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Public School Funding and School Systems Meeting Adequate Yearly Progress in Tennessee

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education in Educational Leadership

by

John E. Robinette

May 2011

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Keywords: Funding Levels, Tennessee School Systems, *NCLB* Status, Targeted, Good Standing,

Tennessee, System Size, Teacher Salary

ABSTRACT

Public School Funding and School Systems Meeting Adequate Yearly Progress in Tennessee

by

John E. Robinette

The purpose of this study was to determine if there was a relationship between level of funding and achievement of school systems in Tennessee based on the standards of the *No Child Left Behind Act (NCLB)* of 2001. This study focused on Tennessee school systems and their adequate yearly progress (AYP) status of “targeted” or “good standing” from 2007 through 2009. Federal, state, and local funding, as well as per-pupil expenditure, average teacher salary, and number of students, were used as variables. All data were gathered from the Tennessee Department of Education website.

The researcher performed 6 independent samples *t*-tests and one chi square analysis. The study showed significant differences in the means of federal, state, and local funding levels between targeted systems and systems in good standing. Targeted systems received more federal, state, and local funding than systems in good standing from 2007 through 2009. The study showed no significant difference in mean per-pupil expenditures between targeted systems and systems in good standing. The study showed a significant difference in the mean teacher salaries. Targeted systems had higher teacher salaries than systems in good standing from 2007 through 2009. The study also showed a significant difference in the mean number of students between targeted

systems and systems in good standing. Targeted systems had more students than systems in good standing.

The findings indicate that targeted systems are receiving as much funding as systems in good standing. To help control for the number of students in each system, the two groups (targeted and in good standing) were compared using per-pupil federal, state and local dollars. The analysis indicated no significant difference between targeted systems and systems in good standing for federal money. The analysis did indicate a significant difference between the two groups for state and local money. However, for state money systems in good standing had the higher mean and for local money, targeted systems had the higher mean. Mean per-pupil expenditures were relatively equal between targeted systems and systems in good standing. System size, based on the number of students, showed a significant relationship with the *NCLB* status of a system. The mean number of students in targeted systems was more than 3 times as large as systems in good standing (17,656 to 5,284). Also, a group of systems with over 4,445 students had over 5 times the number of targeted systems than a group of systems with fewer than 2,094 students.

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DEDICATION

This study is dedicated to my parents Pat and Jackie Robinette. It is because of your support and encouragement that I began this journey. Your constant love and inspiration played an integral part in getting me through to the end. No amount of words can express how blessed my life has been because of you. I love you very much.

This study is also dedicated to my wife Anna and children Jake and Claire. You all are my greatest achievement. You inspire me daily. Thank you for all the sacrifices you made to help me complete this journey. I love you all so much.

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To God be all glory and praise.

Thank you Jesus, my Lord and Savior, for helping me through this journey and using it to draw me closer to you. Thank you for blessing me with the following people:

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CHAPTER 1

INTRODUCTION

Almost all institutions and organizations in the United States have been affected by recessions. During economic downturns, the world seems to focus on managing budgets. Since 2008 the federal government has taken dramatic measures to help the financial state of many institutions struggling with the current recession. Of those measures, massive bailout packages worth billions of dollars have been proposed and passed to help institutions across the nation, most notably big banks and the auto industry.

Schools have not been excluded from these tough financial times. Educational institutions historically struggle to get funding, but the recent recession has made revenue building particularly difficult. From state and local governments to the school community, financial support for public schools has decreased dramatically. As a result schools have had to adjust by making cuts in all areas including personnel, supplies, building structures, and programs. However, schools and school systems have had to continue to manage the cost of education including classroom supplies, fuel for buses, food for the cafeterias, and everything in between. With the additions of higher government standards and public expectations, delivering a quality education for the nation's young people has become increasingly difficult. However, some researchers have argued that money is not the problem or the solution.

The purpose of this study was to determine if there is a relationship between level of funding and achievement of school systems based on the standards of No Child Left Behind (*NCLB*). This study focused on Tennessee school systems and their adequate yearly progress (*AYP*) status of "targeted" or "in good standing". Federal, state, and local funding, as well as per-pupil expenditure, average teacher salary, and number of students, were used as variables. The

issue of public funding of education has always been a sensitive one. As Governor of Virginia in the late 18th century, Thomas Jefferson tried and failed to persuade the state legislature to use public tax money to build schools across the state. At the heart of the issue was expense, and the legislature did not want to use or raise taxes for education (Jefferson Pledge, 2007). Jefferson argued unsuccessfully that an uneducated population would be much more expensive than the cost of educating all children.

Over time, all levels of government have become increasingly involved in education and its funding. The federal government raised standards and accountability in schools across the nation in 2001 by passing the No Child Left Behind Act (*NCLB*). More recently, Congress enacted the American Recovery and Reinvestment Act of 2009 (Recovery Act) which provided over \$100 billion to the U. S. Department of Education to help schools survive the difficult economic times (United States Department of Education, 2009a). These acts represent just how far the federal government has come since it excluded any mention of education from the U.S. Constitution in 1787.

States continue to be the main government funding source for schools across the nation. However, a multitude of legal battles for equity across the nation have given states little freedom in their funding preferences (i.e. *Tennessee Small School Systems v. McWherter, 1993*). The local government causes the most disparity among schools and systems because local revenue is usually generated from property taxes and sales taxes. The local wealth of a community greatly influences the local education agency's ability to supplement educational funding from state and federal sources.

Because state and federal legislatures and the courts have become increasingly involved in the accountability and funding issues of our nation's education systems, educational research

has become increasingly important (McMillan & Schumacher, 2006). This type of research helps educators at all levels improve their educational programs and decision-making abilities.

Unfortunately, the findings are mixed (Greenwald, Laine, & Hedges, 1996; Hanushek, 1996; Klein, 2008; Venteicher, 2005).

Some people believe school systems do not need additional funding in order to successfully educate children. A report from the School Finance Redesign Project (SFRP) in 2008 noted that the usual school improvement funding modes such as salary increases, attempts to reduce class size, and targeted spending programs, have increased costs without increased gains in performance (Adams, 2008). Conversely, Marion and Flanigan (2001) observed that some researchers had found significant relationships between financial factors and student achievement. Archibald (2006) also suggested, based on her research, that such resources were important for improving test scores.

The research findings are so contradictory that some researchers have used the same data but found contrasting results. Harter (1999) was one researcher who found some middle ground in the argument. She suggested the significance of the relationship between expenditures and achievement depended on how funds were used, not how much funding there was. For example, she found that increased expenditures for basic supplies and highly qualified teachers were positively related to achievement. Her study also found that expenditures for support staff and substitute teachers were negatively related to performance. The debate may continue, but the question remains: What is the relationship between public school funding and the levels of student achievement in our schools?

Statement of the Problem

This study was used to investigate the relationship between certain variables involving funding and the status of Tennessee school systems according to the standards set by the *No Child Left Behind Act (NCLB)* of 2001. Not much is known about this relationship because there was little if any research concerning the topic. Although researchers have written on school funding issues in Tennessee, research concerning school systems was minimal. Additionally, existing research regarding funding and achievement was extremely contradictory (i.e. Greenwald et al., 1996; Hanushek, 1996).

The variables in this study included per-pupil expenditure, the average teacher salary of each system, the number of students in each system, and the amount of money provided to each school system by local, state, and federal governments. Using these variables focused the study on areas of a system's financial structure. The average teacher salary encompassed the value a system had placed on teachers as well as local wealth, teacher experience, and the education of the teachers in that system. The per-pupil expenditure measured the total revenue (federal, state, and local) generated by a system as well as how much a school system spent on its schools based on its average daily attendance (ADA). The number of students in each system accounted for extra large (or small) systems that may otherwise have skewed the data because of corresponding amounts of revenue and expenditures. Finally, the funding from each of the three levels of government (federal, state, and local) constituted the major sources of financial support for a school system. The purpose of this study was to determine if there was a relationship between any of these variables and the achievement of students in a school system.

Significance of the Study

During periods of economic downturn, awareness of budgets becomes heightened across the country. Schools and school systems cannot avoid the financial struggles because properties, businesses, and family incomes have all been affected by the struggling economy. At the same time, school systems are increasingly pressured by governments and communities to effectively educate children. As money is eagerly sought from all areas, some question the extent to which additional funds help in the educational process.

A continuing challenge for educational researchers and policymakers has been how to most effectively distribute resources to improve the achievement of schools systems (Peevely, Hedges, & Nye, 2005). During periods of economic struggle this challenge has included the need to efficiently allocate resources that are often scarce. Findings from this study may help educators and policy makers focus their efforts in fund raising and resource distribution on variables positively related to system achievement.

Research Questions

Question 1

Is there a significant difference in the mean federal funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Question 2

Is there a significant difference in the mean state funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Question 3

Is there a significant difference in the mean local funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Question 4

Is there a significant difference in the mean per-pupil expenditures between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Question 5

Is there a significant difference in the mean teacher salaries between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Question 6

Is there a significant difference in the mean number of students between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Question 7

Is there a significant relationship between the size of the school system (categorized as small, medium, or large, based on the number of students) and the system's status (targeted or in good standing) in Tennessee for the academic school years 2007 through 2009?

Limitations

The data used in this study were collected from the Tennessee Department of Education (TDOE) website. Each school system in the state of Tennessee submits financial, demographic,

and academic data to the state each year. It is assumed that the data are accurate. This study was limited to the data released by the *TDOE*. Five systems in the state did not report data. Therefore, they were not included in the study. This study was limited to the 135 (96.4%) of the 140 total systems. Average teacher salary data may be skewed because of variables such as the number of years of experience and level of education. Revenue for capital outlay was not included in the data. The results of this study may not be generalized to other states.

Delimitations

This study was delimited to the state of Tennessee. The findings may not be applied to other states with similar components in the targeted status of a school system.

Definitions of Terms

1. *Adequate yearly progress (AYP)* – Calculated each year, *AYP* is a measure of academic achievement progress a school system or school is making based on student performance on annual tests. (Tennessee Department of Education, 2009b).
2. *Average Daily Attendance (ADA)* – This is a school’s attendance rate on a daily basis. The average number of students attending a school or system daily (Tennessee Department of Education, 2009b).
3. *In good standing* – This is a status given to school systems and schools that have met all performance benchmarks according to the standards set by *NCLB* (Tennessee Department of Education, 2009b).
4. *No Child Left Behind Act of 2001 (NCLB)* – Signed by President George W. Bush, this act reauthorizes and amends the Elementary and Secondary Education Act (ESEA) (Tennessee Department of Education, 2009a).

5. *Per-Pupil Expenditure* – This is a term used to define the total operating expenditures (total federal, state, and local expenditures excluding capital outlay) on a per pupil basis according to *ADA* (Tennessee Department of Education, 2009b).
6. *Targeted* - This is a status given to school systems and schools that have not met all performance benchmarks according to the standards set by *NCLB* (Tennessee Department of Education, 2009b).
7. *TDOE Report Card* – Part of the accountability requirements established in the Tennessee Education Improvement Act of 1992, the Report Card grades school systems and schools for public access each year (Tennessee Department of Education, 2009b).

Overview of Study

Chapter 1 includes an introduction to the study as well as a statement of the problem, the significance of the study, and research questions. Chapter 2 includes a review of the literature. This involves an historical perspective of federal, state, and local involvement. It also contains research findings concerning the relationship between funding and achievement. Chapter 3 contains the research methodology including data collection and analysis. Chapter 4 presents an analysis of the data. Chapter 5 consists of the research findings, conclusions, recommendations for further study and recommendations for further research.

CHAPTER 2

REVIEW OF LITERATURE

The National Center for Educational Statistics (*NCES*) is the main entity for collecting and analyzing educational data for the United States Department of Education. A compilation of statistical information is published yearly by the *NCES* covering America's entire education system. The *NCES* provided a complete breakdown of each state's public school finance program on its website. It also included descriptions of programs from provinces and territories in Canada (National Center for Educational Statistics, 1999). This expansive work covers areas including enrollment, graduation, federal funding, finance, and many other categories (National Center for Education Statistics, 2009). In 2009 *NCES* reported statistics up to the 2006-07 school year and included projections through 2009. In 2007 total expenditures for all educational institutions were over 984 billion dollars, which is approximately 7.3% of the gross domestic product. Expenditures were projected to reach above one trillion dollars for education in 2009. In 2007 the federal government accounted for 8.5% of revenues generated for public schools. States claimed 47.6% of revenues, and local education agencies provided 43.9%.

Funding Mechanisms

Property taxes are the dominant revenue source for local revenues. However the issue of raising property taxes is often a source of conflict at all levels of government. Sanders and Lee (2009) suggested resistance to property tax increases had led to events such as the California tax revolt of 1978, the tax cuts of the Reagan administration, and the tax reform of 1986. State and local governments across the nation have sought out new and alternative revenue-raising methods such as special taxes earmarked for education. A 50-state survey concerning public school finance policies was conducted through the University of Nevada in 2006 and 2007. The

survey included information from chief state education-finance officers, university professors, and state's education association personnel (Verstegen & Jordan, 2009). From the survey Verstegen and Jordan described and categorized state finance policies and programs into four basic formats: foundation programs, district power equalization systems, full state funding, and flat grants. They found that all states had used one of the four formats or a combination of the formats to fund their educational systems. In 2007, 40 states used foundation programs. Three states used district power equalizing. One state used a full state funding system, and one used a flat-grant system. Five states used a combination approach involving the foundation program system. Foundation School Programs (*FSP*) were the overwhelmingly favorite finance program for states. "*FSP* support education through a set-state guarantee per-pupil or per teacher unit. Localities contribute to this amount usually through a uniform-tax rate or the funding that would result from it." (p. 215). Because of the discrepancies in local property tax bases, states attempted to equalize the variations between poor and wealthy localities with a guaranteed foundation amount. However, local agencies were usually allowed to raise more funds than the state's required foundation.

District Power Equalizing systems (*DPE*) attempt equity for the taxpayer rather than the pupil by providing equal yield for equal effort. Local districts set taxing and spending levels while the state makes up the difference between what is raised locally and what is guaranteed by the state (Verstegen & Jordan, 2009). There were three states that financed education using a *DPE* system, each with a different approach. Vermont's system was based on a guaranteed yield from a base tax rate of 8.7 mills. Wisconsin used a three-tiered approach with a guaranteed tax base. The state would make up the difference from the guaranteed and local revenues. Rhode Island used a percentage equalization *DPE* system.

