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Analyzing relationships between student mobility and value-added gain-scores in East Tennessee elementary schools

Duran O'Brian Williams

To the Graduate Council:

I am submitting herewith a dissertation written by Duran O'Brian Williams entitled "Analyzing relationships between student mobility and value-added gain-scores in East Tennessee elementary schools." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Education.

Gerald C. Ubben, Major Professor

We have read this dissertation and recommend its acceptance:

Accepted for the Council:
Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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ANALYZING RELATIONSHIPS BETWEEN STUDENT MOBILITY AND VALUE-ADDED GAIN-SCORES IN EAST TENNESSEE ELEMENTARY SCHOOLS

A Dissertation
Presented for the
Doctor of Education
Degree
The University of Tennessee, Knoxville

Duran O'Brian Williams

May, 2003

DEDICATION

TO THE STUDENTS, PARENTS, AND TEACHERS IN THE
TENNESSEE PUBLIC SCHOOL SYSTEM

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ABSTRACT

The purpose of this study was to examine the relationship between student mobility and Value-Added gain-scores in East Tennessee elementary schools. One large school district was selected as the population; forty-seven elementary schools were included in the analysis. Tennessee Value-Added Assessment System (TVAAS) gain-scores in Language Arts, Math, and Reading for grades three, four, and five were analyzed.

While it cannot be stated that mobility is a causal factor in poor student achievement, this study supported previous research that found that mobility was a contributing factor associated with poor student achievement. A Pearson's Correlation Coefficient Test revealed that composite Federal Free/Reduced Lunch percentages displayed a stronger relationship with lower value-added gain-scores than student mobility rate percentages. However, the two variables closely overlap in the analysis.

Findings also revealed that when mobile students were removed from the Pearson's Correlation Coefficient analysis, value-added gain-scores in Language Arts and Math increased at thirty-four schools. Nineteen school value-added gain-scores increased in Reading. The system-wide average score increase for each school represented in the study was .50. Only Math value-added gain-scores were statistically significant ($R = .43$) when mobile student scores were removed from the Pearson's analysis; Alpha was set at the .05 level of significance.

Recommendations for classroom, school, district, and state level strategies to counteract the negative impact of student mobility are provided as well as recommendations for further study.

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CHAPTER I

INTRODUCTION

The American population is highly mobile (Dougherty, 2000; Kerbow 2000). A relevant body of evidence suggests that many students in the United States change schools frequently. A current review of literature indicates that student mobility, like truancy, begins at an early age (Student Mobility Report, 2000, p. 4). A national study found that more than 40% of all third grade students had changed schools at least once and 17% had changed schools two or more times (U.S. General Accounting Office, 1994).

Mobility can have adverse, lasting effects on a student's ability to become a productive, contributing citizen (Student Mobility Report, 2000, p. 4). Society ultimately pays the price for high student mobility through lost wages, underutilized human resources, and a continuing cycle of poverty (Student Mobility Report, 2000, p. 4). Wood et al., (1993) conducted a study on family relocation. The research revealed those children in families that moved frequently (six or more times by age 18), "were between 50% and 100% more likely to have a delay in growth and development, to have a learning disorder, to have repeated a grade, or to have four or more frequently occurring behavioral problems" (p.136).

Dougherty (2000) contended that the magnitude of student movement and its potential impact on students, teachers, and classroom management has been documented for years (p.12). However, Rumberger and Larson (1998) contended that these apparent detrimental effects may not be due to mobility itself but to other related student variables (p.3). Economically disadvantaged children are more likely to be mobile and have

problems in school (Student Mobility Report, 2000, p. 4). Relationships between student mobility and low achievement may be due to other underlying family problems related to poverty (Rumberger and Larson, p. 3).

Some research suggests that students who change schools frequently are more likely to experience academic, social, and emotional problems than students who do not change schools as often (General Accounting Office, 1994, Lash & Kirkpatrick, 1990). Nation-wide research dealing with mobility has focused on older students and neglected early elementary school populations (Kerbow, 1996; Rumberger & Larson, 1998; Nelson, et al., 1996). There has been relatively little research that examines the educational consequences of student mobility in Tennessee.

Kerbow (1996) purported that neighborhood and community issues and attempts by families to secure better, safer housing contribute to student movement (p.5). Other researchers (Bowditch, 1993; Fine, 1991) said that schools themselves are partly responsible for students transferring. Kerbow (1996) found that over 40% of elementary students who changed schools in 1992 and 1993 in Chicago did not change residences (p. 8). Rumberger and Larson (1998) discovered that some student transfers occurred when administrators actively tried to "get rid of troublemakers" by forcing them to leave school (p. 2). Current research suggests that schools are at least partly to blame for high student transfer rates (Rumberger & Larson, 1998; Kerbow, 1996). Consequently, educational systems should help address and alleviate problems associated with mobility.

Rumberger and Larson (1998) contended that despite its high incidence, the issue

of student mobility has not received much attention from educational researchers, practitioners, or policymakers; student mobility is frequently seen as an inevitable result of family relocation (p.2). Student mobility is generally higher in the United States than other Western countries and Japan (Long, 1992). Wood et al. (1993) purported that 50% of school age children in the United States move a minimum of two times before they are 18 years old (p. 1335).

Research suggests that student mobility is detrimental to both mobile students and to the schools they attend (Dougherty, 2000; Kerbow, 1996; Student Mobility Report, 2000). A recent study of mobile students in Chicago (Kerbow) revealed that there are strong associations between the achievement level of a student's previous school and the school to which he or she transfers (1996). Rumberger & Larson purported that at least half of the differences in student achievement do appear to be associated with mobility (1998). A study by *Education Week* (1993) reported that fourth and eighth grade students who changed schools one or more times in the previous two years scored significantly lower than did other students on math proficiency exams.

Other studies indicated that changing schools has a detrimental effect on student achievement after examining differences in socioeconomic status and family background factors (Kerbow, 1996; Nelson, 1996). A Chicago Catholic elementary school study (Jason et al., 1992) discovered that high-risk transfer students had markedly lower grades than a comparable group of high-risk peers who had not transferred schools.

Many states have recently enacted legislation that forces schools to be held accountable for educating all children (Linn, 2001, p. 1). Linn (2000) reported that most

states now require annual student testing to document academic progress (p.1). Cimbricz (2002) purported that state policymakers have typically relied upon low-stakes, state-mandated testing to address a number of state goals (p.3).

The state of Tennessee adopted an accountability-testing model in 1992 developed by a University of Tennessee professor, Dr. William Sanders (Hill, 2000, p. 4). Tennessee Value-Added Assessment System, or TVAAS, was created by Sanders to annually assess student achievement. Wright, Horn, and Sanders (1997) purported that TVAAS uses statistical mixed-model methodology to enable a multivariate, longitudinal analysis of student achievement data which has demonstrated estimates of school and teacher effects that are free of socioeconomic biases (p.58). Sanders' model reportedly controls for missing student data, the regression to the mean, diversity of individual teaching modes and socioeconomic factors including student mobility.

Problem Statement

There are many mobile families in America today. A variety of evidence suggests that these students change schools frequently. However, there has been minimal research examining the relationship between elementary student mobility and value-added gain-scores. Current research (Kerbow, 1996; Student Mobility Report, 2000; and Thomas, 2001) indicated that system-wide strategies to confront student mobility are not common. Kerbow (1996) lamented that student mobility, "tends to fade from the agenda as the discussion turns toward reform initiatives and school restructuring" (p. 22). Mobility and the resulting classroom instability are typically assigned background status to which schools must adjust (Kerbow, 1996). Consequently, few educational strategies or

innovative solutions have been proposed to lessen the impact of student mobility on classroom instruction (Kerbow, 1996).

There are some schools in Tennessee that serve high mobility, low socioeconomic status students. Some administrators contend that high rates of student mobility causes their schools to receive low value-added gain scores. Student mobility may affect the performance of East Tennessee elementary schools as measured by the TVAAS formula.

Purpose Statement

The purpose of this study was to analyze the relationship between student mobility and value-added gain-scores. What is the relationship between schools with high rates of student mobility and TVAAS Value-Added gain-scores? The analysis for this study was designed to determine if mobility has a greater relationship with value-added gain-scores than do other student variables. An analysis of East Tennessee elementary school value-added gain-scores examined apparent relationships between student mobility and TVAAS gain-scores.

Rationale/Significance of the Study

The demographics of American schools are constantly changing; teachers are uncertain about the future status of their work environments. There are currently many demographics that affect education (Dougherty, 2000; Kerbow, 1996; Student Mobility Report, 2000). Race, religion, wealth, and even access to education are not distributed evenly in classrooms in America. One key variable that affects education is student mobility. Hodgkinson (2001) purported that nearly 40 million Americans move during a

single year (p. 2).

Recent studies have linked student mobility to poor achievement (Kerbow, 1996; Mao, 1997; Rumberger and Larson, 1998; and O'Leary, 2000). Kerbow (1996) contended that the process of changing schools is almost certain to disrupt a student's learning experience; the cumulative effect of frequent moves disrupts the pace of learning for the highly mobile student (p.14). Many mobile students in Chicago experienced a drop in test scores after changing schools (Kerbow, p.14).

Rumberger and Larson (1998) purported that frequent student mobility reduces the chance that a student will earn a high school diploma (p. 30). Some schools administratively transfer troublesome students to another school. (Rumberger & Larson, p. 32). This study supports the contention that academic and behavioral engagements of many students are impacted by mobility.

Schools that experience high rates of student mobility often encounter difficulties educating stable student populations. Kerbow (1996) purported that those teachers at high mobility schools often flatten their classroom curriculum; schools that accelerate their curriculum to challenge all students often discover that mobile students fall farther behind (p. 22). Kerbow asserted that the flattened curriculum creates pacing gaps for some schools (p. 22). Mobile classrooms, by the fifth grade, usually achieve learning levels equivalent to a fourth grade classroom at a stable school (Kerbow, p. 22).

Thomas (2001) purported that student mobility creates an expanse of issues that impact school organization, teacher instruction, and student learning (p. 11). Current research (Kerbow, 1996; Mao, 1997; Thomas, 2001; and O'Leary, 2000) revealed that

adequate strategies to lessen the effects of student mobility are presently insufficient. Student mobility is a widespread problem in America; common educational strategies and staff development opportunities must be developed to lessen the negative effects of student mobility (Kerbow, 1996; Student Mobility Report, 2000).

This study should be undertaken because school systems in Tennessee which have high concentrations of mobile students appear to perform poorly on Value-Added tests. There are several factors that mitigate that this study should be undertaken at this time:

1. Family mobility in America continues to increase;
2. Greater numbers of mobile poor and minority students appear to be failing to meet projected gain-scores;
3. Few strategies have been implemented in Tennessee to lessen the negative impact of student mobility on academic achievement.

Theoretical Framework

The conceptual framework of this study posits that student mobility impacts individual student and classroom achievement scores. The socioeconomic status of a family has a large impact on the academic achievement of a child (Kerbow, 1996). Other factors impact student achievement. Is student mobility a causal or a contributing factor in poor student achievement? An analysis of the effect of student mobility on East Tennessee elementary school value-added gain-scores may provide definitive answers.

Rumberger and Larson (1998) contended that no scholar has yet proposed a theory to specifically explain the causes or consequences of student mobility (p. 4). TVAAS assessment procedures may properly filter out all the socioeconomic variables that poor

and minority students bring to the classroom. An analysis of the effects of student mobility on TVAAS gain-scores may produce strategies that will enable teachers to more effectively educate mobile students

The researcher will develop a conceptual framework based on existing theoretical and empirical research to conduct the study. Current research on student mobility in Tennessee is limited. However, there is a variety of both emperical and theoretical research from other states that can be utilized to develop a better understanding of this issue. Theoretical research suggests why students change schools and why mobility effects educational achievement. These theories also identfy factors that researchers should study to explain mobility and its consequences (Rumberger & Larson, 1998, p. 4). Empirical research is valuable in establishing support for existing theories concerning student mobility

Assumptions

The researcher will conduct this study operating under the following assumptions:

1. Terra Nova achievement tests are valid measures of student achievement.
2. TVAAS calculations represent reliable measures of student gains.
3. Mobility does affect the learning and lives of students.
4. The Milwaukee Public Schools (MPS) mobility formula is a valid indicator of school mobility rates.

Research Questions

The researcher conducted and designed this study based on several relevant research questions that included:

1. Does student mobility have a stronger relationship with value-added gain-scores than Federal Free/Reduced Lunch and Students with Disabilities variables?

2. Will the rank order for all elementary schools that test third, fourth and fifth grade students reveal a relationship between high student mobility rates and low value-added gain-score rankings in Language Arts, Math, and Reading?

3. Will TVAAS gain-scores subjected to a Pearson's Correlation Coefficient Test reveal a relationship between high rates of student mobility and low value-added gain-scores?

4. Is there a relationship between student mobility and low TVAAS gain-scores when mobile students are excluded from the Pearson's Correlation Test analysis?

Delimitations

1. This study was delimited to one, large school district in East Tennessee.

2. The study was delimited to include only third, fourth and fifth grade value-added gain-scores for the 2001-2002 school year. Forty-seven elementary schools met this criteria.

3. The study was further delimited to this age group of students because previous studies revealed that student mobility has a more pronounced effect on achievement in earlier grade levels (Kerbow, 1996: Parades, 1993); and data are available for purposes of this research analysis.

Definitions

Accountability Testing. A testing program designed to hold schools and teachers accountable for the learning of their students. Standardized, multiple-choice,

norm-referenced tests are most often designed for this purpose.

Basic Education Plan (BEP). This plan was enacted as a part of the Education Improvement Act of 1992 to equalize school funding in Tennessee. The General Assembly (GA) included accountability testing as a means for judging teacher effectiveness. The testing instrument developed by Dr. William Sanders was selected to serve as the accountability model for this plan.

Gain-Score. The academic improvement a student makes from one school year to the next on a standardized test, usually referred to as gain-score.

Milwaukee Public School Mobility Formula. MPS defines mobility as the sum of students who enter and leave school between the third Friday of September and the last day of school, divided by the official September enrollment figures.

Mobility Rate. The number of students who leave a school and the number of students who enroll after the beginning of the year. These numbers are summed and then the total number of students attending the school, a percentage, divides the total.

Pearson's Correlation Coefficient. Pearson's is a statistical technique that measures the strength of the linear relationship between two variables. Coefficient is usually signified by r (rho), and can take on values from -1.0 to 1.0. Where -1.0 is a perfect negative correlation, 0.0 is no correlation, and 1.0 is a perfect positive correlation.

Predicted Score. The score that the Tennessee State Department of Education predicts that each student should reach or pass by the end of the upcoming school year.

Stable Cohort. A consistent number of students who remain enrolled at a school over a period of time.

Standardized Achievement Test. Achievement tests measure the current status of individuals with respect to proficiency in given areas of knowledge or skill. Standardized tests are carefully developed to include measurement of objectives common to many school systems. They measure knowledge of facts, concepts and principles.

Teacher Effectiveness. A measure of how successful a classroom teacher is in teaching her/his students (a student, curriculum or set of basic skills). Effectiveness, for the purpose of this study, will be limited to the demonstrated capacity of a teacher to effect change in behavior measured by standard achievement test.

Transient. A student who enrolls or exits from a school attendance databank, another term for a mobile student.

Value-Added Model. The Tennessee Value-Added Assessment System (TVAAS) was created by Dr. William Sanders. The Tennessee General Assembly adapted TVAAS as a part of the Education Improvement Act of 1992. TVAAS has been designed to use statistical mixed-model methodologies to conduct multivariate, longitudinal analyses of student achievement to make estimates of school, class size, teacher , and other effects (Wright, Horn, and Sanders, 1997). Sanders contends that his formula factors in over 21 variables that affect student test scores and achievement. Student mobility is one variable purportedly controlled for by the TVAAS formula.

Summary of the Study

This study was organized following the sequence described here. Chapter 1 includes the introduction, problem statement, purpose of the study, rationale/significance of the study, theoretical framework, assumptions, research questions, limitations, definitions,

and a summary of the study.

Chapter 2 includes a current review of literature focusing on the issues related to student mobility. These issues include the problem of mobility in the United States, the reasons for family mobility, the effects of mobility on academic performance, the effects of mobility on other students, and the strategies to aid mobile students/families.

In Chapter 3, a description of the research methods and procedures that frame the study are included. Chapter 4 contains a description of the population sample, the findings and subsequent data analysis for the study. Chapter 5 includes a summary of the findings, and conclusions and recommendations drawn from the analysis of the study. Suggested strategies for educational practitioners are also included in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

The following chapter provides a review of the literature and research related to the study. The review is focused on five major areas including: (a) the problem of mobility in the United States; (b) the reasons for family mobility; (c) the effects of mobility on academic performance; (d) the effects of mobility on other students; and (e) the strategies to aid mobile students/families.

Problem of Mobility in the United States

The United States' population is highly mobile. People across the nation are on the move. According to a United States Accounting Office report (1994), 43 million Americans move annually. Whether it is across town or across the country, approximately one-fifth of all Americans moves to a new home every year. The United States has one of the highest rates of mobility when compared to western countries and Japan (Thomas, 2001, p. 10). Moving can be stressful for everyone in the family, according to the United States Census Bureau (NAESP - Report to Parents, 1996, p.1). The shifting demographics of America's population contributes to stressful conditions in home, work, and school environments. The level of mobility often has deep and pervasive consequences for the students of mobile families (Kerbow, 1996, p. 1).

Family movements are often based on economic factors. Issues of neighborhood and community poverty are related variables in mobility. Attempts by families to secure better housing, a safer environment, or better educational settings for their children also

contribute to family displacement. There is often a default assumption that student mobility is an intractable problem for schools and educators caused mainly by factors outside of their control (Kerbow, 1996, p. 5). The mobility demographic has become vitally important to educational policymakers at all levels. However, teachers are rarely invited to participate in policy discussions affecting their schools (Hodgkinson, 2001, p. 1).

Key demographics that effect teaching are not distributed evenly across the United States - not race, religion, age, fertility, wealth, and certainly not access to education. For example, five states will soon experience a 20% (or more) increase in school enrollments. Most states will have smaller increases, and about nine states will experience declining enrollments (Hodgkinson, 2001, p.1). One demographic that affects every teacher is transiency. There are about three million children born every year. But, nearly 40 million Americans move during that same time period. Mobility is far greater a factor in explaining population changes than births (Hodgkinson, 2001, p. 2).

Many educators are currently uncertain about the future status of their work environment Research shows that it depends on the teacher's state and location. Nearly one-quarter of Americans live in big cities; half of the population lives in the suburbs. The remaining quarter lives in small towns or rural areas (Hodgkinson, 2001, p. 1). If a teacher lives in a central city in the eastern half of the country, she/he can expect almost no enrollment increases or a slight decrease in enrollment. Enrollment increases in rural areas and small towns will be flat; those families who can do so are fleeing to the suburbs.

The migration of America's population to the suburbs is not a recent phenomenon.

Hodgkinson elaborated on these future mobility trends; he explained that:

> The inner suburban ring (where there is nothing between you and the city limits) will see a major increase in student diversity-more minorities, more immigrants, more students learning English as a second language (ESL), and more students in poverty. Teaching in an inner suburb will increasingly resemble teaching in an inner city. The second suburban ring (with one suburb between you and the city) will see some expansion in student enrollments, especially as you reach the beltway, which used to contain growth-like a belt-but is now the jumping off place for growth. In these areas, parents do not commute to the central city: they live in one suburb and work in another (2001, p. 1).

Inner city areas in the West tend to be more porous and economically flexible than other areas of the U.S. Low-income people are more often segregated in the East and Midwest, and racial and economic segregation is almost the same thing in these two areas. The ten most racially segregated cities are located in the East and the Midwest; none of the ten most racially segregated cities is located in the South (Hodgkinson, 2001, p. 2).

Kerbow, citing 1992 U.S. Bureau of Census figures, reports some alarming statistics concerning mobility. In 1990-91, nearly 17% of children age 5 to 9 moved. Children between the ages of 10 and 14 moved at a slightly lesser rate of 14% (p. 5). Thomas (2001), using 1994 statistics, reported similar trends:

> Seventeen percent of third grade students in the United States have attended three or more schools. This means one child in six has moved three or more times by the time he or she is nine years old. This number increases to 25% for inner city children and to 30 % for low-income families (below $10,000). Forty percent of children changed schools in first, second, or third grade (pp. 13-14).

Student mobility, like student truancy, usually begins at an early age. Yet, mobility can have an adverse, lasting impact on the student's ability to become a productive citizen (Student Mobility Report, 2000, p. 4). Student mobility is a symptom of disengagement and an important risk factor for high school dropouts.

Several states and larger metropolitan areas have recently issued mobility studies. The 2000 Student Mobility Report [for Milwaukee Public Schools] contends that, "If a child is not present in the same classroom at the same school on a regular basis, the child will not learn regardless of instructional quality, teacher competency or facility adequacy" (p. 4). The Milwaukee Public School System experiences student mobility averages of more than 20% for elementary, middle, and high school. Some schools in the system experience mobility rates exceeding 50% (2000, p. 4). Mobile students come from diverse backgrounds. However, research suggests that many tend to come from poor, single parent families (Kerbow, 1996 and Student Mobility Report, 2000).

Chicago has an extremely mobile student population. Kerbow (1996) developed stability and mobility characteristics and rankings for Chicago's student population. Clear trends emerged from these profiles. In general, white and more advantaged students are more likely to engage in stable school membership. White students represented only 6% of the students who attended four or more schools as an elementary student. The pattern was reversed for African American students who represented 75% of the frequent movers within the school system (Kerbow, 2000, p. 7). Stable students were also less likely to receive subsidized meals (65% to 78% for frequent movers). Students from two-parent families are decidedly more stable than students from other family configurations. Forty-six percent of the stable students live in two-parent families; only 22% of the mobile students are from families of this composition (Kerbow, 2000, p. 7). The median family income is also higher for the stable student. A Chicago student who has attended four or more schools has a median family income of $4,424.

This median income is less than that of a student who has remained at the same school for two or more years (Kerbow, 2000, p. 7).

High mobility affects many school districts in New Jersey. A 1999 survey commissioned by the School Finance Committee identified several challenges that districts face in educating mobile students. The analysis of this survey data was consistent with the study by Kerbow. Approximately 10.8%, or 234 New Jersey elementary and high schools have student mobility rates in excess of 30%. Approximately 24.2% of the elementary and high schools have student mobility rates in excess of 20% (O'Leary, 2000, p. 6).

The report concluded that state-funding allocations for New Jersey schools did not serve transient districts well. The funding formula did not recognize mobility differences between schools. School "A" has a mobility rate of 0% and serves 500 students. School "B" has a mobility rate of 35% and serves 500 students by the state reporting process. However, School "B" actually serves 635 students during the school year because of the high 35% mobility rate. Both schools received the same amount of state funding. The 500 student enrollment figure was based on year-end reports (O'Leary, 2000, p. 13).

Alexandria City Public Schools (ACPS) in Virginia experiences high student mobility rates. Nearly one third of the elementary students enrolled in ACPS change schools during a calendar year (Natt, 2000, p. 1). Alexandria is located in the highly transient Washington, D.C, area. The ACPS superintendent commissioned a study to see how student mobility was affecting the district's struggles with high-stakes testing standards. The study concluded that only 35% of the current 5th graders had attended the

same ACPS school throughout their entire elementary career (Natt, 2000, p. 1).

Michigan is the fourth largest receiving state for migrant families. Many of these families pick blueberries at a large migrant camp near Waukazoo Elementary School in Holland, Michigan. Over 200 students began the school year in June, and only 30 remained on school rolls in September. Only five of the students remained at the school in November. However, most of the students were re enrolled at Waukazoo in the spring (Gutloff, 1998, p. 4). In Worcester, Massachusetts, 30% of the district's 24,000 students change schools each year. Some of the schools experience a 70% student turnover during a calendar year (Gutloff, 1998, p. 5). School administrators in Victoria, Texas have struggled for years with the problem of children who frequently change schools. These mobile students often change schools three times or more in the same calendar year (Stover, 2000, p. 1).

The 170,000 secondary school-aged students of military personnel face educational challenges not experienced by the general population. The average student from a military family faces transition challenges more than two times during their high school career. Most military children attend between six and nine different school systems from kindergarten until graduation (Deployment LINK, 2001, p. 1). Many of these students experience two completely different managerial cultures. The top down style of the military environment often conflicts with the bottom up needs of the student/school (DeploymentLINK, 2001, p. 2).

