPANISH served as the dependent variable for six separate regression analyses. The Spanish versions of the TAKS were included because of the large number of bilingual campuses administering the Spanish version of the TAKS.

As discussed in Chapter 2, some of the previous research studying mobility indicated a significant relationship between mobility and economic status. Because the current study used the reported Economically Disadvantaged rate as an independent variable, an analysis was conducted to examine the relationship between the reported mobility rate and the Economically Disadvantaged rate for the 3,447 campuses involved in this portion of the study. A bivariate, two-tailed correlation analysis returned a Pearson coefficient of .57 at an acceptable level of significance ($p<.001$). While the correlation is quite high, it is not high enough to merit concern that the two variables are measuring the same phenomenon.

Regression 1: All Tests

This regression computed an R square of .408, meaning that 40.8% of the variance in the All Tests performance can be explained by the independent variables. The ANOVA for this analysis calculated an acceptable probability value ($p=.000$).

The predictive, or explanatory, strength of the independent variables is indicated by the test-generated Beta coefficients. For the All Tests regression, Economically Disadvantaged is the strongest predictor, with a Beta of -.465 ($p<.001$). The negative Beta signifies that as the percent of Economically Disadvantaged increases, the All Tests performance decreases. The other independent variables with significant Beta coefficients are: Black at a Beta = -.285 ($p<.001$), Hispanic at Beta = -.235 ($p=.015$), and Mobility Percentage at Beta = -.064 ($p<.001$). White at Beta = -.139 and a probability of .094, is above the .05 level of significance. Mobility percentage, while meeting the acceptable level of significance, was shown to have low predictive strength in regards to All Tests performance.

Regression 2: All Tests SPANISH

Of the 3,447 schools identified to test Hypothesis 2, only 1,047 had reported values for All Tests SPANISH. While significant ($p=.007$), the low R square (.015) computed for this regression means that only 1.5% of the variance in All Tests SPANISH values can be explained by the independent variables.

The only Beta coefficient meeting an acceptable level of significance is White at Beta = -.326 ($p=.05$); however, because only 1.5% of the variance in the dependent variable can be explained by the independent variables, the predictive strength of the White variable is not helpful.

Regression 3: Math

A computed R square of .312 means that 31.2% of the Math variance can be explained by the independent variables. The ANOVA results show this model meets an acceptable level of significance (p=.0001).

Of the control variables, all had significant Beta coefficients, with the strongest predictor being Economically Disadvantaged, Beta = -.412 (p<.001). Again, the relationship represented by the negative Beta signifies that as the percentage of economically disadvantaged students increases, the Math performance values decrease. In descending order of explanatory strength, the other coefficients are: Black at a Beta = -.326 (p<.001), Hispanic at a Beta = -.262 (p=.011), and White at a Beta = -.194 (p=.031).

The key independent variable, mobility, has a small Beta of -.035, and falls just outside of the .05 acceptable level of significance (p=.052). Therefore, mobility percentage, as used by this study, is not useful in explaining variances in Math performance.

Regression 4: Math SPANISH

Only 972 of the 3,447 schools identified to test this hypothesis had reported Math SPANISH values. The regression analysis returned a low R square of .020 (p=.002), meaning that only 2% of the variance in the Math SPANISH values can be explained by the independent variables.

The only Beta coefficient meeting an acceptable level of significance is Mobility percent at Beta = -.086 (p=.014); however, because only 2% of the variance in the dependent variable can be explained by the independent variables, the predictive strength of the Mobility variable is minimal in explaining Math SPANISH performance variances.

Regression 5: Reading

The regression analysis computed an R square of .374, this level of predication means that 37.4% of the variance in Reading performance values can be explained by the independent variables and the model is significant (p=.0001).

Of the independent variables, the best predictor of Reading performance is again Economically Disadvantaged, with a Beta of -.438 at an acceptable significance level (p<.001). As the percentage of Economically Disadvantaged students increases, Reading performance decreases. The Black variable is also significant with a Beta of -.224 (p<.001). The other independent variables do not meet the .05 level of significance, including Mobility percentage, with a Beta of -.031 (p=.073) and, thus, are not good predictors of Reading performance.

Regression 6: Reading SPANISH

Of the 3,447 campuses meeting the criteria of Hypothesis 2, only 1,044 had reported values for Reading SPANISH. As with the other SPANISH versions, Reading SPANISH has a low explanation level, with an R square of .012 (p=0.027). Only 1.2% of the variance for Reading SPANISH values can be explained by the independent variables. The only predictor meeting an acceptable level of significance is White, with a Beta of -.397 (p=.018), although its usefulness is mitigated by the low R square.

Based on the results related to Hypothesis 3 described above, decisions to reject or fail to reject, the Null Hypothesis were made for each of the six regressions performed: All Tests; All Tests SPANISH; Math; Math SPANISH; Reading; and Reading SPANISH.

- All Tests: Mobility Beta is small but significant (B=-.065, p<.001) and the R squared value indicates that 40.8% of the variance in the All Test values can be explained by the independent variables at an acceptable model significance (p=0001). Decision: Reject null hypothesis relative to All Test scores.
- All Tests SPANISH: Mobility Beta is small and not significant (B=-.062, p=.067) and R squared value is very small at .015 (p=.007). Decision: Fail to reject the null hypothesis related to All Tests Spanish.
- Math: The model is significant (p<.001) and the R squared value indicates that 31.2% of the performance variance can be explained by the effects of the independent variables; however, mobility does not have a significant Beta coefficient (B=-.035, p=.052). Decision: Fail to reject the null hypothesis relative to Math.
- Math SPANISH: Mobility has a small, but significant Beta coefficient (B=-.086, p=.014); however, a low R squared value shows that only 2% of the variance in Math SPANISH performance can be explained by the independent variables. Decision: Fail to reject the null hypothesis related to Math Spanish.
- Reading: The model is significant with an R squared value of .374 (p<.001), meaning that 37.4% of the variance in Reading performance can be explained by the independent variable; however, the mobility Beta (B=-.031, p=.073) exceeds the acceptable level of significance. Decision: Fail to reject the null hypothesis related to Reading.