Hawaii was the only state to use a full-state funding system (*FSF*). Local funds were neither part of the program nor allowed to supplement state funds. North Carolina was the only state to use a flat-grant system granting each system the same amount of money per pupil. However, unlike the full-state funding system of Hawaii, localities in North Carolina were allowed to supplement state funding. Georgia, Illinois, Kentucky, Texas, and Montana used a combination approach to funding education. Georgia used a combination of guaranteed tax-yield (*DPE*) and a foundation program. Illinois used flat grant funding with a foundation program. Kentucky's Support Education Excellence in Kentucky (*SEEK*) program built in two tiers of *DPE* onto a foundation system. Texas and Montana also mixed a two tiered system with a foundation program (Verstegen & Jordan, 2009).

Tennessee's education finance system is a foundation program. Before 1993 Tennessee used a minimum-foundation program to fund public schools. The mechanism was based on the weighted average daily attendance. However, the level of equalization was small, and there was an inequitable distribution of resources statewide (National Center for Educational Statistics, 1999). However, the Education Improvement Act of 1993 instituted a new funding formula in Tennessee called the Basic Education Program (*BEP*). The new formula used weighted regression to determine the needed funding of Tennessee's schools. Each locality's capacity to produce revenue was used to help equalize the distribution of funds. The Tennessee Department of Education allocated approximately \$6.5 billion in state, federal, and local funds in the 2008-09 school year (Hargett, 2009). The funds served 136 public school systems, over 1,700 schools, and a combined membership of 930,000 students. This includes approximately 65,000 teachers, principals, supervisors, and other professional employees. However, when compared with other

states in our nation, Tennessee ranked 48th in total public school revenue per student in average daily attendance (ADA) in 2008-09 (National Education Association).

Tennessee History

Enacted in 1796, the state's first constitution, like the U.S. Constitution, did not mention education. For nearly 30 years the general assembly failed to effectively address education in the state. In 1829 the state enacted its first law addressing education. The statute authorized local taxes for the support of schools, called common schools (Hargett, 2009). The initial system lacked adequate funding and organizational structure. In 1835 a new Tennessee constitution required the state's general assembly to address the needs of public school funding and appoint a board of commissioners to oversee the state system (Fleming, 2002). Robert H. McEwen was elected as Tennessee's first state superintendent of education in 1836. McEwen poorly managed the school fund, however, and in 1847 Governor Neil S. Brown recommended direct taxation to increase the fund. The recommendation failed. In 1853 Governor Andrew Johnson acknowledged the poor performance of the state's school system, and he placed much of the blame on inadequate funding. Once again, taxation was recommended to increase the fund for public schools. However, the measure was tabled because of the start of the Civil War. The issue of helping public schools would have to wait until 1867, after the war, when the Tennessee legislators made another effort to revive the state's public school system. A third constitution required the state to provide a public school system and develop a public school fund. "The statute provided for the reestablishment of the office of state superintendent of education, furnished additional sources of revenue, and provided county supervision for the fledgling system." (Fleming, 2002, p. 2). As a result of the Civil War, Tennessee had thousands of newly freed black citizens with little taxable property, and the legislature made the decision to provide

for the education of the state's black children. However, the state ran two segregated school systems. This caused great stress on the state's school fund which grew very slowly.

In 1885 the legislature passed a statute allowing additional taxes to be levied for the development of high schools. However, this did not help rural schools in funding such development. Then in 1899 the requirement to establish a high school in each county became a law (Fleming, 2002). Soon after this law was enacted, the General Education Act of 1901 was passed. It provided revenue for the support of public schools, the first percentage distribution of the public school fund, and authorized the election of county school boards. Then in 1923 the Tennessee Department of Education was created (Hargett, 2009). During the 1920s the state's school fund grew dramatically as a result of rising tax revenues. Then, as with all states across the nation, the Great Depression caused drastic setbacks to the school fund and all other areas of finance (Fleming, 2002). To help the growth of the school fund, the state's first sales tax was levied in 1947, 80% of which was allotted to public schools. However, the most difficult educational challenges since the Civil War were yet to come. With the 1954 United States Supreme Court decision that maintaining "separate but equal" school systems was unconstitutional in *Brown v. Board of Education, Topeka*, Tennessee began to face the challenge of integration and providing equal and adequate educational opportunities to all students (Fleming, 2002).

After the 1983 release of the federal government's report on the state of public schools, *A Nation at Risk*, Tennessee introduced a teacher salary system to inspire and reward good teaching across the state. The Better Schools Program was enacted in 1984, instituting among other things, a merit pay system for teachers known as the Career Ladder Program (Hargett, 2009). The plan, outlined by then Governor Lamar Alexander, offered \$116 million annually in

pay supplements available for teachers based on classroom performance. Governor Alexander also recommended an across the board salary increase for all teachers over the next 4 years (Parish, 1983). The system included three levels, or rungs, of certification. Each higher level required more rigorous evaluations for the teachers. If successful and certified, a teacher would receive a salary supplement up to \$7,000 per year (Dee, 2005).

Later, Tennessee's education system and finance structure were challenged in the case, *Tennessee Small School Systems (TSSS) v. McWherter* (Goldhaber & Callahan, 2001). In 1993 Tennessee's Supreme Court declared the state's system of educational funding of elementary and secondary schools unconstitutional (Cohen-Vogel & Cohen-Vogel, 2001). In response to the litigation, the Education Improvement Act (*EIA*) of 1993 was passed by the Tennessee legislature (Rolle & Liu, 2007). This *EIA* included the Tennessee Basic Education Program (*BEP*), a new funding formula designed to distribute funds to school districts more equitably (Rolle & Liu). In 1987 prior to the *BEP* per-pupil expenditure in Tennessee had the considerably range among districts of \$1,823 to \$3,669 (Verstegen, 1994). Although the *BEP* was challenged and revised three times, the foundation program has been used in Tennessee through the present (2010) to fund public education.

History of Federal Involvement

In 1789 the Bill of Rights was ratified including the 10th Amendment in which is written "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States, respectively, or to the people" (The National Archives, 2009). This left the states mostly to their own discretion on education (Thompson & Crampton, 2002). This omission in the Constitution has been the catalyst of much debate about how involved the federal government should be in education (Pulliam & Van Patten, 2007). However, even with

this lack of mentioning education in its original laws, the federal government soon became engaged in promoting education mainly by providing funding and resources.

In the late 1700s there were two major rationales for the government to provide aid for education. These were to encourage common schooling in communities without the ability or desire to do so and to endorse specific types of training (Walter, 2003). The first goal was pursued by federal and state policy makers in the late 1700s and throughout the 1800s. Shortly after the signing of the Constitution, Congress enacted the Northwest Ordinance of 1787. This statute included guidelines for new states to set aside land resources for schools. This set a precedent for federal land grants to the states in support of public schools (Pulliam & Van Patten, 2007). The ordinance also included a statement promoting the encouragement of schools and education for the overall benefit of the people and good government. Also, after the Civil War in the late 1800s, all newly admitted states to the union were required to provide free, nonsectarian public schools (Jennings, 2000).

In the 20th century the federal government began to take more aggressive steps to encourage and support public education across the nation. The rationale of the government was to support democracy through common schooling, to train workers to improve economic prosperity, and to provide for the defense of our nation. Measures by the government included allowing federal income tax deductions and promoting vocational education to train workers (Jennings, 2000). The 1917 Smith-Hughes Act and the 1946 George-Barden Act were passed in an effort to improve vocational education. Both acts included federal aid to high schools to help improve training in agriculture, industry, and home economics (United States Department of Education, 2009b). In 1954 the United States Supreme Court ruled in *Brown v. Board of Education, Topeka* that segregated schools were not equal and violated the 14th Amendment.

Education was recognized as a legal right for all citizens. Restructuring of facilities, school reorganization, busing, and multicultural programs became significant issues in education (Pulliam & Van Patten, 2007). The ruling also caused a ripple effect for laws and litigations outside the realm of racial discrimination and segregation. It led to discussions about the educational opportunities for all children who came from poor backgrounds or who had other disadvantages (Jennings, 2000). A few years later Russia's 1957 launching of the Sputnik satellite spurred the United States to pass the National Defense Education Act (*NDEA*). In 1958 President Eisenhower signed this act in an effort to improve America's education program. *NDEA* focused on excellence in technical and scientific education. With emphasis in math and science, the act included funding for instructional materials and even loans to prospective teachers. It also aimed to enhance state testing, guidance, and vocational education (Pulliam & Van Patten, 2007).

In 1964 another important law involving the equitable treatment of all people, the Civil Rights Act, was passed by Congress and signed into law by President Lyndon Johnson (Jennings, 2000). The combination of this law with Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973 helped pave the way for the Elementary and Secondary Education Act (*ESEA*) of 1965 (United States Department of Education, 2009b). This measure sought to provide federal money to schools with significant populations of disadvantaged children. The act later became the foundation for the *No Child Left Behind Act* of 2001. Title I was a large part of *ESEA*. Jennings labeled it "the principal embodiment of the national commitment to help educate economically and educationally disadvantaged children" (p. 516). With the heading of Improving the Academic Achievement of the Disadvantaged, Title I was designed to help low-achieving children of high-poverty schools meet educational needs. It

also included helping children with limited English proficiency, migratory children, minority children, children with disabilities, children of Indian heritage, neglected or delinquent children, and children with deficiencies in reading (United States Department of Education, 2004). Title I has since provided the largest amount of federal money to schools, more than any other federal program to date (Ilon & Normore, 2006).

In 1975 the Education for All Handicapped Children Act was enacted. PL 94-142, as it is most commonly known, sought to provide equal access to education for all students. Its measure to provide a least restrictive environment has greatly increased the inclusion of special education students into regular classroom settings (Pulliam & Van Patten, 2007). Another step by the federal government to become more involved in public education was the establishment of the United States Department of Education in 1979. However, the act heightened many fears that the federal government was making steps to take over public schools (Anderson, 2005). During his address concerning the proposal to establish the department, Senator Harrison Schmitt (R-NM) prophetically said:

It is not difficult to imagine this department establishing national ‘advisory’ standards at some point in the future. Later, the department could require adherence to the compulsory standards, if Federal aid is to be continued. Next, standard tests, developed by the Federal Government, could be mandated to check whether the compulsory standards are being met. Last, State and Local authorities will be coerced into acceptance of a standardized curriculum as the ‘only possible’ guarantee of meeting compulsory standards. (Congressional Record, 1978, p. 303)

The Carl D. Perkins Vocational and Technical Education Act of 1984 sought to provide federal aid for vocational programs. The aim of the act was to enhance training in technical skills and fight unemployment. Amendments to the act were added in the late 1990s to also help at-risk students and those with disabilities (Pulliam & Van Patten, 2007). However, public education began to lose civic and Congressional support by the mid 1980s. International comparisons

showed the United States faltering on standardized tests. *A Nation at Risk*, a report by the National Commission of Excellence in Education, was published in 1983 in an effort to raise awareness of the nation's educational status. The report was met with opposition by many public school educators and supporters. It was considered an unjust attack on public schools. However, President Ronald Reagan appealed to politicians and the public to increase their expectations from the nation's schools. There was also a push in Congress and the White House to decrease federal involvement and money in public education (Jennings, 2000).

In 1993 President Bill Clinton signed Goals 2000, a bill to increase federal funds and raise standards through the aid of enhanced standardized testing (Jennings, 2000). The general idea of this act was brought to its climax under the next administration in the White House. In 2001 George W. Bush signed the No Child Left Behind Act (*NCLB*). This act reauthorized the Elementary and Secondary Education Act (*ESEA*) of 1965. *NCLB* sought to raise accountability of schools and local education agencies (*LEAs*) with a promise of federal aid to struggling schools. *NCLB* also gave the states more control over how federal funds were spent. However, schools and school systems that did not meet benchmarks or show adequate yearly progress (*AYP*) were labeled as "targeted". With this public stigma, schools and systems faced several levels of increased scrutiny, state involvement, and responsibility.

In 2009 President Barack Obama addressed economic troubles of the nation by signing The American Recovery and Reinvestment Act of 2009 (Recovery Act). It included measures to deal with unavoidable economic struggles states would have with continuing to provide educational opportunities to children after the recession of 2008. This included providing over \$100 billion to the United States Department of Education for funding to states (United States Department of Education, 2009a).

Federal Funding

In 1966 the *Equality of Educational Opportunity Study* was produced by James S. Coleman in response to the *Civil Rights Act* of 1964. The Coleman Report, as it became known, involved data from 600,000 students, 4,000 schools, and 60,000 teachers in all 50 states (Webb, 2005). The report concluded that socioeconomic differences among families and community differences accounted for significant variations in achievement from school to school. The report sparked debate in the federal government about how to close these gaps and improve student achievement. The years that followed led to standardized testing and the *National Assessment of Educational Progress (NAEP)* although the warnings that schools could do little to change a child's background were ignored.

Nevertheless, the federal government soon began to become more and more involved the funding of public education. Opponents consistently questioned the academic effectiveness of increased or additional funding for education. The enactment of *ESEA* and its Title I, the passing of the *Education for All Handicapped Children Act of 1975*, the creation of the Department of Education in 1979, and *Goals 2000* all were hotly debated for their required further involvement of the federal government in education and the funding that would be required (Anderson, 2005). Each was a precedent for the enactment of the *No Child Left Behind Act of 2001*, “the most visible incarnation of federal education policy” (Anderson, 2005, p. 3). In 2001 Senator Judd Gregg (R-NH) suggested that 35 years of Title I and \$120 billion of funding had failed to help students improve academically, particularly low-income students. Senator Gregg stated on the Senate floor that there had been zero academic improvements specifically in the 1990s when most of the money had been spent. Others suggested the lack of improvement was a result of inequitable funding. The Education Trust (2006) argued that states that were able to better fund

the economically disadvantaged should get more funds from Title I. Although this is an attempt to reward state efforts, Education Trust (2006) maintained the funding formula was unfair to states with a lower capacity to provide funds for the economically disadvantaged. In this same light, Gunzelmann (2009) suggested that the United States was among the least equitably funded education systems when compared to other industrialized nations.

