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Per Pupil Expenditure, Graduation Rates, and ACT Scores in Tennessee
School Districts

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

Jay Andrew Irvin

December 2017

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Keywords: Academic Achievement, Per-Pupil Expenditure, ACT, Graduation Rate, Equity, Adequacy, Educational Finance, Educational Funding

ABSTRACT

Per Pupil Expenditure, Graduation Rates, and ACT Scores in Tennessee School Districts

by

Jay Andrew Irvin

The purpose of this study was to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district.

Research was conducted to determine whether a significant difference existed in academic achievement measures (high school graduation rate, ACT composite score) among school districts in the state of Tennessee that were classified as above average, average, and below average in relation to their per-pupil expenditure (PPE) in the 2013-2014, 2014-2015, and 2015-16 school years.

Ex post facto data were collected from the Tennessee Department of Education website. All pertinent school district information reported appeared on the Tennessee State Report Card website. This publicly reported and available data were collected by accessing the Tennessee State Report Card website. The researcher recorded data related to each school district that reported data in all three of the following categories: per-pupil expenditure, graduation rates, and ACT composite scores.

This study examined the relationship of graduation rates to per-pupil expenditure in the 2013-2014, 2014-2015, and 2015-2016 school years. The results indicated that the high school graduation rates during the 2013-2014 and 2014-2015 school year were not significantly affected

by per-pupil expenditure. However, significance was found regarding high school graduation rates in the 2015-2016 school year ($p = .016$). There was a significant difference in the means between the bottom-third (93.537%) and the top-third (90.422%) of per-pupil expenditure levels during the 2015-2016 school year, with the top-third having significantly higher graduation rates.

This study also examined the relationship of ACT composite score to per-pupil expenditures in the 2013-2014, 2014-2015, and 2015-2016 school years. The results for all of the research questions indicated that the ACT composite score during all years was not significantly affected by per-pupil expenditure.

DEDICATION

This dissertation is dedicated to Janice Irvin. From the beginning of this educational journey you have been a dependable rock upon which I could always count for support. You are my best friend and I love you.

This dissertation is also dedicated to my children, Bonnie Ann and Benjamin. Education is an investment in yourself and it is always worth the price.

This dissertation is dedicated to my brother and sisters. Wally, Holly, and Emily, it was a privilege to be able to watch you each set the example for how to succeed in life.

Finally I dedicate this dissertation to my parents, Rod and Ann Irvin. There are surely only a handful of individuals who have possessed your combination of fierce love, relentless support, and bottomless strength. Your belief in me throughout my life fuels my future, and I am thankful for that each and every day.

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TABLE OF CONTENTS

	Page
ABSTRACT.....	2
DEDICATION.....	4
ACKNOWLEDGEMENTS.....	5
LIST OF TABLES.....	9
LIST OF FIGURES.....	10
Chapter	
1. INTRODUCTION.....	11
Statement of the Problem.....	12
Research Questions.....	13
Significance of the Study.....	14
Delimitations of the Study.....	14
Limitations of the Study.....	15
Definitions of Terms and Selected Acronyms.....	16
Overview of the Study.....	19
2. LITERATURE REVIEW.....	20
Educational Finance.....	20
The Evolving Role of the Federal Government.....	20
Educational Finance in the State of Tennessee.....	24
Local Tennessee School District Funding Formulas.....	25
Per-Pupil Expenditure.....	28
Definition and Calculations.....	28
Concepts of Equity and Adequacy in Educational Finance.....	29
Achievement Measures.....	41

Graduation Rate	41
ACT Test.....	44
Funding and Achievement	46
Chapter Summary	54
3. METHODOLOGY	56
Research Questions and Null Hypotheses	57
Research Question 1	57
Research Question 2	57
Research Question 3	57
Research Question 4	58
Research Question 5	58
Research Question 6	59
Population.....	59
Instrumentation	61
Data Collection	62
Data Analysis.....	62
Chapter Summary	63
4. RESULTS	64
Research Question 1	65
Research Question 2	67
Research Question 3	69
Research Question 4	71
Research Question 5	73
Research Question 6	75
Chapter Summary	76