- Reading SPANISH: While the model is significant (p=.027), the very small R squared value of .012 means it is not very helpful in explaining performance variances. Additionally, the mobility Beta is not significant (B=-.010, p=.781). Decision: Fail to reject the null hypothesis related to Reading Spanish.

Hypothesis 3

Null Hypothesis 3

There will be no significant difference in the overall academic performance scores of the identified highest mobility schools and the academic performance scores of those schools when the scores of high mobility students are deleted.

Hypothesis 3 was tested by performing paired-sample *t* tests to compare the TAKS performance means for All Tests, Math, and Reading of the 20 highest mobility campuses to the study-calculated performance means of those same high-mobility campuses, but excluding mobile students. Results from these comparative analyses showed significance on two of the three TAKS values.

The *t* test to compare the All Tests means indicated that the mean for the group exclusive of mobile students (M = 75.60, SD = 17.46) was significantly greater than the mean for the actual reported scores (M = 69.60, SD = 18.72). The analysis computed a *t* value of -3.99, which is significant at a probability value of .001, much lower than the .05 acceptable level of significance.

The Math *t* test also indicated a significant difference between the pairs of means. The mobile student-exclusive group mean (M = 80.30, SD = 17.55) is significantly greater than that of the reported scores mean (M = 74.70, SD = 18.89). The analysis returned a *t* value of -4.89 at a probability value ($p < .001$), clearly lower than the acceptable .05 significance level.

In comparing the reading means, the *t* test computed a higher mean (M = 86.15, SD = 12.39) for the mobile student-exclusive group than for the reported scores group (M = 83.80, SD = 10.99). The *t* value, however, fell outside of the .05 level of significance, with a probability value of .085, thereby limiting the usefulness of the Reading findings.

The results of testing Hypothesis 3, as described in the preceding paragraphs provide the rationale for the following decisions.

- All Tests: The score means for the mobile student exclusive group (M = 75.60) are significantly greater than the actual reported score means (M = 69.60). Decision: Reject null hypothesis relative to All Tests.
- Math: Again the score means for the high-mobility schools, minus their mobile students (M = 80.30), are significantly greater than the score means computed for the actual reported scores inclusive of mobile students (M = 74.70). Decision: Reject null hypothesis relative to Math.
- Reading: While the Reading means are higher for the mobile student-exclusive group (M = 86.15) than for the actual reported Reading scores (M = 83.80), the probability value ($p = .085$) for the *t* score fell outside of the .05 level of significance. Decision: Fail to reject the null hypothesis relative to Reading.

Hypothesis 4

Null Hypothesis 4

There will be no significant difference in the overall academic performance scores of the identified highest mobility schools, excluding high mobility student scores, and identified similar schools with the lowest incidences of mobility, excluding high mobility student scores.

Hypothesis 4 was tested by performing independent-sample *t* tests to compare the study-calculated TAKS performance means for All Tests, Math, and Reading of the 20 highest mobility campuses, excluding their mobile students, to the study-calculated performance means of 20 identified demographically similar campuses with the lowest incidences of mobility, excluding their mobile students. Separate *t* tests were performed to compare the grade three performance score means of these two groups for All Tests, Math, and Reading.

The *t* test to compare All Tests means returned a mean of 75.6 for the high-mobility group and a mean of 71.2 for the low-mobility; however, this comparative analysis computed a probability value of .347, well above the .05 acceptable level of significance.

Like the All Tests analysis, the Math independent-sample *t* test calculated higher means for the high-mobility group than for the low-mobility groups, 80.30 and 75.35 respectively; however, the probability value of .293 does not meet the acceptable level of significance.

The results of the Reading *t* test were even further from significance. The means were found to be closer, at 86.15 for the high-mobility group and 84.95 for the low-mobility group, but the *t* test probability value of .695 greatly exceeded the acceptable level of significance.

Because none of the independent-sample *t* tests were significant, the following decision was made relative to all three analyses (All Tests, Math, Reading): Fail to reject the null hypothesis.

Hypotheses 3 & 4: Additional Information

While not used in the comparison of campus performance score means to test Hypotheses 3 and 4, the reader might find the aggregate information in Tables 22, 23, and 24 interesting. These data were included in information received from TEA as a result of Public Information Request #7468.

Discussion and Implications

School accountability has been deeply woven into the fabric of public education in the state of Texas. An outgrowth of the standards movement, the ratings are intended to be a reflection of schools' proficiency in teaching the state standards, the Texas Essential Knowledge and Skills (TEKS). School ratings are based largely on the performance of their students on the Texas Assessment of Knowledge and Skills (TAKS), both overall and by accountability student groups, including: All Students, Black, Hispanic, White, and Economically Disadvantaged.