Mehana and Reynolds, 1995; and Kerbow, 1996 undertook studies in the Chicago area. Both studies examined the frequency of student moves and the impact on

achievement. Kerbow supported the analysis of Mehana and Reynolds concerning gaps or disruptions in learning. These disruptions were caused by student adjustment to a new school environment (Kerbow, 1996, p. 14). Kerbow surmised that students can adjust to changing schools. The student can "recover" from the move and resume her/his pattern of academic growth (Kerbow, 1996, p. 14). However, repeated student movement between schools often results in continued deficiencies and learning gaps.

Lingon and Paredes, 1992; Paredes, 1993; and Mao, 1997 conducted research studies concerning mobility in Texas. The study of students in Austin, Texas by Paredes (1993) was an outgrowth of the earlier work conducted with Lingon. All of the studies supported the idea that frequent mobility affects student achievement. Mobile students often score lower than non-mobile students on standardized tests.

The problem of student mobility or transience is not unique to any state or school district. Mobility is a widespread problem that impacts every level of education. Frequent mobility was linked to other student variables that affect test scores in several studies. There are varied causes and consequences of student mobility.

Reasons for Family Mobility

Americans today move for a variety of reasons. Family mobility is a major factor that impacts education in the United States. In the past, it was common for students to begin school in the fall and attend the same classroom for the entire year. Many students attended the same school for several years. This typical experience does not exist for a high percentage of students in today's society (Student Mobility Report, 2000, p. 6). Parental change of residence usually necessitates a change in the child's school.

In a majority of studies, there were two predominant reasons for student movement: residential change and school-related factors (Kerbow, 1996; Paredes, 1993; O'Leary, 2000; and Student Mobility Report, 2000). However, a 2002 report by Skandera and Sousa, Highly Mobile Students Often Are Low Achievers, examines two additional variables. Family income and the population density of a student's home neighborhood were analyzed in the report. Skandera and Sousa found that the rates of illegitimacy, divorce and single-parent families are higher in low-income families (2001, p.2). The home environment of children from low-income families is not as stable as for those families with higher incomes. There is a greater dependence on the extended family to provide care and lodging for these students. This often means that low-income children are shuttled from location to location more often than children from higher-income families (Skandera and Sousa, p. 2).

Suburban school districts have lower population densities than inner-city school districts. However, suburban and rural school districts often cover larger geographic areas than inner-city districts (Skandera and Sousa, p. 2). A move within the inner-city almost always assuredly requires a change of school. A move of equal distance in a suburban district is much less likely to require a school transfer (Skandera and Sousa, p. 2). Home ownership affects school mobility. Renters are more common in urban areas, and they tend to move more frequently than homeowners. Over 35% of renters had moved within the last year, compared with only 8% of homeowners (Skandera and Sousa, citing nationwide data for 1995, p. 2).

Skandera and Sousa listed other comparisons of recent school change including the

following:

- About 25% of third-graders in inner-city schools have changed schools frequently, compared with about 15% of third-graders in rural or suburban schools.
- About 40% of migrant children frequently change schools.
- White and Asian-American third-grade students change schools at a rate of approximately 12%; Hispanic students, 25%; Black students, 26%; and Native American, 35%.
- About 34% of limited English profiencey children change schools frequently (2002, p. 2).

The changing employment status of a parent can create a residence change. A parent may change or loose a job. A better job may create the opportunity to move into a nicer neighborhood. Unemployment may create the need to move into lower income housing (Thomas, 2001, p. 14). More than half (54%) of the respondents in the Milwaukee Public School survey chose "housing issues" as the primary reason for family mobility. Community issues accounted for 26% of the student mobility. School issues accounted for approximately 12% of the family mobility in the study (Student Mobility Report, 2000, p. 14).

Kerbow (1996) found that the respondents in the Chicago study chose similar factors relating to family mobility. A detailed survey of over 13,000 sixth-graders found that 58% listed residence change as the primary reason for switching schools (p. 8). However, 40% of the students chose school-related reasons as the impetus for transferring to another school (Kerbow, p. 8). The Chicago study made further

distinctions within the school-related factors. Several responses indicated dissatisfaction with the former school. Participants in the survey chose academic problems, trouble with other students, and problems with former teachers as reasons for their dissatisfaction. Kerbow referred to these as exit reasons (1996, p.8). Other respondents chose better teachers/academic programs, successful sports teams, and improved extracurricular activities as reasons for changing schools. Kerbow referred to these as attraction reasons (p.8). Kerbow divided the school-related reasons for student mobility into two categories: attraction, 23.5%; and exit, 61.1%. School transfer is clearly an exit phenomenon from the perspective of the students in Chicago (Kerbow, p.8).

The Report of the Student Mobility Subcommittee (Dougherty, 2000) for New Jersey examined several variables that affect student achievement. Included in the report was a section on student mobility. The report investigated mobility factors at two schools utilizing case study methods of research. Simmons Elementary has experienced a student mobility rate of more than 30% over the past two years. A majority of the new students are transferring from Philadelphia. The parents of these children are seeking upward mobility (social, economic, educational safety) from the Philadelphia schools (Dougherty, 2000, p.17). The Clayton community where Simmons Elementary is located has vacant apartment rental availability. Many of the parents leaving Philadelphia use Clayton as a first stop stepping stone. The Clayton School District does not have the resources to expand spending on the influx and exodus of students. The district analysis of the student transfers found that many lacked basic skills. These students also had instructional blind spots when they were given the state proficiency test (Dougherty, 2000, p. 17). These

blind spots can be considered equal to the achievement gaps described by Kerbow.

If Clayton's circumstances can be considered typical for socioeconomic transitions affecting student mobility, Seaside Heights can be considered atypical (Dougherty, P. 17). Seaside Heights is a shore community with an extensive supply of investor homes. These homes are rented out during the peak tourist season from Memorial Day to Labor Day. These vacant homes are rented without leases to the economically disadvantaged for the remainder of the off-season. Many of the renters are distressed and exhibit low stability (Dougherty, p. 17). The off-season rental season typically commences October 1 and ends May 15. The children of the off-season renters traditionally are not enrolled in school in September. These same students also miss the last month of school. Seaside Heights graduated 40 students in June 2000. Only three students were residents of the community since the first grade (Dougherty, p. 17). The mobile students attending Seaside Heights could be compared to the migrant children who attend Waukazoo Elementary in Holland, Michigan [where parents migrate to pick blueberries].

A primary reason a majority of survey respondents gave for changing schools was based on a change in residency. Many such changes are based on the economic status of the individual family. The income gap between low earners and high earners in the United States has widened in recent years (Gittleman and Joyce, 1995, p. 1). The U.S. Census Bureau regularly reports on the percentage of families whose income is below the poverty line during a particular year. It is necessary for the Census Bureau to have information on the mobility of individuals, families, and households over a period of

time. What proportion of families in poverty this year will remain in poverty next year? The study of economic mobility and its effects on family mobility/transience can aid educators in the future (Gittleman and Joyce, p.1).

There has been a recent shift in power from the federal government to state governments in many policy areas affecting children (Gill, 2002, p.2). The Census 2000 Supplementary Survey provides reliable estimates of social and economic data. State-by-state analysis allows researchers to more closely examine social changes and trends. These estimates can be utilized by educators to forecast student enrollment trends in the next decade (Gill, p. 2). The Census revealed that the number of children in the United States grew by more than 8 million during the 1990s. This was the largest single decade of growth since the 1950s.

There are vast differences between states in relation to at-risk children. Child poverty increased by 30% in Alaska, but decreased by 33% in Colorado and South Dakota (Gill, p. 2). The American Community Survey recently looked at 10 indicators experts believe have an adverse effect on children's lives. The study developed a "family risk index" based on families that live below the poverty line. The index number examines poverty levels for single-parent households, households where both parents are unemployed, and where the head of the household is a high school dropout (Gill, p. 2). The study increased public awareness and understanding of the problems facing children. States with high percentages of family risk index students can implement educational strategies from successful, proactive states to combat student mobility (Gill, p. 2).

Effects of Mobility on Academic Performance

There are many variables that affect student achievement. Educators and researchers have written countless volumes analyzing these variables. School size, pupil/teacher ratio, teacher effect, and student socioeconomic status have all been examined for their relation to student achievement. Student mobility is a variable that has been debated for its effect on student test scores. Newman (1988) purports that mobility itself cannot be pinpointed as a cause of poor achievement or adjustment, but that it is a complicating factor for children who have other at-risk characteristics. The depression of achievement by mobility can be compounded by other related factors: poverty, limited English, and poor housing (Newman, 1988; Sewell, 1982).

The New Mexico State Department of Education developed a formula to measure school achievement with consideration to three socioeconomic variables. The formula considered: the percent of students eligible for free and reduced price lunch, the percent of limited English proficient students, and student mobility (New Mexico Department of Education, 1999, p.1). Student mobility status, when reported as an isolated variable, revealed that students who have not been in the same school district for a full year had lower levels of proficiency than students who had been in the district for an entire year (Wisconsin School Performance Report, 1997-98, p. 1).

Research has shown that students who switch schools frequently fair poorly on standardized tests. A recent study of California achievement reading tests revealed that students who moved three or more times scored nearly 20 points lower than students who did not move at all (Stover, 2000, p.1). Moving only once or twice during the public

school years may not have harmful, lasting effects. However, high mobility lowers student achievement, especially when students are from low-income, less-educated families (Sewell, 1982; Straits, 1987).

Mobility takes its toll on students academically. Vail, citing 1994 General Accounting Office figures, asserts that 41% of highly mobile third-graders are below grade level in reading. Only 26% of the third-graders who never changed schools are below grade level in reading. The figures are similar for math. Children who change schools frequently are below grade level 33% of the time, compared to 17% of the students who never change schools (Vail, p. 22). However, achievement scores are only part of the problem. Children who change schools frequently are more likely to repeat a grade than those students who never change schools (Vail, p. 20). Highly mobile third-graders are two and one half times more likely to repeat a grade as third-graders who have never moved to a new school (Vail, p. 22). A 1993 study in the Journal of the American Medical Association found that children from families that move frequently are 50 to 100% more likely to repeat a grade. These students are more likely to experience a delay in growth development, have learning disorders, and have behavioral problems (NEA Today Online, 1998, p. 1).

But who repeats grades nationwide? According to CRESPAR Report No. 33, children who repeat kindergarten tend to be White males in the Midwest (1997, p. 1). But first grade repeaters tended to be Black males living in low-income households in the South (CRESPAR, p. 1). Students who were retained in later grades came from middle poverty (53.2%) and high poverty (41%) backgrounds. The Federal Chapter 1 Program

was the highest listed variable effecting retention at 48%. Mobility was listed as being a factor in 10.4% of the retentions (CRESPAR, p. 2).

The achievement gap between advantaged and disadvantaged youths is a consistent concern for educators. Many teachers attribute the gap in student achievement to inequalities in resources and poor learning environments at home and at school. However, data from the United States General Accounting Office (GAO) indicate low achievement scores are related to high rates of mobility (Skandera and Sousa, 2002, p. 1). Other educational problems exist for highly mobile students. Children who change schools frequently are more than twice as likely to have nutrition and health or hygiene problems. When students change schools more than four times, they are more likely to drop out of school. This is true even after taking into account the socioeconomic status of the child's family. These children dropped out of school at high rates regardless of the reading achievement scores (General Accounting Office, 1994).

Clark (2001) contends that welfare reform plays an important role in homelessness and school instability in Ohio (p. 1). Mobility for families recently cut from welfare rolls is four times higher than that of other families. About 42% of families leaving welfare in Cuyahoga County moved within six-months of leaving cash assistance (Clark, p. 1). The movement of the family creates instability in the academic progress of the former welfare children. Welfare reform has created school instability in the Cleveland area. Even if the parent gets a better job and moves to a new neighborhood, the mobile child experiences educational instability.

Clark (2001) purports that those Cleveland 4th-graders who changed schools one

or more times during the school year scored lower than their stable counterparts on all five sections of the Ohio Proficiency Test (p. 1). Mobile students scored 5.12 points below their more stable counterparts. The largest spread between the two groups was between math and science. The smallest gap was in reading. Mobile sixth-grade students also saw similar deficiencies across all five parts of the Ohio Proficiency Test. The test scores suffered regardless of the students' family income (Clark, p. 1).

Cleveland findings reflect similar results for studies that link student mobility to lower achievement. The Minneapolis Public Schools, The Family Housing Fund, and other groups studied mobile children in urban areas. The year-long study, the Kids Mobility Project, discovered that students who moved three or more times earned reading scores of only half of their stable counterparts (Clark, p. 2).

Curran and Takata (2001) analyzed elementary, middle, and high school scores in California utilizing the Academic Performance Index (p. 3). The Index examined the lowest achieving 10% and the highest achieving 10% of schools in the state. Several student variables were analyzed. The lowest 10% achieving schools had a 6% higher mobility rate than the highest achieving schools. The lower achieving schools had 25% of their teachers working on emergency credential licenses at the elementary level. The higher achieving school had only 4% unlicensed teachers (Curran and Takata, P. 2).

The San Juan Unified School District examined mean scores for students in high mobility schools as measured by the Stanford/9 test (Westphal, 2000, p.1). The purpose of the study was to determine the effect of summer break on student achievement in these schools. Mean NCE scores were computed for groups of students for the fall and spring.

Declines were noted for grades four, five, six, and, seven in Total Reading, Reading Comprehension and Total Language. The declines ranged from -3.2 to -8.1 with the largest decline noted in grades five, seven, and eight (Westphal, p. 2). High mobility, lower achieving students in the San Juan District generally demonstrate a reduction in academic performance when compared to the national norm group after the summer break (Westphal, 2000, p. 2).

Major studies on student mobility have been undertaken in Texas, Maryland, and Illinois. Kerbow conducted a detailed study of more than 13,000 Chicago sixth graders. His analysis found that only 50% of Chicago's elementary students were enrolled at the same school over the three-year period of the study (1996, p. 1). Analyzing mathematics data over six years of schooling, Kerbow found that single-time movers did not suffer dramatic achievement losses. Small drops in achievement occurred but students seemed to recover in subsequent years. However, achievement results were much worse for frequently moving students. By the sixth grade, students who have changed schools four or more times are academically about a year behind their classmates (Kerbow, p. 2).

Kerbow (1996) found that student mobility and achievement in mathematics over six years of elementary school are related to students' socioeconomic status (p. 1). The advantaged, stable student achieves the highest level of math skills. The advantaged, but frequently-moving student and the disadvantaged but stable student achieve comparable levels of math skills. The disadvantaged, frequently-moving student consistently achieves the lowest level of math skills (Kerbow, 1996 p. 2). Mobility has the greatest

impact on the low socioeconomic students in the Chicago school system.

The Montgomery County Public School System (MCPS) conducted a study on student mobility from 1994-1996 (1999, p. 2). MCPS is located in Rockville, Maryland and receives transfer students from the District of Columbia/Washington, DC area. The study sample contained 1702 students enrolled in grades two through five. Highly mobile is defined as changing schools three or more times for the purpose of the study. The Wheaton School Cluster was highly mobile; 348 (20.4%) of the students changed MCPS schools three or more times. Four hundred thirteen (24.3%) students had changed MCPS schools twice (1999, p. 5).

The number of school changes had an impact on the achievement scores in the MCPS study (1999, p. 2). Student receipt of free/reduced meals and receipt of ESOL services were co-variables in the detailed analysis. The students who attended three or more schools scored 32 points lower on the CRT (Criterion Referenced) reading test than their classmates who attended only one school (MCPS, p. 3). The students who received free/reduced meals and ESOL services and had changed schools more than three times by the fifth grade scored 52 points lower than the students who remained at the same school since kindergarten (MCPS, 1999, p. 2).

Students enrolling in MCPS after first grade tend to score lower than their classmates who have attended MCPS their entire career. However, those students who enrolled after first grade and spent more than two years in MCPS usually "caught up" academically with students enrolled since kindergarten (1999, p. 3). The analysis showed that highly mobile fifth graders with two years or less in the system score about 23 points

lower on the CRT reading test than students who spent all six years at the same school. However, fifth graders with three to five years in MCPS score nearly the same as classmates enrolled in MCPS since kindergarten (1999, p. 3). The results of the MCPS study align with the Kerbow study concerning student academic recovery.

Mao, and others, examined the magnitude of student mobility in the Texas Public School System. The Mao study clarified the relationship between mobility and academic performance at the individual student, campus and district level (1997, p. 1). The primary focus of the Mao study explored within-year mobility. However, the issue was also examined longitudinally. Mao tracked the first grade students of 1991-92 through the 1995-96 school year. Data analysis from the files of the Texas Assessment of Academic Skills (TAAS) led to the conclusion that there are significant relationships between academic performance, school accountability, and student mobility in Texas (Mao, p. 1). Mobile students scored lower on the state-required TAAS test than their non-mobile classmates. The negative relationship became much stronger in schools with high student turnover rates or high percentages of low socioeconomic students (Mao, 1997, p. 1).

Other mobility studies have been undertaken that indicate correlations, but not necessarily cause-and-effect relationships, between student mobility and poor achievement in language, reading, and mathematics. Rumbarger and Larson (1998) conducted a study on the correlation between student mobility and the increased risk of high school dropouts. Rumbarger and Larson purport that:

> Although, on average, school mobility is associated with poor student achievement, the apparent detrimental effects may be due not to mobility itself but to other factors that contribute to both student mobility and student achievement. For example, because poor children are more likely to be mobile and have problems in

> school, perhaps their mobility and low achievement are due to underlying family problems related to poverty (1998, p. 3).

Wright conducted a study, Student Mobility: A Negligible and Confounded Influence on Student Achievement, in the Kansas City Public School System. Scores from the urban, Midwestern school district were collected using a nationally normed, standardized test and state assessments in reading and math (Wright, 1999, p. 347). Low achievement scores were associated more highly with internal system mobility rather than external mobility (students moving into or out of the school district). The study found that mobility was closely correlated with ethnic family membership and socioeconomic status. However, Wright concluded that student mobility had less of an impact on achievement than either family income or ethnic membership (p. 347). Wright asserted that although it appears consistently as a significant predictor:

> Mobility is generally subordinate in magnitude to other factors such as ethnicity, family income, and (in one comparison) gender. The results also provide an explanation for the somewhat counterintuitive observation that lower achievement often precedes mobility rather than following it; lower achievement is associated with other more powerful predictors than temporal mobility. Students who likely become mobile, especially within the school district, do show preexisting achievement deficits. Location mobility, although a significant predictor of achievement, is confounded with other, stronger predictors and adds little incremental power to prediction. The broad conclusion that may be drawn from the results is that student mobility is subordinate in its effects on achievement to the risk factors for ethnic minority status and low family income (1999, p. 352).

Nelson, and others, conducted a study, Mobility and School Functioning in the Early Grades (1996, p. 365). The study examined the relationship between initial school functioning and student mobility among 2,534 early elementary students. The students were tracked for three years. The analysis indicated that the most mobile students tended to have poor school adjustment ratings and came from single-parent families. The

findings also suggest that poor school functioning and mobility may be related to a third variable, at risk family traits (Nelson, p. 368).

Dobson and Henthorne (2000) conducted research in England concerning student mobility and achievement. The case study research concluded that not all high mobility schools are poor. Also, pupils from high mobility schools "have extensive and diverse learning needs which would be difficult to meet, even without the additional demands of mobility" (Dobson and Henthorne, p. 3).

Student mobility creates a myriad of problems. The Wisconsin School Performance Report (WSPR) concluded that many schools test all or nearly all enrolled students; however, some schools do not (1998, p. 2). Student groups with the lowest achievement levels traditionally have the highest percentages of students who are not included in statewide testing. Students who are disadvantaged by mobility, SES, disabilities or limited-English proficiency are tested at lower rates than other advantaged students. Test participation rates for racial/ethnic minorities are also lower than test rates for white students (WSPR, p. 2).

Keller offered an example of how student mobility impacts graduation rates. He asserts that:

> Last year a student moved to another state in the spring of his senior year and faced a graduation exam in the new school. The student took the test based on a specific state-developed curriculum and failed. The student was then notified that he would not graduate (DevelopmentLINK, 2001, p. 4).

Many mobile teenagers experience similar problems in earning grades, making friends, and passing exit exams at new schools.

There is a strong relationship between the achievement level of the student's

previous school and the school to which she/he transfers. Kerbow (1996) categorized the data from the Chicago study into tables for analysis. The tables were arranged by quartiles. Students from the lowest quartile transfer to another low quartile school 44% of the time. A student from a low quartile school transfers to a highest quartile only at a rate of 7% (Kerbow, 1996, p. 10). Students from the highest quartile transfer to a like quartile 52% of the time. However, a student only moves from a highest to a lowest quartile school at a 9% transfer rate. On average, the school that a student leaves is a strong indicator of the type of school to which she/he will transfer. High achieving Chicago students are seven times more likely to transfer to high achieving schools than are students from low achieving schools (Kerbow, 1996, p. 10).

Kerbow further analyzed the quartile data by test scores. The Academic Achievement Level table distributed the data into four quartiles based on Illinois Goals Assessment Program (IGAP) achievement scores. The state norm is 250 for the IGAP. However, most elementary Chicago schools fall well below this level (Kerbow, p. 9). The highest-achieving quartile only had an average of 225. Schools in the lowest quartile had scores of less than 167 or a full standard deviation below state norms (Kerbow, 1996, p.10).

Mobility and Mixed-Model Statistics

Comparing average test scores from year to year seems like a reasonable basis for assessing student improvement. But such causal analyses can be misleading and troublesome for individual schools (Academic Productivity Series, 1998, p. 1). Variables such as student mobility and test form differences between academic years can

make test scores unreliable for measuring achievement gains in a particular school. A Chicago technical report released in 1998, Academic Productivity of Chicago Public Elementary Schools, analyzed these variables. This study developed potential solutions to these problem variables with value-added indicators of school productivity (Academic Productivity Series, p. 1). The study utilized standardized test data (1987-1996) in reading and mathematics to chart the effects of reform on student learning for each classroom and school. The test-equating study created a stable measurement ruler from six different test forms utilized by Chicago Public Schools. Value-added indicators for each grade in all schools show the extent that student learning has improved. Achievement test gain scores were used as the stable measurement ruler (Academic Productivity Series, 1998, p. 2).

"Tennessee is unique among the states in that an elementary testing program has been in existence to test each elementary student in five subject areas since 1991," purport Sanders and Rivers in their report, Tennessee Elementary Student Achievement Trend Analysis (2000, p. 1). The unprecedented database enables the addressing of questions related to measurement of student academic progress.

The Education Improvement Act (EIA) of 1992 sought to effect academic achievement in Tennessee by substantially increasing school revenue allocations. The increase in educational funding (1.2 billion over five years) was tied to an accountability system based on the rate of student academic progress (Achievement Trend Analysis, 2000, p.1). "The cornerstone of the accountability system, the Tennessee Value-Added Assessment System (TVAAS), a statistical process based upon a mixed model theory and

methodology, has produced reports of the effectiveness of districts in sustaining academic growth since 1993," assert Sanders and Rivers (2000, p. 1).

One major advantage of TVAAS is that elementary students are tested each year. Dimensions of achievement utilizing a common scale over all years enables direct measures of student progress. "TVAAS uses student scale scores derived from the norm-referenced component of the Tennessee Comprehensive Assessment Program (TCAP) as input into the statistical mixed model process," (Sanders, and others, 1993, p. 3). What are some issues important to teachers that are addressed through mixed-model methodology? Bratton, Horn, and Wright offered these explanations; they said that:

> First, the mixed-model methodology used in TVAAS makes it possible to use all the data available on each child. Second, by using the longitudinal data, TVAAS is able to produce more reliable estimates of the school, system, and teacher effects on the academic gains of students than other assessment systems. Third, TVAAS contains methodology that ensures that no teacher will be misclassified as extremely good or extremely bad due to chance. Fourth, other assessment systems based on standardized testing depended on simple raw scores. TVAAS has dealt with the same evaluation problems by focusing on the measurement of academic progress. Fifth, experts in the field of educational statistics and highly respected theoretical statisticians, who have studied TVAAS, have found the process sound and appropriate for the assessment of educational effects (1996, p. 20).