The federal government has provided the smallest portion of funding for school systems (about 8% of total funds) among the three government levels (United States Department of Education, 2009b). In Tennessee federal funds accounted for approximately 11% of total expenditures on education in 2009. Tennessee school districts received federal funds directly and through the state. There were 13 categories for receiving these funds including Title I, Title III, Individuals with Disabilities Education Act (IDEA), and adult and vocational programs to name a few (Tennessee Department of Education, 2009c). Research findings on the relationship between federal funding and achievement were mixed, although most found little to no positive relationship. However, in 1999 Congress renewed Title I based on the report, *National Assessment of Title I*, which found positive gains in reading and math performance by the nation's highest poverty schools and lowest performing students (Jennings, 2000). The United States Department of Education assessed Title I in a national report to the Clinton Administration and Congress in 1999. The report stated that the students for whom Title I was intended showed improved achievement and the educational system as a whole was improving (United States Department of Education, 1999). Although it saw Title I funding as inequitable, Education Trust (2006) agreed in principle with the increased funding. It suggested the federal government seek to improve the nation's education system and eliminate inequality by increasing funding to compensate for discrepancies in state's abilities to support their education systems. However, it

warned, “Federal education funds are meant to supplement, not supplant, state and local revenues” (Education Trust, 2006, p. 5).

Related Studies

When considering the goal of *NCLB* nationally, Archibald (2006) studied a Nevada school district with over 60,000 students. The study involved students and teachers from grade 3 through grade 6. Archibald found that achievement in math and reading was positively related to per-pupil expenditure and teacher performance. She further stated that the statistical significance of these relationships may suggest that resources are important for improving test scores (Archibald). However, Baird (2008) argued that federal funding was too weak to be effective in a positive manner. She analyzed financial data from over 10,000 school districts nationwide. Baird sought to study the possible effects of federal resources on districts by examining total per-pupil revenue from *NCES* for these districts with and without federal funds. From an analysis of revenue data from 1990 through 2000, she suggested it was not clear how effectively federal programs promoted the objective of school funding equity. Baird stated that federal direct spending was not distributed well to the districts with the greatest need for federal funding. She noted that in 2008 the achievement gap between low-income and other students, meant to be addressed by Title I, had not narrowed.

State Statutes

There were few adjustments made in the state funding of elementary and secondary education until the 1960s and 1970s. The Supreme Court’s ruling on *Brown v. Board of Education* combined with the Civil Rights Act of 1965 changed the country. Issues in the equitable treatment of all people in all situations became national concerns. These changes on the national level were the catalysts for many lawsuits at the state level challenging the equality of

education, particularly funding equity. At the heart of most cases is funding, and, as Hanushek and Lindseth (2009a) noted, the courts had over the past 30 years become as important as legislative bodies concerning the funding of schools. State governments began to seek ways to provide more equity among their schools and school systems.

Serrano v. Priest (1971, 1976, California) and *Robinson v. Cahill* (1973, New Jersey) were two nationally recognized state cases in each of which the state's school finance plan was challenged (Verstegen, 1994). In both cases the courts ruled that the state funding plans for education were unconstitutional. This prompted other state finance challenges across the nation through the 1970s and 1980s. New Jersey continued to be in litigation through the next 30 years (Hanushek & Lindseth, 2009a). Following the release of 'A Nation at Risk' in 1983 and other reports of the supposed decline of our nation's educational system, plaintiffs became much more successful in the courts. This was mainly because the public was disturbed by those reports but there was also a growing achievement gap between students of color and a belief that properly applied resources could make a difference (Thompson & Crampton, 2002).

The 1989 *Rose v. Council for Better Education* (Kentucky) decision also found that the Kentucky education funding system was unconstitutional and ordered increased funding among other things. According to Hanushek and Lindseth (2009a) this case also ignited a "golden age of successful adequacy litigation" from 1990 to 2004 (p. 2). Also, in 1993 (in response to the *McDuffy* case) the Massachusetts system of education funding was found to be unconstitutional and the legislature enacted a host of reforms. As a result the funding of the state's public schools was increased from approximately \$3 billion to \$10 billion and a number of other strong reform measures were adopted. In 1995 the Wyoming education funding system was found to be unconstitutional by its supreme court, and the court ordered the legislature to provide the

necessary funds to make its educational system the best in the nation. Hanushek and Lindseth claimed per-pupil spending in states overall has quadrupled because of litigations since 1960.

Arkansas faced similar cases beginning in 1983, when the state's supreme court found the state's education funding system to be unconstitutional in *Dupree v. Alma School District No. 30*, 651 S.W.2d 90 (Barnett & Blankenship, 2005). In 2002 the supreme court again ruled that the state was underfunding the education system and being inequitable. The case was *Lake View School District, No. 25 v. Huckabee, No. 1992-5318*. As a result Governor Mike Huckabee and the state legislature increased state funding for education by \$450 million in 2004 (Barnett & Blankenship). Missouri also faced two cases involving education funding in 1994. *The Committee for Educational Equality v. Missouri* (1994) and *Lee's Summit School District v. Missouri* (1994), both heard by the Supreme Court, placed pressure on the state legislature to seek ways to equalize funding across the state. The result was massive increases to funding for education (Venteicher, 2005).

Tennessee Basic Education Program

After a lawsuit over education funding equity in 1992, the Tennessee legislature passed the Education Improvement Act of 1992 that involved a funding formula called the Basic Education Program (*BEP*). One of the biggest challenges for the legislature was how to account for the discrepancies in the funding abilities from community to community. Based on this idea that different school systems have different abilities to raise funds, *BEP* was designed to provide 75% of classroom component costs using pupil-weighted factors to determine district costs (Rolle & Liu, 2007). *BEP* was also required to provide 50% of nonclassroom component costs such as for transportation, maintenance, and support staff. The local education agencies as a collective group were required to account for the other 25% of classroom costs and 50%

nonclassroom costs (Cohen-Vogel & Cohen-Vogel, 2001). “The *BEP* accounts for 90 percent of the state allocation for public education dollars” (Cohen-Vogel & Cohen-Vogel, 2001, p. 300).

Goldhaber and Callahan (2001) found that overall spending for education had risen in Tennessee, even relative to other states, because of the execution of the *BEP* in 1992. “There is also good evidence that the implementation of the *BEP* led to both a focusing of spending on more at-risk pupils in the state and a more equitable distribution of educational spending in Tennessee in 1998-99 than 1991-92” (p. 415). However, they found that per-pupil expenditures remained relatively the same from the early 1990s to the late 1990s (Goldhaber & Callahan). In their review of Tennessee’s funding formula, Fox, Murray, and Price (2002) found that the *BEP* had made steps to equalize per-pupil spending levels between districts. However, they also noted that instability in the flow of state revenue had led to one third of *LEAs* being further from the state’s per-pupil spending average than before. Cohen-Vogel and Cohen-Vogel (2001) also questioned whether the reform in Tennessee education in 1992, including the *BEP* formula, improved equity and student performance across the state. Six statistical measures were used in their study to analyze the student *TCAP* (Tennessee Comprehensive Assessment Program) scores from the 1991-92 school year to 1997-98. They also used financial data such as per-pupil expenditure provided from Tennessee school districts and posted on the Department of Education’s report card. Cohen-Vogel and Cohen-Vogel concluded from their study that although spending levels in all districts had increased (particularly in lower spending districts), the gap between higher spending districts and lower spending districts also had increased. According to the Tennessee Department of Education (2009c), state funding accounted for 48.5% of Tennessee school districts’ expenditures in 2009. Districts receive funding from eight

categories including the Basic Education Program, food services, vocational programs, and the Career Ladder Program, to name a few.

State Funding

There is much debate and disagreement about the relationship between state-level educational funding and student performance. Hanushek and Lindseth (2009b) studied *NAEP* scores from elementary and middle schools from 1992 to 2007. They found that even though state legislatures had spent a significant amount of money on education, more than other government sectors, they almost always respond to finance litigation by increasing funding for schools even more (Hanushek & Lindseth, 2009b). Especially since the wave of state court cases involving education funding, researchers, educators, and legislatures have been interested in the educational results, if any, of increased funding. The research results are mixed. Hanushek has written extensively since 1970 on education and, specifically, education funding. In a 30-year meta-analysis of previous school spending issues containing over 350 models, Hanushek (1996) found no reason to believe that more funding had improved achievement. One finding suggested a negative relationship between funding and performance. His contention was that how money was spent was the most important issue, not how much. Over a decade later Hanushek and Lindseth still insisted more increased funding had not yielded considerable improvements in student performance (Hanushek & Lindseth, 2009a). After studying several states' attempts at improving education through financial means, they alleged none had significantly improved student achievement. They noted the remedy of choice for states was to provide ever more money for existing systems in the state education program. Per-pupil expenditures were nearly four times greater than in 1960, but student achievement had not improved significantly.

In rebuttal, Greenwald, Laine, and Hedges (1996) used the same data of Hanushek (1996) from his earlier 30-year study but came up with different results. They used different methods than Hanushek in determining relationships. They focused on methods to account for the magnitude of the effects that certain resource variables could have had on performance. They discovered that certain groups (white, black, and Hispanic students) did show significant, increased performance in reading achievement. In their reanalysis of the data, they found overall increases in achievement levels and a positive relationship between a number of school resources and student performance. These resources included per-pupil expenditures, class size, school size, and teacher characteristics (Greenwald et al., 1996). Venteicher (2005) conducted a similar study in Missouri involving data from 1990 to 2004. Using data collected by the Missouri Department of Elementary and Secondary Education (*MDESE*), he examined all 522 school districts and the association between funding and student performance. The study used per-pupil expenditures, teacher-student ratios, and socioeconomic demographics from each district. The variables included graduation rates, Missouri Assessment Program (*MAP*) scores, and *ACT* scores. Venteicher found that higher levels of per-pupil expenditure had led to higher student performance. Lower student-teacher ratios also had positively influenced achievement and were strong predictors of graduation rates. In a twist, though, when the state suffered from education cutbacks in 2000, the graduation rates increased. Overall, Venteicher concluded in agreement with Greenwald et al. stating that increased funding and school performance were closely related.

Other studies demonstrated similar contrasts. Klein (2008) collected and analyzed financial data from 70 elementary schools in the Metropolitan Nashville-Davidson County School District in Tennessee. The study included academic test scores and demographic data

from 2004-05. Klein found no significant relationship between budgeted state government resources and school performance. He suggested that the determinants of performance were not the budgeted expenditures but simply the socioeconomic status of the students. However, Wall (2006) found in an Illinois study that there was a positive relationship between per-pupil state and local revenue and student performance. Wall's study analyzed Illinois Report Card data from 2005 including over 300 variables and 810 school districts. The study focused on the relationship between achievement and funding as well as school environment and composition. The results showed higher per-pupil state (and local) revenue was positively related to better performance on tests among districts. Similarly, in the ruling of *TSSS v. McWherter*, the Tennessee Supreme Court found a direct relationship between expenditures and the quality of education students received (Verstegen, 1994). Cohen-Vogel and Cohen-Vogel (2001) found from their study in Tennessee that increased funds for education were parallel to some student test performance gains. However, performance in other areas remained dormant such as ACT scores, dropout rates, and TCAP scores.

In 2006 Education Trust studied 49 states (excluding Hawaii, because the whole state is one district) and over 14,000 school districts. The across-state comparison analyzed how states had distributed funding between high- and low-poverty districts. It also studied the distribution differences between high- and low-minority districts. State and local revenues were also compared from the highest poverty districts to the lowest (Education Trust, 2006). The study found that in 26 out of 49 states, the highest poverty districts received fewer resources per-pupil than the wealthiest districts. Four states (Illinois, New Hampshire, New York, and Pennsylvania) actually provided over \$1,000 per-pupil less to the poorest districts. Districts with large numbers of minority students also had received less money than had low-minority districts. The analysis

highlighted a general need for states to simply provide equitable funding, but increased funding was suggested as the way to improve student achievement across the country. In 2002 the Arkansas Supreme Court agreed with the idea that increased funding would improve academic performance (Barnett & Blankenship, 2005). After the court ruled Arkansas's system to be inadequate and unfunded, then-Governor Mike Huckabee and the state legislature increased - funding for education by 30% in 2004. Barnett and Blankenship surveyed 254 superintendents across the state to determine their perspective on increased funding and its effects on teacher quality. They found that superintendents felt the system was still lacking funds. The superintendents believed that even more money would help systems provide a better quality education.

Local Funding

Local communities have always played a major role in education in the United States. The discrepancies in school performances across the nation are often directly related to the school's community and local education agency. Slavin (1999) opined that local wealth was the primary reason that expenditures across districts differed. He suggested, "...the U.S. is the only nation to fund elementary and secondary education based on local wealth. Other developed countries either equalize funding or provide extra funding for individuals or groups felt to need it" (Slavin, p. 520). This is because school funding in the United States is most often tied to local property taxes. Pulliam and Van Patten (2007) explained that the disparities in school finance between wealthy and poor school districts were a source of much public concern and complications in reaching equity in education. "Because wealth and property value are so unequally distributed, using local taxes as the primary resource for schools inherently gives

wealthier communities an advantage in providing better educational opportunities” (Education Trust, 2006, p. 9).

School districts also have great control on how to allocate funds by providing more money to low-performing schools to improve scores, withholding funds as punishment, or using the money to offset federal grants. As a reflection of community funding of schools, Klein recognized that additional resources provided by the community and directed by the school administrator had been highly influential at improving performance. According to Education Trust (2006) states vary dramatically in how much funding is provided to schools by local taxes. In 2006 the gap across states ranged from 13% from local taxes in New Mexico to 60% in Connecticut. In a 20-state analysis Education Trust studied the financial records of dozens of districts across the nation. Two patterns emerged in the use of local funds. Less money was spent on salaries in high poverty schools than in wealthier schools, and larger amounts of unrestricted funds were provided to wealthier districts. The reasons for these discrepancies were suggested to be the costly programs often located in wealthier schools and the tendency for teachers to move out of high poverty schools as they moved up the pay scale.

In their interview with rural middle school principals, Eady and Zepeda (2007) found that funding, or lack of funding, directly affected the schools’ abilities to develop teachers. The principals’ major concerns involved having quality teachers and providing effective professional development. Both depended on proper funding. In her 1999 survey of K-8 teachers in Illinois, Sandall (2003) set out to evaluate a professional development program designed to help teachers meet new science standards and identify needs and goals. What she found was that teachers were eager to use the suggested materials to meet the new standards, but, like the principals in Eady and Zepeda’s (2007) interviews, they were hampered by lack of funding.