Table 22

All Tests Aggregates

All Tests	Campus Groups			
	High Mobility	Hi-Mobility minus Mobile Student	Low Mobility	Low-Mobility minus Mobile Students
All Students				
# Tested	1033	426	1594	779
%Passing	70	78	67	70
Black				
# Tested	351	92	520	205
%Passing	58	68	56	60
Hispanic				
# Tested	401	195	615	345
%Passing	68	76	67	68
White				
# Tested	255	131	412	206
%Passing	88	88	79	83
Economically Disadvantaged				
# Tested	813	311	1203	586
%Passing	66	75	63	67

Table 23

Math Aggregates

Math	Campus Groups			
	High Mobility	Hi-Mobility minus Mobile Student	Low Mobility	Low-Mobility minus Mobile Students
All Students				
# Tested	984	417	1555	775
%Passing	75	82	73	76
Black				
# Tested	327	91	505	204
%Passing	64	76	63	66
Hispanic				
# Tested	390	191	606	343
%Passing	74	80	73	74
White				
# Tested	244	127	397	205
%Passing	90	88	84	87
Economically Disadvantaged				
# Tested	769	304	1172	583
%Passing	72	80	70	72

Table 24

Reading Aggregates

Reading	Campus Groups			
	High Mobility	Hi-Mobility minus Mobile Student	Low Mobility	Low-Mobility minus Mobile Students
All Students				
# Tested	989	420	1550	770
%Passing	84	87	87	84
Black				
# Tested	330	90	504	204
%Passing	76	78	76	78
Hispanic				
# Tested	386	193	602	339
%Passing	83	86	82	82
White				
# Tested	248	129	399	204
%Passing	96	96	90	92
Economically Disadvantaged				
# Tested	777	306	1168	579
%Passing	82	85	79	81

The move toward increasing transparency in public schools has increased the pressure, both internal and external, to achieve high ratings, or avoid low ratings. In Texas, the possible school ratings are: Exemplary, Recognized, Academically Acceptable, and Academically Unacceptable. Additionally, while not the direct focus of this study, there is also the federal accountability rating based on the measurement of adequate yearly progress. Schools receiving the Academically Unacceptable rating are subject to increased state scrutiny and possible sanctions, including reconstitution. The ratings, and TAKS scores, are reported at both the district and campus levels. These ratings are published in newspapers, posted on school websites, and included on student report cards and various school and district newsletters. In addition, the ratings are used by cities and communities to attract economic development and by realtors to market holdings.

Because of the high stakes associated with accountability ratings, it is imperative that schools be rated fairly. As described in the review of literature, the mobility phenomenon is an issue being faced by schools across both the state and nation, and, as such, the effects that these students have on schools need to be understood. Since the accountability rating purports to accurately reflect a school's academic program, it is essential that mobility be sufficiently addressed by the rating system. The current Texas system calculates a school's mobility rate by the number of students who are not enrolled at that school for at least 83% of the instructional days for a given school year. The Texas accountability rating system accounts for students by including students' performance in a school's rating if they are enrolled prior to the current year Fall data submission in October. Therefore, under the current system, ratings include many students who have been enrolled at a school for less than even one calendar year. Furthermore, the reported mobility rates, calculated using information from only one school year, do not include prior year mobility.

Hypothesis 1

Null Hypothesis 1

There will be no significant relationship between student mobility rate and the accountability ratings of elementary schools in Texas.

The results from the one-way analysis of variance indicate a significant negative relationship between mobility and school performance accountability ratings, and thus a rejection of the null hypothesis. This finding, while broad, does suggest a need to further explore the effects of mobility on school academic performance. Also, while this particular analysis did not include school demographic indices, it does show that the mobility percent means increase as ratings decrease. The mobility means for each rating are: Exemplary (13.61%), Recognized (19.06%), Academically Acceptable (21.81%), and Academically Unacceptable (23.43%). These findings support the Texas Education Agency (1997) report that shows student turnover rates are higher for low performing schools.

It should also be noted that this study, for accessibility reasons, used the state-calculated mobility rates as the key independent variable for study analyses. As discussed in previous paragraphs, the calculated mobility rates only take into account mobility occurring during the current school year. State-computed mobility rates do not account for prior year school moves and are thus minimized.

Hypothesis 2

Null Hypothesis 2

There will be no significant relationship between student mobility and the academic performance scores of elementary schools in Texas when controlling for economic status and ethnicity, using the reported accountability ethnic groups: Black, Hispanic, and White.

This series of six linear multiple regressions attempted to show the effect of mobility on separate TAKS performance values while controlling for economic status and ethnicity. Regressions were conducted with TAKS performance as the dependent variable for the following reported grade three performance values: All Tests, All Tests SPANISH, Math, Math SPANISH, Reading, and Reading SPANISH.

The explanatory levels of the independent variables were significant for each of the non-Spanish reported TAKS performance values. For the All Tests performance, 40.8% of the variance can be explained by the independent variables: Mobility percentage, Black; Hispanic, White; and Economically Disadvantaged. The Math regression returned an R square of .312, meaning that 31.2% of the performance variance can be explained by the independent variables. Of the variance in Reading performance, 37.4% can be explained by the effects of the independent variables.

The control variables have varying levels of predictive strength. As indicated by the study-computed Beta coefficients, Economically Disadvantaged is the strongest significant predictor of performance for the non-Spanish TAKS tests. The study revealed that as the Economically Disadvantaged rate increased, TAKS values decreased. The Black percentage is also a significant negative predictor for All Tests, Math, and

Reading. The Hispanic rate is a significant negative predictor for All Tests and Math. The White rate is a significant negative predictor of Math performance.

As measured by this study, the strength of mobility percent as a predictor of TAKS performance for grade 3 All Tests, Math, and Reading is negligible. It is a small, but significant, predictor of All Tests performance, with a Beta coefficient of -.064 ($p<.001$). For Math and Reading values, mobility percentage fell outside of the .05 acceptable levels of significance. Again, it should be remembered that this study used the state-computed mobility rates, which were based on one calendar year. A mobility measure including prior year moves would generate higher mobility rates and would potentially have a more significant effect (higher explanatory strength) on TAKS values than the current study indicates.