Does TVAAS make it possible to use all the data available on a child? Sanders purports that his assessment system does incorporate all student variables and utilize all available data and findings. Sanders asserts that, "These consistent findings verified the contention that by allowing each child to serve as his or her own control (the longitudinal component of TVAAS), the inclusion of exogenous co-variables to ensure fairness in the estimates of system, school and teacher effects is not necessary" (1998, p. 26). Sanders stated that the cumulative gains for grades 3 to 8 for schools statewide were found to be

virtually unrelated to the racial composition of the school. Socioeconomic factors were related to achievement in some research studies. But separating student mobility from the other socioeconomic was difficult in most studies. Student mobility was often found to be a contributing rather than a causal factor in poor academic performance.

Sanders focused a 1993 article, "Effects of Building Change on Indicators of Student Academic Growth," on student outcomes and the problems associated with students' change of building (p. 3). Sanders asserts that when TVAAS was first developed in 1992, it was discovered that certain systems had a distinct drop in gain for all subjects at certain grades. But the drop in gains varied from system to system. Sanders theorized that the receiving point of the entry school could be causing the retardation in growth (1993, p. 3). Students' records were matched and merged over all systems in the state utilizing the masterbase of 1.7 million students. School configurations vary greatly across the state; school change patterns are known (Sanders, 1993, p. 3). Mean gain scores in scale scores were calculated. The population of Tennessee's students was divided into three groups: those who attended the same school in two contiguous years, those who changed schools and entered the new school at the lowest grade offered in the receiving school, and those who entered the new school at any grade other than the lowest grade offered (Sanders, 1993, p. 3).

Sanders listed his finding and the implications for the study. *Finding 1:* The negative effect of student transfer to any grade other than the lowest grade offered in the new school is negligible for transfers prior to the seventh grade. Transfer students make similar or better gains in the year following the school change than students who remain

in their home school. But according to Sanders, (1993) the effects of transients are entirely different when a student transfers to the lowest grade of a new school (1993, p. 3). *Finding 2:* Students who transfer to the lowest grade of a new school have measurably lower mean scores in all 25 subject-grade combinations than students who stayed in the same school. Severe retardation in gains was most pronounced in grades six and seven. These are the grades in which schools routinely transfer students to middle or junior high schools (Sanders, 1993, p. 3).

Implications: Sanders purports that:

> These findings indicate that there may be major disruption in a child's academic progress associated with school change. For many children, building change occurs when they leave primary school, intermediate school, and middle or junior high school, so the opportunity for a collective impairment to the overall academic progress is most likely (1993, p. 3).

Sanders discussed strategies of instructional factors. These suggestions will be presented in the strategies section of this review.

Effects of Mobility on Other Students

According to the U.S. Census Bureau, approximately one-fifth of all Americans will move every year (Chaika, 1999, p.1). Parents, transient students, teachers, and students who "remain behind" are all affected in different ways by student mobility. "Kids often move emotionally before they move physically," said Susan Titterton, an elementary guidance counselor in California (Chaika, 1999, p.1). "It is very common for negative behavior to escalate when a child knows he'll be moving. It's almost seems like the child wants to get the other kids and the teacher mad at him so it'll be easier to leave" stated Titterton (Chaika, 1999, p. 1). The students are not the only ones affected by the

move. Her or his friends are also affected. Student mobility has a negative impact on the emotions of the mobile and the stable student. Sixth grader Candace Douglas told Education World that:

> This summer my best friend moved away. We'd been best friends for four years. We were really close. Then one day I called her, and she told me she was moving to Texas. A few weeks later, she moved. It was really hard for me at first because a lot of things in my room reminded me of her. I was also sad at school because every time we had to work with a partner, it reminded me of everything we had done together at school (Chaika, p. 3).

The emotional impact of moving can effect the classmates who are left behind. Schools and individual teachers must constantly deal with the emotional and academic impact of the mobile student.

Transfer students have a "Ripple Effect" on their classmates (Williams, 1996, p. 3). Principals have long complained that transfer students create a domino effect that makes their schools look bad at test time. Arline Hersch complained about the plight of student mobility when she said that:

> My bright kids often move on to other schools, like magnet schools. And then we get a set of new kids who are not doing so well. But we have to test them, and you can imagine what our scores look like. It's not a true picture of what we've done with our students (Williams, 1996, p. 4).

Kerbow (1996) found that new students often cause teachers to "flatten" their curriculum. "That means that teachers overlay their material to accommodate the increased variation in their students' learning" (Williams, p. 4). The flattened curriculum limits the amount of material students are exposed to and effects even the stable students' scores.

A revolving door of new students forces many teachers to devote attention to remedial rather than enriching new lessons (Stover, 2000, p. 1). The constant distractions

of mobility affect all students. Just as high poverty rates depress achievement even for non-poor students, high mobility schools often do not succeed with students whose residence is stable (Neuman, 1987, p.1). Bracey (1991), contends that the arrival of newcomers challenges teachers with the problem of acculturating new children into a system without disrupting the system (p. 713). Lash and Kirkpatrick (1990) purport that student mobility creates a sense of impermanence and constant change and upheaval in classroom climates and creates extra work for teachers (p. 186).

The Student Mobility Report for Milwaukee Public Schools (2000) contends that mobility affects all students and makes it difficult to adequately teach the stable student population (p. 6). The Milwaukee report, citing principal survey data, asserts that mobility impacts students in the following ways:

- Mobility slows a school's instructional curricular pace as teachers find the need to review more;
- Students in mobile schools lag behind their stable counterparts by approximately one grade level;
- Mobile schools have many students with poor attendance and low test scores;
- Schools with high mobility rates don't succeed even with students who are stable; and
- Schools selected by the student and family had the highest stability and lowest mobility rate (2000, p. 6).

Students who transfer into different schools change the social dynamics of the individual classroom. The influx of mobile students can negatively impact the academic

performance of the entire class (Student Mobility Report, 2000, p. 6). Behavioral problems plague teachers in classrooms with high mobility. Vail (1996) asserts that teachers set rules and procedures for each child at the beginning of the school year (p. 22). However, the teacher must reestablish behavioral norms each time a new student transfers into the classroom (Vail, p. 22).

Kerbow (1997) contends that there is considerable variation in how teachers approach student instability across different classrooms even in the same school (p. 3). Schools with high levels of student mobility tend to have classrooms with increased rates of material review. The result is a tendency toward a "flattened curriculum" which decreases the opportunity for all students to learn (Kerbow, 1997, p. 3). Even those students who do not change schools fall victim to limited educational opportunities. Kerbow asserts that, "The analysis of student achievement growth in highly mobile schools revealed that even students who are stable in these contexts are adversely affected" (1997, p. 3). Stable students who are in schools with large numbers of highly mobile students achieve at a lower rate. Kerbow contends that the reduction in student achievement over time is reflective of the slower curricular pace of the highly mobile school (1997, p. 6).

The influx and exit of students creates organizational stress for high-mobility schools. Similar students soon replace students who transfer early in the school year. However, the school has little control over the age and grade of the students who transfer into classrooms after the school year begins. Administrators often face mid-year decisions about student/grade-level organization (Kerbow, 1997, p.3). The lack of

certainty about student enrollment is particularly problematic at the beginning of the academic school year. Fewer than expected students may enroll at the beginning of the year resulting in teacher layoffs. This scenario often results in split grade classrooms. However, more students than expected may enroll during the school year. Kerbow (1997) contends that additional staff must be hired essentially delaying the functional start of school for the mobile child (p. 3).

Late arriving mobile students do not always guarantee the hiring of additional teachers to reduce the pupil/teacher ratio. Stover (2000) discovered that New Jersey administrators are often forced to pack classrooms with high numbers of students (p. 4). Most mobile students in the coastal resort towns of New Jersey arrive after the October 15 state-funding report deadline. Local taxpayers are reluctant to allocate additional school spending to finance the education of the visiting students (Stover, p.4). In some schools as many as 36 students fill these classrooms over the winter months. Student test scores, not surprisingly, are below state averages for these seaside classrooms (Stover, p.4).

Research has made it clear that bouncing from school to school hurts the academic progress of mobile students. Mobile students forfeit the benefits of the continuity of school services. But the stable school population also suffers academically and emotionally because of high rates of student transfers. Large numbers of mobile students can pull down the test scores of the entire school (Stover, 2000, p.1). Kerbow (1997) argues that, "Not only does mobility impact individual students who are changing schools, it has deep (though often hidden) consequences for the schools these students

attend and for the systematic changes intended by local school reform" (p. 4).

Strategies to Aid Mobile Students/Families

Student mobility is not an isolated problem. Most school districts can identify mobility rates and percentages as readily as their attendance and graduation rates. However, many high-mobility systems lack district plans and school-wide strategies to combat problems connected to mobile students. Stover (2000) discussed the problems facing high mobility districts when he said that:

> For school boards, finding effective strategies to help these transient students hasn't been easy, experts say. High mobility isn't so much a problem in itself as it is a symptom of many interacting social and economic factors---hard-core poverty, rising housing costs, sporadic unemployment among low-income parents, a large influx of immigrants, homelessness, and a greater likelihood of unstable family life in poorer households (p. 2).

"One of the things that makes student mobility hard to deal with is it is symptomatic of larger problems," says Sandra Paik, education policy specialist for the Poverty & Race Research Action Council, a Washington, DC-based policy group. "Lots of different things that move kids around are outside the control of the school system" (Stover, p. 2).

State and District Strategies for Mobile Students

Some cities and states are making strides in developing strategies to combat student mobility. In Minneapolis, an abundance of factors fueling student mobility has convinced educators to provide remedial intervention to all low-performing students. These services best meet the needs of the highly transient student (Stover, 2000, p. 2). A Montana school that has a 90% poverty rate hired a "transition facilitator" with funds from a federal homeless grant. The facilitator welcomes new families in the area and

often goes to their home (Million, 2000, p. 1). The facilitator also administers logistic and reading tests and places the student in a multiage classroom for high-mobility children (Million, p. 1).

The Incentives and Interventions Program in New Mexico requires schools to meet standardized test score and graduation competency scores to determine achievement (State of New Mexico Department of Education, 1999, p. 1). Three socioeconomic variables were factored into the state formula (including student mobility). High mobility schools that evidenced the greatest increase in test scores shared over $484,000.00 in incentive awards in 1998-99 (State of New Mexico Department of Education, 1999, p.1).

Clark (2001) reports that the California Department of Education factors mobility into its accountability system (p. 5). School Districts are required to report student mobility. The California Department of Education uses the rate to decide which student scores will or will not be used in their rating system. If students are not enrolled in the district for a full year their scores do not count for rewards and intervention strategies. The California schools report two types of mobility: students who have been in a district a full year and students who have not been enrolled at school for a complete year. Districts failing to meet state targets are given extra money for three years to show improvement. Successful districts are issued $70 per student from state intervention funds (Clark, 2001, p.5). The premise of the intervention plan is that highly mobile students should not be counted against high-stakes test rankings.

In South Dakota, principal Dennis Arnold has developed an orientation program for new students. The school makes contact with the new family as soon as the transient

child arrives. A "friendship group" invites the newcomer to meet with other students. The new student is then paired with a current student to help with the assimilation to the new school (Million, 2000, p. 1). Schools in Dallas, Texas, are putting extra resources into schools with high mobility rates. School officials are attacking the problem of mobility on a case by case basis. Community liaisons are trained to work with the mobile families (Stover, 2000, p. 3). Gwinnett County, Georgia, is tackling mobility issues by investing in extra teachers and smaller class sizes at high mobility schools (Stover, p. 3). The district also offers free summer school and before and after school tutoring sessions for students who are not at grade level (Stover, 2000, p.3). A Sioux City, Iowa, school offers extra tutoring and ESL assistance for transient children (Million, 2000, p. 3).

An elementary school in Lennox, California, is trying to ease the transition for mobile students. Newly enrolled students are placed in a "transition classroom" for a brief period of time. Stover (2000) states that school officials then determine the best placement for the transient children (p.3). The principal of a highly mobile school in Detroit, Michigan, is extremely committed to easing the transition of mobile students (Stover, p. 3). The school has hired part-time teachers and paraprofessionals to work with regular classroom teachers. The half-day collegial learning sessions are spent discussing problems that newly enrolled students may be having at school.

Million (2000) described a Montana community that has designed an "extra services/extra benefits" network to assist itinerant children (p. 2). Local businesses pay for school uniforms. The clothing is ready when the mobile child arrives at school. The student no longer "stands out" in the classroom. The network coordinator arranges day-

care transportation and involves children in before and after school programs. Transient families can check out computers for six weeks at a time (Million, 2000, p.3).

> A district needs to understand where that mobility is coming from, whether it's within the district or students coming a long distance. Districts that don't understand the source of mobility can't make necessary accommodations to offset it effects, said Kerbow who has studied The effects of student mobility on academic achievement in the Chicago area (Natt, 2000, p. 3).

The study by Kerbow identified residential change as the primary cause (52%) of student mobility in the Chicago school system (CRESPAR, 1996, p. 3). The majority of the transient students continually move within the Chicago system. Williams (1996) contends that no other area in America suffers the mobility problem that Chicago experiences (p.2). Chicago is beginning to act upon this data. However, Rochester, NY remains the leader in the fight against student mobility (Williams, 1996, p. 2). Rochester school officials urged the apartment owners association to assist the city with strategies to combat student mobility. The apartment owners association launched programs that cut the school district's mobility rate by 38% (Williams, 1996, p. 2).

School research from 1996 in the Chicago area revealed that most student transfers occur in October and in late spring (Williams, p. 6). These dates coincide with the October 30 or April 30 expiration for apartment leases. Chicago school activists worked with the apartment owners association to distribute letters educating parents about the harmful effects of mobility. The Chicago School Board also implemented a more flexible student transfer policy. Children who transfer out of a school's attendance boundary may stay at the school until the end of the year. The parent must provide transportation. However, if the student qualifies as low-income she/he can apply for

board-funded public transportation vouchers (Williams, 1996, p. 5).

No matter how attractive schools make themselves, there will still be some student mobility. Several large school districts have undertaken proactive strategies to create a safety net for transient students (Williams, 1996, p. 9). Schools in the Chicago area received grants under the Annenberg Challenge. The curriculum is broken down into week-long units of study for grades kindergarten through 9th grade. Each school teaches a certain subject at a certain time (Williams, 1996, p.9). The contention of the common curriculum is to ease the burden for parents and teachers who work with highly mobile students. Transient students can remain on task when they move to a new school.

The Milwaukee Board of Education and community leaders enacted several strategies to reduce the impact of student mobility. The Student Mobility Report (2000) listed several of these strategies, including:

- Decreasing the need for a family to move by increasing the availability of safe, affordable housing;
- Educating the family regarding the importance of keeping their child in the same school the entire year or longer;
- Providing support services to a allow the family to keep the child at one school;
- Increasing inner-school cooperation between schools to minimize the impact of student mobility;
- Increasing a school's ability to minimize the impact of mobility on the academic performance of all students; and to
- Increase the family's ability to deal with family issues and stress (p. 15).

The Houston School District in Texas has used technology for years to track migrant and ESL students. In 1993, district administrators became concerned about the achievement levels of all students (Lunon, 2001, p. 2). The administrators proposed a technology infrastructure that would provide classroom teachers with individualized student information. The initial goal was to use the comprehensive database to track Houston's highly mobile student population (Lunon, p. 2). The system now has over 8000 computers connected to a network that allows teachers and students to access the information they need. The School Finance Committee Report (O'Leary) made similar recommendations in its 2000 report on student mobility (p. 21). The committee requested that a state-wide database be created to track New Jersey's highly mobile student population.

The Montgomery Public School System Executive Summary for Rockville, Maryland, developed several strategies to reduce the negative impacts of student mobility. These MPS Study (1998) made the following recommendations:

- Consistent instructional delivery to accommodate students with interrupted learning opportunities that may vary from school to school;
- Expedited transfer of student records so that receiving schools can quickly and correctly match student needs with teacher expertise and re-establish special services or accommodations where they are needed;
- Transportation practices that might encourage greater utilization of the existing transfer policy in order to decrease the mobility of students whose families move;
- Inter-agency dialogue on topics including, but not limited to, the availability of

childcare and low-cost housing in Montgomery County (pp. 4-5).

The Rockville, Maryland study produced one disturbing finding. Less experienced teachers are concentrated at schools with higher instructional challenges. The dual problems of staff turnover and staff inexperience suggest that procedures for regulating staff mobility be explored for at-risk schools (Montgomery Public Schools, 1998, p. 5).

School/Teacher Strategies for Mobile Students

Stable students often have a difficult time adjusting to incoming transient students. This adjustment often impacts the social and academic progress of individual classrooms. The following inclusion from *Addressing Barriers to Learning* (1997) described the difficulties that mobile students face when it stated that:

> Youngsters vary in capability and motivation with respect to dealing with psychological transitions into new settings. Students entering late in a school year often find it especially hard to connect and adjust. Making friends means finding ways to be accepted into a complex social milieu. School-wide strategies to ensure school adjustment of newly entering students and their families can reduce adjustment problems, ease bicultural development, enhance student performance, and establish a psychological sense of community throughout the school (p. 1).

Individual schools, teachers and students can help reduce the anxiety and difficulties that mobile and stable students face. The Florida Department of Education (1992) listed several strategies that individual schools can implement to reduce the impact of student mobility including:

- Utilizing technology, such as electronic record keeping systems;
- De-emphasizing the competition and grading practices that favor the long-term school population;

- Emphasizing opportunities for students to exhibit competence through portfolios or other performance-based assessments;
- Establishing low student-teacher ratios with an emphasis on personal contact;
- Adjusting school-year calendars, classroom activities, and curriculum schedules in response to the patterns of student mobility present in the school; and
- Providing professional development opportunities for teachers on facilitating adaptation for new students (p. 1).

Stover (2000) presented similar school strategies for dealing with transient students that include:

- Urging parents to keep their children in the same school all year, and providing advice and counseling to resolve any problems that are prompting a student transfer;
- Making every effort to ease a child's transition into a new school and encouraging parents to meet with the school counselor and teacher two or three weeks after a transfer to see how a child is adjusting to the new school;
- Preparing an appropriate orientation for new students, and quickly assessing a child's academic level if transcripts or school records are available;
- Encouraging students to enroll in a class without credit to gain experience and then re-enroll for credit at the beginning of the semester or new year. Assigning late-arriving students to independent study where they can earn credits until the next semester starts; and
- Developing learning packets to help students catch up with a class's past work, and

provide tutoring for students having academic problems (pp. 4-5).

Classroom teachers should be the primary agents in implementing proactive strategies to acclimate transient students into their new classroom. Recent research (*Addressing Barriers to Learning*, 1997; Asher, 1991; Clayton, 1998; NEA Today Online, 1998; Nueman, 1988; and Sewell, 1982;) presents several methods that teachers can utilize to lessen the impact of mobility including to:

- Form student welcoming committees;
- Make connections - make new students feel welcome;
- Establish a buddy system;
- Create and constantly update a classroom book;
- Make a student/community handbook;
- Make posters when the new student arrives;
- Designate tour guides;
- Create special, personalized cards to mail to the new student;
- Create after-school-clubs;
- Brainstorm with the class the ways in which they could help a new student feel welcome; and
- Convey a general sense of welcome to all.

The NEA Today Online (1998) states that, "Schools soon discover that the greatest resource for integrating students into a school is the students that are already there," (p. 4).

Teachers have little control over a child's move. But there is a great deal that

teachers at high mobility schools can do to ease classroom anxiety during an exit transition. Chaika (1999) offered a list of possible ways for schools and teachers to help children and their classmates facing transient moves including these suggestions:

- Confronted with a child's sudden move, school personnel could ask that the child be allowed to go to his or her classroom to say good-bye. A good-bye is important for a sense of closure, both for the child and for the other children in the classroom;
- Before a child leaves, teachers could encourage classmates who have moved to share their experiences and explain what it feels like to be in a new school;
- A teacher who knows in advance that a child is moving could ask the child to list questions she or he may have about the new school. The teacher could then call the school to get answers to the questions;
- A teacher could set up a dramatic-play area where younger children can play-act packing and moving, putting toys in boxes, and having the area totally clear of familiar toys to make that experiences less scary when it really happens;
- A class could throw a party at the end of the last day for a child who is moving. At the party, each child in the class could say one thing she or he will miss or one thing she or he appreciates about the child who is leaving;
- A class could give a child who is moving a going-away gift. A nice remembrance is a good-bye book with photos of classmates and notes from them. Or children can draw pictures of themselves and use bubbles in which to say a farewell to their classmate. A card, an autograph book, a T-shirt signed by each classmate, or an

address book with addresses or other gifts the class could give to the child;

- A teacher could send letters from a child's classmates to the child's new school to greet the child when she or he gets there; and
- To make the experience less frightening, a teacher could read to the class (or have them read) books about children who are moving. A few books that deal with moving are Joy Berry's *About Change and Moving*, Bernard Weber's *Ira Says Good-Bye*, and for children in grades K through 2, Elizabeth Lee O'Donnell's *Maggie Doesn't Want to Move.* In addition, a different type of book, available in both Spanish and English, is Beverly Roman's www.brancher.com *Let's Make a Move.*

Summary of Literature Review

This literature review of student mobility was critical in gaining an understanding of the impact of student transience on achievement scores. There were several important benefits derived from this review of literature. The most crucial benefit of the review revealed where the parameters of the field were concerning student mobility. The researcher is now able to carry on informed dialogue about ideas, theories, questions, and the hypothesis that are important when referencing student mobility. The review helped the researcher narrow the problem. A third benefit of the literature review was the generation of a hypothesis and subsequent research questions. The increased depth of knowledge about mobility expanded the questions. Another benefit gleaned from the review was a knowledge of the methodologies common to the field and their appropriateness of their application.

In conclusion, the review of literature centered on studies and journal entries that are current to the field. The literature presented information about the evolution and present state of theory and research. A deeper investigation of student mobility and its impact on value-added achievement test scores is needed.

CHAPTER III

METHODS

Research has shown relationships between student mobility and low academic achievement (Rumberger and Larson, 1998; Kerbow, 1996). Mobility may not be proven to be a direct cause of poor student achievement; however, high rates of student mobility may be a contributing factor for students whose achievement tests scores suffer from other variables (Wright, 1999, p. 352). The purpose of this study was to determine if student mobility rates have a relationship with East Tennessee elementary school TVAAS gain-scores.

Study Design

This study analyzed data generated by the Tennessee Value-Added Assessment System (TVAAS) Model. The study utilized the correlation method of inquiry. Correlation methodology determined the extent to which variations in one or more factors correspond with variations in one or more other factors to establish relationships. The research questions were formulated to deduce if relationships exist between student mobility and third, fourth and fifth grade composite value-added gain-scores in a selected East Tennessee school district.

A Pearson's Correlation Coefficient Test was performed to determine if student mobility displayed a stronger relationship with TVAAS gain-scores than other student variables. The analyzed variables included Federal Free/Reduced Lunch, Students with Disabilities, and Student Mobility Rate percentages for each school. The Pearson's Correlation Coefficient Test was utilized to measure the strength of linear relationships.

Rank-order analysis procedures were performed in this study. The rank-order analysis process examined student value-added gain-scores and elementary school mobility rates for statistically significant relationships. A list of value-added gain-scores were rank-ordered and a quartile analysis was performed on the data.

Population and Site

The population for this study consisted of all third, fourth and fifth grade students who took the annual Terra Nova achievement tests in the selected school district for the 2001-2002 academic year. The population was delimited to the schools that serviced third, fourth and fifth grade students at the same school. Forty-seven schools met the criteria for inclusion in this study. The schools in the population were representative of inner city, rural, and urban communities.

The system had 2,564 student withdrawals and 2,545 new enrollees during the 2001-2002 school year; 5,109 children were identified as mobile students. The school mobility rates ranged from a high of 54% to a low of 9%. The composite mobility rate for this system was 25%. The school Federal Free/Reduced Lunch percentages ranged from a high of 95% to a low of 6%. The system-wide Federal Free/Reduced average was 44%.

The research design for this study was quantitative. On-site visits to the schools were not necessary. The school district Director of Research and Evaluation for the sample provided the data for analysis in a Microsoft © Excel file. This school population was selected because the data were available, and the system is large enough to support useful research.

Sources of Data

Two sources were contacted to provide data for this study. The Director of Research and Evaluation from the sample school district provided the researcher with individual school data and value-added gain-scores. Elementary school mobility rates were calculated and submitted to the researcher by the Director of Research and Evaluation.