Wall (2006) also found a positive relationship between local revenue and student performance. He found in Illinois that students in districts with higher state and local per-pupil revenue performed better on tests than those in districts with low revenue. He also found higher concentrations of minorities and low-income students in lower-performing school districts. These districts also have low per-pupil state and local revenue. In Tennessee Cohen-Vogel and Cohen-Vogel (2001) also found the distributions of district-level expenditure and student performance to be parallel. Around 40% of Tennessee school district expenditures were from local funds in 2009. These funds were generally raised from property taxes, other local taxes (such as sales), and a general fund (Tennessee Department of Education, 2009c). There has been great variability in district-level abilities to raise revenue due to many factors. Socioeconomic factors in each household, property taxes, sales taxes, community involvement in local schools, and other components create the local wealth of the system. The *BEP* recognized these disparities by adjusting the contributions to each system based on the community's ability to raise funds (Rolle & Liu, 2007). Because of the complexity of these disparities, it has been difficult to focus research on any one component. Especially in the state of Tennessee, research concerning the relationship between funding and achievement often combines local and state funds.

Webb (2005) used the Tennessee State Department of Education website to collect and analyze data for 281 high schools in 2004. His dissertation focused on comparing ACT scores and the TVAAS (Tennessee Value Added Assessment System) analysis of those scores. In his study Webb found a negative correlation between per-pupil expenditures and ACT scores. The same was found for teacher salaries. Webb attributed this to the above-average spending on minority students and schools with mostly minority populations. Attempts were made to help

lower-performing schools financially. However, the schools with large populations of low income students still performed poorly, skewing the results. In their review of research findings from the 1960s to 1998, Verstegen and King (1998) cited many studies that combined the funding from state and local governments. Variables such as teacher characteristics (i.e. experience, salary, education, class size, per-pupil expenditures, instructional expenditures and others) were used in the studies both individually and in combinations. While they admit there were variations in the results, Verstegen and King were able to rest on one solid conclusion. The studies showed a significant positive relationship between student achievement and expenditures for inputs such as instruction, materials, supplies, and even libraries.

Greenlee (2007) studied a program in Florida that allowed local councils called School Advisory Councils (SACs) to make decisions locally about how certain money was spent. The study included 186 elementary, middle, and secondary schools. SACs were allowed to spend funds in areas such as extended learning programs, curriculum materials, incentives, local teacher supplements, parental involvement and other miscellaneous items. The most significant finding from the study of spending priorities was that higher performing schools had spent more on professional development than had lower performing schools. The study suggests that local funding can have a positive impact on performance, especially in the area of teacher improvement and performance. California found that more money at the school level does not always translate into success. In 1999 the California legislature passed the Public Schools Accountability Act (PSAA) in an effort to reform and improve public schools across the state. Part of the legislation included giving additional funds to schools labeled as underperforming according to state evaluations. An analysis of the performance of these schools compared to

schools that did not receive additional funding showed the extra revenue did not improve school achievement (Goe, 2005).

Average Teacher Salary

Average teacher salaries have been significantly influenced by the level of local revenue even though the *BEP* sought to equalize pay across systems to create equity in Tennessee. Several factors have influenced the calculation of a teacher's salary. The state of Tennessee through the *BEP* has provided a minimum salary schedule for every teacher in the state. The local education agencies have supplemented this base salary in a variety of ways depending on local policies causing discrepancies across the state between districts. Therefore, local level revenue has directly impacted the average teacher salaries of systems. Salaries have been adjusted at the local level by supplements provided by the local education agency, level of education, and experience. Hanushek (1996) claimed that level of education and years of experience have been the primary causes for variations in average teacher salaries.

Because of the many components involved in calculating the figure, researching the relationship between average teacher salary and achievement has been difficult. Local supplements to teacher salaries have been influenced by several factors including teacher experience, teacher education level, the average salaries in neighboring systems, and the property tax wealth of the district (Winters, 2009). Local districts have tried to offer competitive salary supplements in an effort to hire and retain the best teachers and compete with neighboring systems. Systems that have been able to offer better supplements were generally wealthier communities. Therefore, if higher test scores were present in such a district, it may have been due to socioeconomic factors in the homes or community, fund-raising ability of the school, or one or more of many other variables not related to the average teacher salary.

However, research has indicated that teacher quality has a positive relationship with student performance. Greene and Huerta (2007) studied 303 public high schools in New Jersey from 1999 to 2002. Their study included 14 variables including student achievement scores in math and language arts, class size, student-teacher ratio, student demographics, and teacher education. They focused on resources such as personnel and class materials used directly to increase student learning as a means to deal in more relevant measures of instructional conditions. Green and Huerta found a positive relationship between teacher performance and student achievement, suggested administrators use more school-level resources to raise the quality of their teaching staff. Hanushek (2007) suggested that teacher performance was so significant that incentive pay was extremely important for the future of education. Forty percent of the 254 superintendents in the study by Barnett and Blankenship (2005) believed a merit pay system would help improve instruction and attract more high qualified teachers. Tennessee instituted an incentive pay program based largely on teacher evaluations in the late 1980s known as the Career Ladder Program. After going through a three-tiered evaluation system set up by the state, teachers could earn pay increases for reaching each new level (Dee, 2005). The Career Ladder Program ceased in 1996, and it is no longer available for new teachers in Tennessee. However, teachers who successfully completed its levels during its existence continue to receive bonuses twice a year. The idea of pushing teachers to succeed in the classroom and with their own education continued with *NCLB* in the form of the highly qualified status. Teachers were required to maintain proper certifications in specific areas that included more rigorous testing during certification as well as more education. The *NCLB* required schools to hire only highly qualified teachers under the idea that poorly trained and uncertified teachers produce low achievement in schools (Donlevy, 2002).

Fox, Murray, and Price (2002) found that teacher salary had attracted higher quality teachers and therefore had positively affected student performance. They suggested an increase in the minimum teacher salary in *BEP*. The average teacher salary in the United States was \$54,319, and the average salary in Tennessee was \$45,549 (National Education Association, 2009). Fox et al. estimated that schools with lower per-pupil expenditures would best benefit from a higher minimum teacher salary. Previous research has not yielded unanimous conclusions about teacher salary, though. Archibald (2006) found in her study that teacher performance was positively related and statistically significant to student achievement in reading and math. Ilon and Normore (2006) studied 1,734 Florida elementary schools and the cost-effectiveness of per-pupil expenditures and class size reductions in relation to student achievement. The study included variables such as score from the Florida Comprehensive Assessment Test (*FCAT*), class size, demographics, and expenditure per student. Similar to Archibald's findings, they found teacher quality, which included teacher education, had a positive influence on test scores (Ilon & Normore). However, Archibald (1999) also discovered that neither education level nor years of experience had a positive relationship with student achievement although the quality of teaching was important. This agreed with a study involving 130 Tennessee school districts by Leuthold (1999). He examined the relationship of teacher salary and per-pupil expenditures with student achievement. He found that additional revenue at the city and county levels was seldom added for high teacher salaries. He also discovered a low relationship between teacher salary and student performance.

Per-Pupil Expenditure

Per-pupil expenditure is generally calculated by dividing the total educational expenditures of a locality by the average daily attendance (*ADA*). Total expenditures include

expenditures for instruction, student support services, food services, and enterprise operations (National Center for Education Statistics, 2009). In Tennessee the calculation includes expenditures for instructional materials, maintenance, transportation, and administration. However, this excludes adult education (*TDOE*, 2009). Organizations vary in what is included. For example, the *NCES* does not include administrative expenses. Like average teacher salary, per-pupil expenditure has been closely tied to local wealth. Federal funding has been relatively small at the district level, and the state has generally worked to provide equal funding. Therefore, disparities in spending per-pupil among districts have come from local wealth and the community's ability to raise funds. Research generally indicated that local wealth has had a significant impact on achievement results because it affects student socioeconomic status, teacher salary, community fund raising ability, and property taxes. Wall (2006) acknowledged that there was a positive relationship between state and local per-pupil revenue and student performance in an Illinois study. He reported that districts with higher per-pupil state and local revenue perform better on tests than districts with lower per-pupil state and local revenue.

Lockwood and McLean (1993) also found data that documented a positive relationship between per-pupil expenditures and achievement. Their study of Alabama Stanford Achievement Test (*SAT*) scores from 128 schools and instructional expenditures per average daily attendance (*ADA*) exhibited a significant, positive relationship between funding and achievement. Archibald (2006) found a similar correlation. When examining expenditures with National Assessment of Educational Progress (*NAEP*) scores, Wainer (1993) found a small relationship between performance and money spent. "For every thousand dollars spent [per pupil] a state's *NAEP* ranking improves by two places" (p. 1).

However, in 1999 Leuthold's study of 130 school districts in Tennessee found there was no significant relationship between per-pupil expenditure and student achievement when teacher salary was controlled. The differences in per-pupil expenditures failed to explain the disparities in achievement levels. Leuthold cited other variables such as system goals, leadership, student body characteristics, and other unknown variables as the reason for the achievement level differences (Leuthold, 1999). In a similar study of 1,734 elementary schools in Florida, Ilon and Normore (2006) found a negative relationship between per-pupil spending and scores on the *FCAT* when teacher experience and classroom size were accounted for.

No Child Left Behind Act

President George W. Bush signed the No Child Left Behind Act (*NCLB*) in 2001 reauthorizing the *ESEA*. Its purpose was to improve the performance of elementary and secondary schools in America. Anderson (2005) recognized the close relationship between *NCLB* and previous laws, such as *NDEA*, *ESEA*, P.L. 94-142, and Goals 2000, when he noted the federal government's unprecedented involvement in public education by stating in his analysis:

NCLB injected federal regulations into more schools and districts than earlier laws, in addition to setting high expectations for students and teachers. *NCLB* did this by putting the Federal government at the center of the movement for standards-based accountability. Although neither federal involvement in education nor high-stakes accountability are new ideas, they have been combined in *NCLB* in important new ways. (p. 15)

The act included measures for increasing accountability in states, districts, and schools as well as a parent choice option for students in low performing schools. States and *LEAs* were also guaranteed more flexibility in their use of federal funds. *NCLB* promised actions against systems and schools not meeting adequate yearly progress towards state standards such as corrective action and restructuring measures. Schools that met or exceeded these goals would be eligible for awards or incentives provided by the state.

NCLB requires schools and school systems to meet proficiency standards for categories of students defined by students' racial, socioeconomic, or disability characteristics (Klein, 2008). The act focuses on the proficiency of students in eight subgroups on math and language arts tests. In 2007 through 2009 Tennessee students completed the Gateway tests in these areas. The subgroups include African American students, Asian/Pacific islander students, Hispanic students, Native American students, white students, economically disadvantaged students, students with disabilities, and students with limited English proficiency. The graduation rate of the school or system is also a required benchmark. Benchmarks were set progressively such that by the year 2014 all schools should have 100% in each subgroup. However, as schools fail to meet the benchmarks the state adjusts the mark for the next year. Systems may not meet *NCLB's* original standard, but if a system shows adequate yearly progress in that area remains in good standing. Hence, each system and each school could have unique marks to meet. Meeting *AYP* in each subgroup, attendance, and graduation rate are required or the school is labeled as targeted.

However, *NCLB* is not without its critics. Congress uses its spending power to encourage states to accept its policies. States were not required to adopt the rules of *NCLB*. However, failure to follow *NCLB* would result in the removal of all federal funds included in the act (Testani & Mayes, 2008). This would mean states would not receive millions of dollars for their educational systems. Tennessee adopted the standards and policies of *NCLB*. However, Klein (2008) noted in a Tennessee study, based on budgeting practices, schools were not allocated funds based on their performance suggesting that the incentive effects of *NCLB* and Tennessee's testing program were nonexistent (Klein, 2008). Also, Smyth (2008) opined that the act is imperfect, inappropriate, and under-funded. He reasoned that not only were teachers, students, and schools suffering because of the act, but low-performing schools are unable to keep up.

Lower performing schools are often poorer schools unable to compete for the highly qualified teachers required by *NCLB*. Thus, the act allegedly is leaving many minority and economically disadvantaged students behind.

Summary

The federal government's involvement in education was nonexistent for many years. However, federal involvement in education has steadily increased over the years. The passing of No Child Left Behind in 2001 displayed the federal government's willingness not only to get involved but also to take a great part in influencing the policies of public education across the country. States have also increased involvement in public education. Both levels of government have turned most often to increasing funding as a means to support and control public education. The debate about the relationship between funding and student achievement has been a popular subject in education research. However, findings have been consistently mixed. Only local government funding has consistently been positively related with student performance (Cohen-Vogel & Cohen-Vogel, 2001; Education Trust, 2006; Slavin, 1999; Wall, 2006). Average teacher salary and per-pupil expenditure are closely related to state and local funding, especially with Tennessee's Basic Education Program. However, the research specific to these areas was again mixed. Local ability to raise funds for these variables, which is directly related to the wealth of the community, is a consistent indicator of a high performing school.

Researchers have debated for many years about the effectiveness of funding in education, sometimes heatedly (Greenwald et al., 1996; Hanushek, 1996). However, most were able to come to agreement in one area. Funding used wisely can have a positive impact on the success of students and schools (Venteicher, 2005). Exactly where funding should be used is another matter.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The purpose of this study was to explore the relationship between public school funding and achievement in school systems in Tennessee. The variables chosen to represent the overall scope of funding in public schools were federal funding, state funding, local funding, average teacher salary, per-pupil expenditure, and number of students. The review of literature exposed conflicting research findings in all variables. The research for local level funding most consistently showed a positive relationship with achievement. Each year the Tennessee Department of Education (TDOE) collects and reports data concerning these six variables for each school system in Tennessee. All data for this study were collected from the *TDOE* website. This chapter provides the methods used in this study to examine if there exists a relationship between these variables and school system achievement. The chapter contains the research design, population, data collection procedures, research questions, hypotheses, and data analysis.

Research Design

From 2007 to 2009, 135 out of 140 school systems (96%) reported data to the TDOE and received a status of targeted or in good standing according to *NCLB* standards. In this study school systems were grouped by *NCLB* status over the 3-year period. The status of each school system was considered independent from year to year resulting in total of 405 systems. For each system the federal, state, and local revenues were determined, as well as per-pupil expenditure, and average teacher salary. The number of students in each system was collected from the state report card for each system each year. The mean federal, state, and local revenues were

calculated. This process was repeated for per-pupil expenditure, number of students, and mean teacher salary.