The Spanish versions of the TAKS tests were included in this study because of the growing number of bilingual campuses serving Spanish-speaking students, and thus the need to understand the impact of mobility on those campuses. The regressions conducted for the Spanish versions of the TAKS values (All Tests, Math, and Reading) returned significant, but small, R square values indicating very little explanatory, or predictive, strength.

The All Tests SPANISH had an R square of .015, meaning that only 1.5% of the All Tests performance can be explained by the independent variables. Of those variables, only the White student percent had a significant Beta coefficient, B = -.326 ($p=.050$). This negative relationship means that as the percentage of White students increases, the percentage of students passing the Spanish versions of both the Reading and Math TAKS (All Tests) decreases. A possible explanation of this finding could be that for those bilingual campuses serving small numbers of Limited English Proficient (LEP), Spanish-speaking students, there exist limited resources, limited instructional expertise, and/or limited opportunities to receive academic interventions in the students' primary language. The low R square, however, reduces the helpfulness of the White coefficient as a predictor of All Tests performance.

The R square for Math SPANISH was found to be .020, signifying that just 2% of the variance in performance on the Spanish version of the Math test can be explained by the independent variables, of which only Mobility percentage had a significant, albeit very small, Beta coefficient, B = -.086 (p=.014). Again, the explanatory strength of this already small coefficient is further minimized by the low R square.

As with the other Spanish TAKS performance values, the regression for the Spanish version of the Reading TAKS produced a small R square, .012, so that the independent variables are only useful in predicting 1.2% of the performance variance. As with the All Tests SPANISH, the only significant Beta coefficient is White, -.397 (p=.018). The same rationale for the negative relationship as that discussed for All Tests SPANISH might also hold true for Reading SPANISH. But again, the low R square minimizes the amount of performance effect that can be attributed to the White independent variable.

As the analyses indicated, mobility had little or no effect on Spanish TAKS performance. The null hypothesis was accepted for the All Tests Spanish and Reading Spanish values because the models lacked significance. While the Math Spanish model did meet significance, the very low R squared value was only able to explain 2% of the variance, thus resulting in the failure to reject the null hypothesis related to Math Spanish.

Though the results from regression analyses performed for the Spanish TAKS might not offer much help in predicting TAKS performance, it should be noted that these particular assessments, and the performance values analyzed by this study, are affected by factors that are difficult to control for. The Spanish TAKS are only administered by qualifying bilingual campuses. Additionally, all Spanish bilingual students are not assessed using the Spanish versions of the TAKS. Assessment decisions are made on a student-by-student basis by the Language Proficiency Assessment Committee (LPAC) based on factors discussed in detail in Chapter 4. The combined effects of LPAC-determined TAKS assessment decisions and small numbers of enrolled Spanish-speaking LEP students at many bilingual campuses may result in very small numbers of students taking Spanish versions of the TAKS. This means that, while meeting the parameters of schools considered in this study, the Spanish TAKS values for many of the campuses are potentially based on the performance of only a very small number of students.

Hypothesis 3

Null Hypothesis 3

There will be no significant difference in the overall academic performance scores of the identified highest mobility schools and the academic performance scores of those schools when the scores of high mobility students are deleted.

The null hypothesis was rejected relative to All Tests and Math, with both values significantly higher for the group excluding mobile students. For the Reading analysis, the study failed to reject the null hypothesis because an acceptable level of significance was not met. Results from the paired-sample *t* tests used to test Hypothesis 3 indicated higher score means for the group excluding mobile students, for All Tests, Math, and Reading. Specifically, significant differences were found in the All Tests and Math values, with the mobile student exclusive group having significantly higher score means than the actual reported, mobile student inclusive group. The Reading score means were also higher, though not to the extent of All Tests and Math, but the differences were not found to be statistically significant, with a probability value (p=.085) greater than .05. It must be noted, however, that Reading in grade three is assessed differently than Math. Since meeting the minimum passing standard on the TAKS Reading test is required for promotion to the fourth grade, there is likely a greater degree of “built in” motivation for students to pass this test. Also, the reported Reading scores were based on two administrations of the test. Students were first assessed in February. Those not passing the first administration were provided with mandatory additional intensive intervention prior to taking the second administration in April. The results of Hypothesis 3 *t* tests support previous research showing that mobility has a detrimental effect on academic achievement (Engec, 2006; Kerbow, Azcoitia, & Buell, 2003).

Hypothesis 4

Null Hypothesis 4

There will be no significant difference in the overall academic performance scores of the identified highest mobility schools, excluding high mobility student scores, and identified similar schools with the lowest incidences of mobility, excluding high mobility student scores.

The results for the independent-sample *t* tests were not found to be significant relative to all compared values (All Tests, Math, and Reading). That is not to say that there are not significant differences between the performance scores of high-mobility schools and low-mobility schools when mobile students are excluded. The current study may have been affected by the sample sizes (N=20) of the high-mobility and low-mobility groups. Also, because of the demographic filters used by the current study to ensure that similar types of schools were compared, only 37 out of the pool of 3,447 schools met the parameters for Hypothesis 4. The aggregate mobility rate for the low-mobility group was calculated to be 21% versus 43% for the high-mobility group. This attempt to compare apples to apples may have lessened the effects of mobility as measured by this study.