SAS inSchool calculated and provided the value-added mobility exclusion gain-scores for the elementary schools represented in this study. A division of SAS Institute, the world's largest privately held software company, SAS inschool was formed in January of 1997 to focus on the research and development of K-12 educational technologies; SAS inschool offers multimedia instructional and value-added technologies (ICDRI, 2001, p.2) Dr. William Sanders and Dr. June Rivers, of the Cary, NC division of SAS inSchool provided the value-added mobility exclusion gain-scores for each school represented in this study.

The Office of the Director of Research and Evaluation and SAS inSchool were asked to send the requested student data in Microsoft © Excel files. The student value-added gain-scores and Federal Free/Reduced Lunch percentages were available on the Tennessee State Department of Education Website. The Director of Research and Evaluation calculated Students with Disability and Mobility Rate percentages for each school. Two lists of value-added gain-scores were provided for each school. The researcher did not identify any individual student or classroom teacher data in this study.

Procedures

The data to be analyzed in this study was retrieved in a Microsoft © Excel file and converted to an SPSS Computer Analysis Program. The researcher performed a Pearson's Correlation Coefficient Test for each school based on three student co-variables. Federal Free/Reduced Lunch, Students with Disabilities, and Mobility Rate percentages were divided by mobility rate quartiles and analyzed.

Milwaukee Public Schools (MPS) defines mobility as the sum of students who enter and leave school between the third Friday of September and the last day of the school year, divided by the official September enrollment figures. The Director of Research and Evaluation applied the MPS formula to the enrollment figures for each school represented in the population. A mobility rate was established for each elementary school included in this study.

A Pearson's Correlation Coefficient Test was performed to analyze the relationship between the three co-variables and each school's value-added gain-scores. The Pearson's Correlation Coefficient determined if student mobility had a stronger relationship with value-added gain-scores than other student variables. The Pearson's Correlation Coefficient Test was performed at a 95% confidence level. Alpha was set at .05%.

A list of TVAAS gain-scores was analyzed; school scores, not individual student scores, were examined. Only schools that enrolled and tested third, fourth and fifth grade students at the same school were included in the population. A rank-order analysis was performed on the student data. A mean score for each school was determined by averaging the third, fourth, and fifth grade scores in each subject area. The composite

school scores were examined by mobility rate quartiles. Value-Added gain-scores and mobility rate rankings for the four quartiles were analyzed for relationships in Language Arts, Math, and Reading.

The TVAAS data was rank-ordered using composite school scores for students who took the Terra Nova Achievement Test during the 2001-2002 year. A second list of value-added gain-scores was formulated and ranked-ordered. The students who were not present at the school for the entire year had their scores excluded from the analysis. Mobile students' scores were reflected in the second list. The SPSS computation program assigned mean rank to all tied variables from the data set. The researcher theorized that schools with higher mobility rates would reflect greater increases in their value-added gain-score rankings when mobile students' value-added gain-scores were removed from the analysis.

Two rank-order correlation lists were examined utilizing a Pearson's Correlation Coefficient Test. Two TVAAS composite gain-score lists for grades three, four, and five in Language Arts, Math, and Reading were summed and statistically correlated. The Pearson's Test was performed to examine how closely the two rank-order lists correlate using the Pearson's R-Value analysis. A Pearson's Coefficient at or near one (1.0) revealed an apparent positive correlation between mobility and student gain scores. A coefficient of zero (.0) signified no correlation between the two variables. A negative (inverse) correlation determined that the Pearson's Coefficient was at or near a negative one (-1.0). The Pearson's R-Values for Language Arts, Math, and Reading and the mobility rate for each school were also correlated. The schools were ranked in

descending order by mobility rates.

Data Analysis

This study analyzed existing value-added gain-score data to determine if student mobility had a relationship with value-added gain-scores in selected East Tennessee elementary schools. The mobility exclusion list for TVAAS gain-scores rose substantially if student mobility had a significant relationship with the test score rankings based on the following analysis; the researcher:

1. performed a Pearson's Correlation Coefficient Test on the student variables of Federal Free/Reduced Lunch, Student with Disabilities, and Mobility Rate percentages for each school. This analysis determined if mobility had a stronger relationship with value-added gain-scores than Federal Free/Reduced Lunch and Students With Disabilities percentages,

2. performed a rank-order analysis of third, fourth and fifth grade value-added gain-scores in Language Arts, Math and Reading. The composite school value-added gain-scores were rank-ordered and analyzed by quartiles for each subject,

3. performed a Pearson's Correlation Coefficient Test analysis to determine if relationships exist between high rates of student mobility and low TVAAS gain-scores. The school value-added gain-scores were divided by mobility rate quartiles for analysis, and

4. performed a Pearson's Correlation Coefficient Test on the sums of the two rank-ordered TVAAS gain-score lists. The first TVAAS list included all student value-added gain-scores; the second rank-order list had the mobile students' scores excluded from

the analysis. The Pearson's Correlation R-Value from the summed rank-ordered list was correlated with the individual mobility rates for each school. A single R-Value for each subject area of Language Arts, Math, and Reading was determined by the Pearson's Correlation Coefficient Test analysis.

CHAPTER IV

DATA ANALYSIS

Chapter 4 contains an introduction and presentation and analysis of data. This chapter also includes the findings and a brief summary for each research question outlined in Chapter 1. The research questions examined student mobility and value-added gain-scores for relationships. The data was obtained from a large school system in East Tennessee; forty-seven schools were included in the sample. Student value-added gain-scores were analyzed for grades three, four and five in Language Arts, Math, and Reading. The system-wide mobility rate was 25%; the Federal Free/Reduced Lunch rate was 44%.

The data analysis and presentation were separated into these areas of discussion:

1. Pearson's Correlation Coefficient Analysis of student variables
2. Rank-order analysis of composite value-added gain-scores
3 Quartile analysis of composite value-added gain-scores
4. Pearson's Correlation Analysis of school R-Values and mobility rates

Presentation and Analysis

The system-wide average mobility rate for the schools represented in this study was 25%. Nineteen (19) schools represented in this population have school mobility rates at or over twenty-five (25) percent (See Table 1). The attendance, enrollment, and withdrawal rates for each school were also analyzed by quartiles for each school. The schools in the highest quartile of mobility rates had an average mobility rate of 41.8%. The average membership for these twelve (12) schools was 388 students. The average

TABLE 1. School Mobility Rate Averages

Case Summaries[a]

	SCHOOL	%students that are mobile	
1	adams1	.54	QUARTILE ONE 41.8% Mobility Rate
2	arther	.53	
3	kennedy	.52	
4	lincoln	.49	
5	garfield	.45	
6	grant	.40	
7	pierce	.38	
8	lb.johns	.37	
9	tyler	.37	
10	mckinley	.36	
11	clinton	.31	
12	filmore	.30	
13	nixon	.30	QUARTILE TWO 25.8% Mobility Rate
14	ford	.29	
15	wilson	.29	
16	jackson	.28	
17	truman	.28	
18	gore	.25	
19	buren	.25	
20	bush	.24	
21	gw.bush	.23	
22	q.adams	.22	
23	taft	.21	
24	harrison	.21	QUARTILE THREE 18.6% Mobility Rate
25	monroe	.21	
26	coolidge	.20	
27	harrison	.20	
28	rehnquis	.20	
29	eisenhow	.19	
30	o'connor	.19	
31	reagan	.18	
32	roosevel	.18	
33	fdr	.17	
34	carter	.16	
35	clevelan	.16	
36	johnson	.15	QUARTILE FOUR 12.3% Mobility Rate
37	harding	.14	
38	polk	.14	
39	b.frankl	.14	
40	buchanan	.13	
41	cheney	.13	
42	madison	.12	
43	hoover	.12	
44	washinto	.11	
45	jefferso	.11	
46	hayes	.11	
47	taylor	.09	
Total N	47	47	

a. Limited to first 100 cases.

enrollment of new students for this quartile was 78. The average number of students who withdrew from each school was 79. The top mobility rate quartile had a total of 932 new enrollees and 949 student withdrawals for the 2001-2002 school year. The schools in the first quartile had 1881 children classified as mobile students.

The second highest percentage quartile had an average mobility rate of 25.8%. The average membership for these schools was 428 students. An average of 55 students enrolled at each school after the academic year began. There was an average of 55 student withdrawals. This quartile had a total of 612 new student enrollees and 603 withdrawals for the 2001-2002 school year. The schools in the second quartile had 1215 children identified as mobile students.

The third highest percentage quartile had an average mobility rate of 18.7%. The average membership for these schools was 494 students. An average of 49 students enrolled at each school after the academic year began. There was an average of 45 student withdrawals. The third quartile had a total of 587 new enrollees and 535 withdrawals for the 2001-2002 school year. The schools in the third quartile had 1122 children identified as mobile students.

The fourth highest percentage quartile had a 12.2% school average mobility rate. The average membership for these schools was 582 students. An average of 35 students enrolled at each school after the academic year began. There was an average of 40 student withdrawals. The fourth quartile had a total of 414 new enrollees and 477 withdrawals for the 2001 – 2002 school year. The schools in the fourth quartile had 891 children identified as mobile students.

The school system selected for this study had a total mobility rate of 25%. The system had 2,545 students identified as new enrollees. The system also had 2,564 student withdrawals. There were 5,109 children identified as mobile students for the 2001–2002 school year. The schools represented in the highest mobility rate quartile had 194 less students per school than the schools represented in the fourth or lowest mobility rate quartile. The highest mobility quartile had only 66.6% of the students per school that the lowest mobility quartile had represented at each school (388 to 582 students). However, the highest mobility quartile had 2.1 times as many mobile students as the average school represented in the lowest mobility quartile (1881 to 891 total mobile students – see Table 2).

Question Number One. Does student mobility have a greater relationship with value-added gain-scores than other student variables (Federal Free/Reduced Lunch, Students with Disabilities, and School Mobility rates)?

Federal Free/Reduced Lunch Data Presentation Analysis. The researcher began the data analysis by performing a Pearson's Correlation Coefficient Test on three student variables: Federal Free/Reduced Lunch, Students with Disabilities, and Student Mobility rate percentages for each school. The Federal Free/Reduced Lunch data and the Mobility Rates for each school were presented in a table and analyzed. The scores were ranked in descending order by Federal Free/Reduced Lunch percentages. The Federal Free/Reduced (F/R) Lunch Percentages ranged from a high of ninety-five (95) percent to a low of six (6) percent for the forty-seven schools.

The forty-seven (47) schools were also examined by quartiles. The twelve (12)

TABLE 2. School Membership, Enrollees, and Withdrawal Averages

Case Summaries[a]

	SCHOOL	ENROLL	WITHDRAW	MEMBERSH	%students that are mobile	
1	adams1	30.00	24.00	100.00	.54	
2	arther	187.00	177.00	693.00	.53	
3	kennedy	110.00	74.00	353.00	.52	QUARTILE ONE
4	lincoln	50.00	54.00	211.00	.49	
5	garfield	56.00	73.00	286.00	.45	Average New Enrollment 77.7
6	grant	146.00	121.00	675.00	.40	
7	pierce	46.00	53.00	261.00	.38	
8	tyler	136.00	119.00	692.00	.37	Average Withdrawal 79
9	lb.johns	53.00	72.00	340.00	.37	
10	mckinley	84.00	80.00	453.00	.36	Average Membership 387.7
11	clinton	59.00	81.00	451.00	.31	
12	filmore	21.00	21.00	138.00	.30	
13	nixon	69.00	69.00	465.00	.30	
14	wilson	52.00	66.00	405.00	.29	
15	ford	40.00	36.00	263.00	.29	QUARTILE TWO
16	jackson	67.00	65.00	465.00	.28	
17	truman	41.00	37.00	278.00	.28	Average New Enrollment 55.6
18	buren	65.00	73.00	558.00	.25	
19	gore	67.00	59.00	499.00	.25	
20	bush	65.00	80.00	595.00	.24	Average Withdrawal 54.8
21	gw.bush	61.00	43.00	444.00	.23	
22	q.adams 2	43.00	42.00	388.00	.22	Average Membership 428.5
23	monroe	42.00	33.00	354.00	.21	
24	harrison	67.00	67.00	656.00	.21	
25	taft	42.00	33.00	354.00	.21	
26	harrison	91.00	82.00	834.00	.20	QUARTILE THREE
27	coolidge	37.00	43.00	399.00	.20	
28	rehnquis	44.00	25.00	352.00	.20	
29	eisenhow	47.00	53.00	516.00	.19	Average New Enrollment 48.9
30	o'connor	30.00	29.00	307.00	.19	
31	roosevel	82.00	85.00	951.00	.18	Average Withdrawal 44.6
32	reagan	48.00	39.00	475.00	.18	
33	fdr	56.00	51.00	630.00	.17	
34	clevelan	29.00	23.00	330.00	.16	Average Membership 493.7
35	carter	14.00	5.00	120.00	.16	
36	johnson	23.00	21.00	296.00	.15	
37	polk	42.00	40.00	607.00	.14	QUARTILE FOUR
38	harding	13.00	3.00	117.00	.14	
39	b.frankl	34.00	59.00	659.00	.14	
40	buchanan	37.00	48.00	647.00	.13	Average New Enrollment 34.5
41	cheney	24.00	17.00	318.00	.13	
42	madison	21.00	26.00	384.00	.12	Average Withdrawal 39.8
43	hoover	37.00	49.00	716.00	.12	
44	washinto	36.00	40.00	694.00	.11	Average Membership 582
45	jefferso	54.00	45.00	911.00	.11	
46	hayes	62.00	45.00	1006.00	.11	
47	taylor	31.00	23.00	632.00	.09	
Total N		47	47	47	47	47

a. Limited to first 100 cases.

schools with the highest Federal F/R Lunch percentages were compared to the twelve schools with the lowest Federal F/R Lunch percentages. The twelve (12) schools with the highest Federal F/R Lunch percentages have an 81.8% Federal F/R Lunch average. These schools have an average mobility rate of 40.4%. These schools had a high of 54% and a low of 28% mobility rates. The twelve schools with the lowest Federal F/R Lunch percentages have a 15% Federal F/R Lunch average. These schools have an average mobility rate of 13.5%. These schools have a high of 20% and a low of nine percent mobility rate (See Table 3).

Students with Disabilities Data Presentation and Analysis. The twelve (12) schools with the highest percentage of Students with Disabilities were compared to the twelve (12) schools with the lowest percentages of Students with Disabilities (SWD). The schools with the highest percentages of SWD have an 18.8% average of Students with Disabilities. The average Mobility Rate for these schools is 29.3%. These schools have a high of 54% and a low of 11% mobility rates.

The twelve (12) schools with the lowest percentage of SWD have a 10.3% of Students with Disabilities. The average Mobility Rate for these schools is 17.9%. These schools have a high of 37% and a low of nine percent mobility rates (See Table 4).

Pearson's Correlation Coefficient Test Analysis. A Pearson's Correlation Coefficient Test was performed on the Federal Free/Reduced Lunch, Students with Disabilities, and Student Mobility Rate percentages for each school. These student variables were tested for their relationship with Language Arts, Math, and Reading value-

TABLE 3. Federal Free/Reduced Lunch and Mobility Rate Averages

Case Summaries[a]

	SCHOOL	%Free/Reduced	%students that are mobile	
1	pierce	.95	.38	
2	adams1	.93	.54	
3	lb.johns	.89	.37	QUARTILE ONE
4	arther	.85	.53	
5	lincoln	.85	.49	81.8% Free/Reduced Average
6	jackson	.85	.28	
7	kennedy	.84	.52	
8	tyler	.80	.37	40.4% Mobility Rate
9	clinton	.77	.31	
10	filmore	.76	.30	
11	grant	.69	.40	
12	mckinley	.64	.36	
13	ford	.63	.29	
14	gore	.57	.25	QUARTILE TWO
15	wilson	.55	.29	
16	garfield	.53	.45	49.4% Free/Reduced Average
17	nixon	.52	.30	
18	carter	.50	.16	
19	taft	.48	.21	25.7% Mobility Rate
20	eisenhow	.46	.19	
21	gw.bush	.44	.23	
22	truman	.38	.28	
23	reagan	.37	.18	
24	bush	.36	.24	
25	q.adams 2	.36	.22	
26	harrison	.36	.21	QUARTILE THREE
27	johnson	.32	.15	
28	coolidge	.31	.20	30.8% Free/Reduced Average
29	harding	.31	.14	
30	buchanan	.31	.13	19.3% Mobility Rate
31	monroe	.29	.21	
32	fdr	.28	.17	
33	harrison	.27	.20	
34	buren	.26	.25	
35	roosevel	.26	.18	
36	clevelan	.24	.16	
37	madison	.24	.12	QUARTILE FOUR
38	polk	.23	.14	
39	o'connor	.20	.19	15.0% Free/Reduced Average
40	b.frankl	.18	.14	
41	rehnquis	.16	.20	
42	cheney	.11	.13	13.5% Mobility Rate
43	taylor	.11	.09	
44	washinto	.10	.11	
45	jefferso	.09	.11	
46	hoover	.08	.12	
47	hayes	.06	.11	
Total N	47	47	47	

a. Limited to first 100 cases.

TABLE 4. Students with Disabilities and Mobility Rate Averages

Case Summaries[a]

	SCHOOL	%students with disability	%students that are mobile	
1	fdr	.27	.17	
2	adams1	.26	.54	
3	filmore	.25	.30	
4	truman	.24	.28	QUARTILE ONE
5	garfield	.23	.45	
6	pierce	.23	.38	20.8% Students With Disability
7	clinton	.23	.31	
8	gore	.21	.25	29.3% Mobility Rate
9	carter	.21	.16	
10	mckinley	.20	.36	
11	monroe	.20	.21	
12	jefferso	.19	.11	
13	arther	.18	.53	
14	lincoln	.17	.49	
15	grant	.17	.40	
16	ford	.17	.29	QUARTILE TWO
17	wilson	.17	.29	
18	o'connor	.17	.19	18.3% Students With Disability
19	buchanan	.17	.13	
20	kennedy	.16	.52	32.3% Mobility Rate
21	nixon	.16	.30	
22	taft	.16	.21	
23	harrison	.16	.20	
24	lb.johns	.15	.37	
25	reagan	.15	.18	
26	clevelan	.15	.16	
27	b.frankl	.15	.14	QUARTILE THREE
28	gw.bush	.14	.23	
29	eisenhow	.14	.19	13.8% Students With Disability
30	buren	.13	.25	
31	bush	.13	.24	
32	harding	.13	.14	18.2% Mobility Rate
33	polk	.13	.14	
34	madison	.13	.12	
35	q.adams	.12	.22	
36	harrison	.12	.21	
37	taylor	.12	.09	
38	jackson	.11	.28	
39	rehnquis	.11	.20	QUARTILE FOUR
40	washinto	.11	.11	
41	coolidge	.10	.20	10.3% Students With Disability
42	roosevel	.10	.18	
43	johnson	.10	.15	
44	cheney	.10	.13	17.9% Mobility Rate
45	hayes	.10	.11	
46	hoover	.09	.12	
47	tyler	.07	.37	
Total N	47	47	47	

a. Limited to first 100 cases.

added gain-scores in grades three, four, and five. Tennessee Value-Added Assessment System (TVAAS) gain-scores were tested and correlated with the student variable percentages for each school. The Pearson's Correlation was performed to determine if student mobility displays a stronger relationship with value-added gain-scores than school Federal Free/Reduced Lunch or Students with Disabilities percentages. Alpha was set at .05 to establish each variables level of significance.

Pearson's Correlation Coefficient Test Analysis for Language Arts. The correlation coefficient test for composite Language Arts value-added gain-scores revealed the following Pearson Correlation Values (see Figure 1).

The Pearson' Correlation Coefficient Test revealed that mobile student percentages displayed a higher Pearson Correlation level of significance than Federal Free/Reduced Lunch or Students with Disabilities percentages for third grade Language Arts gain-scores. The Language Arts Mobility Rate composite score (.230) was higher than F/R

Third Grade:	Students that eat Free/Reduced	-----	.242
	Students with Disabilities	-----	.011
	Students that are Mobile	-----	.261
Fourth Grade:	Students that eat Free/Reduced	-----	.193
	Students with Disabilities	-----	.164
	Students that are Mobile	-----	.237
Fifth Grade:	Students that eat Free/Reduced	-----	.178
	Students with Disabilities	-----	.190
	Students that are Mobile	-----	.192
Composites:	Students that eat Free/Reduced	-----	.204
	Students with Disabilities	-----	.085
	Students that are Mobile	-----	.230

Figure 1. Pearson's Correlation Coefficient Test Analysis for Language Arts

(.204) or SWD (.085) composite scores (see Table 5).

Pearson's Correlation Coefficient Test Analysis for Math. The correlation coefficient test for composite Math value-added gain-scores revealed the following Pearson Correlation Values (See Figure 2). The correlation coefficient test revealed that mobile student percentages displayed a higher Pearson's Correlation level of significance in third grade Math value-added gain-scores. Students with Disabilities percentages displayed a greater level of significance in Math than mobile students for the fourth and fifth grades. Both Students that eat Federal Free/Reduced Lunch (.300) and Student with Disabilities (.356) percentages were significant at the .05 level for fourth grade Math value-added gain-scores (see Table 6).

Third Grade:	Students that eat Free/Reduced	----	.182
	Students with Disabilities	----	.025
	Students that are Mobile	----	.224
Fourth Grade:	Students that eat Free/Reduced	----	.300*
	Students with Disabilities	----	.356*
	Students that are Mobile	----	.210
	* Correlation is significant at the .05 level		
Fifth Grade:	Students that eat Free/Reduced	----	.080
	Students with Disabilities	----	.107
	Students that are Mobile	----	.015
Composites:	Students that eat Free/Reduced	----	.187
	Students with Disabilities	----	.163
	Students that are Mobile	----	.150

Figure 2. Pearson's Correlation Coefficient Test Analysis for Math

TABLE 5. Pearson's Correlation Coefficient for Language Arts

Correlations

		%Free/Reduced	%students with disability	%students that are mobile	3rd gain language	4th gain language	5th gain language	language composite gain score
%Free/Reduced	Pearson Correlation	1.000	.424**	.868**	-.242	-.193	-.178	-.306*
	Sig. (2-tailed)	.	.003	.000	.101	.193	.231	.036
	N	47	47	47	47	47	47	47
%students with disability	Pearson Correlation	.424**	1.000	.422**	-.011	-.164	-.190	-.198
	Sig. (2-tailed)	.003	.	.003	.940	.271	.202	.182
	N	47	47	47	47	47	47	47
%students that are mobile	Pearson Correlation	.868**	.422**	1.000	-.261	-.237	-.192	-.345*
	Sig. (2-tailed)	.000	.003	.	.076	.108	.196	.018
	N	47	47	47	47	47	47	47
3rd gain language	Pearson Correlation	-.242	-.011	-.261	1.000	-.047	.067	.442**
	Sig. (2-tailed)	.101	.940	.076	.	.756	.656	.002
	N	47	47	47	47	47	47	47
4th gain language	Pearson Correlation	-.193	-.164	-.237	-.047	1.000	.351*	.702**
	Sig. (2-tailed)	.193	.271	.108	.756	.	.016	.000
	N	47	47	47	47	47	47	47
5th gain language	Pearson Correlation	-.178	-.190	-.192	.067	.351*	1.000	.781**
	Sig. (2-tailed)	.231	.202	.196	.656	.016	.	.000
	N	47	47	47	47	47	47	47
language composite gain score	Pearson Correlation	-.306*	-.198	-.345*	.442**	.702**	.781**	1.000
	Sig. (2-tailed)	.036	.182	.018	.002	.000	.000	.
	N	47	47	47	47	47	47	47

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

*. Correlation is significant at the 0.05 level (2-tailed).