Population

The population of the study included all public school systems in the state of Tennessee that reported sufficient data for the *TDOE* Report Card during the research period (2007 to 2009). This study excluded five systems that failed to report data to the state. No individual student data were used in this study. Data from 135 Tennessee school systems were collected over the 3-year period for a total of 405 system years. Out of this total, 43 systems were listed as targeted. Thirteen school systems were targeted in 2007. Twelve systems were targeted in 2008. Eighteen were targeted in 2009.

Data Collection

School systems in Tennessee report data to the Tennessee State Department of Education (*TDOE*) annually. This information is displayed on the *TDOE* website. The *TDOE* Report Card contains data concerning *NCLB* such as demographics, test scores, discipline, attendance figures, and Career and Technical Education information as well as many other statistics (Tennessee Department of Education, 2009b). The *TDOE* provides financial information such as revenue and expenditures for each system for public viewing through reports and data link on the *TDOE* website (Tennessee Department of Education, 2009a). The data were organized in spreadsheet documents for download. All data significant to this study were gathered from the Tennessee Department of Education website (Tennessee Department of Education, 2009c).

From the *TDOE* Report Card the *NCLB* status, number of students, and per-pupil expenditures of each system were recorded. For each system per-pupil expenditure and the

number of students were listed in the system profile. The *NCLB* status for each system was listed on the state report card.

Federal, state, and local revenues and average teacher salary data were retrieved from the Department of Education website under Reports and Data Resources. The data were organized by year and by financial category. The extracted reports included the average teacher salary, federal funds received through the state, federal funds received directly, and state revenue receipts. Revenue receipts for county, city, special district, and other sources were also retrieved to make up local revenue. This information was also organized according to the year with data from 2007 through 2009 in a spreadsheet.

Each system reported both revenue and expenditures. However, a discrepancy can exist between these two figures. Systems make an effort to break-even each year with budgeted revenues and expenditures at the local and state levels. Federal funds differ because the allotted funds must be spent. Therefore, only federal, state, and local revenues were used in this study. The only expenditure used was the per-pupil expenditure from each system as reported in the *TDOE* Report Card. Revenue for capital outlay was not included in the data.

Research Questions and Associated Null Hypotheses

Question 1

Is there a significant difference in the mean federal funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Ho1: There is no significant difference in mean federal funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

Question 2

Is there a significant difference in the mean state funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Ho2: There is no significant difference in mean state funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

Question 3

Is there a significant difference in the mean local funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Ho3: There is no significant difference in mean local funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

Question 4

Is there a significant difference in the mean per-pupil expenditures between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Ho4: There is no significant difference in mean per-pupil expenditures between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

Question 5

Is there a significant difference in the mean teacher salaries between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Ho5: There is no significant difference in mean teacher salaries between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

Question 6

Is there a significant difference in the mean number of students between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009?

Ho6: There is no significant difference in the mean number of students between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

Question 7

Is there a significant relationship between the size of the school system (categorized as small, medium, or large based on the number of students) and the system's status (targeted or in good standing) in Tennessee for the academic school years 2007 through 2009?

Ho7: There is no significant relationship between the size of the school system (categorized as small, medium, or large based on the number of students) and the system's status (targeted or in good standing) in Tennessee for the academic school years 2007 through 2009.

Data Analysis

The *NCLB* status of a school or school system depended on the data the state collected from the test scores, attendance, and graduation rates of the students in each system. If a system

failed to meet the benchmarks set by the state and based on the standards of *NCLB*, that system was labeled as targeted. If a system met every benchmark or qualified for adequate yearly progress, it was in good standing.

The first six research questions were analyzed using independent samples *t* tests to compare the means of revenue totals by status. A level of significance of 0.05 was used for the two-tailed test. SPSS Version 16 software program was used for the analyses. The seventh research question was analyzed using a chi squared analysis.

Summary

School systems and individual schools are evaluated yearly according to *NCLB* standards and whether or not they meet adequate yearly progress (*AYP*). This study examined the relationship between funding and the status (targeted or in good standing) of Tennessee school systems from 2007 through 2009. All data for the study were collected from the Tennessee Department of Education. Treating each year independently, there were 405 total systems divided into two groups according to the *NCLB* status of the systems. Federal funding, state funding, local funding, average teacher salary, number of students, and per-pupil expenditure were used as variables to represent different funding components.

CHAPTER 4

ANALYSIS OF DATA

The No Child left Behind Act of 2001 raised standards and accountability for school systems across the country. The act heightened awareness of educational performance and achievement in schools and systems. Educational funding also became an important issue as educators asked for help to meet the new higher standards. In many cases, such as with the American Reinvestment and Recovery Act of 2009, funding has increased. However, as is often the case in American history, the matter of money caused many to question its usefulness and necessity. Research in funding and education has produced mixed results. The purpose of this study was to determine if there is a relationship between level of funding and achievement of school systems based on the standards of No Child Left Behind (*NCLB*). Seven research questions were developed to guide the study. Seven null hypotheses were developed and tested.

One hundred thirty-five Tennessee school systems reported data each year to the Tennessee Department of Education from 2007 through 2009. Each school system received a status of “targeted” or “good standing” depending on whether or not the system made adequate yearly progress in the benchmarks set by the state. Treating each year independently, data were collected on 405 systems. Forty-three systems were labeled as “targeted”. The grouping variable used was the status of the systems each year. The test variables were the mean federal, state, and local revenues; average teacher salary; per-pupil expenditure; and the number of students in each system. Table 1 displays a description of the two groups.

Table 1

Profile of the Study

	Targeted (N = 43)		Good Standing (N = 362)	
	M	SD	M	SD
Federal Revenue	\$19,380,361	\$35,019,591	\$4,651,808	\$9,774,588
State Revenue	\$64,409,203	\$95,670,583	\$22,313,593	\$33,732,929
Local Revenue	\$82,635,525	\$147,176,890	\$16,711,521	\$39,545,385
Ave. Salary	\$43,768	\$3,459	\$41,958	\$3,454
Per-Pupil	\$8,139	\$1,115	\$8,009	\$4,000
Number of Students	17,656	26,420	5,284	8,913

Note: Per-pupil expenditures are the reported values from the State Report Card

Research Question 1

Is there a significant difference in the mean federal funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho1: There is no significant difference in mean federal funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

An independent-samples *t* test was conducted to evaluate whether the mean federal funding levels differ between targeted school systems and systems of good standing in Tennessee for the academic school years 2007 through 2009. The mean federal funding level was the test variable and the grouping variable was the *NCLB* status of the school systems. The test was significant, $t(43) = 2.75, p = .009$. Therefore, H_0 was rejected. Systems labeled as targeted ($M = \$19,380,000, SD = \$35,020,000$) tended to receive more federal funds than those labeled as in good standing ($M = \$4,651,808, SD = \$9,774,588$). The 95% confidence interval for the difference in means was \$3,907,200 to \$25,550,000. The η^2 index was .02, which indicated a small effect size. Targeted systems tended to receive more federal funding. Figure 1 displays the distributions of the two groups.

To help control for the number of students in each system, the two groups (targeted and in good standing) were compared using per-pupil federal dollars. The analysis indicated no significant difference between the two groups $t(403) = .73, p = .468$. Means and standard deviations are displayed in Table 2.

Table 2

Federal, State, and Local Per-Pupil Expenditures

Funding Source (per-pupil)	Targeted		Good Standing	
	M	SD	M	SD
Federal	\$956.46	\$241.12	\$990.51	\$295.95
State	\$4,293.32	\$814.20	\$4,822.55	\$814.20
Local	\$3,283.56	\$1,727.94	\$2,532.11	\$1,266.30

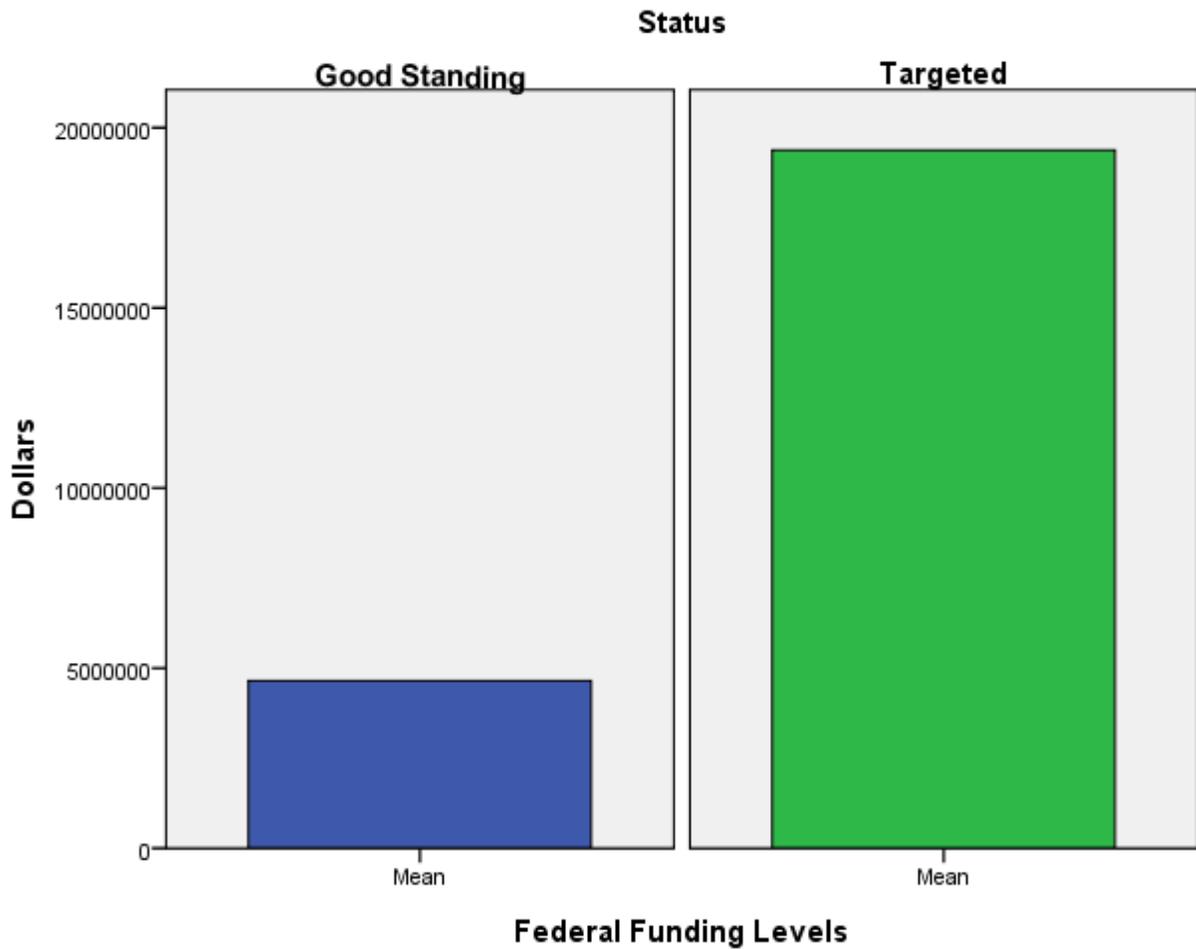


Figure 1. Distribution of Federal Funds Received for Targeted Systems and Systems in Good Standing.

Research Question 2

Is there a significant difference in the mean state funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho2: There is no significant difference in mean state funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

An independent-samples t test was conducted to evaluate whether the mean state funding levels differed between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009. The mean state funding level was the test variable and the grouping variable was the *NCLB* status of the school systems. The test was significant, $t(43) = 2.86, p = .006$. Therefore, H_0 was rejected. Systems labeled as targeted ($M = \$64,410,000, SD = \$95,671,000$) tended to receive more state funds than those labeled as in good standing ($M = \$22,310,000, SD = \$33,733,000$). The 95% confidence interval for the difference in means was \$12,461,000 to \$71,730,000. The η^2 index was .02, which indicated a small effect size. Targeted systems tended to receive more state funding. Figure 2 displays the distributions of the two groups.

To help control for the number of students in each system, the two groups (targeted and in good standing) were compared using per-pupil state dollars. The analysis indicated a significant difference between the two groups $t(403) = 4.01, p = <.001$, with systems in good standing having the larger mean. Means and standard deviations are displayed in Table 2.

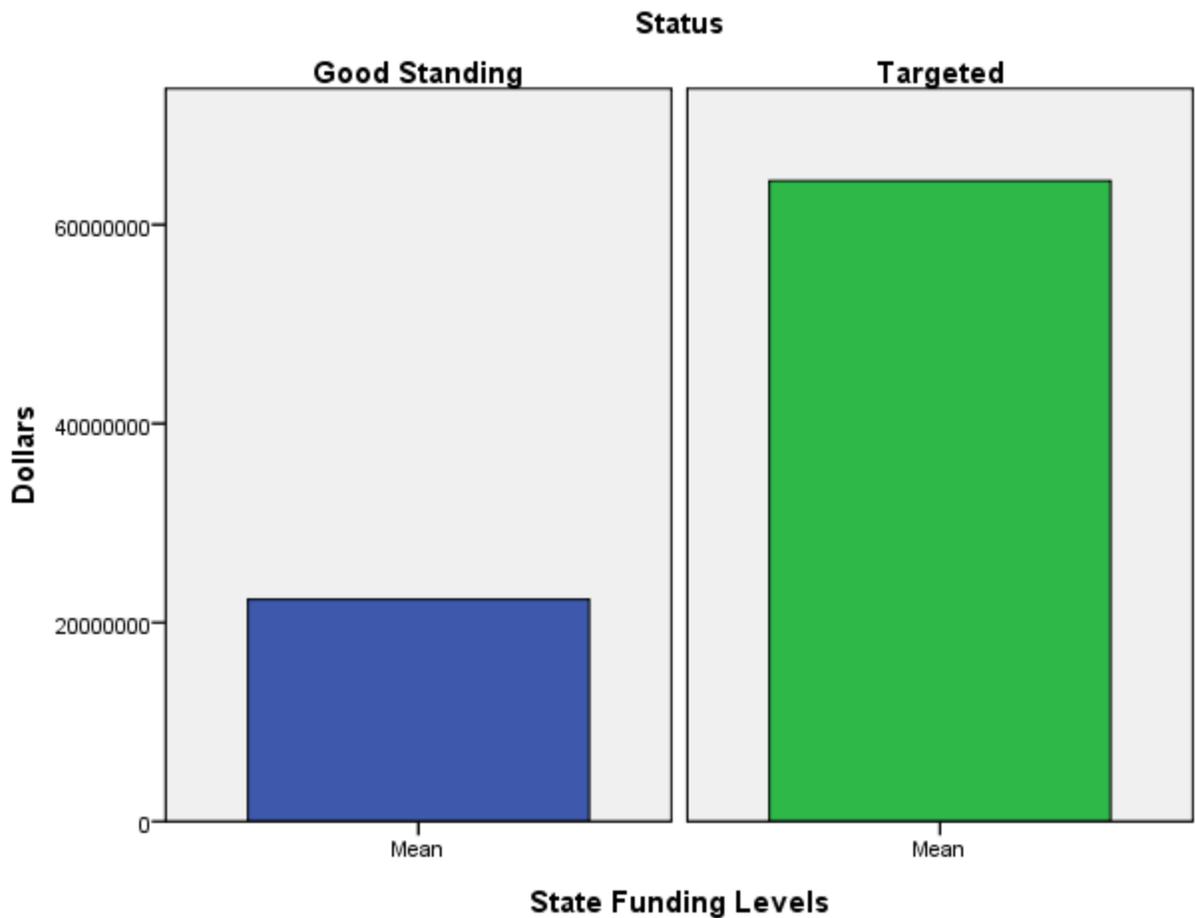


Figure 2. Distribution of State Funds Received for Targeted Systems and Systems in Good Standing.