Additional Conclusions and Implications

While this study attempted to explore the impact that student mobility has on school performance and the resulting accountability ratings, some other factors were illuminated as predictors of school performance. Most notable, but not surprising, was the effect of the economically disadvantaged rate on school performance values. It is clear from this and other research that low socioeconomic status is strongly related to depressed school performance and is also correlated to student mobility (Rumberger & Larson, 1998; Texas Education Agency 1997).

To some degree, the results of the current study were as expected, showing that school performance scores are affected by high student mobility rates. While mobility is largely outside the control of schools and school districts, there are measures that, if taken, could lessen the negative effects of mobility.

The findings of the overall study have several implications. First, policies and procedures should be developed to ensure that, upon enrollment, mobile students are served based on their academic needs. The expeditious transfer of records is essential to determining the correct academic placement. Records should be reviewed and students should be assessed to determine academic levels. Along with the requisite academic records, a student portfolio composed of up-to-date achievement information and recent examples of student work might be beneficial to receiving schools. Students identified as below grade level should be provided with needed intervention, teaching, and re-teaching to fill in learning gaps. Also, it would probably benefit schools to develop procedures for the teachers receiving a new student to communicate with the student's former teachers from the school that was exited.

Additionally, to assuage the disruptive effects associated with changing schools, a formalized induction system could be developed to ease the transition of new students into the school. Depending on the size and complexity of the school, the induction system could be as simple as an assigned student mentor and academic advisor to meet regularly with the mobile student and communicate with teachers and parents, or as complex as a new student academy, where students would spend a pre-determined amount of time learning about the new school and being assessed academically prior to assimilating into the school.

Because of the importance of these issues (student learning and school accountability ratings), it is certainly in the best interests of those serving in the public educational system to communicate to district administrators and state legislators the effects that these students have on the system. At the district and state levels, policy makers should be cognizant of the effects that high rates of student mobility have on the districts serving those populations. Efforts should be taken to minimize the negative effects that mobility has on schools that serve high rates of mobile students, so that those schools are not being rated based on the performance of students who have not been enrolled long enough to be impacted by the academic programs in place. Also, measures should be taken to ensure that the impact of school moves is minimized for the mobile students. Some possibilities are:

- Because of the high stakes associated with the current accountability system, the state's method of accounting for the performance of mobile students could be altered by extending the time that students are enrolled in a school before they actually count toward that school's TAKS scores and subsequent accountability rating. The challenge in that case would be to make certain that the learning needs of mobile students are not neglected simply because the school has a grace period.
- Policies should be put into place, backed up by adequate funding, to help those schools provide assessments, instruction, and interventions to mobile students where needed.
- For students transferring within a district or across neighboring districts, more flexible transfer rules could be developed to allow students to remain at the same campus, thus negating the turbulent effects of changing schools.
- For students transferring to schools within the same district, the adoption and implementation of a mandated curriculum calendar would help to eliminate

instructional gaps, ensuring that all students have been taught the state standards at similar times during the school year.

Further Research

As discussed in earlier chapters and sections of this document, the increasing importance placed on school accountability ratings by school officials, policy makers, and community members reinforces the necessity that ratings be fair and accurate indicators of the academic programs of schools and districts. Because this study focused solely on the effects of mobility on elementary school accountability ratings and grade three TAKS scores, additional research is needed to examine the long-term cumulative effects of mobility students on middle and high schools. Also, in addition to studying TAKS scores, future research should include indices of attendance, completion rate, and participation rates and scores for college entrance exams. Also, to more completely account for the effects of mobility, this study has illuminated the need to compute mobility rates that are inclusive of more than just the current year school changes. As this study indicates, there is also a need for additional studies examining the effects of low-socioeconomic status on mobility.

Because of the demographic projections for Texas as reported by Murdock et al. (2002), there is a strong need to understand how schools will be affected by mobility that is heavily influenced by increased numbers of low-socioeconomic status families and constantly growing Hispanic enrollments. Future research conducted in areas affected by both factors may provide valuable information for addressing mobility related to these characteristics.

APPENDICES

APPENDIX A

Texas Education Agency Data Request

TO: TEA Personnel
FROM: Lynn Pulliam
RE: Public Information Request
DATE: January 19, 2007

To Whom It May Concern:

I am the principal at Crockett Middle School, in Amarillo ISD. I am also enrolled as a graduate student at Baylor University, where I am currently conducting a dissertation study. The title of my study is:

The Impact of Student Mobility on School Accountability in Texas

For the study, I will be using the existing 2006 third grade TAKS data for non-charter, regular instructional, 3rd grade-inclusive Texas public schools. I believe I will be able to complete part of my study using the existing datasets I have downloaded from the Performance Reporting Division website; however, a portion of my study requires data that is not available as a regular download.

By using the previously downloaded data, I have identified 20 high-mobility schools, for which I need the following:

REQUEST 1:

> Study Objective1: To determine if there is a significant difference in the overall academic performance scores of the highest mobility schools and the academic performance scores of those same schools when the scores of high mobility students are deleted.
>
> For the 20 high-mobility schools listed below, I need:
>
> 1. Calculated aggregate (combined scores for the whole group) grade 3 “met passing standard” scores for each of the following elements:

Element Name (Column Heading)	Description
CA003TA06R	Grade 3, All Tests Taken, 2006, All Students
CB003TA06R	Grade 3, All Tests Taken, 2006, African American Students
CH003TA06R	Grade 3, All Tests Taken, 2006, Hispanic Students
CW003TA06R	Grade 3, All Tests Taken, 2006, White Students
CE003TA06R	Grade 3, All Tests Taken, 2006, Economically Disadvantaged Students
CA003TM06R	Grade 3, Mathematics, 2006, All Students
CB003TM06R	Grade 3, Mathematics, 2006, African American Students
CH003TM06R	Grade 3, Mathematics, 2006, Hispanic Students
CW003TM06R	Grade 3, Mathematics, 2006, White Students
CE003TM06R	Grade 3, Mathematics, 2006, Economically Disadvantaged Students
CA003TR06R	Grade 3, Reading, 2006, All Students
CB003TR06R	Grade 3, Reading, 2006, African American Students
CH003TR06R	Grade 3, Reading, 2006, Hispanic Students
CW003TR06R	Grade 3, Reading, 2006, White Students
CE003TR06R	Grade 3, Reading, 2006, Economically Disadvantaged Students

2. Calculated aggregate (combined scores for the whole group) grade 3 "met passing standard" scores **minus mobile students** for the same elements. For the purposes of my study, I need the scores removed for those grade 3 students who were not continuously enrolled at the same school, or who did not naturally progress, beginning with the **October 2003** PEIMS data submission. Same elements, only with mobile students deleted:

CAMPUS	CAMPNAME	CA003TA06R	CB003TA06R	CH003TA06R	CW003TA06R	CE003TA06R	CA003TM06R	CB003TM06R	CH003TM06R	CW003TM06R	CE003TM06R	CA003TR06R	CB003TR06R	CH003TR06R	CW003TR06R	CE003TR06R
14906112	WEST WARD ELEMENTARY	74	50	71	-4	73	94	75	-4	-4	93	84	80	76	-4	85
14906116	CLARKE ELEMENTARY	82	83	84	83	79	87	87	94	88	85	96	91	95	98	95
15907127	GATES ACADEMY	20	30	-3	-1	20	26	44	-3	-1	26	58	60	50	-1	58
15907142	M L KING ACADEMY	63	50	77	-1	65	65	54	77	-1	68	96	93	-4	-1	96
15910113	SERNA EL	77	60	89	78	71	87	69	92	-4	83	92	87	96	88	88
57905127	CITY PARK EL	63	-1	62	-1	67	73	-1	70	-1	79	79	-1	76	-1	81
57905142	J N ERVIN EL	73	74	60	-1	71	86	85	-4	-1	85	76	77	60	-1	74
57916126	SKYVIEW EL	73	61	83	-1	71	82	68	-4	-1	82	90	86	92	-1	88
68901110	GOLIAD EL	79	-4	76	76	76	91	-4	88	94	89	80	-4	75	81	77
93901101	ANDERSON-SHIRO ELEMENTARY	69	50	-1	73	44	69	50	-1	73	44	89	83	-1	92	88
133902101	HUNT SCHOOL	86	-1	80	88	60	86	-1	80	88	60	95	-1	-4	94	-4
139912101	BLOSSOM ELEM	87	-1	-1	85	83	93	-1	-1	92	88	-4	-1	-1	-4	-4
139912102	DEPORT ELEM	97	-1	-1	97	-4	97	-1	-1	97	-4	-4	-1	-1	-4	-4
152901115	JACKSON EL	57	-1	50	-1	59	77	-1	74	-1	81	65	-1	60	-1	68
178904110	EVANS SES	50	30	56	-1	51	58	50	60	-1	59	87	67	92	-1	87
178904142	ZAVALA EL	78	-1	79	-1	79	82	-1	83	-1	83	88	-1	89	-1	89
220901113	SWIFT EL	83	-1	61	92	69	90	-1	78	94	82	93	-1	81	97	85
220901122	ROQUEMORE EL	45	44	48	-1	46	53	56	50	-1	52	69	62	78	-1	66
220905217	I M TERRELL EL	80	82	-1	-1	80	-4	-4	-1	-1	-4	87	82	-1	-1	87
220905222	CLIFFORD DAVIS ELEMENTARY	45	41	52	-1	44	47	44	52	-1	47	86	79	95	-1	86
Aggregate Scores																
AggScoresMobileStuDeleted																

REQUEST 2:

Study Objective 2: To determine if there is a significant difference in the overall academic performance scores of the highest mobility schools, minus the scores of high mobility students, and the scores of less mobile schools with similar accountability student groups, minus the scores of high mobility students.

For the 20 low-mobility schools listed below, I need:

1. Calculated aggregate (combined scores for the whole group) grade 3 "met passing standard" scores for each of the following elements:

Element Name (Column Heading)	Description
CA003TA06R	Grade 3, All Tests Taken, 2006, All Students
CB003TA06R	Grade 3, All Tests Taken, 2006, African American Students
CH003TA06R	Grade 3, All Tests Taken, 2006, Hispanic Students
CW003TA06R	Grade 3, All Tests Taken, 2006, White Students
CE003TA06R	Grade 3, All Tests Taken, 2006, Economically Disadvantaged Students
CA003TM06R	Grade 3, Mathematics, 2006, All Students
CB003TM06R	Grade 3, Mathematics, 2006, African American Students
CH003TM06R	Grade 3, Mathematics, 2006, Hispanic Students
CW003TM06R	Grade 3, Mathematics, 2006, White Students
CE003TM06R	Grade 3, Mathematics, 2006, Economically Disadvantaged Students
CA003TR06R	Grade 3, Reading, 2006, All Students
CB003TR06R	Grade 3, Reading, 2006, African American Students
CH003TR06R	Grade 3, Reading, 2006, Hispanic Students
CW003TR06R	Grade 3, Reading, 2006, White Students
CE003TR06R	Grade 3, Reading, 2006, Economically Disadvantaged Students