TABLE 6. Pearson's Correlation Coefficient for Math

Correlations

		%Free/Reduced	%students with disability	%students that are mobile	3rd gain math	4th gain math	5th gain math	math composite gain score
%Free/Reduced	Pearson Correlation	1.000	.424**	.868**	-.182	-.300*	-.080	-.290*
	Sig. (2-tailed)	.	.003	.000	.220	.041	.595	.048
	N	47	47	47	47	47	47	47
%students with disability	Pearson Correlation	.424**	1.000	.422**	-.025	-.356*	.107	-.150
	Sig. (2-tailed)	.003	.	.003	.866	.014	.473	.315
	N	47	47	47	47	47	47	47
%students that are mobile	Pearson Correlation	.868**	.422**	1.000	-.224	-.210	-.015	-.219
	Sig. (2-tailed)	.000	.003	.	.131	.156	.920	.139
	N	47	47	47	47	47	47	47
3rd gain math	Pearson Correlation	-.182	-.025	-.224	1.000	.026	.322*	.610**
	Sig. (2-tailed)	.220	.866	.131	.	.864	.027	.000
	N	47	47	47	47	47	47	47
4th gain math	Pearson Correlation	-.300*	-.356*	-.210	.026	1.000	.022	.589**
	Sig. (2-tailed)	.041	.014	.156	.864	.	.884	.000
	N	47	47	47	47	47	47	47
5th gain math	Pearson Correlation	-.080	.107	-.015	.322*	.022	1.000	.722**
	Sig. (2-tailed)	.595	.473	.920	.027	.884	.	.000
	N	47	47	47	47	47	47	47
math composite gain score	Pearson Correlation	-.290*	-.150	-.219	.610**	.589**	.722**	1.000
	Sig. (2-tailed)	.048	.315	.139	.000	.000	.000	.
	N	47	47	47	47	47	47	47

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

*. Correlation is significant at the 0.05 level (2-tailed).

Pearson's Correlation Coefficient Test Analysis for Reading. The correlation coefficient test for composite Reading value-added gain-scores revealed the following Pearson Correlation Values (See Figure 3). The correlation coefficient test revealed that mobile students percentages displayed a higher Pearson Correlation level of significance in fourth grade Reading value-added gain-scores (.133). Students with Disabilities displayed a higher level of significance for third grade gain-scores. Students that eat Federal Free/Reduced Lunch displayed a higher level of significance for fifth grade value-added gain-scores (see Table 7).

Findings for Question One

Finding Number 1. School Federal Free/Reduced Lunch percentages ranged from a high of ninety-five (95) to a low of six (.06) percent. The twelve (12) schools with the highest percentages of students who eat free or reduced had a Federal Free/Reduce

Third Grade:	Students that eat Free/Reduced -----	.006
	Students with Disabilities -----	.168
	Students that are Mobile -----	.012
Fourth Grade:	Students that eat Free/Reduced -----	.072
	Students with Disabilities -----	.118
	Students that are Mobile -----	.133
Fifth Grade:	Students that eat Free/Reduced -----	.215
	Students with Disabilities -----	.041
	Students that are Mobile -----	.042
Composites:	Students that eat Free/Reduced -----	.097
	Students with Disabilities -----	.110
	Students that are Mobile -----	.060

Figure 3. Pearson's Correlation Coefficient Test For Reading

TABLE 7. Pearson's Correlation Coefficient for Reading

Correlations

		%Free/Reduced	%students with disability	%students that are mobile	3rd gain reading	4th gain reading	5th gain reading	reading composite gain score
%Free/Reduced	Pearson Correlation	1.000	.424**	.868**	.006	.072	.215	.180
	Sig. (2-tailed)	.	.003	.000	.968	.630	.146	.226
	N	47	47	47	47	47	47	47
%students with disability	Pearson Correlation	.424**	1.000	.422**	.168	.118	-.041	.105
	Sig. (2-tailed)	.003	.	.003	.259	.428	.782	.480
	N	47	47	47	47	47	47	47
%students that are mobile	Pearson Correlation	.868**	.422**	1.000	-.012	.133	.042	.111
	Sig. (2-tailed)	.000	.003	.	.937	.371	.777	.458
	N	47	47	47	47	47	47	47
3rd gain reading	Pearson Correlation	.006	.168	-.012	1.000	.008	-.206	.187
	Sig. (2-tailed)	.968	.259	.937	.	.960	.165	.209
	N	47	47	47	47	47	47	47
4th gain reading	Pearson Correlation	.072	.118	.133	.008	1.000	.212	.797**
	Sig. (2-tailed)	.630	.428	.371	.960	.	.153	.000
	N	47	47	47	47	47	47	47
5th gain reading	Pearson Correlation	.215	-.041	.042	-.206	.212	1.000	.681**
	Sig. (2-tailed)	.146	.782	.777	.165	.153	.	.000
	N	47	47	47	47	47	47	47
reading composite gain score	Pearson Correlation	.180	.105	.111	.187	.797**	.681**	1.000
	Sig. (2-tailed)	.226	.480	.458	.209	.000	.000	.
	N	47	47	47	47	47	47	47

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

Lunch average of 81.8%. These schools had a 40.4% Mobility Rate average. The twelve (12) schools with the lowest percentages of students who eat free or reduced had a Federal Free/Reduced Lunch average of 18%. The mobility rate for these schools was 13.5 %. The mobility rate for the highest mobility quartile was three times greater than the mobility rates for the lowest quartile. The schools in the highest mobility rate quartile had a Federal Free/Reduced Lunch percentage that was 4.5 times greater than schools in the lowest mobility rate quartile.

Finding Number 2. School averages for Students with Disabilities ranged from a high of twenty-seven (.27) percent to a low of seven (.07) percent. The twelve (12) schools with the highest percentages of Students with Disabilities had an SWD average of 18.75%. These schools had a 29.3% Mobility Rate average. The twelve (12) schools with the lowest percentages of Students with Disabilities had a SWD average of 10.25%. These schools had a 17.9% mobility rate. The schools represented in the highest quartile of SWD percentages had a mobility rate average 1.6 times greater than the schools in the lowest SWD rate quartile.

Finding Number 3. A Multi-Variable Correlation Test revealed that Mobile Student percentages displayed a higher Pearson's level of relationship than either Federal Free/ Reduced Lunch or Students with Disabilities percentages for Language Arts gain-scores. The correlation test revealed that Student Mobility had an apparent greater relationship with Language Arts gain-scores at the third, forth, and fifth grade level than other student variables. The Pearson Correlation Value revealed a mild level of significance for the school composite scores: Mobility = .230; F/R = .204; SWD = .085.

However, no student variables were shown to be statistically significance at the .05 level.

Finding Number 4. A Pearson's Correlation Coefficient Test revealed that mobile student percentages displayed an apparent higher level of relationship than either Federal Free/ Reduced Lunch or Students with Disabilities percentages for only third grade Math gain-scores. The Pearson's Correlation Test revealed that Students with Disabilities displayed a greater level of significance in Math than Federal Free/Reduced Lunch or Student Mobility percentages for both the fourth and fifth grades. Both Students that eat Federal Free/Reduced Lunch (.300*) and Students with Disabilities (.356*) percentages are statistically significant at the .05 level for fourth grade gain-scores. Mobility was not significant at the .05 level of significance. The composite school scores for Math revealed the following percentages of correlation: F/R = .187, SWD = .163, Mobility = .150.

Finding Number 5. A Pearson's Correlation Coefficient Test revealed that Mobile Student percentages displayed a higher level of relationship than either Federal Free/Reduced Lunch or Students with Disabilities percentages for only fourth grade Reading value-added gain-scores. Students that are mobile (.133) displayed a slightly greater relationship than Students with Disabilities (.118) percentages for fourth grade Reading value-added gain-scores. The composite Reading value-added gain-scores revealed these levels of relationship: SWD = .109, F/R = .097, Mobility = .06.

Summary of Findings for Question Number One. The schools in the highest mobility quartile had a Federal Free/Reduced Lunch percentage average of 81.8%. This rate was 4.5 times greater than 18% rate of the schools in the lowest mobility quartile. The highest quartile had a mobility rate of 40.4% in comparison to the 13.5% rate of the lowest

mobility quartile schools. This highest mobility quartile rate was three times greater than mobility rate for the lowest quartile schools.

The SWD rate was 1.8 times greater for the highest mobility schools. The mobility rates of the highest SWD quartile schools were 29.3% in comparison to the 17.9% rate for the lowest mobility schools. The mobility rate was 1.6 times greater for the highest mobility rate quartile.

The Pearson's Correlation Coefficient Test revealed that student mobility displayed a greater relationship with Language Arts value-added gain-scores than either Math or Reading gain-scores. The Pearson's Correlation revealed a mild relationship for grades three, four, and five for Language Arts gain-scores and student mobility. Third grade value-added gain-scores revealed the highest level of significance (.26). However, student mobility was not statistically significant at the .05 level.

The Pearson's Correlation Coefficient Test analysis revealed that student mobility had a greater relationship with third grade Math scores. However, the relationship (.224) was not significant at the .05 level. Both students that eat Federal Free/Reduced Lunch (.30*) and Students with Disabilities (.36*) percentages were statistically significant at the .05 level of significance for fourth grade Math value-added gain-scores.

The Pearson's Correlation Coefficient Analysis revealed that mobility displayed a greater relationship with Reading value-added gain-scores only at the fourth grade level. The level of significance for student mobility was .133 at the fourth grade level.

Question Number Two. Will a rank-order analysis reveal a relationship between high student mobility rates of and low TVAAS gain-scores?

Value-Added gain-scores for grades three, four, and five in Language Arts, Math, and Reading were analyzed using a rank-order analysis procedure. Composite gain-scores were determined for each school in each subject area. Two analysis procedures were performed on the value-added gain-scores. First, the value-added gain-scores were rank-ordered. The rank-order lists were averaged and analyzed by quartiles. The mobility rates were also calculated for each quartile and compared with the rank-order analysis. Next, the composite value-added gain-scores were analyzed by quartiles. The value-added gain-score composites were compared to the mobility rate averages for each quartile.

Rank-Order Analysis. The composite rank-order value-added gain-scores and school mobility rates were analyzed by quartiles for relationships. The quartiles were numbered one (1) through four (4). Quartile 1 had the highest school mobility average. Quartile 4 had the lowest school mobility average. The Language Arts, Math, and Reading rank-order and mobility rate composites for each quartile were displayed in tables for analysis.

Language Arts Rank-Order Analysis. Quartile 1 had a rank-order average of 28.2. The average mobility rate for Quartile 1 was 41.8%. Quartile 2 had a rank-order average of 26.2 and a mobility rate average of 25.8%. Quartile 3 had a rank-order average of 21.9 and a mobility rate average of 18.7%. Quartile 4 had a rank-order average of 20.1 and a mobility rate average of 12.2%. The value-added gain-score rank-order averages for each quartile steadily decreased as the mobility rate average grew smaller. There appeared to be consistent relationships between high mobility rates and high rank-order value-added gain-scores. The average difference between Quartile 1 and Quartile 4 was 8.1 rank-order positions (see Table 8).

TABLE 8. Quartile Ranks For Composite Language Arts Value-Added Gain-Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	RANK of average language value-added scores for grades 3,4,5	
1	adams1	.54	42.000	
2	arther	.53	25.000	
3	kennedy	.52	25.000	QUARTILE ONE
4	lincoln	.49	43.000	
5	garfield	.45	21.000	Language Value-Added Rank 28.2
6	grant	.40	35.000	
7	pierce	.38	40.000	Mobility Rate 41.8%
8	tyler	.37	32.000	
9	lb.johns	.37	38.000	
10	mckinley	.36	7.000	
11	clinton	.31	36.000	
12	filmore	.30	29.000	
13	nixon	.30	46.000	
14	wilson	.29	37.000	
15	ford	.29	1.000	QUARTILE TWO
16	jackson	.28	27.000	
17	truman	.28	45.000	Language Value-Added Rank 26.2
18	buren	.25	47.000	
19	gore	.25	30.000	Mobility Rate 25.8%
20	bush	.24	25.000	
21	gw.bush	.23	17.000	
22	q.adams 2	.22	28.000	
23	monroe	.21	12.000	
24	harrison	.21	22.000	
25	taft	.21	16.000	
26	harrison	.20	11.000	
27	coolidge	.20	13.000	QUARTILE THREE
28	rehnquis	.20	18.500	
29	eisenhow	.19	39.000	Language Value-Added Rank 21.9
30	o'connor	.19	15.000	
31	roosevel	.18	33.000	Mobility Rate 18.8%
32	reagan	.18	3.000	
33	fdr	.17	34.000	
34	clevelan	.16	6.000	
35	carter	.16	20.000	
36	johnson	.15	9.000	
37	polk	.14	41.000	
38	harding	.14	44.000	
39	b.frankl	.14	5.000	QUARTILE FOUR
40	buchanan	.13	4.000	
41	cheney	.13	2.000	Language Value-Added Rank 20.1
42	madison	.12	14.000	
43	hoover	.12	31.000	Mobility Rate 12.3%
44	washinto	.11	18.500	
45	jefferso	.11	8.000	
46	hayes	.11	10.000	
47	taylor	.09	23.000	
Total N	47	47	47	

a. Limited to first 100 cases.

Math Rank-Order Analysis. An analysis of the composite value-added gain-score rank-order averages for Math revealed that Quartile 1 had a rank-order average of 29.3. The average mobility rate for Quartile 1 was 41.8%. Quartile 2 had a rank-order-average of 21.4 and a mobility rate average of 25.8%. Quartile 3 had a rank-order average of 21.7and a mobility rate average of 18.7%. Quartile 4 had a rank-order average of 20.5 and a mobility rate average of 12.2%. The quartile comparisons displayed an apparent consistent relationship between high mobility rates and high rank-order value-added gain-scores. The average difference between Quartile 1 and Quartile 4 was 8.8 rank-order positions (see Table 9).

Reading Rank-Order Analysis. An analysis of the composite value-added gain-score rank-order for Reading revealed that Quartile 1 had a rank-order average of 24.1. The average mobility rate for Quartile 1 was 41.8%. Quartile 2 had a rank-order average of 22.2 and a mobility rate average of 25.8%. Quartile 3 had a rank-order average of 22.6 and a mobility rate average of 18.7%. Quartile 4 had a rank-order average of 27.4 and a mobility rate average of 12.2%. The quartile rankings for Reading did not reveal a consistent relationship between high mobility rates and high rank-order value-added gain-scores. The rank-order average for Quartile 1 was 24.1. The average difference between Reading Quartile 1 and Reading Quartile 4 was negative 3.3. Quartile 4 had the lowest mobility rate but the highest rank-order average. This rank average was 4.1 rank positions lower than Language Arts Quartile 1 and 5.2 rank positions lower than Math Quartile 1 (see Table 10).

TABLE 9. Quartile Ranks For Composite Math Value-Added Gain-Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	RANK of average math value-added scores for grades 3,4,5	
1	adams1	.54	32.000	
2	arther	.53	35.000	
3	kennedy	.52	6.000	
4	lincoln	.49	46.000	QUARTILE ONE
5	garfield	.45	19.000	
6	grant	.40	16.000	Math Value-Added Rank 29.3
7	pierce	.38	44.000	
8	tyler	.37	25.000	
9	lb.johns	.37	43.000	Mobility Rate 41.8%
10	mckinley	.36	37.000	
11	clinton	.31	36.000	
12	filmore	.30	29.000	
13	nixon	.30	42.000	
14	wilson	.29	41.000	
15	ford	.29	3.000	
16	jackson	.28	20.000	QUARTILE TWO
17	truman	.28	22.000	
18	buren	.25	30.000	Math Value-Added Rank 21.1
19	gore	.25	38.000	
20	bush	.24	4.000	
21	gw.bush	.23	23.000	Mobility Rate 25.8%
22	q.adams 2	.22	17.000	
23	monroe	.21	12.500	
24	harrison	.21	33.000	
25	taft	.21	12.500	
26	harrison	.20	1.000	
27	coolidge	.20	9.000	QUARTILE THREE
28	rehnquis	.20	28.000	
29	eisenhow	.19	39.000	Math Value-Added Rank 21.8
30	o'connor	.19	24.000	
31	roosevel	.18	31.000	
32	reagan	.18	26.500	Mobility Rate 18.6%
33	fdr	.17	40.000	
34	clevelan	.16	2.000	
35	carter	.16	15.000	
36	johnson	.15	10.000	
37	polk	.14	45.000	
38	harding	.14	47.000	
39	b.frankl	.14	21.000	QUARTILE FOUR
40	buchanan	.13	11.000	
41	cheney	.13	7.000	Math Value-Added Rank 20.5
42	madison	.12	5.000	
43	hoover	.12	34.000	
44	washinto	.11	8.000	Mobility Rate 12.3%
45	jefferso	.11	18.000	
46	hayes	.11	14.000	
47	taylor	.09	26.500	
Total N	47	47	47	

a. Limited to first 100 cases.

TABLE 10. Quartile Ranks For Composite Reading Value-Added Gain-Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	reading composite gain score	
1	adams1	.54	.67	
2	arther	.53	.94	
3	kennedy	.52	1.13	
4	lincoln	.49	.78	QUARTILE ONE
5	garfield	.45	.83	
6	grant	.40	.84	Reading Composite Gain Score 0.92
7	pierce	.38	1.02	
8	tyler	.37	.93	Mobility Rate 41.8%
9	lb.johns	.37	.98	
10	mckinley	.36	1.09	
11	clinton	.31	1.09	
12	filmore	.30	.68	
13	nixon	.30	1.10	
14	wilson	.29	.86	
15	ford	.29	1.48	
16	jackson	.28	.93	QUARTILE TWO
17	truman	.28	.84	
18	buren	.25	.14	Reading Composite Gain Score 0.92
19	gore	.25	1.14	
20	bush	.24	.83	Mobility Rate 25.8%
21	gw.bush	.23	.89	
22	q.adams	.22	1.03	
23	monroe	.21	.92	
24	harrison	.21	1.07	
25	taft	.21	1.10	
26	harrison	.20	1.24	
27	coolidge	.20	1.19	QUARTILE THREE
28	rehnquis	.20	.93	
29	eisenhow	.19	.79	Reading Composite Gain Score 1.01
30	o'connor	.19	1.20	
31	roosevel	.18	.88	Mobility Rate 18.8%
32	reagan	.18	1.36	
33	fdr	.17	1.01	
34	clevelan	.16	.71	
35	carter	.16	.59	
36	johnson	.15	.44	
37	polk	.14	.60	
38	harding	.14	.66	
39	b.frankl	.14	.98	
40	buchanan	.13	1.24	QUARTILE FOUR
41	cheney	.13	.88	
42	madison	.12	1.04	Reading Composite Gain Score 0.78
43	hoover	.12	.62	
44	washinto	.11	.59	Mobility Rate 12.3%
45	jefferso	.11	.65	
46	hayes	.11	.95	
47	taylor	.09	.74	
Total N	47	47	47	

a. Limited to first 100 cases.

Findings for Question Two

Finding Number 1. The composite Language Arts rank-order quartile analysis revealed an apparent, consistent relationship between high mobility rates and low student value-added gain-score rankings.

The composite averages for each quartile for Language Arts value-added gain-scores steadily dropped as the mobility rate for each school decreased. Quartile 1 had a rank-order average of 28.2. Q2 had a 26.2 rank-order average. Q3 had a 21.9 rank-order average. Q4 had a 20.1 rank-order average. The average difference between Language Arts Quartile 1 and Language Arts Quartile 4 was 8.1 rank-order positions.

Finding Number 2. The composite Math rank-order quartile analysis revealed an apparent relationship between high mobility rates and low student value-added gain-score rankings. The composite value-added gain-score averages for each quartile for Math gain-scores dropped slightly as the mobility rate for each school decreased. Quartile 1 had a rank-order average of 29.3. Q2 had a 21.4 rank-order average. Q3 had a 21.7 rank-order average. Q4 had a 20.5 rank-order average; the average difference between Math Quartile 1 and Math Quartile 4 was 8.8 positions. However, the decrease in rank-order averages for Math were not as consistent as the decrease for Language Arts gain-scores.

Finding Number 3. The composite Reading rank-order quartile analysis did not reveal a relationship between high mobility rates and low student value-added gain-score drop consistently when analyzed by quartiles. Quartile 1 had a rank-order average of 24.1. Q2 had a 22.2 rank-order average. Q3 had a 22.6 rank-order average. Q4 had a 27.4 rank-order average. The average difference between Reading Quartile 1 and Reading

Quartile 4 was 3.3. Q4 had the lowest mobility rate (12.2%); however, Q4 had the highest Reading rank-order average (27.4).

Summary of Findings for Question Number Two. The Pearson's Correlation Coefficient rank-order analysis for Language Arts revealed an apparent, consistent relationship between high mobility rates and low value-added gain-scores. The average difference between Language Arts Q1 (28.2) and Language Arts Q4 (20.1) was 8.1 rank-order positions. Language Arts Q1 had a mobility rate of 41.8% and Language Arts Q4 had a mobility rate of 12.2%.

The Pearson's Correlation Coefficient rank-order analysis for Math revealed an apparent relationship between high mobility rates and low gain-scores. The average difference between Math Q1 (28.2) and Math Q4 (20.1) was 8.8 rank-order positions. However, Math Q2 (21.4) and Math Q3 (21.9) did not show the consistent drops in rank-order positions revealed in the Language Arts rankings.

The Pearson's Correlation Coefficient rank-order analysis for Reading did not reveal a relationship between high mobility rates and low value-added gain-score rankings. Reading Q1 (24.1) had a lower rank order average than Reading Q4 (27.4). Reading Q3 (22.2) and Reading Q3 (22.6) had almost identical rank averages. Reading Q4 had the lowest mobility percentage (12.25) but the highest rank-order average (27.4).

Question Number Three. Will a Pearson's Correlation Coefficient Test analysis reveal relationships between high rates of student mobility and low TVAAS gain-scores?

All 47 schools were ranked in a list by descending mobility rates. Each composite value-added gain-score average was listed beside the mobility rate of each school. The

composite value-added gain-scores were examined by quartiles. The reader may reference the mobility rates of each quartile from the previous section.

Language Arts Value-Added Gain-Score Analysis. The Language Arts composite value-added gain-score analysis revealed the following information. Quartile 1 had a gain-score composite of .59. Quartile 2 had a value-added gain-score composite of .53. Quartile 3 had a value-added gain-score composite of .79. Quartile 4 had a value-added gain-score composite of .80. The average difference between Reading Quartile 1 and Quartile 4 value-added gain-scores was .21. There was an apparent consistent relationship between higher Language Arts value-added gain-score averages and lower student mobility rates (see Table 11).

Math Value-Added Gain-Score Analysis. The Math composite value-added gain-score averages analysis revealed the following information. Quartile 1 had a value-added gain-score composite of .90. Quartile 2 had a value-added gain-score composite of 1.03. Quartile 3 had a value-added gain-score composite of 1.06. Quartile 4 had a value-added gain-score composite of 1.00. There was a slight drop between Quartile 3 and Quartile 4 (1.06 – 1.00). The average difference between Math Quartile 1 and Quartile 4 value-added gain-score averages was .10. However, Quartile 4 displayed a higher composite value-added gain-score than Quartile 1 (.90 – 1.00). There was an apparent mild relationship between higher Math value-added gain-score averages and lower student mobility rates (see Table 12).

Reading Value-Added Gain-Score Analysis. An analysis of composite Reading value-added gain-score averages revealed the following information. Quartile 1 had a

TABLE 11. Language Arts Composite Value-Added Gain-Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	language composite gain score	
1	adams1	.54	.28	QUARTILE ONE
2	arther	.53	.73	
3	kennedy	.52	.73	Language Composite Gain Score 0.59
4	lincoln	.49	.26	
5	garfield	.45	.75	Mobility Rate 41.8%
6	grant	.40	.54	
7	pierce	.38	.47	
8	tyler	.37	.64	
9	lb.johns	.37	.48	
10	mckinley	.36	.97	
11	clinton	.31	.52	
12	filmore	.30	.67	
13	nixon	.30	.09	QUARTILE TWO
14	wilson	.29	.49	
15	ford	.29	1.30	Language Composite Gain Score 0.53
16	jackson	.28	.71	
17	truman	.28	.18	Mobility Rate 25.8%
18	buren	.25	-.06	
19	gore	.25	.66	
20	bush	.24	.73	
21	gw.bush	.23	.78	
22	q.adams	.22	.69	
23	monroe	.21	.89	
24	harrison	.21	.73	QUARTILE THREE
25	taft	.21	.78	
26	harrison	.20	.92	Language Composite Gain Score 0.79
27	coolidge	.20	.85	
28	rehnquis	.20	.77	Mobility Rate 18.8%
29	eisenhow	.19	.48	
30	o'connor	.19	.84	
31	roosevel	.18	.61	
32	reagan	.18	1.14	
33	fdr	.17	.58	
34	clevelan	.16	.98	
35	carter	.16	.76	
36	johnson	.15	.94	QUARTILE FOUR
37	polk	.14	.36	
38	harding	.14	.25	Language Composite Gain Score 0.80
39	b.frankl	.14	.98	
40	buchanan	.13	1.01	Mobility Rate 12.3%
41	cheney	.13	1.29	
42	madison	.12	.84	
43	hoover	.12	.66	
44	washinto	.11	.77	
45	jefferso	.11	.95	
46	hayes	.11	.93	
47	taylor	.09	.73	
Total N	47	47	47	

a. Limited to first 100 cases.