5. FINDINGS, IMPLICATIONS, AND CONCLUSIONS.....	78
Summary of Findings	78
Research Question 1	78
Research Question 2	79
Research Question 3	80
Research Question 4	81
Research Question 5	81
Research Question 6	82
Recommendations for Future Research.....	83
Implications for Practice.....	84
Conclusions	85
REFERENCES	88
APPENDICES	94
APPENDIX A	94
APPENDIX B	97
APPENDIX C	100
VITA.....	104

LIST OF TABLES

Table	Page
1. 2013-2014 High School Graduation Rate Means and Standard Deviations of 3 PPE Groups.	66
2. 2013-2014 ACT Composite Scores and Standard Deviations of 3 PPE Groups	68
3. 2014-2015 High School Graduation Rate Means and Standard Deviations of 3 PPE Groups.	70
4. 2014-2015 ACT composite Scores and Standard Deviations of 3 PPE Groups.....	72
5. 2015-2016 High School Graduation Rates Means and Standard Deviations of 3 PPE Groups with 95% Confidence Intervals of Pairwise Differences	74
6. 2015-2016 ACT Composite Scores and Standard Deviations of 3 PPE Groups	75

LIST OF FIGURES

Figure	Page
1. High school graduation rates for 2013-2014 by level of per-pupil expenditure.....	66
2. ACT composite scores for 2015-2016 by level of per-pupil expenditure	68
3. High school graduation rates for 2014-2015 by level of per-pupil expenditure.....	70
4. ACT composite scores for 2014-2015 by level of per-pupil expenditure	72
5. High school graduation rates for 2015-2016 by level of per-pupil expenditure.....	74
6. ACT composite scores for 2015-2016 by level of per-pupil expenditure	76

CHAPTER 1

INTRODUCTION

Funding for America's public school system fluctuates every year. The ebb and flow of educational budgets is dependent upon several uncontrollable and unpredictable variables. The most recent economic crisis, beginning in December of 2007, illustrates and underscores this assertion. Furthermore, Baker, Sciara, and Ferrie (2015) found that the majority of states failed to restore state funding to educational budgets after federal money, distributed during the recession, ran out. District administrations in school districts across the country work tirelessly throughout the year to develop and deliver budgets that meet a myriad of expectations from several entities. National, state, and local interests simultaneously impact educational budgetary planning. Emphasizing the role these interests play Spring (2005) explained that school funding policy concerns can only be understood by evaluating their intersection with the American political system. Nevertheless, the challenge remains for school districts across the country to determine how to best allocate resources for programs and initiatives that meet the needs of their specific student populations. There is perennial discussion regarding the funding of public schools in America and whether or not the amount of money spent on education is producing the desired result: graduates who are prepared for entry into college or the workforce.

In a comparison of state spending, the US Census Bureau (2014) ranked Tennessee 45th in per-pupil expenditure. There is a substantial range in the level of per-pupil expenditure from state to state. The Tennessee Department of Education State Report Card (2017) shows that each student in the state of Tennessee represented \$9,499.10 of educational spending for the 2015-2016 school year. Within the state of Tennessee, local funding streams are added to federal and

state appropriations. The per-pupil expenditures of each school district within the state of Tennessee vary greatly as well. An analysis of graduation rates and ACT scores can begin to produce some level of understanding regarding the current percentages of students who are successful based on the parameters and definitions of success. Therefore, it was necessary to examine the relationship between funding for school districts and data which serves as an indication of student success through a quantitative analysis of per-pupil expenditure, graduation rates, and ACT scores of school districts in the state of Tennessee. This analysis investigated the relationship that per pupil expenditure had with ACT scores and graduation rates.

Statement of the Problem

This study was an examination of the relationships between academic achievement of school districts in Tennessee and per-pupil expenditure. The purpose of this study was to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district. Research was conducted to determine whether a significant difference existed in academic achievement measures (high school graduation rate, ACT composite score) among school districts in the state of Tennessee that were classified as above average, average, and below average in relation to their per-pupil expenditure (PPE) in the 2013-2014, 2014-2015, and 2015-16 school years. The Statistical Package for the Social Sciences (SPSS) was used to calculate results of the relationship between academic achievement of school districts in Tennessee and per-pupil expenditure.

Research Questions

The following research questions were addressed during the study.

Research Question 1

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

Research Question 2

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

Research Question 3

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year?