Research Question 3

Is there a significant difference in the mean local funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho3: There is no significant difference in mean local funding levels between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

An independent-samples t test was conducted to evaluate whether the mean local funding levels differ between targeted school systems and systems of good standing in Tennessee for the academic school years 2007 through 2009. The mean local funding level was the test variable and the grouping variable was the *NCLB* status of the school systems. The test was significant, $t(43) = 2.93, p = .005$. Therefore, H_0 was rejected. Systems labeled as targeted ($M = \$82,640,000, SD = \$147,180,000$) tended to receive more local funds than those labeled as good standing ($M = \$16,710,000, SD = \$39,545,000$). The 95% confidence interval for the difference in means was \$20,459,000 to \$111,390,000. The η^2 index was .02, which indicated a small effect size. Targeted systems tended to receive more local funding. Figure 3 displays the distributions of the two groups.

To help control for the number of students in each system, the two groups (targeted and in good standing) were compared using per-pupil local dollars. The analysis indicated a significant difference between the two groups $t(403) = 3.52, p = <.001$, with targeted systems having the larger mean. Means and standard deviations are displayed in Table 2.

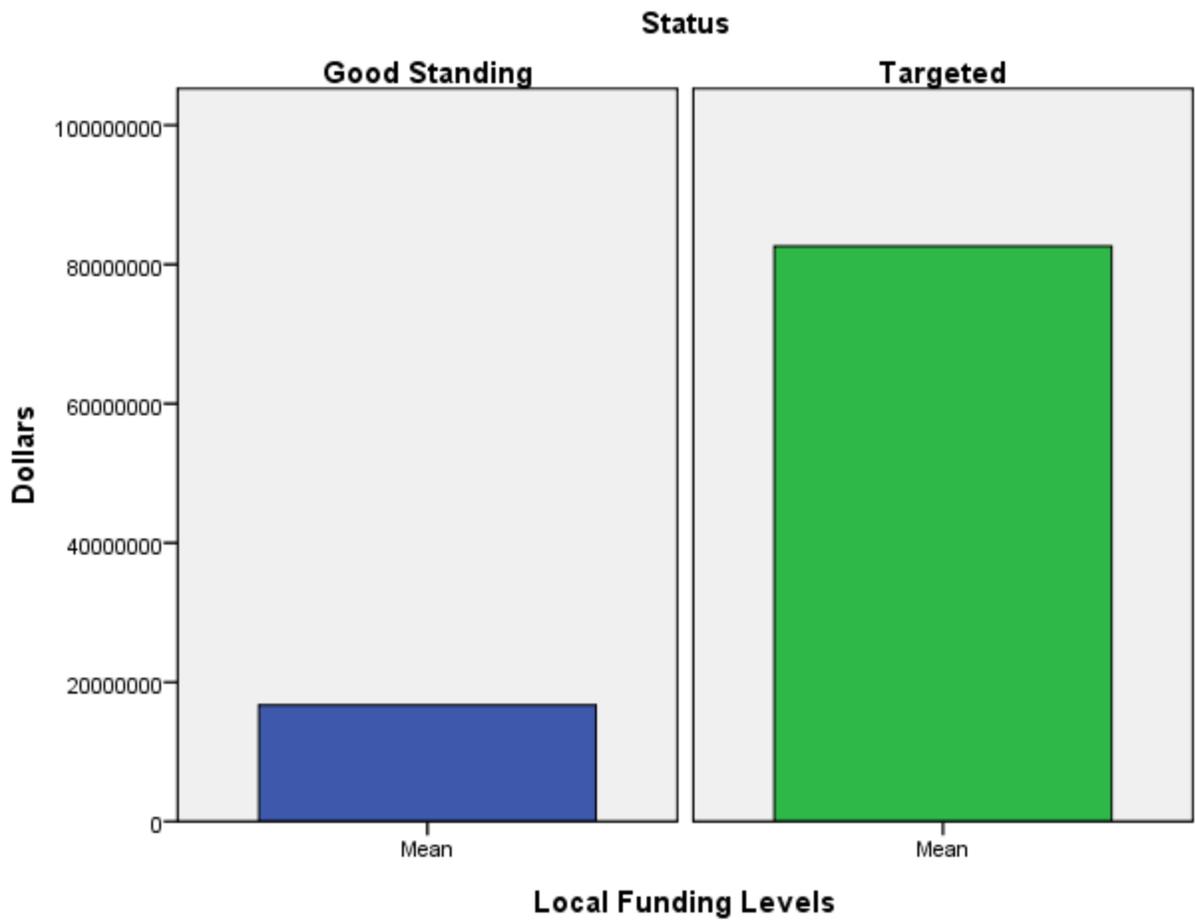


Figure 3. Distribution of Local Funds Received for Targeted Systems and Systems in Good Standing.

Research Question 4

Is there a significant difference in the mean per-pupil expenditures between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho4: There is no significant difference in mean per-pupil expenditures between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

An independent-samples *t* test was conducted to evaluate whether the mean per-pupil expenditures differ between targeted school systems and systems of good standing in Tennessee for the academic school years 2007 through 2009. The mean per-pupil expenditure was the test variable and the grouping variable was the *NCLB* status of the school systems. The test was not significant, $t(211) = .48, p = .632$. Therefore, Ho1 was retained. The η^2 index was $< .01$, which indicated a small effect size. Systems labeled as targeted ($M = \$8,138.84, SD = \$1,115.15$) tended to have similar per-pupil expenditures as those labeled as good standing ($M = \$8,009.23, SD = \$3,999.84$). The 95% confidence interval for the difference in means was $-\$403.42$ to $\$662.64$. Figure 4 displays the distributions of the two groups.

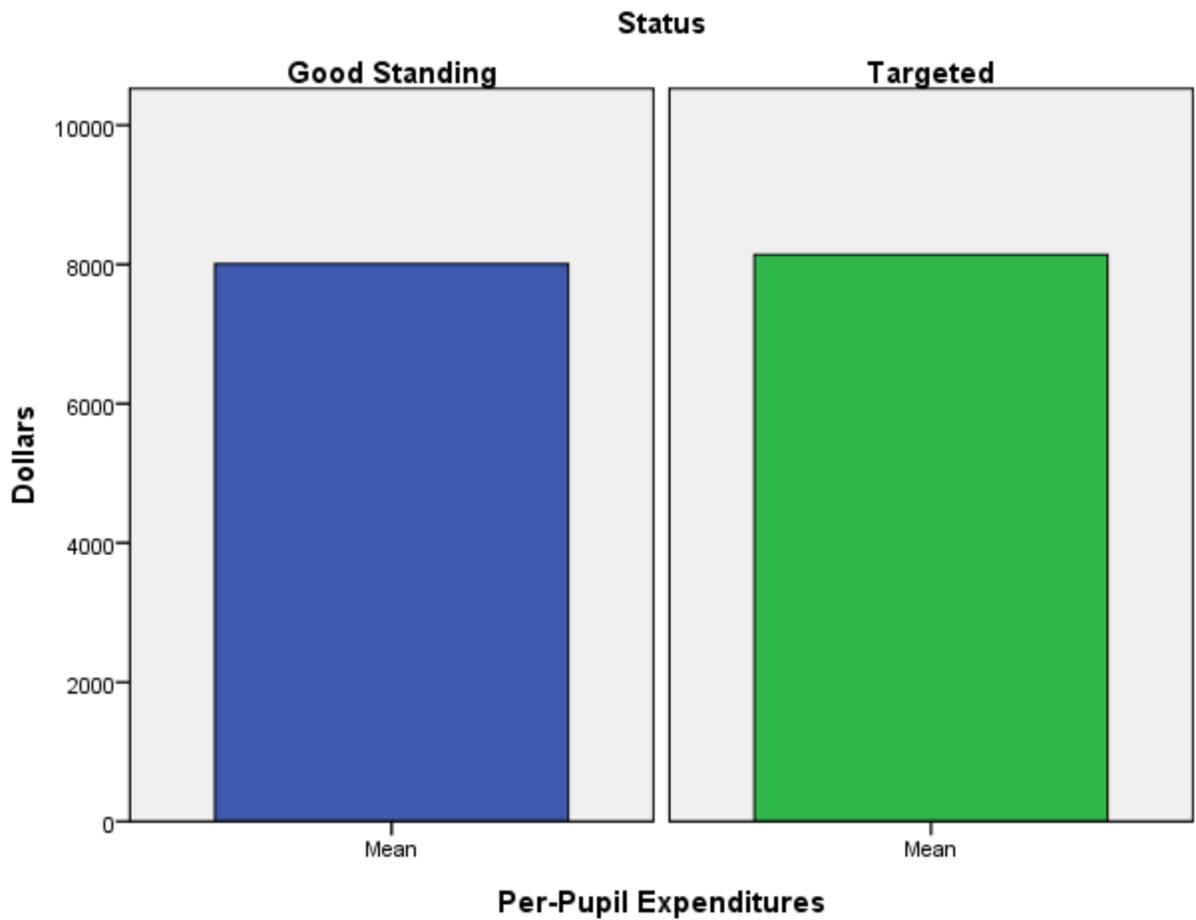


Figure 4. Distribution of Per-Pupil Expenditure for Targeted Systems and Systems in Good Standing.

Research Question 5

Is there a significant difference in the mean teacher salaries between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho5: There is no significant difference in mean teacher salaries between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

An independent-samples t test was conducted to evaluate whether the mean teacher salaries differ between targeted school systems and systems of good standing in Tennessee for the academic school years 2007 through 2009. The mean teacher salary was the test variable and the grouping variable was the *NCLB* status of the school systems. The test was significant, $t(52) = 3.25, p = .002$. Therefore, H_0 was rejected. Systems labeled as targeted ($M = \$43,767.88, SD = \$3,459.16$) tended to have higher average teacher salaries than those labeled as in good standing ($M = \$41,957.78, SD = \$3,454.01$). The 95% confidence interval for the difference in means was \$690.87 to \$2,929.35. The η^2 index was .03, which indicated a small effect size. Targeted systems tended to have higher average teacher salaries. Figure 5 displays the distributions of the two groups.

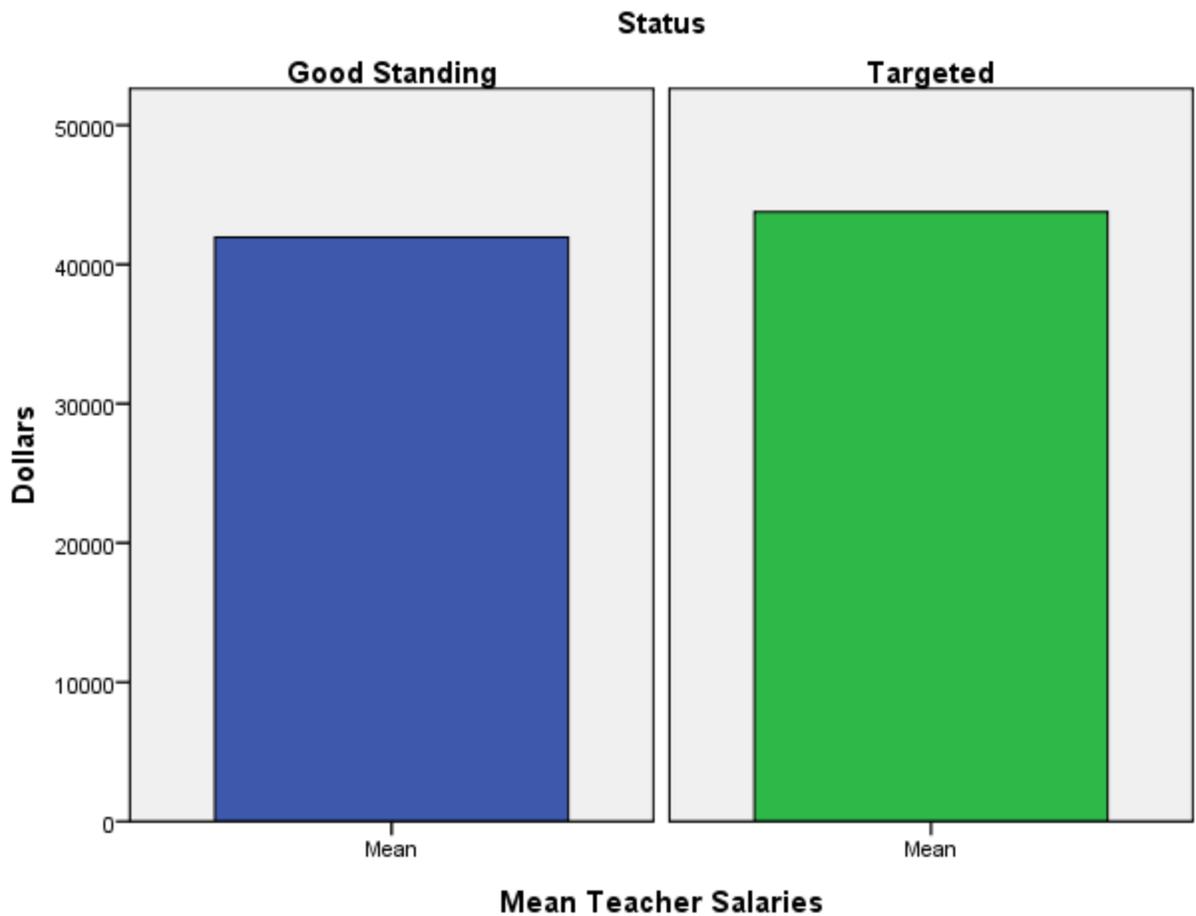


Figure 5. Distribution of Average Teacher Salaries for Targeted Systems and Systems in Good Standing.