2. Calculated aggregate (combined scores for the whole group) grade 3 "met passing standard" scores **minus mobile students** for the same elements. For the purposes of my study, I need the scores removed for those grade 3 students who were not continuously enrolled at the same school, or who did not naturally progress, beginning with the **October 2003** PEIMS data submission. Same elements, only with mobile students deleted:

CAMPUS	CAMPNAME	CA003TA06R	CB003TA06R	CH003TA06R	CW003TA06R	CE003TA06R	CA003TM06R	CB003TM06R	CH003TM06R	CW003TM06R	CE003TM06R	CA003TR06R	CB003TR06R	CH003TR06R	CW003TR06R	CE003TR06R
241904102	C G SIVELLS EL	67	57	64	83	60	75	70	72	87	70	83	85	77	89	78
93904105	JOHN C WEBB EL	78	69	79	84	74	89	80	88	96	85	88	79	90	94	84
236902104	SCOTT JOHNSON EL	89	89	83	96	87	95	93	93	-4	94	93	96	86	-4	91
210904101	TENAHA ELEMENTARY	44	27	63	50	48	50	30	57	80	55	76	82	75	67	74
227901122	MAPLEWOOD EL	50	44	50	-1	43	56	56	50	-1	50	78	72	80	-1	75
116905103	CROCKETT EL	75	43	80	80	71	79	50	80	84	76	85	57	87	92	82
37904105	JOE WRIGHT ELEMENTARY	69	39	74	93	65	78	57	82	93	75	78	54	79	-4	74
174904105	RAGUET EL	69	65	52	84	56	85	75	90	88	80	85	85	68	96	79
243905119	LAMAR EL	79	87	75	67	76	87	87	83	90	85	93	95	90	91	92
220904101	BISHOP EL	66	55	79	67	63	71	61	79	75	67	85	76	96	91	83
161914105	CEDAR RIDGE EL	42	29	50	54	44	45	33	50	62	46	79	76	80	85	79
220901155	BURGIN EL	62	56	62	63	56	69	63	67	75	63	76	72	77	75	71
174904104	NETTIE MARSHALL EL	56	42	52	83	54	67	50	70	91	68	77	67	73	-4	75
57914106	MCWHORTER ELEMENTARY	52	31	61	50	49	57	36	66	56	53	79	75	76	-4	76
161914106	CRESTVIEW EL	50	57	41	67	48	55	69	45	67	53	75	86	66	89	73
101911115	PUMPHREY EL	64	63	70	59	67	78	73	77	88	78	79	74	87	75	79
101913103	NORTH BELT EL	62	45	68	71	61	68	45	75	86	66	79	70	84	79	76
221901120	REAGAN EL	74	79	75	67	70	82	85	80	80	78	81	86	80	75	78
220901126	FOSTER EL	66	65	59	77	65	71	71	63	85	70	83	81	82	85	81
101913102	LAKELAND EL	66	48	69	74	64	68	48	76	74	66	88	71	89	-4	85
Aggregate Scores																
AggScoresMobileStuDeleted																

If you have any questions regarding this request, please contact Lynn Pulliam at:
Home 806-358-4278
Mobile 806-382-7304
Work 806-326-3305
Email lynn.pulliam@amaisd.org

APPENDIX B

Texas Education Agency Data Request 2

TO: Jana Coirsairt
FROM: Lynn Pulliam
RE: Public Information Request
DATE: February 22, 2007

I am the principal at Crockett Middle School, in Amarillo ISD. I am also enrolled as a graduate student at Baylor University, where I am currently conducting a dissertation study. The title of my study is:

The Impact of Student Mobility on School Accountability in Texas

REQUEST:

For the 20 high-mobility schools listed below, I need:

Calculated grade 3 "met passing standard" scores **minus mobile students** for each campus. For the purposes of my study, I need the scores removed for those grade 3 students who were not continuously enrolled at the same school, or who did not naturally progress, beginning with the **October 2003** PEIMS data submission.

Description

Grade 3, All Tests Taken, 2006, All Students minus mobile students

Grade 3, Mathematics, 2006, All Students minus mobile students

Grade 3, Reading, 2006, All Students minus mobile students

High-Mobility Campuses:

CAMPUS	CAMPNAME	% met passing All Tests All Students	% met passing All Tests All Students minus mobile students		% met passing Math All Students	% met passing Math All Students minus mobile students		% met passing Reading All Students	% met passing Reading All Students minus mobile students
14906112	WEST WARD ELEMENTARY	74			94			84	
14906116	CLARKE ELEMENTARY	82			87			96	
15907127	GATES ACADEMY	20			26			58	
15907142	M L KING ACADEMY	63			65			96	
15910113	SERNA EL	77			87			92	
57905127	CITY PARK EL	63			73			79	
57905142	J N ERVIN EL	73			86			76	
57916126	SKYVIEW EL	73			82			90	
68901110	GOLIAD EL	79			91			80	
93901101	ANDERSON-SHIRO ELEMENTARY	69			69			89	
133902101	HUNT SCHOOL	86			86			95	
139912101	BLOSSOM ELEM	87			93			100	
139912102	DEPORT ELEM	97			97			100	
152901115	JACKSON EL	57			77			65	
178904110	EVANS SES	50			58			87	
178904142	ZAVALA EL	78			82			88	
220901113	SWIFT EL	83			90			93	
220901122	ROQUEMORE EL	45			53			69	
220905217	I M TERRELL EL	80			100			87	
220905222	CLIFFORD DAVIS ELEMENTARY	45			47			86	

For the 20 low-mobility schools listed below, I need:

Calculated grade 3 “met passing standard” scores **minus mobile students** for each campus. For the purposes of my study, I need the scores removed for those grade 3 students who were not continuously enrolled at the same school, or who did not naturally progress, beginning with the **October 2003** PEIMS data submission.