TABLE 12. Math Composite Value-Added Gain-Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	math composite gain score	
1	adams1	.54	.94	
2	arther	.53	.89	
3	kennedy	.52	1.21	
4	lincoln	.49	.49	QUARTILE ONE
5	garfield	.45	1.08	
6	grant	.40	1.11	Math Composite Gain Score 0.90
7	pierce	.38	.67	
8	tyler	.37	.98	Mobility Rate 41.8%
9	lb.johns	.37	.73	
10	mckinley	.36	.87	
11	clinton	.31	.89	
12	filmore	.30	.95	
13	nixon	.30	.80	
14	wilson	.29	.83	
15	ford	.29	1.32	QUARTILE TWO
16	jackson	.28	1.05	
17	truman	.28	1.01	Math Composite Gain Score 1.03
18	buren	.25	.95	
19	gore	.25	.86	Mobility Rate 25.8%
20	bush	.24	1.23	
21	gw.bush	.23	1.00	
22	q.adams	.22	1.08	
23	monroe	.21	1.15	
24	harrison	.21	.94	
25	taft	.21	1.15	
26	harrison	.20	1.39	QUARTILE THREE
27	coolidge	.20	1.18	
28	rehnquis	.20	.96	Math Composite Gain Score 1.06
29	eisenhow	.19	.85	
30	o'connor	.19	1.00	Mobility Rate 18.8%
31	roosevel	.18	.94	
32	reagan	.18	.96	
33	fdr	.17	.84	
34	clevelan	.16	1.36	
35	carter	.16	1.12	
36	johnson	.15	1.16	
37	polk	.14	.59	
38	harding	.14	.36	
39	b.frankl	.14	1.02	QUARTILE FOUR
40	buchanan	.13	1.16	
41	cheney	.13	1.21	Math Composite Gain Score 1.00
42	madison	.12	1.22	
43	hoover	.12	.90	Mobility Rate 12.3%
44	washinto	.11	1.20	
45	jefferso	.11	1.08	
46	hayes	.11	1.14	
47	taylor	.09	.96	
Total N	47	47	47	

a. Limited to first 100 cases.

value-added gain-score composite of .92. Quartile 2 had a value-added gain-score composite of .92. Quartile 3 had a value-added gain-score composite of 1.01. Quartile 4 had a value-added gain-score composite of .78. There was not an apparent relationship between higher Reading value-added gain-score averages and lower student mobility rates. Quartile 1 and Quartile 2 had the same value-added gain-score composite (.92). Quartile 3 had a higher value-added gain-score composite (1.01) than Quartiles 1 and 2. However, the value-added gain-score composite for Reading Quartile 4 was .14 lower than the value-added gain-score composite for Reading Quartile 1 (see Table 13).

Findings for Question Three

Finding Number 1. A school quartile analysis revealed an apparent consistent, positive relationship between composite high Language Arts value-added gain-scores and low student mobility rates. Composite Language Arts value-added gain-scores improved as the average quartile mobility rate decreased. Quartile 1 had a value-added gain-score composite of .59. Q2 revealed a slight decrease in the value-added gain-score average with a composite of .53. Q3 had a value-added gain-score composite of .79. Q4 had a value-added gain-score average of .80. A system-wide analysis of composite gain-scores revealed that Language Arts value-added gain-score averages were lower than Math and Reading value-added gain-score averages.

Finding Number 2. A school quartile analysis revealed an apparent positive relationship between high Math value-added gain-scores and low student mobility rates. Composite Math value-added gain-scores increased as the average quartile mobility rate decreased. Quartile 1 had gain-score composite of .90. Q2 had a value-added gain-score

TABLE 13. Reading Composite Value-Added Gain-Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	reading composite gain score	
1	adams1	.54	.67	QUARTILE ONE Reading Composite Gain Score 0.92 Mobility Rate 41.8%
2	arther	.53	.94	
3	kennedy	.52	1.13	
4	lincoln	.49	.78	
5	garfield	.45	.83	
6	grant	.40	.84	
7	pierce	.38	1.02	
8	tyler	.37	.93	
9	lb.johns	.37	.98	
10	mckinley	.36	1.09	
11	clinton	.31	1.09	
12	filmore	.30	.68	
13	nixon	.30	1.10	QUARTILE TWO Reading Composite Gain Score 0.92 Mobility Rate 25.8%
14	wilson	.29	.86	
15	ford	.29	1.48	
16	jackson	.28	.93	
17	truman	.28	.84	
18	buren	.25	.14	
19	gore	.25	1.14	
20	bush	.24	.83	
21	gw.bush	.23	.89	
22	q.adams	.22	1.03	
23	monroe	.21	.92	
24	harrison	.21	1.07	QUARTILE THREE Reading Composite Gain Score 1.01 Mobility Rate 18.8%
25	taft	.21	1.10	
26	harrison	.20	1.24	
27	coolidge	.20	1.19	
28	rehnquis	.20	.93	
29	eisenhow	.19	.79	
30	o'connor	.19	1.20	
31	roosevel	.18	.88	
32	reagan	.18	1.36	
33	fdr	.17	1.01	
34	clevelan	.16	.71	
35	carter	.16	.59	
36	johnson	.15	.44	QUARTILE FOUR Reading Composite Gain Score 0.78 Mobility Rate 12.3%
37	polk	.14	.60	
38	harding	.14	.66	
39	b.frankl	.14	.98	
40	buchanan	.13	1.24	
41	cheney	.13	.88	
42	madison	.12	1.04	
43	hoover	.12	.62	
44	washinto	.11	.59	
45	jefferso	.11	.65	
46	hayes	.11	.95	
47	taylor	.09	.74	
Total N	47	47	47	

a. Limited to first 100 cases.

composite of 1.03. Q3 had a gain-score composite of 1.06. Q4 had a value-added gain-score composite of 1.00. The composite score of Q4 decreased slightly below the composite for Q3. However, the composite for Q4 was .10 higher than the composite gain-score for Q1. The relationship between higher value-added gain-scores and lower student mobility rates was not as pronounced in Math as in Language Arts.

Finding Number 3. A school quartile analysis of composite Reading value-added gain-scores did not reveal a consistent relationship with low student mobility rates. Quartiles 1 and 2 had a value-added gain-score composite of .92. Q3 had a value-added gain-score composite of 1.01, but Q4 had a composite value-added gain-score of .78. Reading Q1 and Q2 have the same composite value-added gain-score (.92). The composite value-added gain-score for Reading Q4 is .14 lower than the composite gain-score for Q1. Reading value-added gain-scores did not reveal the positive relationship with low student mobility rates that was revealed between the Language Arts and Math value-added gain-scores analysis. There appears to be a negative relationship between low value-added gain-scores and low student mobility rates in grades three, four, and five in Reading.

Summary of Findings for Question Number 3. Language Arts value-added gain-score composites consistently improved as school mobility rate averages decreased. The Language Arts value-added gain-score composite improved by .21 when analyzed by quartiles. Language Arts Q1 had a .59 value-added gain-score composite; Language Arts Q4 had a composite value-added gain-score of .80. Language Arts Q1 had a 41.8 mobility rate percentage; Language Arts Q4 had 12.5 mobility rate percentage.

A school quartile analysis revealed an apparent, positive relationship between high Math value-added gain-scores and low student mobility rates. Math Q1 had a value-added gain-score composite of .90. Math Q4 had a value-added gain-score composite of 1.00. However, Math Q4 had a lower value-added gain-score average than Math Q3.

A school quartile analysis of composite Reading value-added gain-scores did not reveal consistent, relationships with low student mobility rates. Reading Quartiles 1 and 2 had value-added gain-score composites of .92. The Reading value-added gain-score composite for Q4 was .78 or .14 lower than Q1. There appears to be a negative relationship between low value-added gain-scores and low student mobility rates for composite gain-scores in Reading.

Question Number Four 4. Is there a relationship between student mobility and TVAAS three-year composite gain-scores when mobile student scores are excluded from the Pearson's Correlation Coefficient Test analysis?

Two schools included in the sample set of forty-seven schools did not have enough consecutive years of value-added data to compile three-year averages. The scores for these two schools were utilized in the analysis for questions one, two, and three. The value-added gain-scores for these two schools were not included in the analysis for question four. The data set for question four contains value-added gain-scores for forty-five schools.

Two lists of value-added gain-scores were compiled and summed for each subject at each school. Forty-five schools were rank-ordered by descending mobility rates. Three-year value-added gain-score averages for Language Arts, Math, and Reading were

displayed for each school. The first list reflected the scores of all students who took the Terra Nova achievement test at each school. The second list excluded the value-added gain-scores of the students who had not been enrolled at the school for the entire year. Value-added gain-scores at or above 100.00 identify schools that make expected or above annual progress based upon The Tennessee State Department of Education projections (adequate score represented by "G" for Green status).

Language Arts Value-Added Gain-Score Mobility Exclusions. Only eight, or 18%, of the forty-five schools represented in this study were assigned a value-added gain-score at or above 100.00 in Language Arts. None of the schools in the highest two Mobility Rate Quartiles received a Language Arts value-added gain-score over 100.00. One school, "Bush," improved its Language Arts valued-added gain-score from 99.50 to 101.00 when the mobile students' scores were excluded from the analysis. Bush had a mobility rate of 24%.

Math Value-Added Gain-Score Mobility Exclusions. Thirty, or 67 %, of the forty-five schools displayed a Math value-added gain-score over 100.00. Thirteen, or 43%, of these schools were from the highest Mobility Rate Quartiles (1 and 2). Seventeen of the schools were from the lowest Mobility Rate Quartiles (3 and 4). No school improved its Math value-added gain-score enough to move to "G" status when the mobile students were excluded from the analysis.

Reading Value-Added Gain-Score Exclusions. Thirty, or 67% of the forty-five schools displayed a Reading value-added gain-score over 100.00. Seventeen, or 57%, of the schools that received a value-added gain-score over 100.00 were from the highest

Mobility Rate Quartiles (1 and 2). Thirteen, or 43%, of the schools were from the lowest two Mobility Rate Quartiles (3 and 4). One school, "Filmore," dropped below the 100.00 level when mobile students' scores were excluded from the analysis. Filmore dropped from 100.60 to 99.10 and had a mobility rate of 30%.

School "G" Status by Mobility Rate Quartile Analysis. Mobility Rate Quartile1 had fourteen (14) of the schools in Language Arts, Math, and Reading achieve valued-added gain-scores at or above 100.00. Quartile 2 had sixteen (16) schools achieve this ranking. Quartile 3 had the highest number of schools, twenty (20), achieve a score at or above 100.00. Quartile 4 had eighteen (18) schools achieve this ranking (see Table 14).

Mobile Student Exclusions Impact on School Value-Added Analysis. Two lists of three-year value-added gain-score averages were calculated in Language Arts, Math, and Reading. The first list contained the value-added gain-score averages for all students tested at the schools. The second list of value-added gain-scores contained only the students who were enrolled at school for the entire year. The scores of the mobile students who were not enrolled for the entire year were excluded from the second list. The two lists were summed and analyzed by subject and Mobility Rates

Language Arts Value-Added Gain-Score Exclusions. Language Arts value-added gain-scores for thirty-four of the forty-five schools increased when mobile students were excluded from the analysis. The total school average increase for the Language Arts sample was .79. Language Arts experienced the highest average increase of the three subject areas when the two value-added gain-score lists were summed and analyzed.

The Language Arts Mobility Rate Quartile analysis revealed the following school

TABLE 14. Language, Math, and Reading Mobility Exclusion Scores

Case Summaries[a]

	SCHOOL	%students that are mobile	Language 3 year average value-added score	Language 3 year average value-added score with mobile students removed	math 3 year average value-added score	math 3 year average value-added score with mobile students removed	reeding 3 year average value-added score	reading 3 year average value-added score with mobile students removed
1	adams1	.54	22.70	24.70	77.60	83.10	55.90	51.30
2	arther	.53	64.60	62.30	97.90	98.30	97.70	97.00
3	kennedy	.52	88.30	87.70	112.90	114.80	135.70	136.10
4	lincoln	.49	74.40	74.90	92.80	98.60	93.30	99.90
5	garfield	.45	63.90	64.80	100.80	101.80	115.70	121.20
6	grant	.40	61.90	60.30	101.60	102.40	107.00	107.10
7	pierce	.38	81.50	81.90	94.00	92.40	130.00	126.10
8	tyler	.37	85.50	87.90	101.80	102.00	114.60	116.10
9	lb.johns	.37	68.80	69.80	84.30	85.70	119.50	120.90
10	mckinley	.36	88.00	86.70	93.90	93.70	110.70	110.40
11	clinton	.31	81.40	79.50	91.70	91.60	127.80	131.20
12	nixon	.30	80.50	81.90	104.90	105.50	119.90	115.70
13	fillmore	.30	64.90	62.30	97.40	98.00	100.60	99.10
14	ford	.29	97.20	99.70	112.40	112.10	121.10	120.40
15	wilson	.29	77.50	79.60	119.00	121.60	120.70	123.90
16	jackson	.28	67.10	69.20	88.20	88.40	105.30	103.60
17	truman	.28	61.00	63.70	108.70	110.00	104.80	109.00
18	buren	.25	57.20	57.90	132.20	132.80	54.50	54.70
19	gore	.25	48.10	50.00	66.70	67.10	103.10	102.30
20	bush	.24	99.50	101.00	128.90	129.60	97.90	96.10
21	gw.bush	.23	71.90	73.80	114.90	114.60	87.20	87.60
22	q.adams 2	.22	82.70	84.00	110.60	111.00	112.90	112.90
23	taft	.21	59.50	62.60	107.20	108.40	108.10	111.50
24	monroe	.21	102.20	101.60	111.90	112.70	111.00	106.90
25	harrison	.21	73.00	73.30	95.20	96.10	115.00	115.60
26	coolidge	.20	97.30	96.70	131.50	131.30	141.70	140.90
27	o'connor	.19	112.40	112.70	125.50	126.60	138.90	137.90
28	eisenhow	.19	51.20	51.90	77.90	79.80	82.80	81.50
29	reagan	.18	119.00	120.40	145.10	146.50	137.00	138.10
30	roosevel	.18	84.70	85.80	125.50	124.70	99.80	98.50
31	fdr	.17	83.20	83.00	108.50	109.20	113.10	113.10
32	carter	.16	70.30	71.80	79.10	80.00	66.70	68.00
33	clevelan	.16	117.10	116.10	151.80	152.70	115.00	114.40
34	johnson	.15	115.50	115.30	139.40	139.60	92.20	93.30
35	harding	.14	27.60	35.10	81.30	81.00	92.30	87.30
36	polk	.14	41.70	42.20	84.20	85.40	73.50	72.90
37	b.frankl	.14	101.10	101.40	114.00	114.20	117.40	116.60
38	buchanan	.13	105.00	106.10	111.40	111.30	124.80	124.80
39	cheney	.13	93.20	93.90	121.40	121.20	118.40	118.30
40	hoover	.12	70.60	70.80	109.30	109.50	93.00	92.00
41	madison	.12	94.80	95.00	130.30	130.40	123.10	123.50
42	hayes	.11	109.90	111.80	121.60	121.20	115.60	115.00
43	jefferso	.11	90.80	91.30	126.20	126.60	91.90	91.80
44	washinto	.11	76.90	77.80	117.10	118.10	86.80	87.20
45	taylor	.09	77.70	78.70	108.70	110.00	104.70	105.10
Total N	45	45	45	45	45	45	45	45

a. Limited to first 100 cases.

value-added gain-score increases/decreases: Q1 = seven increases and five decreases, Q2 = ten increases and one decrease, Q3 = six increases and five decreases, Q4 = all eleven schools increased. Each Mobility Quartile experienced the following average school gain-score increase for Language Arts: Q1 = .08, Q2 = 1.56, Q3 = .25, and Q4 = 1.35. "Harding" School had the largest Language Arts value-added gain-score increase at 7.50. Harding ranked 35th with a mobility rate of 14%. Filmore School had the largest Language Arts decrease at - 2.60 and ranked 13th with a mobility rate of 30%.

Math Value-Added Gain-Score Exclusions. Math value-added gain-scores increased for thirty-four of the forty-five schools when mobile students were excluded from the analysis. The total school average increase for the Math sample was .76. Math experienced the second highest average gain-score increase when the two value-added lists were summed. Math Mobility Rate Quartile analysis revealed the following school value-added gain-score increases/ decreases: Math Q1 = nine increases and three decreases, Q2 = nine increases and two decreases, Q3 = nine increases and two decreases, Q4 = seven increases and four decreases. Math Mobility Rate Quartiles revealed the following school

gain-score average increases: Q1 = 1.31, Q2 = .67, Q3 = .71, and Q4 = .51. Lincoln School had the largest Math increase at 5.80. Lincoln ranked 4th with a Mobility Rate of 49%. Pierce School had the largest Math decrease at –1.60 and ranked 7th with a Mobility Rate of 38%.

Reading Value-Added Gain-Score Exclusions. Only nineteen of the forty-five schools had their Reading value-added gain-scores increase when mobile students were

removed from the analysis. Twenty-three schools experienced a decrease in scores. Three schools' Reading gain-scores remained unchanged after the analysis. The total school average decrease for Reading sample was negative (-) .05. Reading was the only subject area to experience a decrease in school value-added gain-score averages after mobile students' gain-scores were removed from the analysis.

The Reading Mobility Rate Quartile analysis revealed the following school value-added score increases/decreases. Reading Q1 = seven increases and five decreases, Q2 = five increases and five decreases with one "no change," Q3 = four increases and six decreases with one no change, Q4 = three increases and seven decreases with one no change. Each Mobility Rate Quartile experienced the following average school gain-score increase/decrease for Reading: Q1 = .43, Q2 = .45, Q3 = (-).45, Q = (-).64. Reading Quartiles 3 and 4 were the only two quartiles to reveal average decreases for the entire quartile. Again, Lincoln School experienced the largest score increase. The Reading score for Lincoln increased by 6.50 when mobile students were removed from the analysis. Lincoln's mobility rate is 49%. Harding School experienced the largest decrease in Reading scores at a negative (-) 5.00. Harding's mobility rate is 14%.

Reading Mobility Quartile 1 revealed the largest increases/decreases in scores of any quartile. There were three large increases of scores: Lincoln = 6.60, Garfield = 5.50, and Clinton = 3.40. There were three large decreases of scores: Adams 1 = (-) 4.60, Nixon = (-) 4.20, and Pierce = (-) 3.90. Quartile1displayed the most dramatic change in gain-scores. Reading Quartile 4 revealed the largest decrease for all the quartiles analyzed; Reading Q4 averaged a negative (-) .64 decrease.

Language Arts, Math, and Reading Quartile Analysis. Value-Added gain-score changes in Language Arts, Math, and Reading were averaged and analyzed by quartiles. The highest mobility rate quartile, Q1, had twenty-three schools with gain-score increases. Thirteen schools in Q1 had score decreases. Quartile 2 had the highest number of schools with gain-score increases with twenty-four. There were eight schools that had gain-score decreases. One school did not experience a value-added gain-score change. Mobility Quartile 3 had the fewest schools with an increase in value-added gain-scores with nineteen. There were thirteen schools in Q3 with decreasing gain-scores. One school's value-added gain-score did not change. Quartile 4 had twenty-one schools with value-added gain-score increases and eleven schools with gain-score decreases. One school in Q4 did not have a value-added gain-score change.

Mobility Quartile composite value-added gain-scores were averaged to reflect increases/decreases. Mobility Quartile 1 had an average school gain-score increase of .60. Quartile 2 had the largest average school gain-score increase at .89. Q3 reflected the lowest average increase with a score of .17. Quartile 4 had an increase of .34. The two highest Mobility Rate Quartiles (1 and 2) had an average school gain-score increase in Language Arts, Reading, and Math of .76. The two lowest Mobility Rate Quartiles (3 and 4) had an average school gain-score increase of .25. The average system wide value-added gain-score increase for the sample was .50 (See Table 15).

Pearson's Correlation R-Values Analysis for Mobility Exclusions. The two lists of value-added gain-scores were summed and a Pearson's Correlation Coefficient Test analysis was performed on the data. The summed differences of the two value-added

TABLE 15. Language Arts, Math, and Reading Mobility Exclusion Score Changes

Case Summaries [a]

	SCHOOL	%students that are mobile	Change in language value-added score after mobile students removed	Change in math value-added score after mobile students removed	Change in reading value-added score after mobile students removed
1	adams1	.54	2.00	5.50	-4.60
2	arther	.53	-2.30	.40	-.70
3	kennedy	.52	-.60	1.90	.40
4	lincoln	.49	.50	5.80	6.60
5	garfield	.45	.90	1.00	5.50
6	grant	.40	-1.60	.80	.10
7	pierce	.38	.40	-1.60	-3.90
8	tyler	.37	2.40	.20	1.50
9	lb.johns	.37	1.00	1.40	1.40
10	mckinley	.36	-1.30	-.20	-.30
11	clinton	.31	-1.90	-.10	3.40
12	nixon	.30	1.40	.60	-4.20
13	filmore	.30	-2.60	.60	-1.50
14	ford	.29	2.50	-.30	-.70
15	wilson	.29	2.10	2.60	3.20
16	jackson	.28	2.10	.20	-1.70
17	truman	.28	2.70	1.30	4.20
18	buren	.25	.70	.60	.20
19	gore	.25	1.90	.40	-.80
20	bush	.24	1.50	.70	-1.80
21	gw.bush	.23	1.90	-.30	.40
22	q.adams 2	.22	1.30	.40	.00
23	taft	.21	3.10	1.20	3.40
24	monroe	.21	-.60	.80	-4.10
25	harrison	.21	.30	.90	.60
26	coolidge	.20	-.60	-.20	-.80
27	o'connor	.19	.30	1.10	-1.00
28	eisenhow	.19	.70	1.90	-1.30
29	reagan	.18	1.40	1.40	1.10
30	roosevel	.18	1.10	-.80	-1.30
31	fdr	.17	-.20	.70	.00
32	carter	.16	1.50	.90	1.30
33	clevelan	.16	-1.00	.90	-.60
34	johnson	.15	-.20	.20	1.10
35	harding	.14	7.50	-.30	-5.00
36	polk	.14	.50	1.20	-.60
37	b.frankl	.14	.30	.20	-.80
38	buchanan	.13	1.10	-.10	.00
39	cheney	.13	.70	-.20	-.10
40	hoover	.12	.20	.20	-1.00
41	madison	.12	.20	.10	.40
42	hayes	.11	1.90	-.40	-.60
43	jefferso	.11	.50	.40	-.10
44	washinto	.11	.90	1.00	.40
45	taylor	.09	1.00	1.30	.40
Total N	45	45	45	45	45

a. Limited to first 100 cases.

gain-score lists were correlated with the mobility rates for each school. A Pearson's R-Value was correlated for Language Arts, Math, and Reading. The Language Arts analysis revealed a negative (-) .21 Pearson's R-Value. The Math analysis revealed a .43 Pearson's R-Value. The Reading analysis revealed a .15 Pearson's R-Value. The Pearson's Correlation Coefficient Test analysis revealed an apparent moderate relationship between the score changes for the two lists of Math (.43) value-added gain-scores (see Table 16).

Findings for Question Four

Finding Number 1. A system wide analysis of value-added gain-scores revealed a higher number of schools that were assigned an average or above value-added gain-score in Math and Reading in comparison to Language Arts. Mobile student exclusions produced little school movement to the average or above standing for value-added gain-scores.

Thirty schools in both Math and Reading displayed value-added gain-scores at or above 100.00 or the cutoff for "no maintenance needed" category of the Tennessee Value-Added Assessment System (TVAAS). However, only eight schools achieved this level in Language Arts. The schools that achieved this status in Math and Reading were more equally spread across the four Mobility Quartiles than the gain-scores in Language Arts. There were no 100.00 level gain-scores in Mobility Rate Quartiles 1 and 2 in Language Arts. Only two schools moved past the 100.00 score cutoff in the three subject areas. "Bush" School improved its Language Arts value-added gain-score from 99.50 to 101.00. "Filmore" School dropped below the100.00 cutoff level (dropped from 100.60 to 99.10).