Research Question 6

Is there a significant difference in the mean number of students between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho6: There is no significant difference in the mean number of students between targeted school systems and systems in good standing in Tennessee for the academic school years 2007 through 2009.

An independent-samples t test was conducted to evaluate whether the mean number of students differ between targeted school systems and systems of good standing in Tennessee for the academic school years 2007 through 2009. The mean number of students was the test variable and the grouping variable was the *NCLB* status of the school systems. The test was significant, $t(43) = 3.05$, $p = .004$. Therefore, H_0 was rejected. Systems labeled as targeted ($M = 17,656$, $SD = 26,420$) tended to have more students than those labeled as good standing ($M = 5,284$, $SD = 8,913$). The 95% confidence interval for the difference in means was 4,192 to 20,550. The η^2 index was .02, which indicated a small effect size. Targeted systems tended to have a higher number of students. The mean number of students in targeted systems was more than three times as large as systems in good standing (17,656 to 5,284). Figure 6 displays the distributions of the two groups.

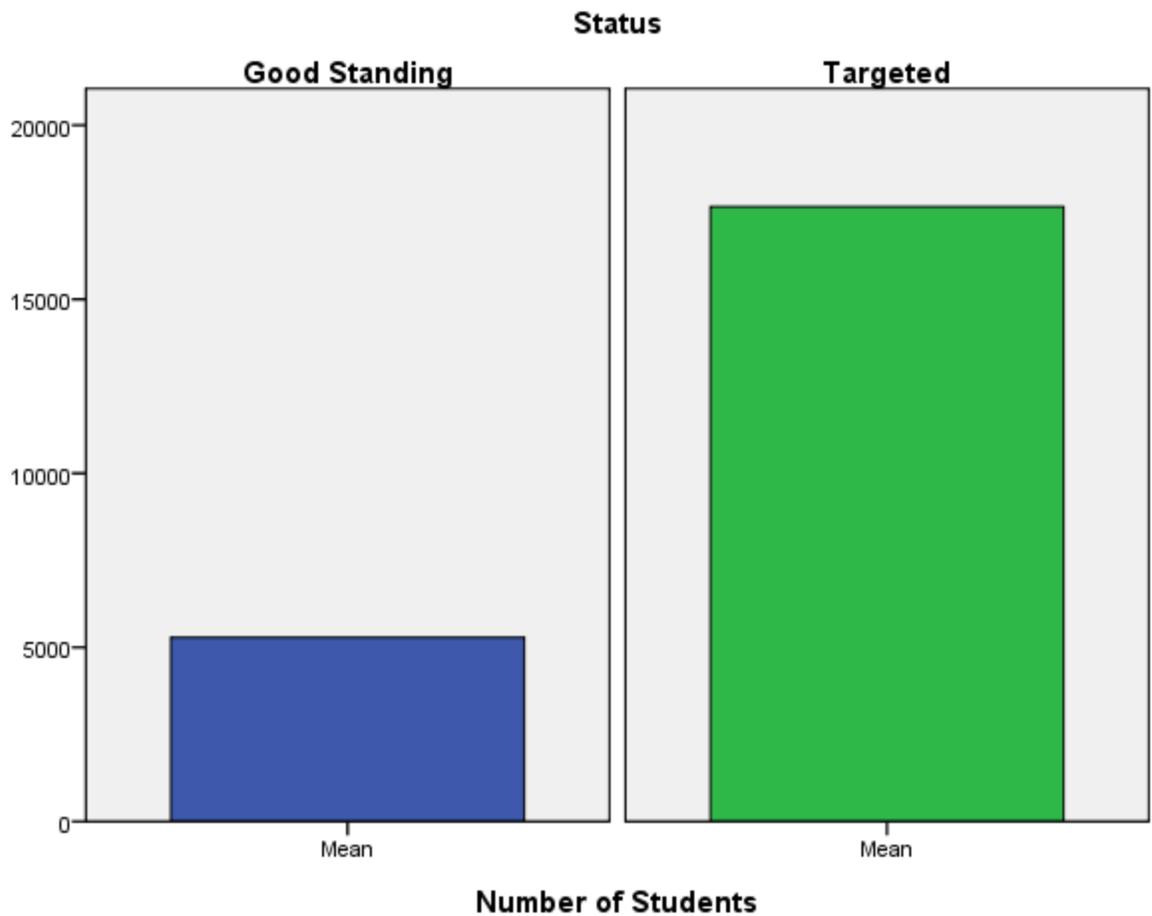


Figure 6. Distribution of the Number of Students for Targeted Systems and Systems in Good Standing.

Research Question 7

Is there a significant relationship between the size of the school system (categorized as small, medium, or large based on the number of students) and the system’s status (targeted or in good standing) in Tennessee for the academic school years 2007 through 2009? The following null hypothesis was developed and tested for this research question:

Ho7: There is no significant relationship between the size of the school system (categorized as small, medium, or large based on the number of students) and the system's status (targeted or in good standing) in Tennessee for the academic school years 2007 through 2009.

A two-way contingency table analysis was conducted to evaluate whether targeted systems were prevalent in small, medium, or large school systems. The variables were the number of students in the system with three levels (small: 0 – 2,094 students; medium: 2,095 – 4,440 students; and large: 4,445 – 105,571 students) and the status of the school system (targeted or in good standing). Size and status were found to be significantly related, Pearson χ^2 (2, N = 405) = 20.19, $p < .001$, Cramer's V = .22. The proportions of targeted systems in small (269 – 2,094 students), medium (2,095 – 4,440 students), and large (4,445 – 105,571 students) systems were .12, .26, and .63 respectively (the three categories consisted of an equal number of schools). Figure 7 displays the distributions of the three groups.

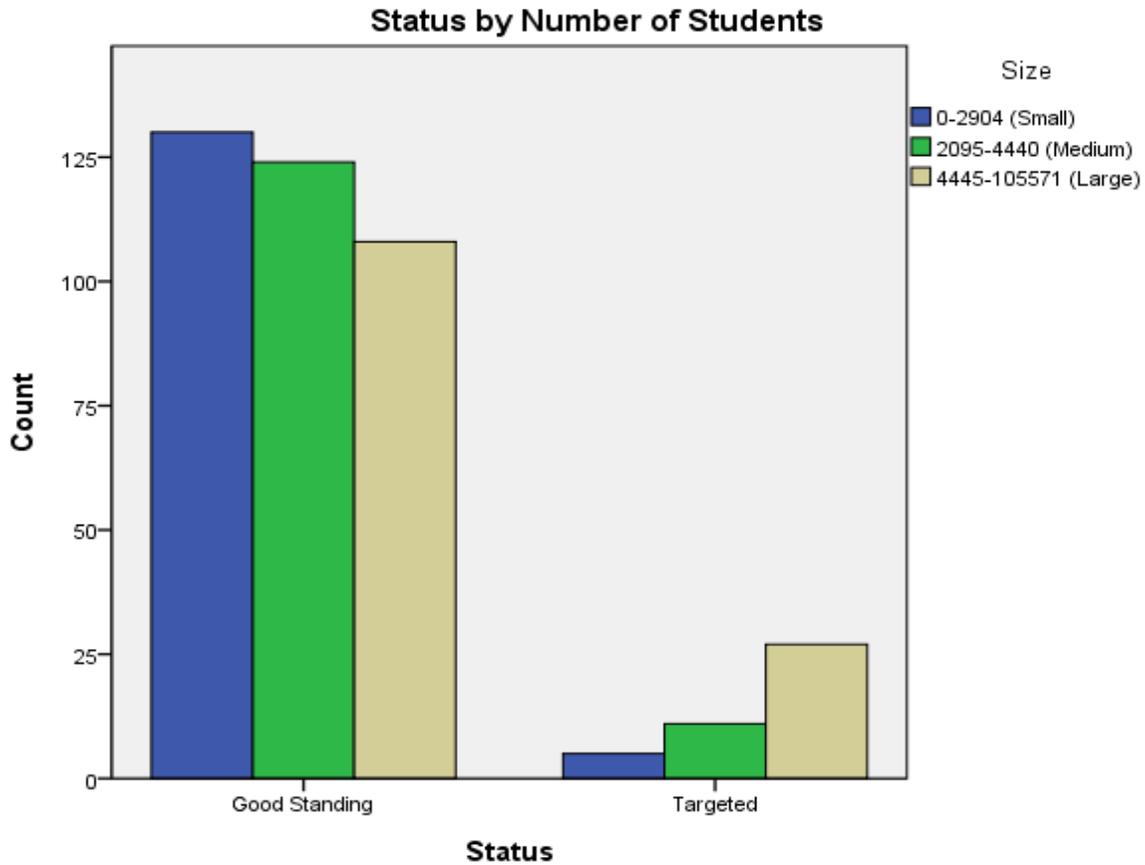


Figure 7. Distribution of Systems by the Number of Students (Categorized by Small, Medium, and Large Systems) and NCLB Status.

Follow-up pairwise comparisons were conducted to evaluate the differences among these proportions. Table 2 shows the results of these analyses. The Holm’s Sequential Bonferroni Method was used to control for Type I error at the .05 level across all three comparisons. The pairwise difference between the small (269 - 2,094 students) school systems and large (4,445 – 105,571) school systems was significant. The probability of being “targeted” was 5.25 times (.63/.12) more likely for a large system than for a small system. The pairwise difference between the medium (2,095 – 4,440 students) school systems and large (4,445 – 105,571) school systems

was significant. The probability of being “targeted” was 2.42 times (.63/.26) more likely for a large system than for a medium system. Table 3 displays the results of the pairwise comparisons.

Table 3

Results for the Pairwise Comparisons Using Holm’s Sequential Bonferroni Method

Comparison	Pearson chi-squared	<i>p</i> value (Alpha)	Cramer’s <i>V</i>
Small vs. Large	17.16*	<.001 (.017)	.25
Medium vs. Large	7.84*	.005 (.025)	.17
Small vs. Medium	2.39	.122 (.050)	.09

**p*-value \leq alpha

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine if there is a relationship between level of funding and achievement of school systems based on the standards of No Child Left Behind (*NCLB*). Data were gathered from the Tennessee Department of Education website. The population consisted of 135 school systems in Tennessee receiving a status of either “targeted” or “good standing” from 2007 through 2009 according to the standards of *NCLB* and adequate yearly progress (*AYP*). With each year treated independently, the data consisted of 405 total systems. Independent samples t-tests and chi-square analyses were used to compare the means of federal, state, and local revenue as well as per-pupil expenditure, average teacher salary, and the number of students in the system. This chapter contains a summary of findings, conclusions, and recommendations for further research.

Summary of the Findings

The analyses focused on seven research questions. The independent variables included federal, state, and local revenue as well as per-pupil expenditure, average teacher salary, and the number of students in the system. The grouping variable was the status of the system, “targeted” or “good standing,” according to a system’s *AYP*. The following includes a summary of the findings for each research question.

The results indicate that targeted systems received significantly ($p=.001$) more federal funds ($M=\$19,380,000$) than systems in good standing ($M=\$4,651,808$). The η^2 index was .02, which indicated a small effect size. The significant difference may be a result of Title I funding that has provided more federal money to public schools than any other federal program (Ilon & Normore, 2006). Title I is intended to help economically and educationally disadvantaged

students, traditionally low-achieving students (United States Department of Education, 2009b). Systems with large populations of disadvantaged students are more likely to be low-achieving and receive more federal funds. Targeted school systems are larger on average than systems in good standing. A reasonable assumption can be made that larger systems also have more students qualifying for federal programs. Therefore, larger systems would receive more federal funds.

There was a significant difference between mean state funding levels ($p=.001$). The results indicate that targeted systems received significantly more state funds ($M=\$64,410,000$) than systems of good standing ($M=\$22,310,000$). The η^2 index was .02, which indicated a small effect size. The significant difference may be evidence of increased aid from the state for systems with the “targeted” status and systems in jeopardy of a receiving that status. Also, targeted school systems are larger on average than systems in good standing. State funding is based on a pupil-weighted formula (*BEP*). Therefore, larger systems receive more state funding than smaller systems.

The results indicate that targeted systems received significantly more local funds ($M=\$82,640,000$) than systems of good standing ($M=\$16,710,000$). The η^2 index was .02, which indicated a small effect size. Local funding had the largest mean difference of the three levels of government funding (federal, state, and local). Lower performing systems according the standards of *NCLB* receive significantly more local revenue than better performing systems. Targeted school systems are larger on average than systems in good standing. A reasonable assumption can be made that large systems are part of larger communities, cities, and counties. Therefore, larger systems would have access to a better tax base and receive more local funding than smaller systems from property and sales taxes.

The findings for Research Questions 1-3 should be viewed with some skepticism because large school systems receive more funds based on the number of students qualifying for federal programs, larger tax bases, and Tennessee's pupil-weighted funding formula. Also, unlike small school systems, large systems almost always have enough students (45 or more) in each subgroup (African American students, Asian/Pacific islander students, Hispanic students, Native American students, white students, economically disadvantaged students, students with disabilities, and students with limited English proficiency) to be included in the evaluation under NCLB. This increases the likelihood of failing to meet AYP.

The results of the analysis on mean per-pupil expenditures indicate that there was no significant difference between targeted systems and systems in good standing. However, systems with a status of "targeted" expended slightly more total funds ($M=\$8,138.84$) than systems with a status of "good standing" ($M=\$8,009.23$). The η^2 index was $< .01$, which indicated a small effect size. Per-pupil expenditure is calculated based on the number of students in a system's average daily attendance (ADA). Given the results in questions 1, 2, and 3, the lack of a significant difference in mean per-pupil expenditure may be a result of state funding policy that was an outcome of the lawsuit brought by small school systems against the state in 1993 (*Tennessee Small Schools v. McWhorter*, 1993).