Research Question 4

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-15 school year?

Research Question 5

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

Research Question 6

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

Significance of the Study

This study was an examination of the relationships between academic achievement of school districts in Tennessee and per-pupil expenditure. The purpose of this study was to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district. This study could be beneficial to national and state legislatures who are determining legislation and policy concerning educational finance and funding formulas. This study could benefit educational leaders in state and district offices who seek to influence and advise educational policy decisions made in legislative bodies at the national, state, and local levels. This research could benefit educational leaders and decision makers at the district and school level who determine budgets and budgetary priorities for districts and schools. This study adds to the research base concerning the possible relationships between academic achievement and educational funding.

Delimitations of the Study

The study was delimited to secondary schools within the state of Tennessee. Schools included in the population were secondary schools whose data was recorded on the Tennessee State Report Card for the 2013-2014, 2014-2015, and 2015-2016 school years. Any school that did not have all necessary data points for a given school year was not

included in the sample.

This study was delimited to academic achievement measures that included high school graduation rate and ACT composite score. These measures were selected due to their high degree of reliability and validity across all districts. High school graduation rates were calculated using the ACGR, or the adjusted cohort graduation rate, which is the standard for reporting graduation rates on state and national report cards. Due to ongoing tweaks and changes to educational standards within the state of Tennessee, ACT composite score was used to provide a measure of academic achievement separate from newly changed state standards and newly created standardized assessments.

This study examined the possible relationships between academic achievement and educational expenditures broken down to the per-pupil level. The measures used were averages of entire school districts within the state of Tennessee. It is possible that studies that replicated this study's methodology at the individual school level could produce varying results due to differences in how educational monies were spent.

Limitations of the Study

This study uses data pertaining to district level per-pupil expenditure and academic achievement. The key limitation of this study, as reflected in the review of literature, is the inability of available data to analyze the relationship between how differences in educational spending on the school level effects the academic achievement of students. Therefore, results are more valuable to state and district leadership teams rather than individual school leaders. As accountability continues to increase across the country, it is presumable that school level data may become available and accessible for future researchers.

Although this study examined all school districts that reported necessary data points for the 2014-2016 school years, it did not reflect differences in academic achievement based on per-pupil expenditure in the elementary or middle grades of districts within the state of Tennessee. It may not be possible to generalize the results of this study to lower grade bands. Also, since this data is specific to Tennessee, and since each state has unique funding formulas for their educational systems, results of this study may not be generalized for other states.

Definitions of Terms and Selected Acronyms

The following terms as defined were used in the study:

1. *Adequacy* - the capacity of the educational system to provide sufficient resources to achieve a pre-determined outcome or objective, whereas equity can be more closely associated and defined as inputs. The relative straightforwardness of determining numerical funding equity contrasts with the complexity of determining adequacy. Adequacy involves providing an intentional unequal playing field. That playing field must be unequal, and tilted in the balance of students who arrive to educational institutions with diverse needs, learning challenges, and a variety of societal and environmental experiences that require more inputs than the traditional student. More and more, adequacy is being defined solely in the context of outputs, or goals that are identified. Guthrie and Rothstein (1999) note that defining adequacy involves 2 main steps: identification of the objective or performance criteria to be met or attained, and the resources necessary that will allow for students to meet or attain the identified objective or performance criteria. This research equates adequacy with student outputs, as defined by academic achievement measures, such as high school graduation rate and

ACT composite score.

2. *American College Test (ACT)* – a standardized test that measures college readiness.

This assessment is used as a measurement for high school academic achievement.

According to ACT (2017), use of the assessment has grown yearly since its creation in 1959. As of 2016, the state of Tennessee requires high school students to take the ACT as a requirement before graduation. Tennessee uses average school district ACT composite scores as an accountability measurement for academic achievement as part of the Tennessee State Report Card.