Description

Grade 3, All Tests Taken, 2006, All Students minus mobile students

Grade 3, Mathematics, 2006, All Students minus mobile students

Grade 3, Reading, 2006, All Students minus mobile students

Low-Mobility Campuses

CAMPUS	CAMPNAME	% met passing All Tests All Students	% met passing All Tests All Students minus mobile students		% met passing Math All Students	% met passing Math All Students minus mobile students		% met passing Reading All Students	% met passing Reading All Students minus mobile students
241904102	C G SIVELLS EL	67			75			83	
93904105	JOHN C WEBB EL	78			89			88	
236902104	SCOTT JOHNSON EL	89			95			93	
210904101	TENAHA ELEMENTARY	44			50			76	
227901122	MAPLEWOOD EL	50			56			78	
116905103	CROCKETT EL	75			79			85	
37904105	JOE WRIGHT ELEMENTARY	69			78			78	
174904105	RAGUET EL	69			85			85	
243905119	LAMAR EL	79			87			93	
220904101	BISHOP EL	66			71			85	
161914105	CEDAR RIDGE EL	42			45			79	
220901155	BURGIN EL	62			69			76	
174904104	NETTIE MARSHALL EL	56			67			77	
57914106	MCWHORTER ELEMENTARY	52			57			79	
161914106	CRESTVIEW EL	50			55			75	
101911115	PUMPHREY EL	64			78			79	
101913103	NORTH BELT EL	62			68			79	
221901120	REAGAN EL	74			82			81	
220901126	FOSTER EL	66			71			83	
101913102	LAKELAND EL	66			68			88	

If you have any questions regarding this request, please contact Lynn Pulliam at:

Mobile 806-382-7304
Home 806-358-4278
Work 806-326-3305
Email lynn.pulliam@amaisd.org

APPENDIX C

Explanation of Masking

Explanation of AEIS Masking Rules

The 2005-06 AEIS reports employ masking of performance data in order to comply with the federal Family Educational Rights and Privacy Act (FERPA). Generally speaking, the term "masking" refers to the use of special symbols to conceal the performance results. TAKS and SDAA II results are masked under the following conditions:

1. *When very few students in a group are assessed.* If performance is revealed for a group of very few students, then it is possible that the result for an individual student could be known, which violates that student's right to privacy.

2. *When all students pass or all students fail.* Revealing that 100 percent of the students passed or 0 percent passed is considered to be a violation of the privacy of all students, because the result for every student tested is known. In cases where TAKS or SDAA II results are 100 percent or round to 100 percent, then the expression >99% is shown. In cases where TAKS or SDAA II results are 0 percent or round to 0 percent, then <1% is shown.

Explanation of AEIS Masking Rules

The tables below show each of the masking situations that are possible on the 2005-06 AEIS Reports. Different rules apply for the TAKS and SDAA II indicators compared to other performance indicators.

Symbols Used TAKS or SDAA II

Examples	Numerator	Denominator	Actual Value	What is Shown on Report	What is Stored on Data Download	Meaning
a	4	4	100%	*	-1	• Denominator is less than five (including 0).
	3	4	75%	*	-1	
	0	4	0%	*	-1	
b	24	24	100%	>99%	-4	• Denominator is five or more; and, • Percent is 100 or rounds to 100.
	995	1000	100%	>99%	-4	
	199	200	100%	>99%	-4	
c	0	5	0%	<1%	-3	• Denominator is five or more; and, • Percent is 0 or rounds to 0.
	1	20	0%	<1%	-3	

For there to be no masking of TAKS and SDAA II performance data, both of the following conditions must be met:

- Results are based on five or more students tested; and,
- Percent is not 100 or 0 and does not round to either 100 or 0.

	Numerator	**Denominator**	**Percent**
Examples	197	200	99%
	3	6	50%
	59	62	95%

Symbols Used for Other Performance Indicators (e.g., RPTE, Dropout/Completion, Advanced Courses, RHSP/DAP Graduates, AP/IB, Attendance, SAT/ACT, and TAKS/SDAA Participation)

Examples	Numerator	Denominator	Actual Value	What is Shown on Report	What is Stored on Data Download	Meaning
1	1	4	25.0%	*	-1	• Denominator is less than five (excluding 0).
	0	2	0.0%	*	-1	
	3	3	100.0%	*	-1	
2	0	0	–	–	•	• Denominator is 0.
3	–	–	–	n/a	•	• Data reporting is not applicable.
4	8	6	133.0%	?	-2	• Denominator is five or more; and, • Percentages are statistically improbable, or were reported outside a reasonable range.
	35	30	117.0%	?	-2	

For there to be no masking of other performance data, both of the following conditions must be met:

- Denominator is five or more; and,
- Percentages are statistically probable, or are reported within a reasonable range.

	Numerator	**Denominator**	**Percent**
Examples	147	147	100%
	3	6	50%
	0	12	0%

Symbols Used for Texas Growth Index (TGI) and Campus Group Values

- If the campus group median value is based on 16 or fewer campuses, an asterisk (*) is reported and a -1 is stored on the download file.
- If the campus group value does not exist at all, a dash (-) is reported and a period (.) is stored on the download file.
- If the average TGI values are based on a denominator of less than 5 (including 0) then an asterisk (*) is reported and a -99 is stored on the download file.

Symbols Used for Profile Values

If values reported on school and district staff, finances, and student demographics are outside a reasonable range, a question mark (?) is printed on the report and a -2 is stored on the download file.

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