Table 16. Pearson's Correlation R-Values After Mobility Exclusions

Correlations

		%students that are mobile	Change in language value-added score after mobile students removed
%students that are mobile	Pearson Correlation	1.000	-.208
	Sig. (2-tailed)	.	.170
	N	45	45
Change in language value-added score after mobile students removed	Pearson Correlation	-.208	1.000
	Sig. (2-tailed)	.170	.
	N	45	45

Correlations

		%students that are mobile	Change in math value-added score after mobile students removed
%students that are mobile	Pearson Correlation	1.000	.432**
	Sig. (2-tailed)	.	.003
	N	45	45
Change in math value-added score after mobile students removed	Pearson Correlation	.432**	1.000
	Sig. (2-tailed)	.003	.
	N	45	45

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

Correlations

		%students that are mobile	Change in reading value-added score after mobile students removed
%students that are mobile	Pearson Correlation	1.000	.154
	Sig. (2-tailed)	.	.313
	N	45	45
Change in reading value-added score after mobile students removed	Pearson Correlation	.154	1.000
	Sig. (2-tailed)	.313	.
	N	45	45

Finding Number 2. There was a greater number of schools in the lower Mobility Rate Quartiles (Q3 and Q4) that reached the "needs no maintenance" level of gains than the higher Mobility Rate Quartiles (Q1 and Q2) for Language, Math and Reading.

Thirty-eight total schools in Language Arts, Math, and Reading achieved value-added gain-scores above 100.00 in Quartiles 3 and 4. Q4 had eighteen schools reach this level. Q3 had the highest total reach this level with twenty schools. Q2 had sixteen schools reach this cutoff score. Mobility Quartile 1 had only fourteen total schools reach the 100.00 level or above

Finding Number 3. There appears to be strong positive relationship between valued-added gain-scores increases in Language Arts and Math and the exclusion of mobile student gain-scores from the analysis.

Thirty-four schools each in Language Arts and Math experienced an increase in their value-added gain-scores after mobile student scores were removed from the analysis. Language Arts experienced the highest average increase at .79 per school. "Harding" School achieved the largest single school increase in Language Arts at 7.50. Math value-added gain-scores increased by an average of .76 per school. "Lincoln" School achieved the largest single school increase in Math at 5.80. Only nineteen schools experienced an increase in Reading value-added gain-scores when mobile students were removed from the analysis. Twenty-three schools experienced a decrease in gain-scores. Three school gain-scores remained unchanged.

The total school average value-added gain-score decrease for Reading was (-) .05. Reading was the only subject area to experience a decrease in school value-added gain-

score averages. "Harding" School experienced the largest drop in gain-scores at a negative (-) 5.00. Reading Quartile 1 had three other large decreases in value-added gain-scores : Adams 1 = (-) 4.60, Nixon = (-) 4.20, and Pierce (-) 3.90. Reading Quartile 4 revealed the largest average value-added gain-score decrease at a negative (-) .64.

Finding Number 4. There appears to be a moderate relationship between value-added gain-score increases in Language Arts, Math, and Reading and mobility rate averages when examined by quartiles. The highest Mobility Rate Quartile, Q1, had twenty-three schools with value-added gain-score increases. The average school value-added gain-score increase in Q1 was .60. Mobility Quartile 2 had the highest number of school gain-score increases with twenty-four. Q2 also reflected the highest average school gain-score increase at .89. Mobility Quartile 3 had the fewest schools with gain-score increases at nineteen. The average school gain-score increase was only .17. Mobility Quartile 4 had twenty-one schools with gain-score increases. Q4 had an average school score increase of .34. The system-wide average value-added gain-score increase for each school represented in the sample was .50.

Finding Number 5. The Pearson's Correlation Coefficient Test revealed that Math value-added gain-scores were statistically significant when mobile student scores were removed from the analysis. The Pearson's R-Value for Math Value-Added gain-scores exclusions was .43. Reading displayed an R-Value of .15. Language Arts displayed an R-Value of negative (-) .21.

CHAPTER V

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

The problem investigated in this study dealt with the need to develop system-wide educational strategies to lessen the impact of student mobility on value-added gain-scores. The purpose of this study was to determine if there is a correlation between student mobility and TVAAS gain-scores. This study also sought to determine if student mobility experiences a greater relationship with value-added gain-scores than other student variables. The study attempted to provide answers to the following questions:

1. Does student mobility have a greater relationship with value-added gain-scores than Federal Free/Reduced Lunch and Students with Disabilities variables?

2. Will a rank-order analysis of elementary schools that test third, fourth, and fifth grade students reveal relationships between low value-added gain-scores and high mobility rates when analyzed by quartiles?

3. Will TVAAS gain-scores subjected to Pearson's Correlation Coefficient Test reveal a relationship between high rates of student mobility and low gain-scores?

4. Is there a relationship between high student mobility rates and low TVAAS value-added gain-scores when mobile students' value-added gain-scores are excluded from the Pearson's Correlation Coefficient Test Analysis ?

The population was composed of third, fourth, and fifth grade students who took the annual Terra Nova Achievement Test in the selected district during the 2001-2002 academic year. School value-added gain-scores were obtained from the Director of Research and Evaluation from the school district selected for analysis in this study.

A Pearson's Correlation Coefficient Test was performed on several student co-variables for each school represented in the study. Federal Free/Reduced Lunch, Students with Disabilities, and Mobility Rate percentages were analyzed for each school. The Pearson's Correlation Analysis was also utilized to determine relationships between the co-variables and value-added gain-scores. Only school value-added gain-scores in Language Arts, Math, and Reading were included in this analysis.

A rank-order analysis was performed on the school TVAAS gain-scores. Composite value-added gain-scores for grades three, four, and five were calculated for each school. A rank-order analysis was performed on the composite value-added gain-scores. Rank-order quartiles were arranged by school mobility rates and analyzed.

Two rank-order lists of value-added gain-scores were also analyzed utilizing a Pearson's Correlation Coefficient Test Analysis. The Pearson's R-Value Analysis was performed to determine the relationships between school mobility rates and the summed difference of the two value-added gain-score lists. A second list of value-added gain-scores was calculated; students not enrolled for the entire school year were excluded from the second list. A composite Pearson's R-Value was determined for Language Arts, Math, and Reading by summing the differences between the two gain-score lists and correlating the summed score with the mobility rate of each school. A Pearson's R-Value at or near one (1.0) indicated an apparent positive correlation between the two variables. A coefficient of zero (.0) signified no correlation. A negative (inverse) correlation was determined if the Pearson's R-Value was at or near a negative one (-1.0).

The following **findings** were obtained for **Question Number 1:**

1. There were significant differences between the school Federal Free/Reduced Lunch and Mobility Rate percentages when analyzed by quartiles. The schools in the highest mobility rate quartile had a Federal Free/Reduced Lunch percentage 4.5 times greater than the schools in lowest mobility rate quartile. The mobility average for the highest mobility quartile was three times greater than the average for the lowest mobility rate quartile.

2. School averages for Students with Disabilities (SWD) ranged from a high of 27% and a low of seven percent. The schools in the highest quartile of SWD percentages had a mobility rate average 1.6 times greater than the schools represented in the lowest SWD rate quartile.

3. Forty (.40) percent of the schools represented in the population had mobility rates greater than 25%. Ten (10) schools had mobility rates greater than 35%. Five (5) schools had mobility rates greater than 45%. Three (3) schools had mobility rates in excess of 50%.

4. Student mobility displayed a mild level of relationship with Language Arts value-added gain-scores in all three grades. The relationship was most pronounced at the third grade level (.26). The composite value-added gain-scores in Language Arts were: Mobility = .23, F/R = .20; and SWD = .08. Student mobility displayed the highest level of relationship of the three student variables.

5. Student mobility had the highest level of relationship with Math gain-scores only at the third grade level (.22). Both Students with Disabilities (.36*) and Students that eat Federal Free/Reduced Lunch (.30*) percentages are statistically significant at the

fourth grade level in Math. All three student variables displayed mild levels of significance in Math: F/R = .19, SWD = .16; and Mobility = .15. However, student mobility displayed the weakest relationship of the three student variables.

6. Student mobility revealed a greater relationship with Reading gain-scores only at the fourth grade level (.13). Composite school gain-scores for Reading revealed a very mild level of relationship. The composite value-added gain-score levels of significance in Reading were: SWD = .11, F/R = .10, and Mobility = .06. Student mobility displayed the weakest relationship of the three student variables with Reading value-added gain-scores.

The following **findings** were obtained for **Question Number 2:**

1. The composite Language Arts rank-order analysis revealed an apparent, consistent relationship between high mobility rates and low student value-added gain-score rankings. There was a difference of 8.1 rank-order positions between Language Arts Quartile 1 (28.2) and Quartile 4 (20.1). The Language Arts rankings descended in a consistent order when compared to school mobility rates.

2. The composite Math rank-order quartile analysis revealed an apparent relationship between high mobility rates and low student value-added gain-score rankings. There was a difference of 8.8 rank-order positions between Math Quartile 1 (29.3) and Quartile 4 (20.5). The Math quartile ranking descended in a consistent order when compared to school mobility rates.

3. The composite Reading rank-order quartile analysis did not reveal a consistent relationship between high mobility rates and low student value-added gain-scores rankings. There was a difference of 3.3 between Reading Quartile 1 (24.1) and Quartile

(27.4). Reading Q4 had the lowest mobility rate, but the highest value-added gain-score rank-order average (27.4).

The following **findings** were obtained for **Question Number 3.**

1. A school quartile analysis revealed an apparent consistent, positive relationship between high Language Arts gain-scores and low student mobility rates. Composite Language Arts value-added gain-scores improved as the average quartile mobility rate decreased. Language Arts value-added gain-scores composites were .21 higher when averages for Quartile 1 (.59) and Quartile 4 (.80) were analyzed and compared. However, Language Arts Quartile 4 (.80) was only .01 higher than Language Arts Quartile 3 (.79).

2. A school quartile analysis revealed an apparent, positive relationship between high Math value-added gain-scores and low student mobility rates. Math value-added gain-score composites increased as the average quartile mobility rate decreased. Math value-added gain-score composites were .10 higher when averages for Quartile 1 (.90) and Quartile 4 (1.00) were analyzed. However, the composite for Math Quartile 4 (1.00) was .06 lower than Quartile 3 (1.06).

3. A school quartile analysis did not reveal consistent, positive relationships between Reading value-added gain-scores and low student mobility rates. Reading Quartiles 1 and 2 had a value-added gain-score composite of .92. Quartile 3 had a composite score of 1.01. However, Reading Quartile 4 only had a value-added gain-score composite of .78.

The following **findings** were obtained for obtained for **Question Number 4.**

1. A system-wide analysis of value-added gain-scores revealed disparities in the levels of gain in Language Arts, Math, and Reading. Thirty schools each in Math and Reading were assigned average or above progress ranking. Only eight school were assigned this ranking in Language Arts.

2. A quartile analysis revealed an apparent relationship between low mobility rates and school assignment to the average or above level of TVAAS proficiency rankings. Mobility Quartile 3 had twenty schools reach the average or above level and a 19% mobility rate. Q1 had fourteen schools at or above average and mobility rate of 40%.

3. There appears to be a strong positive relationship between value-added gain-score increases in Language Arts and Math and the exclusion of mobile student value-added gain-scores from the analysis. Thirty-four schools each in Language Arts and Math experienced an increase in their value-added gain-scores after mobile student gain-scores were excluded from the analysis. The system wide average school value-added gain-score increase for these two subject areas was .78. Only 19 schools experienced an increase in Reading value-added gain-scores after the mobile students' scores were excluded from the analysis. The system wide average value-added gain-score change for each school dropped to .50 when the Reading average was combined with Language Arts and Math value-added gain-score composites.

4. There appears to be a moderate relationship between value-added gain-score increases in Language Arts, Math, and Reading and high mobility rate averages when examined by quartiles. Q2 had the highest average at .89; Q1 had an average increase of .60, and Q3 had the lowest increase at .17.

5. The regular and the mobility exclusion lists of value-added gain-scores for Language Arts, Math, and Reading were summed and a Pearson's Correlation Coefficient Test was performed on the summed difference. The Pearson's analysis revealed a statistically significant R-Value for Math. The .43 R-Value reflects a moderate relationship for Math value-added gain-scores when mobile students' scores are excluded from the analysis.

Conclusions and Discussions

1. This study identified and analyzed three student variables: Federal Free/Reduced lunch, Students with Disabilities, and Student Mobility Rate percentages for their relationship with Value-Added gain-scores. The correlation revealed only small variances between the analyses of variables. Student Mobility appears to have a slight relationship only with Language Arts gain-scores.

There are many variables that effect student achievement. School size, gender, pupil/teacher ratio, teacher effect, and student socioeconomic status have all been examined for their relationship to student achievement. Previous research suggests that student mobility is difficult to separate from other student socioeconomic variables (Dobson & Henthorne, 2000; Nelson et al., 1996; Newman, 1988; Rumbarger & Larson, 1998; Wright, 1999). This research supports and extends the findings of other major studies analyzing student mobility. Federal Free/Reduced Lunch and mobile student percentages closely overlap in most studies that examine test scores and mobility. Past studies suggest that these two student variables are difficult to separate in correlation type studies (Rumberger and Larson, 1998).

This study sought to determine if student mobility has a stronger relationship with value-added gain-scores than Federal Free/Reduced Lunch or Students with Disabilities variables. The correlation analysis did reveal a slight relationship between student mobility and Language Arts gain-scores. However, the Language Arts Correlation Coefficient (2.3) was not significant at the .05 level. The Pearson's Correlation Coefficient Analysis revealed that student mobility did not display a greater association with Math or Reading composite gain-scores. Federal Free/Reduced Lunch (.30*) and Students with Disabilities (.36*) percentages were both statistically significant at the fourth grade level in Math. The researcher concludes that further data analysis may reveal a significant number of physically handicapped students at the fourth grade level in this school system.

The researcher did compile a system-wide average of the Pearson's Correlation Coefficient for each student variable analyzed in the study. The third, fourth, and fifth grade correlation coefficient for each variable was: F/R = .163, SWD = .116, and Mobility Rate = .147. Federal Free/Reduced Lunch percentages had the highest correlation coefficient for the entire system. Student mobility was more closely associated with Federal F/R Lunch percentages than Students with Disabilities percentages. These system-wide findings support the conclusions of previous research. Students that eat Free/Reduced and students that are mobile are often the same students. These two student variables are difficult to separate in correlation studies. These findings did not support the initial question posed by the researcher. Student mobility does not appear to have a more significant relationship with low value-added gain-scores than other student variables at the schools represented in this study.

The researcher examined the three student variables analyzed in this study by quartiles. The two highest mobility quartiles displayed a two-to-one ratio of Free/ Reduced Lunch percentage to Mobility Rate percentage: Q1 = 81.8% F/R - 41.8% Mobility Rate. Q3 revealed a three-to-two ratio: 30.8% F/R - 18.75% Mobility Rate. Q4 displayed a Free/Reduced Lunch to Mobility Rate percentage closer to a one-to-one ratio.

This analysis supports the theory that higher school Federal Free/Reduced Lunch percentages correlate with high rates of student mobility. Schools that have low percentages of children that eat free and reduced have fewer mobile students. Students with Disabilities displayed inconsistent ratios with Student Mobility rates.

2. The rank-order analysis of Language Arts, Math, and Reading value-added gain-score composites revealed consistent relationships between high rates of student mobility and lower school score rankings.

3. The Pearson's Correlation Coefficient analysis of Language Arts, Math, and Reading value-added gain-scores composites revealed consistent relationships between high rates of student mobility and lower gain-scores. The quartile analysis remained consistent except for Quartile 4 rank-order and gain-score composites.

A rank-order analysis of composite value-added school scores revealed apparent relationships between the gain-scores and student mobility rates. A composite score for grades three, four, and five in Language Arts, Math, and Reading was tabulated for each school. There appeared to be a relationship between lower composite gain-scores and subsequent school rankings and high student mobility rates. Composite rank-order averages improved from Quartile 1 through 3 as the composite mobility rate decreased.

Composite gain-score averages also improved for Quartiles 1 through 3 as the composite mobility rate decreased.

However, rank-order composite quartile analysis's yielded one inconsistent finding. Quartile 4 had a lower rank composite than Quartile 3. Quartile 4 had a rank-order average 2.5 ranks higher than Quartile 3. The rank-order composite for Quartile 3 was 18.1. The rank-order composite for Quartile 4 was 20.6.

Why did the composite rank-order for Quartile 4 fall below the level of Quartile 3? A review of recent studies concerning state-mandated testing may provide definitive clues to this question. Cimbricz (2002) examined several studies that analyzed the relationship between state-mandated testing and teachers' beliefs and practice. Cimbricz purports that:

> The studies reviewed suggest that while state testing does matter and influence what teachers say and do, so, too, do the other things, such as a teachers' knowledge of subject matter, their approaches to teaching, their views of learning, and the amalgam of experience and status they possess in the school organization. As a result, the influence state-mandated testing has (or not) on teachers and teaching would seem to depend on how teacher interpret state testing and use it to guide their action. Moreover, the influence state testing may or may not have on teachers and teaching expands beyond individual perceptions and actions to include the network of constructed meanings and significance extant within particular educational contexts. How tests matter then is not always clear and simple (p.16).

Brown conducted interviews with teacher and principals in Illinois, New York, and Tennessee, and concludes that state-mandated testing greatly influences teachers and negatively impacted their classroom practices. Brown (1993) stated that teachers reported being confused about the overall purposes of state-mandated testing; in general, many educators stated a growing distrust and a lack of faith in decisions mandated from above (p.29).

Grant (2000) based his study on focus group interviews with elementary and secondary teachers form New York. Grant concludes that most teachers "praised state efforts to bring standardized assessments into closer alignment with the kind of ambitious instruction they believe is important" (p.7), yet they still expressed concerns "that the new tests could produce undesirable effects," most importantly reductionistic approaches to learning and teaching and an increased emphasis on remediation (p. 14).

Sanders in a recent article entitled, "Value-Added Assessment from Student Achievement Data: Opportunities and Hurdles" wrote about the perils of unused measurement methodologies. Sanders (2000) wrote that:

> Our work indicates that the biggest impediment to ever-higher achievement is the years in which individual students are not making realistic growth. Especially in inner city schools, too often it is observed that the previously lower scoring students are being given the opportunity to make reasonable progress, but within the same school the earlier higher achieving students are being held to the same pace and place as the lower achieving peers. When this pattern is repeated over grades, then it becomes a self-fulfilling prophecy that these early high achieving students lose ground. Without yearly feedback from responsible measurements, often teachers and principals do not recognize that these hurtful patterns exist. However, we certainly know cases in which teachers, after being presented with the results from the data, have engineered for themselves strategies within classrooms that have made instruction more equitable-addressing the needs of all students, rather than just a few (p.337).

What is the answer to question four? The answer may be found in the quote by Cimbricz, "How tests matter are not always clear and simple" (2002, p.16). The answer is not simple or clear. The composite scores for the schools listed in Quartile 4 of this study were lower than the composite scores for Quartile 3. Did the majority of the teachers at the schools in Quartile 4 teach to the test? Did a majority of these teachers focus their teaching efforts on the students in the lowest learning quartile? Were the earlier higher

achieving students held at the same pace as their lower achieving peers?

Each school system can benefit from the quartile rank and value-added gain-score analysis undertaken in this study. District and building level administrators can disaggregate teacher and student information to identify and correct problems in teaching practices. Administrators can design individual and collective staff development sessions to familiarize and prepare teachers in child-centered assessment and instructional strategies that benefit all students. Newspaper staff writers and state and local legislators can also be familiarized with these child-centered strategies.

4. There appears to be a strong positive relationship between value-added gain-score increases in third, fourth, and fifth grade Language Arts and Math and the exclusion of mobile student scores from the correlation analysis. There does not appear to be a positive relationship between Reading value-added gain-score increases and mobile student score exclusions.

Value-added gain-scores increased in Language Arts and Math after mobile student scores were removed from the correlation analysis. Thirty-four schools in both Language Arts and Reading experienced increases in value-added gain-scores after mobile students were removed from the analysis. The average combined system wide increase for Language Arts and Math was .78.

Twenty-six schools experienced value-added score decreases in Reading when mobile students were removed from the analysis. The system wide school average dropped to .50 when the Reading average was combined with Language Arts and Math Averages. Mobility Quartiles 3 and 4 experienced moderate decreases in quartile averages

after mobile student score were excluded from the analysis. Quartiles 3 and 4 have the lowest Mobility Rate averages in the sample (19.3 and 12.2%). However these two Reading Quartiles' average school scores decreased (Q3 = -.45 and Q4 = -.64).

This study examined twelve Mobility Rate Quartiles for value-added gain-score increases after mobile students' scores were excluded from the analysis. Language Arts and Math average score increases were spread across all Mobility Rate Quartiles. However, only Reading Quartile 1had more school score increases than score decreases. Why did schools in Reading Quartiles 3 and 4 show average decreases when mobile student scores were removed from the analysis? Did schools in Reading Quartile 3 and 4 focus more attention on improving highly mobile, low income students' scores? Were early high achieving students given less instruction enrichment in Reading (Sanders, 2000, p. 337)? Does the TVAAS model adequately control for the missing scores of these mobile student at the school represented in Reading Quartiles 3 and 4?

5. There appears to be a moderate relationship between student mobility and Math Value-Added gain-score increases when mobile students are removed from the correlation analysis. A Pearson's Correlation Coefficient Test produced an R-Value of .43 for Math when the two lists of Value-Added gain-scores were summed after mobile students' scores were removed from the analysis.

Mobile student scores were removed from the value-added gain-scores list for schools represented in this study. The exclusion list of scores and the regular value-added gain-scores list were summed and a Pearson's Correlation Coefficient Test was performed on the summed data. A system-wide Pearson's R-Value was produced for

Language Arts, Math, and Reading. The following R-Values were revealed for each subject: Language Arts = negative (-) .21; Math = .43; and Reading = .15. The summed score for Math was statistically significant at the .05 level.

The Milwaukee Student Mobility Report (2000) reported these comments regarding the impact that mobility has on student achievement:

> High student mobility affects all of a school's students, even making it difficult for a school to adequately teach students who attend on a regular basis. The students and teachers that the youth left behind at his/her old school feel the negative effect of one child's mobility. Students transferring into a different school and classroom change the social dynamics. The influx of students into the classroom can negatively impact the academic performance of the entire class. Mobility slows a school's instructional curricular pace as teachers find the need to review more. Students in mobile schools lag behind their stable counterparts by approximately one grade level. Mobile schools have many students with poor attendance and low test scores. Schools with high mobility rates don't succeed even with the students who are stable (p.6).

The Milwaukee Student Mobility Taskforce surveyed the principals in that school system. The comments from that survey lend support to the findings reported in this study. The Milwaukee Student Mobility Report (2000) stated that:

> All sixty-five principals participating in a survey regarded student mobility as detrimental to academic achievement, student behavior, parental involvement and school spirit. More than half the of the principals who responded to the survey had a mobility rate exceeding 30% at their schools. Almost unanimously, the principals agreed that mobility had a negative impact on students transferring to another school during the school year. In fact, the principals felt that the student could be completely lost if the new school used a different learning program (p.6).

The comments from the principals that were reported in the Milwaukee Student Mobility Report buttress the findings from this study for the Pearson's R-Value for Math (.43) after the mobile students were removed from the test analysis. Math skills are taught and learned sequentially. Mobility may be disrupting the math learning sequence for

students in the third, fourth, and fifth grades where multiplication tables are taught.

6. There are currently no mechanisms in place in Tennessee to track and monitor the educational progress of highly mobile students in Tennessee. An electronic database should be created to increase the communication and exchange of relevant information concerning Tennessee's mobile students.

7. Administrators at high mobility schools should be given funds allocations to create new programs and learning opportunities specifically designed to overcome the unique problems of student mobility.

Tennessee does not have a central database to monitor mobile families. This subsequent lack of data impedes local efforts of understanding the impact of student mobility on individual schools. State proficiency test results for mobile students are included with students who have been continual residents of the same school for extended periods of time. Dougherty (2000) purports that it takes approximately two years to properly assess the instructional effectiveness of a school (p.18). The transfer student must take one year to adjust and assimilate into the different culture, and it takes the second year for the instructional staff to provide the proper level of instruction (Dougherty, p.18). Kerbow (1996) contends that mobile students "adjustment period" becomes extended across several years and several different schools (p.14).