3. *Basic Education Plan (BEP)* – a plan used by the state of Tennessee that incorporates a formula to establish the yearly education fund disbursement. This formula calculates the funding levels each year for every school system that operates in the state. The Tennessee State Board of Education (2016a) stated that the BEP is made up of various components that encompass both the operating and capital outlay costs of each district. The BEP determines what amount of federal and state dollars are added to local sources of revenue for school districts on an individualized basis. The main variables in the equalization formula include property values and sales tax at the county level. In addition to this determination, all school districts are able to raise additional educational monies in addition to the state disbursement.
4. *Equity* –is associated with inputs, and involves what is input into the educational system so that students may succeed. Equity demands that each student be provided with a level playing field on which to begin his or her academic pursuits. Equity is providing an equal starting line for all students. For the purposes of this study, equity involves the money that is spent on the education of all students in the state of

Tennessee. This type of equity is reflected in the BEP's attempt at providing equal funding for students in districts across the state. Berne and Steinfel (1999) remind their readers that the authors of early educational finance reform works assumed that equal input would result in equal, leveled performance and outcome. However, the drive for equity evolved into a discussion of adequacy.

5. *High School Graduation Rate (ACGR)* – is the percentage of high school seniors who graduated from high school in a specific academic year. Kena et al.. (2016) clarified this particular measure, stating that the adjusted cohort graduation rate (ACGR) has only been widely used since 2010, due to a lack of the types of student data needed to compute the rate. The ACGR tracks data on an individual student level. This allows the ACGR to subtract any members of an incoming freshman cohort that transfer out of a district, emigrated, or passed away. It also allows for the addition of students who transfer into the district during a particular cohort's 4 year measurement period. The ACGR is the graduation rate that is now used for reporting purposes on state and national report cards. It is officially defined in the United States Code Annotated (2015) as the national standard for how schools, districts, and states compute graduation rates.
6. *Per Pupil Expenditure (PPE)* – “...the aggregate current expenditures...of all local educational agencies in the state...[and] any direct current expenditures by the State for the operation of those agencies; divided by the aggregate number of children in average daily attendance to whom those agencies provided free public education during that preceding year” as defined by the United States Code Annotated (2015). This research uses the per-pupil expenditure of school districts within the state of Tennessee that is

reported on the Tennessee State Report Card.

Overview of the Study

This study is presented in five chapters. Chapter 1 contains an introduction, a statement of the problem, the research questions, the significance of the study, the delimitations and limitations, and a definition of terms. Chapter 2 encompasses a review of existing educational research pertaining to educational finance and academic achievement. Chapter 2 begins with an examination into the role of federal, state, and local agencies in the determination of educational finance and budgets. Chapter 2 concludes with an examination of research that focuses on the potential relationship between money and academic achievement. Chapter 3 explains the methodology of the study, including: research questions and null hypotheses, population, sample, instrumentation, data collection, and data analysis. Chapter 4 includes the data and analysis for all research questions. Chapter 5 contains a summary of the research and the potential for its findings to contribute to the literature. Chapter 5 concludes with recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

Educational Finance

The Evolving Role of the Federal Government

The United States public education system is frequently misconstrued as a federal bureaucracy that is uniform in its politics, practices, and outcomes. In reality, this is far from the mark. McGuinn (2006) stated that state and local governments have maintained almost exclusive control over public education for the majority of its existence in the United States. Indeed, every state constitution includes language that holds the state responsible for providing and paying for public education. Sciarra and Hunter (2015) contended that each state is responsible for the distribution of approximately 90% of all school funding for elementary and secondary schools. These funds are dispersed according to individual state systems that allocate revenue to school districts, as well as allow for a determined amount of local tax revenue to potentially supplement the state's primary allocation.

The federal government began assuming a limited role in public education through various fund disbursements and supported programs in the 1950s and 1960s with programs such as the *National Defense Education Act (NDEA)* (McGuinn, 2006). However, the United States Department of Education (2005) traced the beginning of significant federal government support of elementary and secondary education to the *Elementary and Secondary Education Act (ESEA)* of 1965. The ESEA was an educational reform bill packaged as part of President Lyndon Johnson's *War on Poverty*. The most important significant aspect of the law in regards to federal funding of public education was Title I. This section of the law made federal funding available for schools in

low-income areas. Burrup, Brimley, and Garfield (2002) explained that the money was distributed with modest levels of provisions and expectations pertaining to how and for what those dollars were spent. These provisions illustrate the beginning of the federal government's gradual encroachment on the public education system. In many ways, this law sets the parameters for future legislation that exchanged federal monies to state and local educational agencies for the establishment of desired programs, policies, and student outcomes.