The results of the analysis on teacher salaries indicate that teachers in targeted systems received significantly higher salaries ($M=\$43,767.88$) than teachers in systems of good standing ($M=41,957.78$). The η^2 index was $.03$, which indicated a small effect size. Targeted systems tend to have higher salaries. However, the results of this analysis may also be related to the size of the school system. Larger systems, especially urban systems, tend to have a higher cost of living than smaller systems and that could account in part for the increased local funding for salaries.

The results indicate that targeted systems have significantly more students ($M=17,656$) than systems of good standing ($M=5,284$). The η^2 index was .02, which indicated a small effect size. This difference may help explain higher funding levels for targeted systems from federal, state, and local governments without a similar difference in per-pupil expenditures. Larger systems will have more students in the subcategories of NCLB that in turn increases their chances of being targeted.

When grouping systems by number of students into three equal groups (135 systems in each group), the chi square results indicate that systems with over 4,445 students have significantly more targeted systems than those with fewer than 2,094 students. Size and status were found to be significantly related, $p < .001$, Cramer's $V = .22$. The large system group had over five times the number of targeted systems than the small system group. Smaller systems may have advantages over larger systems under the guidelines of *NCLB*. In Tennessee, a minimum of 45 students is needed for a system to be measured in a subgroup on the state report card (Tennessee Department of Education, 2009c). Smaller systems may avoid being measured in certain categories because of the low number of students.

Conclusions

Smaller systems were less likely to receive a status of "targeted" than larger systems in Tennessee from 2007 through 2009 (see Appendix). When the number of students was the independent variable, there was a significant difference between the mean number of students in each of the groups, targeted systems and systems in good standing. Also, there were over five times as many targeted systems in the group with more than 4,445 students (27 targeted systems) than the group with fewer than 2,094 (5 targeted systems). Small school systems may have an advantage in system level management. Also, smaller systems may be able to avoid being

measured in some report card subgroups because they have fewer than 45 students in that category. Forty-five is the minimum number of students Tennessee requires to measure a system in a subgroup (Tennessee Department of Education, 2009c).

Federal, state, and local levels of funding were also significantly higher for targeted systems. However, an analysis of total funding (or per-pupil expenditure) showed no difference. Because per-pupil expenditure is a quotient of total funding and the number of students in average daily attendance, the number of students may be related to the status of a system.

Average teacher salaries are also higher among systems with a status of “targeted.” Salaries can be affected by a teacher’s experience and level of education as well as a system’s pay scale. The findings of higher salaries in systems with a “targeted” status agree with Archibald’s (1999) findings that a teacher’s level of education and years of experience were not related to student achievement. However, it cannot be determined if the salaries are higher as a result of the system receiving the targeted status or for other reasons such as the size of the system or cost of living issues. Larger systems may have the tax base or resources to be able to pay teachers more than smaller systems.

The purpose of this study was to determine if there is a relationship between level of funding and achievement of school systems based on the standards of No Child Left Behind (*NCLB*). Higher average teacher salaries also existed in targeted systems. However, system size may be one of the most important factors in *NCLB* status.

Recommendations for Practice

1. State and local governments should study if reducing the number of students in large systems is a means to improve achievement. It may not be practical to simply reduce system sizes especially because population growth is inevitable. However, systems

- can explore the concept of dividing into smaller, more manageable units (systems within a system). This has been practiced at other levels such as class groups, grade level academies, or schools within a school.
2. Available research should be used to identify specific expenditures at the local level that are most significantly related to achievement. When determined, these spending practices should be implemented.
 3. Teachers' education and experience raise teacher salaries. In tune with spending wisely, state and local governments need to focus their spending on strategies shown to be significantly related to achievement such as quality instruction, classroom materials, class size, and teachers (Archibald, 1999; Harter, 1999).

Recommendations for Further Research

1. Further investigate the relationship of size (number of students) and achievement. The size of a system had the most significant relationship with the *NCLB* status of a school system. Therefore, other variables such as school size and class size may also be significantly related to achievement.
2. Study specific spending practices of school systems to go beyond total expenditures of federal, state, and local funding. Determining how effectively or ineffectively systems spend their money may help guide future spending decisions of other systems.
3. No Child Left Behind has been controversial. A study using a different measure for achievement such as ACT scores or TVAAS scores is recommended.

4. Research on a system for measuring improvement of individuals (students and teachers), rather than on systems, may be more helpful in the long run. A funding system based on improvement of individuals would reward success.
5. Replicate this study for years other than 2007 through 2009 to determine if the findings are similar in other periods.
6. Broaden the scope of this study to include other states to determine if the findings are similar outside of Tennessee.
7. Research the relationship between small school systems and their possible advantages in attaining an *AYP* status of “in good standing.” For example, do small systems avoid accountability in some subgroups measured by *NCLB* because the minimum number of students in the subgroup (45) is not met?
8. Replicate this study with an ANCOVA, using number of students as the covariant, may produce more generalizable results.
9. Because some socioeconomic and educational factors are beyond the control of the school systems, research into these factors should be conducted.

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APPENDIX

Rank of Systems by Number of Students (Targeted Systems in Red)

2007	No. of Students	2008	No. of Students	2009	No. of Students
Memphis	105,571	Memphis	101,850	Memphis	99,966
Davidson County	67,469	Davidson County	66,419	Davidson County	68,147
Knox County	50,959	Knox County	50,906	Knox County	51,630
Shelby County	44,196	Shelby County	44,840	Shelby County	44,631
Hamilton County	37,269	Hamilton County	37,352	Hamilton County	37,606
Rutherford County	32,497	Rutherford County	33,799	Rutherford County	34,725
Williamson County	26,134	Williamson County	27,405	Williamson County	28,543
Montgomery County	26,040	Montgomery County	26,446	Montgomery County	27,039
Sumner County	24,511	Sumner County	24,883	Sumner County	25,265
Wilson County	13,265	Wilson County	13,501	Wilson County	14,006
Sevier County	13,257	Sevier County	13,346	Sevier County	13,331
Madison County	12,985	Madison County	12,605	Madison County	12,347
Sullivan County	11,354	Sullivan County	11,210	Tipton County	11,199
Tipton County	10,977	Tipton County	11,083	Sullivan County	10,998
Blount County	10,776	Blount County	10,875	Maury County	10,849
Maury County	10,760	Maury County	10,795	Blount County	10,784
Robertson County	9,956	Robertson County	10,116	Robertson County	10,210
Putnam County	9,702	Putnam County	9,788	Putnam County	9,832
Bradley County	9,298	Bradley County	9,412	Bradley County	9,488
Hamblen County	9,119	Hamblen County	9,125	Hamblen County	9,018
Washington County	8,530	Washington County	8,554	Washington County	8,612

Dickson County	7,911	Dickson County	7,993	Dickson County	8,008
Hawkins County	7,216	Hawkins County	7,278	Bedford County	7,366
Bedford County	7,066	Bedford County	7,265	Hawkins County	7,190
Roane County	7,024	Roane County	7,077	Johnson City	6,990
Jefferson County	6,929	Jefferson County	7,002	Jefferson County	6,963
Cumberland County	6,819	Johnson City	6,923	Roane County	6,939
Greene County	6,807	Greene County	6,883	Cumberland County	6,874
Johnson City	6,742	Cumberland County	6,858	Greene County	6,871
Anderson County	6,543	Anderson County	6,638	Murfreesboro	6,584
Cheatham County	6,489	Murfreesboro	6,566	Anderson County	6,504
Murfreesboro	6,384	Cheatham County	6,448	Cheatham County	6,421
Lawrence County	6,325	Lawrence County	6,362	Lawrence County	6,319
Kingsport	6,084	Kingsport	6,048	Kingsport	6,039
Warren County	5,850	Warren County	5,932	Warren County	6,012
Franklin County	5,589	Franklin County	5,602	Campbell County	5,661
McMinn County	5,541	McMinn County	5,588	McMinn County	5,603
Carter County	5,485	Carter County	5,538	Franklin County	5,505
Campbell County	5,406	Campbell County	5,465	Carter County	5,432
Monroe County	5,094	Monroe County	5,193	Monroe County	5,213
Marshall County	4,977	Marshall County	4,992	Marshall County	4,975
Loudon County	4,794	Loudon County	4,819	Maryville	4,808
Maryville	4,662	Maryville	4,782	Loudon County	4,773
Weakley County	4,531	Cocke County	4,542	Cleveland	4,584
Cocke County	4,440	Weakley County	4,481	Weakley County	4,562
Claiborne County	4,380	Claiborne County	4,398	Cocke County	4,526

Cleveland	4,299	Cleveland	4,360	Claiborne County	4,358
Lauderdale County	4,249	Lauderdale County	4,267	Lauderdale County	4,248
Coffee County	4,190	Oak Ridge	4,165	Oak Ridge	4,231
Oak Ridge	4,146	Coffee County	4,143	Giles County	4,116
Giles County	4,137	Giles County	4,143	Coffee County	4,115
McNairy County	4,073	McNairy County	4,084	McNairy County	4,105
Hardeman County	4,030	Hardeman County	3,982	Marion County	4,040
Rhea County	3,878	Marion County	3,950	Hardeman County	3,896
Marion County	3,878	Rhea County	3,884	Rhea County	3,879
Lincoln County	3,838	Lincoln County	3,870	White County	3,851
Obion County	3,823	White County	3,836	Lincoln County	3,831
White County	3,818	Obion County	3,780	Obion County	3,719
Hickman County	3,668	Franklin	3,697	Bristol	3,637
Franklin	3,652	Hickman County	3,640	Hickman County	3,621
Bristol	3,592	Bristol	3,639	Franklin	3,588
Macon County	3,556	Macon County	3,568	Macon County	3,549
Hardin County	3,502	Hardin County	3,514	Hardin County	3,531
Fayette County	3,388	Fayette County	3,379	Henderson County	3,398
Tullahoma	3,364	Dyer County	3,245	Fayette County	3,396
Henderson County	3,331	Tullahoma	3,230	Grainger County	3,309
Dyersburg	3,274	Grainger County	3,213	Dyer County	3,249
Overton County	3,263	Overton County	3,193	Tullahoma	3,209
Grainger County	3,242	Henderson County	3,177	Overton County	3,195
Haywood County	3,200	Dyersburg	3,168	Haywood County	3,150
Dyer County	3,176	Haywood County	3,152	Gibson County	3,139
Smith County	3,134	Smith County	3,128	Smith County	3,125

Morgan County	3,092	Morgan County	3,075	Morgan County	3,103
Henry County	2,975	Henry County	2,999	Dyersburg	3,084
Lebanon	2,910	Gibson County	2,973	Lebanon	2,986
Union County	2,856	Lebanon	2,938	Henry County	2,973
Humphreys County	2,850	Humphreys County	2,896	Humphreys County	2,905
Gibson County	2,777	Union County	2,840	Union County	2,794
Greeneville	2,655	DeKalb County	2,665	DeKalb County	2,694
DeKalb County	2,582	Greeneville	2,639	Scott County	2,659
Scott County	2,507	Scott County	2,609	Greeneville	2,608
Polk County	2,494	Chester County	2,551	Chester County	2,573
Chester County	2,493	Polk County	2,526	Polk County	2,511
Wayne County	2,379	Benton County	2,359	Unicoi County	2,384
Unicoi County	2,361	Unicoi County	2,342	Benton County	2,323
Benton County	2,357	Wayne County	2,301	Fentress County	2,266
Fentress County	2,197	Fentress County	2,245	Wayne County	2,249
Grundy County	2,151	Cannon County	2,148	Grundy County	2,152
Johnson County	2,126	Johnson County	2,114	Sequatchie County	2,125
Cannon County	2,088	Stewart County	2,095	Johnson County	2,111
Stewart County	2,074	Sequatchie County	2,093	Stewart County	2,101
Lenoir City	2,050	Grundy County	2,089	Lenoir City	2,094
Sequatchie County	2,037	Lenoir City	2,028	Cannon County	2,081
Milan	1,966	Milan	1,973	Milan	2,014
Elizabethton	1,885	Elizabethton	1,880	Elizabethton	1,942
Lewis County	1,808	Lewis County	1,797	Lewis County	1,824
Bledsoe County	1,786	Bledsoe County	1,767	Meigs County	1,723
Meigs County	1,711	Meigs County	1,740	Bledsoe County	1,723

Crockett County	1,695	Crockett County	1,720	Crockett County	1,665
Athens	1,636	Athens	1,665	Athens	1,595
Jackson County	1,600	Alcoa	1,540	Alcoa	1,569
Alcoa	1,520	Jackson County	1,537	Jackson County	1,553
Decatur County	1,511	Paris	1,507	Paris	1,527
Paris	1,467	Decatur County	1,505	Decatur County	1,510
Sweetwater	1,394	Sweetwater	1,439	Sweetwater	1,423
Houston County	1,393	Houston County	1,363	Houston County	1,361
Trenton	1,371	Trenton	1,341	McKenzie	1,351
Union City	1,354	McKenzie	1,330	Union City	1,341
McKenzie	1,340	Union City	1,317	Trenton	1,335
Humboldt	1,321	Humboldt	1,303	Trousdale County	1,307
Trousdale County	1,263	Trousdale County	1,265	Humboldt	1,254
Oneida	1,256	Manchester	1,220	Manchester	1,233
Huntingdon	1,208	Oneida	1,215	Oneida	1,203
Manchester	1,198	Huntingdon	1,212	Huntingdon	1,191
Clay County	1,128	Lexington	1,056	Perry County	1,059
Perry County	1,041	Perry County	1,044	Lexington	1,021
Lexington	1,033	Clay County	1,028	Clay County	1,016
West Carroll	975	West Carroll	991	West Carroll	979
Hancock County	945	Hancock County	959	Fayetteville	948
Moore County	928	Fayetteville	956	Hancock County	946
Fayetteville	912	Moore County	929	Moore County	931
Clinton	823	Lake County	865	Lake County	847
Lake County	818	Clinton	816	Clinton	818
Van Buren County	778	Van Buren County	750	Van Buren County	759

Hollow Rock Bruceton	690	Newport	720	Newport	722
Dayton	683	Hollow Rock Bruceton	687	Dayton	700
Newport	683	Dayton	673	Hollow Rock Bruceton	671
Rogersville	641	Pickett County	637	Rogersville	635
Pickett County	640	Rogersville	630	Pickett County	631
Bradford	579	Bradford	556	Alamo	560
Alamo	495	Alamo	521	Bradford	526
South Carroll	383	South Carroll	378	Bells	377
Bells	363	Bells	360	South Carroll	374
Etowah	340	Etowah	351	Etowah	332
Richard City	327	Richard City	302	Richard City	269