Texas has a central database to provide insight into mobility issues. Dougherty (2000) contends that there are several benefits of a central database: identifies causes of student mobility, creates centralized records, and leads to the development of specialized programs (p.18). The Tennessee State Department of Education should consider creating

a central database to track and monitor mobile student/family relocation.

Many students arrive at a new school with all of the required transfer documentation in hand. However, some records arrive well after the mobile student has transferred to the new school. In some instances, mobile student records arrive partially or altogether incomplete. This incomplete record of past academic and family socioeconomic history complicates the process of educating the mobile child.

Each school in Tennessee could contact the database when a new student transfers into their building. School principals and guidance counselors can continually update mobile student information electronically with a central database. The impact of high student mobility may continue to hamper professional examination unless such a database is created.

Dougherty (2000) concluded that school administrators who attempt to address school mobility find high student mobility greatly complicates staffing and school-calendar determinations (p. 12). Mobile students bring educational histories and subject matter knowledge that may not align with the shared experiences of their new classroom. Many teachers find that acclimating mobile students into the curricular pace of their classroom is often difficult.

Administrators spend substantial amounts of time requesting academic, family, and health records for mobile students that sometimes takes between two and six weeks to receive. Dougherty (2000) purports that, "In the interim, the students may or may not be properly placed in appropriate and needed programs. Ensuring that sufficient resources are available to assess new students and to provide them with the necessary services is

also a problem" (p. 12).

The Director of Research and Evaluation for the system analyzed in this study said that principals, "rely primarily on Title I funds," at the high mobility schools. The Director of Research and Evaluation further stated that, "Since most of our mobility is within the system, we believe the best way to overcome it is to have a unified curriculum across the system. If all teachers are teaching the same content and following the same pace, the effects of students moving from on school to another is lessened" (Researcher email interview on 12/17/02 @ 6:07 PM).

The State Department of Education in Tennessee should consider an allocation formula to distribute funds to school districts with high rates of student mobility. Each school district could utilize and place the funding based on selected guidelines and criteria established by the state and/or local education authority (LEAs). Proactive LEAs can consider utilizing local funding for allocations even if state funds are not made available.

Regardless of the funding source, highly mobile school districts should create programs especially designed to overcome the unique problems at high mobility schools. Proactive administrators may consider the creation of transition classrooms for mobile students. These classrooms would offer mobile students the opportunity to minimize the adverse impacts of changing schools. Principals and teachers would be given time to assemble the necessary documents and make appropriate student placement decisions based on staff observations of mobile student interactions.

8. Community-wide efforts are necessary to successfully reduce student mobility; factors effecting mobility are not only school related. Mobile students are often members

of unstable family units that suffer from a variety of social problems including: lack of adequate housing, frequent moves, student attendance and poor academic achievement.

Current research has found that the primary reasons parents give for family mobility are not school related (Kerbow, 1996; Dougherty, 2000; Student Mobility Report, 2000). More than half (54%) of the mobile families surveyed by the Milwaukee Public Schools System chose housing issues as the most common reason for changing school (2000, p.14). School issues were chosen only 12% of the time by the respondents in the Milwaukee Study. Kerbow (1996) found that 40.% of the parents in his Chicago study moved their child to a new school because of residential change (p.8). School related reasons were cited by 43% of the respondents.

Community-wide efforts are needed to reduce student and family mobility. The State Department of Education provides for the operation of Adult and Community Education (ACE) Programs in each county in Tennessee. The ACE director is trained to network with many community agencies to streamline adult and community education opportunities. The Department of Education could provide the ACE directors with training guidelines to link student mobility efforts with other agency initiatives with similar goals. Early childhood programs, community-learning centers, before and after school programs, and a variety of other community-based programs can be contacted to increase the support network for mobile children.

Recommendations

The following are the recommendations from this study.

Recommendation 1. This study should be replicated to further the collection of

data on the relationship between student mobility and valued-added gain-scores. This study should be replicated across other grade levels and within other school systems. The conclusions ascertained from the current study may be validated by additional studies.

Student mobility has not been determined to be a causal variable in low gain-scores in Tennessee. However, student mobility appears to be a contributing factor in poor academic performance for some children and schools. The negative effects of mobility appear to impact K-12 education at every grade level. Previous studies suggest that the consequences of mobility are the most pronounced in earlier grades (K-5). Additional studies in Tennessee concerning student mobility should focus on primary grade levels. However, middle and high school research should be undertaken to gain a better understanding of the long-term effects of student mobility.

Recommendation 2. Further research should be completed in order to analyze additional variables that impact student mobility and value-added gain-scores. Each system has similar and different conditions and variables that interconnect student mobility and school value-added gain-scores. A replication of this study will produce expected and unexpected findings for each individual school system.

This study did not analyze race or gender as student variables for their relationship with mobility and low gain-scores. Future studies might include these two variables for their association with mobility and low academic performance. Several student variables should be considered for future research. The relationship of individual student variables to mobility and achievement test scores may vary between education systems. However, common variables may appear if several school systems engage in mobility studies.

Recommendation 3. Future mobility data analysis concerning individual schools should be made available for building level principals. Proactive strategies to address the impact of student mobility should not be limited to school level plans. Individual classroom management techniques should be examined and developed for each teacher. This analysis can help administrators determine their school and staff's strengths and weaknesses when student mobility issues are discussed. These findings can be analyzed and evaluated to improve the teaching strategies that affect schools that experience high levels of student mobility.

Teacher training and staff development sessions can be designed to combat the negative consequences of mobility. School-wide and individual classroom strategies can be developed. Building-level administrators need to construct staff development plans that dovetail with system-wide strategies to reduce the influence of student mobility. Principals might be trained to lead these training sessions.

Recommendation 4. Tennessee has experienced a recent surge in urban growth. Major metropolitan areas in Tennessee will continue to expand. School populations in these communities will experience student mobility problems. Some students regularly transfer between three or more schools throughout their educational careers. Many school systems suffer from high rates of inter-district student mobility. Individual school systems should determine if student mobility is an inter or intra district phenomenon.

Parents need to have meaningful ties to a new school to want to keep their child there. Mobility is often associated with dissatisfaction with a previous school. Families must develop social ties to a learning community to develop meaningful relationships and

strong family/school bonds; insecurity and transition weakens trust and community bonds. Schools must take responsibility to strengthen the social connection between families and the learning community.

District and school surveys should be undertaken to determine the extent of inter-district mobility. Each school should designate a teacher or paraprofessional to oversee the mobility needs survey process. The school surveys should target parental opinion concerning their child's reason for transfer. The survey should address the parents reasoning for transferring their child to another school within the district. School exit or attraction categories should be included in the survey. Previous studies have found that parents transfer their child from a school due to dissatisfaction, or exit reasons, more often than they are attracted to a new school. Proactive schools districts need to determine why parents transfer their children. This information can assist school directors in implementing policies to counteract problems at high mobility schools.

Recommendation 5. School districts need to network with each other to develop consistent policies to counteract the consequences of intra district student mobility. Many individual schools and some school districts do not currently have available funds to allocate to mobility problems. Regional networking between geographically linked school districts can offer opportunities to pool manpower and resources to enact common strategies to reduce the effects of student mobility. Civic groups, private enterprises, and social agencies need to be included in these discussions. Local school and community awareness of mobility issues can be expanded to regional platforms. Collective ideas can be discussed and broad strategies can be formulated to interconnect regional school

districts and maximize available resources.

Recommendation 6. Consistent, school-wide steps should be taken to ensure that mobile students are given every opportunity to successfully transition to the receiving school. Parent and student insecurity and frequent mobility weaken the transition process at a new school. Rich, deep learning and consistent academic progress usually will not take place unless students quickly feel welcome at their new school.

School directors should assess strategies that individual principals can implement to help parents and students adjust to new schools. Principals may choose to develop a welcome center with information for parents and students, school tours, welcoming day, buddy system/student guides, free school supplies for the first day, and before and after school tutoring.

Recommendation 7. Schools that have high mobility rates should receive funding to create transition classrooms for mid and late term transfer students. These classrooms would target students from kindergarten through second grade. A core group of high-achieving second grade students would remain in the classroom all year. The core group of students would be recommended by teacher referrals for the transition classroom opportunity. Parental approval will be necessary for each child to be placed as a permanent year-long member of this classroom. The core group of second grade students in the transition classroom should number no more than six to eight students. The core students would constantly be provided with enrichment opportunities. The students would be socially outgoing. The students would serve as the "first-friend" for incoming mobile students.

Mobile K-2 students that transfer into the receiving school would be placed in the transition classroom for brief periods of time. This transition time would range from a few days to no more than a few weeks. The teacher and classroom paraprofessional would be assisted by the core group of students in welcoming the new student to school. The classroom teacher and paraprofessional would review student records, assess abilities, communicate with the parents or guardian, and determine the best placement for the child. New students would not always be assigned to the grade level placement that they left at their former school. The new student would not receive any grade or be required to take any permanent academic tests during this transition period.

State/System Implementations. The following list of recommendations is included for consideration of implementation at the state and district departments of education.

1. Create a statewide student-tracking network to monitor the transfers of mobile students. This system could be modeled after systems developed in Texas to track migrant-workers' children.

2. Develop new categories for reporting student residency data on state proficiency tests by: creating a category for students who have been in the school district for less than two years, and by creating a category for students who have been at the same school for less than two consecutive years.

3. Create a standard, consistent checklist to assist parents who must transfer their child/children to a new school.

4. Add student mobility reduction goal to the attendance component of each schools' attendance plan. Calculate and monitor attendance, mobility, and stability rates

for each school.

5. Assist adult and community education directors in developing strategies to increase community/school/family awareness of hurdles that face mobile families.

6. Provide support services that assist families in keeping children at the same school for an entire year or longer.

7. Provide before and after school child care for high mobility rate schools.

8. Work with local landlord associations to create uniform apartment lease deadlines. Encourage landlords to implement lease deadlines that begin and end during the summer break period (June/July) of the school calendar.

9. Provide student transportation for the parents who must transfer their child/children to a different school within the same school district. This public or private transportation would allow the child to attend the same school for at least one year. The student would enroll in a new school in her/his new residential district at the beginning of the next school year.

BIBLIOGRAPHY

Addressing Barriers to Learning. (1997). "Easing the Impact of Student Mobility: Welcoming & Social Support." (2) 4, Fall, 1997. Retrieved on 2/27/02 10:11 AM @ http://smhp.psych.ucla.edu/easimp.htm.

Academic Productivity Series Technical Report. (1998). *Consortium on Chicago School Research.* Retrieved on 2/16/02 10:07 AM @ http://www.consortium-chicago.org/research/academicprod.html.

Asher, C. (1991). Highly Mobile Students: Educational Problems and Possible Solutions. ERIC Clearinghouse on Urban Education, Columbia University: New York, NY. EDO-UD-91-3, ISSSN 0889 8049 Retrieved on 2/27/02 10:16 AM @ http://eric-web.tc.columbia.edu/digest/dig73.html.

Bracey, G. W. (1991). "Student Mobility: An Inside View." *Phi Delta Kappan (72),* April, pp. 713-716.

Bowditch, C. (1993) "Getting Rid of Troublemakers: High School Disciplinary Procedures and the production of Dropouts." *Social Problems (40).* pp. 444-47.

Bratton, S.E., Horn, S.P, & Wright, S.P. (1996). Using and Interpreting Tennessee's Value-Added Assessment System: A Primer for Teachers and Principals. *Value Added Research and Assessment Center.* Knoxville: TN.

Brown, D. F. (1992, April). *Altering curricula through state-mandated testing: Perceptions of teachers and principals.* Paper presented at the annual meeting of the

American Educational Research Association, San Francisco, CA.

Brown, D. F. (1993) *The political influence of state-mandated testing reform through the eyes of principals and teachers.* (ERIC Document Reproduction Service No. Ed 360 737).

Chaika, G. (1999). "Student Mobility: Helping Children Cope With a Moving Experience." *Education World.* Retrieved on 2/27/02 9:38 AM @ http://www.education-world.com/a_curr/curr134.shtml.

Cimbricz, S. (2002), January 9. "State-mandated testing and teachers' beliefs and practice." *Education Policy Analysis Archives, 10*(2). Retrieved @ http://epaa.asu.edu/epaa/v10n2.html.

Clark, S. (March/April 2001). "Mobile students score lower on state test." *Catalyst For Cleveland Schools.* Retrieved on 2/28/02 6:13 PM @ http://www.catalyst-clevland.org/0401/0401manage.htm.

CRESPAR Report No. 3. (1997). "GRADE RETENTION - Prevalence, Timing, and Effects. Chapter III. The Timing of Retention. *CRESPAR Program 3: School & Classroom Interventions: Elementary Schools.* Retrieved on 2/16/02 10:45 AM @ http://www.csos.jhu.edu/crespar/Reports/report33chapt3.htm.

Curran, J. & Takata, S. (2001). "What High-Stakes Testing Can't Fix." *School In California - Schools and Zip Codes.* Retrieved on 2/27/02 11:35 AM

@ http://www.csudh.edu/dearhabermas/schools01.htm.

Darling-Hammond, L. (1997). *The Right To Learn,* San Francisco, CA: Jossey-Bass.

DeploymentLINK. (January, 2001). "Military Education Coalition builds understanding between students and educators." Office of the Special Assistant for Gulf War Illnesses Medical Readiness and Military Deployments. Retrieved on 2/27/02 11:11 AM @ http://deploymentlink.osd.mil/news/jan02/news_11402_001.shtml.

Dobson, J. & Henthorne, K. (2000). "Changing faces in the classroom." *The Times Educational Supplement, 15 September, 2000.* London, England, pp. 1-26.

Dougherty, J. (2000). Report of the Student Subcommittee. Appendix A. Prepared for the School Finance Committee. August 24, 2000.

Fine, M. (1991). *Framing Dropouts: Notes on the Politics of an Urban Public High School.* Albany: State University of New York Press.

Florida Department of Education Office of School Improvement (1992). "Strategies that Enhance Success for Highly Mobile Students." *Office of School Improvement Information Wave Series # 2.*

Gill, S. (March 8 , 2002). "California Children Living in Poverty Rose by 430,000 in '90s, Survey Shows." *Los Angeles Times.* Retrieved on 3/9/02 9:38 AM @ http://www.latimes.com/news/nationworld/nation/la-000017306mar08.story.

Gittleman, M. & Joyce, M. (September, 1995). "Earning mobility in the United States." *Monthly Labor Review Online. 118*(9). Retrieved on 3/9/02 10:20 AM @ http://www.bis.gov/opub/mir/1995/09/art1exc.htm.

Grant, S. G. (2000, February). "Teachers and tests: Exploring teachers' perceptions of changes in the New York State-mandated testing Program." *Education Policy Analysis Archives* [On-line serial], *8*(14). Retrieved @ http://epaa.asu.edu/epaa/v8n14.html.

Gutloff, K. (February, 1998). "Moving Targets," *NEA Today Online.* Retrieved on 2/27/02 11:49 PM @ http://www.nea.org/neatoday/9802/cover.html.

Hodgkinson. H. (2000, December/2001, January). "Educational Demographics: What Teachers Should Know." *Educational Leadership 58*(4). Retrieved on 2/27/02 9:24 AM @ http://www.ascd.org/readingroom/edlead/0012/hodgkinson.html.

ICDRI – The International Center for Disability Resources on the Internet (2001). "SAS inSchool to Address Accessibility." Atlanta Business Wire (11/08/2001). Retrieved on 3/14/03 9:52 PM @ http://www.icdri.org/Education/sas_inschool_to_address_accessib.htm.

Jason, L. A., Weine, A. M., Johnson, J. H., Warren-Suhlberg, L., Filippelli, L. A., Turner, E. Y., and Lardon, C. *Helping Transfer Students: Strategies for Educational and Social Readjustment.* San Fransisco: Jossey-Bass, 1992.

Kerbow, D. (1996). Patterns of Urban Student Mobility and Local School Reform - A

Technical Report. *CRESPAR Program 7, Systemic and Policy-Related Studies, Report No. 5.* Retrieved on 2/16/02 9:42 AM @ http://www.csos.jhu.edu/crespar/Reports/report05entire.html.

Kerbow, D. (1997). "Addressing Systemic Issues Raised by High Rates of Student Mobility." *CRESPAR Project 7.5.* Chicago, IL: Retrieved on 2/23/02 3:27 PM @ http://www.csos.jhu.edu/crespar/prog7.5hi.html.

Lash, A. A., & Kirkpatrick, S.L. (1990). A Classroom Perspective on Student Mobility. *The Elementary School Journal (91),* 2. Chicago: Ill., pp. 177-191.

Ligon, G., & Paredes, V. (1992). Student mobility rate: A moving target (Report No. TM 019 035) Washington, D.C.: National Center for Education Statistics. (ERIC Document Reproduction Service No. ED 349 335).

Linn, R. L. (2001). The Design and Evaluation of Educational Assessment and Accountability Systems (CSE Technical Report 539). Center for the Study of Evaluation, Standards, and Student Testing. Graduate School of Education & Information Studies. University of California, Los Angeles, Los Angeles, CA.

Long, L. H. (1992). "International Perspectives on the Residential Mobility of America's Children." *Journal of Marriage and the Family (54).* pp. 861-69.

Mao, M., And Others. (1997). Student mobility, academic performance, and school accountability (Report No. TM 026 966). Chicago,: American Association Educational

Research. (ERIC Document Reproduction Service No. ED 409 380).

McNeil, L (2000). *Contradictions of School Reform.* New York: Routledge.

Mehana, M. & Reynolds, A. (1995). The effects of school mobility on scholastic achievement (Report No. IS 023498). Indianapolis, IN: Society for Research in Child Development. (ERIC Document Reproduction Service No. ED 385 381).

Million, J. (2000). "Mobility Matters." *NAESP Principal Online, November 2000.* Retrieved on 2/27/02 9:58 PM @ http://www.naesp.org/comm/pr1100.htm.

Montgomery County Public Schools (1999). Student and Staff Mobility in the Wheaton Cluster Year 1 (1997-98) Report. Executive Summary. Rockville, MD. Retrieved on 3/1/02 4:22 PM @ http://www.mcps.k12.md.us/departments/dea/PROJECT/mobility/.

NAESP Principal Online (Winter 1995-96). "Report to Parents - Moving to a New School." Retrieved on 2/27/02 9:52AM @ http://www.naesp.org/comm/r0296.htm.

Natt, J. G. (May, 2000). "School Districts Need to Analyze Mobility Sources, Make Policy Adjustments." *Leadership News.* Retrieved on 2/28/02 5:06 PM @ http://www.aasa.org/publications/ln/05_00/05_15_00mobility.htm.

Nelson, P. S.; Simoni, J. M.; & Adelman, H. S. (1996). Mobility and School Functioning in the Early Grades. *The Journal of Educational Research, 89,* July/Aug. pp. 365-369.

New Mexico State Department of Education (1999). "Incentives & Interventions." *NM SDE - Data Collection & Reporting Unit.* Retrieved on 2/28/02 4:48 PM

@ http://sde.state.nm.us/divisions/ais/datacollection/incentives.html.

Newman, J (1988). "What Should We Do About The Highly Mobile Student?" Mt. Vernon, WA: *The Research Center, May, 1988.* ED 305 545.

Nelson, P. S., Simoni, J. M., Adelman, H. S. (1996). Mobility and School Functioning in the Early Grades. *The Journal of Educational Research (89),* July/August 1996, pp. 365-369.

New Mexico Department of Education. (1999). "Incentives and Interventions. *NM SDE – Data Collection & Reporting Unit, Incentives & Interventions.* Retrieved on 2/28/02 on 4:48 PM @ http://sde.state.nm.us/divisions/ais/datacollection/incentives.html.

O'Leary, B. F. (2000). School Finance Committee Report. Prepared for the Semiannual Delegate Assembly of New Jersey, November 18, 2000.

Paredes, V. (1993). A study of student mobility (Publication No. 92.21). Atlanta, GA: American Educational Research Association. (ERIC Document Reproduction Service No. ED 359 282).

Patterson, F. E. (2002) Educational Values and Accountability in Tennessee: Ethical Dilemmas and Moral Imperatives. University of Tennessee Doctoral Study.

Rumbarger, R.W., & Larson, K. A. (1998). Student Mobility and the Increased Risk of High School Dropout. *American Journal of Education (107)* November. Chicago: IL. pp. 1-35.

Sanders, W. L., (1998). "Value-Added Assessment." *The School Administrator, December, 1998.*

Sanders, W. L. (2000, July 21). "Value-Added Assessment from Student Achievement Data: Opportunities and Hurdles." *CREATE NATIONAL EVALUATION INSTITUTE.* SASinSchool, SAS Institute, Inc. Cary, NC.

Sanders, W.L., & Rivers, J.C. (2000). Tennessee Elementary Student Achievement Trend Analyses (1991-1999). *University of Tennessee Value-Added Research and Assessment Center.* University of Tennessee at Knoxville.

Sanders, and Others. (1993). Effects of Building Change on Indicators of Student Academic Growth. *TVAAS Research and Software Development Team.* The University of Tennessee, Knoxville.

School Improvement In Maryland. Tennessee Valued Added Assessment System. Excerpted from *The Building Change Effect,* Sanders et al., 1994. retrieved on 8/9/02 4:57 PM @ http://www.mdk12.org/practices/tva/implications_research.html.

Sewell, C. (October, 1982). "The impact of pupil mobility on assessment of achievement and its implications for program planning." Brooklyn, NY Community School District 17. (ERIC Document Reproduction Service No. ED 228 322).

Skandera, H. & Sousa, R. (2002). Highly Mobile Students Often Are Low Achievers. *School Reform News - January, 2002.* The Hoover Institute. Retrieved on 2/28/02

6:22 PM @ http://www.heartland.org/education/jan02/mobility.htm.

Snow, C. E., & Jones, J. (2001). "Making a Silk Purse." *Education Week, April 25, 2001 (20)* 32, p. 60.

Straits, B. C. (January, 1987). "Residence migration and school progress." *Sociology of Education, 60* (1), 34-43.

Stover, D. (2000). "Schools grapple with high student mobility rates." *School Board News.* Retrieved on 2/27/2 11:10 AM @ http://www.nsba.org/sbn/00-jun/061300-2.htm.

Student Mobility Report (2000). Report and Recommendations Prepared By The Student Mobility Task Force As Part Of The Neighborhood Schools Initiative. Milwaukee Public Schools.

"Student Mobility." *Education Week*, June 23, 1993.

Thomas, D. K. (2001). Strategies to Ease the Negative Effects of Mobility on Academic Achievement. Dissertation Study for East Tennessee State University.

U.S. General Accounting Office. (February 1994). Elementary school children: Many change schools frequently, harming their education. (GOA/HEHS-94-95).

Vail, K. (January, 1996). "Learning On The Move." *The American School Board Journal. (183)* pp. 20-25.

Wehlage, G. G., and Rutter, R. A. (1986). "Dropping Out: How Much do Schools

Contribute to the Problem?" *Teachers College Record (87).* pp. 374-92.

Westphal, C. R. (2000). "Effects of Summer Break on Stanford/9 Test Scores." *San Juan Unified School District Research and Evaluation Page.* Retrieved on 2/28/02 4:50 PM @ http://www.sanjuan.edu/services/r&e/rbsummer.htm.

Williams, D. (1996). "Kids, schools suffer from revolving door." *Catalyst, April, Mobility Research.* Retrieved on 2/16/02 10:16 AM @ http://www.catalyst-chicago.org/04-96/046main.htm.

Wisconsin School Performance Report. (1997-98). "Knowledge & Concepts Examinations: 1997-98 Results for Grade." *Wisconsin Department of Public Instruction.* Retrieved on 2/16/02 10:37 AM @ http://www.dpi.state.wi.us/spr/8kcds98.html.

Wright, D. (1999). Student Mobility: A Negligible and Confounded Influence on Student Achievement. *The Journal of Educational Research (92)* 6, July/Aug. 1999, pp. 347-53.

Wright, S.P., Horn, S.P. and Sanders, W.L. (1997) "Teacher and Classroom Context Effects on Student Achievement: Implications for Teacher Evaluation." *Journal of Personnel Evaluation in Education* (11): 57-67.

Wood, D., Halfon, N., Scarla, D., Newacheck, P., and Nessim, S. (1993). "Impact of Family Relocation on Children's Growth, Development, School Function, and Behavior." *Journal of the American Medical Association 270,* pp. 1334-38.

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