Although there were modifications to the initial legislation, the first reauthorization and repackaging of *ESEA* were the *Goals 2000: Educate America Act (Goals 2000)* and the *Improving America's School Act (IASA)* passed in 1994. In many ways, President Clinton's administration carried the main thrust of Johnson's legislation with an intentional focus on four main areas: high standards, teacher training, flexibility and accountability for local educational organizations, and family and community partnerships (Riley, 1995). The educational legislation of the Clinton administration explicitly stated that its aim was to, "...coordinate the implementation of its reform legislation..." by establishing "...an integrated system of high-quality service that focuses on improving the performance of all students" (p. 3). The laws were intended to create desired change throughout the entire public education system by focusing funds and reform efforts on programs that centered on improving the academic achievement and growth of all students. Ten years after the release of the National Commission on Excellence in Education's report *A Nation At Risk* (1983) explicated the dire urgency for reform of the American educational system, Clinton took aim at improving the quality of public education by more closely tying federal funding to specific expectations and outcomes.

The *No Child Left Behind Act (NCLB)*, passed in 2001, was the third reauthorization of *ESEA*. NCLB further solidified the practice of tying federal dollars for education to specific conditions for how the money should be spent. If a state chose to receive federal funds it would be

required to agree to the conditions set forth by the federal government (USDOE, 2005). The introduction of accountability measures for both districts and schools was the critical construct of the law. After the legislation went into effect it was more apparent how the federal government's role in public education had changed since the Johnson administration. Both *ESEA* and *NCLB* were intended to increase academic achievement for all students, while narrowing the gap between the majority of students and identified sub-groups. The two laws differed in terms of what states were required to do to receive funding, what students were targeted, and how successful implementation would be measured. Where *ESEA* was focused solely on students who were disadvantaged and judged success through ensuring additional resources were provided to schools, *NCLB* focused on all students and judged success through measuring academic performance of all students on standardized proficiency tests that met certain established criteria (McGuinn, 2006). *NCLB* represented a substantial increase in both the amount of federal money spent on education, as well as an increase in federal expectations for how that money was spent.

In 2015, President Barack Obama signed the *Every Student Succeeds Act (ESSA)*. This legislation, coming on the fiftieth anniversary of *ESEA*, further illustrates the expanding role of the federal government in public education. This most recent iteration of the *ESEA* seeks to continue previous policies and programs from earlier legislation while advancing towards expanded federal control through the introduction of new federal conditions regarding educational priorities. The United States Department of Education (2017) highlighted key provisions of the legislation on its website, including: equity for high-need and at-risk students, requirements for high academic standards, annual assessments that measure student progress, support for local innovation, increasing access to preschools, and accountability measures. These focus areas indicated a continued federal focus on equity and access in public education. The emphasis on accountability, first witnessed on a large scale with the passing of *NCLB*, has evolved, yet still maintains the

primary mechanism of tying student outcomes to federal assistance.

As *ESEA*, *IASA*, *NCLB* and *ESSA* demonstrate, the federal government's role and influence in public education is becoming increasingly stronger as federal money and conditions attached to that money grows. Indeed, an analysis conducted by the Committee for Education Funding (2016) found that federal government spending on education rose from approximately \$50 billion dollars in 2002 to \$68 billion dollars in 2016. Furthermore, the role of the federal government has shifted from that of merely a provider of funds to that of an evaluator of outcomes. The federal government has demonstrated the establishment of mechanisms that seek to ensure a return on that investment. States and localities must ensure that, not only is money being distributed appropriately and equitably, but that the money has positively affected student outcomes. Those student outcomes are evaluated through an examination of multiple measures. It would appear that the political debate is less about if the federal government should be involved in public education and more about how it should be involved in public education. As the Committee for Education Funding's collection of data detailing discretionary funding programs of the United States Department of Education demonstrates, it is also important to fully appreciate that federal involvement is based upon the government's desire to affect a specific change in current and future practice and outcome. The availability of federal money is the manner in which the government has consolidated considerable power and influence within the overall American public education system in all states. However, even with the increasing prominence of the federal government's place in public education, state and local governments are still primarily responsible for the financing of elementary and secondary schools within their borders.

Educational Finance in the State of Tennessee

Even though the role of the federal government in public education has grown considerably over the last fifty years, the responsibility of funding public education ultimately rests with individual states. As previously noted, each state constitution includes provisions for the funding of public education within the borders of each state. Each state determines the disbursement of funds according to individually created, reviewed, and revised formulas. The state of Tennessee establishes yearly education fund disbursement according to the Tennessee Basic Education Program (BEP). This formula calculates the funding levels each year for every school system that operates in the state. The Tennessee State Board of Education (2016a) stated that the BEP is made up of various components that encompass both the operating and capital outlay costs of each district. There are 45 different operating components in the funding formula that includes the following: instructional components, classroom components, and non-classroom components. The state share of funding for instructional components is 70%, for classroom components is 75%, and for non-classroom components is 50%. Each component is primarily funded based on the number of students who are enrolled and served in a given school or district. The Tennessee State Board of Education (2016b) also stated that adjustments to the formula will be made to, “equalize responsibility among the local school systems based on variations in the cost of delivering services to students and in relative fiscal capacity” (p. 1). This approach seeks to disburse funds in a manner that creates equity for districts, schools, and students no matter where in the state they are located. The Tennessee State Department of Education website (2017) concerning the BEP states that the share of funding for both the state and local agency is based upon an equalization formula. The equalization formula determines the level to which the BEP will be supported by the state and the district or local agency. The main variables in the equalization formula include property values and sales tax at the county level. In addition to this determination, all school districts are able to

raise additional educational monies in addition to the state disbursement.

The Tennessee Code Annotated § 49-1-302(a)(4)(B) requires that the State Board of Education must establish a committee for the purpose of meeting and reviewing the BEP at least four times each fiscal year. These meetings review and identify areas in which the formula may require additions, revisions, and deletions. There are specific instructions for the review committee to examine salary disparities between school districts, benefits, compensation, inflation, and regional salary comparisons. This committee is also charged with producing an annual report before November 1st each year. This report is provided to the Governor of Tennessee, the State Board of Education, and appropriate committees representing the Tennessee legislature. For example, the Basic Education Review Committee Annual Report (2016b) contained recommendations regarding teacher compensation, English language learners, school counselors, RTI positions, and technology. Details regarding these recommendations ranged from broad statements of support for existing policies to specific changes to the funding formula for identified areas of need. In one instance, the report simply commended previous year's legislation that increased teacher compensation funding, while in another place detailed specific changes to the formula to change the ratio of English language learners from 1:25 to 1:20. The report went further by actually including the specific dollar amount that this change would add to state expenditures.

Local Tennessee School District Funding Formulas

After BEP calculations are complete, state education funds are allocated to school districts across Tennessee. Each school district is free to raise additional money to add to the state disbursement. Examining a snapshot from three school districts within the state could help better highlight the similarities and differences that present in diverse localities within the state.

Davidson County encompasses the city of Nashville and much of the surrounding suburbs. and is funded through taxes and grants (Metro Nashville Public Schools, 2017). Funding from taxes came through the city government offices, while other funding was obtained through the procurement of federal, state, and local grants. The school system broke down its financial resources in four distinct sub-accounts: a general purpose fund, federal and categorical programs, a food service fund, and a capital budget. The district website described their budgeting method as “student-based budgeting.” Under this system, more than half of the district’s operating budget was sent to the individual schools. Building-level administrators were then responsible for the allocation of funds according to the needs present in their building. The rest of the funds were used for transportation, security, textbooks, maintenance, technology, etc. The district placed special emphasis on the fact that no funds would be funneled from one school to another in a way that would produce negative effects. The district’s budgets for the last several years were easily available on the website along with more detailed breakdowns of particular budget programs, funds, etc. The most recent Tennessee Department of Education district profile data report (2016c) show that Metro Nashville had an average per-pupil expenditure of \$11,725.90. The funding percentages of Metro Nashville’s overall budget included a federal funding percentage of 11.4%, a state funding percentage of 28.7%, and a local funding percentage of 59.95%.

The Kingsport City school district, located in East Tennessee, is a small city district. The Kingsport City Schools Finance Department website (2017) provided a sample budget overview from the 2013-2014 fiscal year. Similar to the Metro Nashville School District, the budget of Kingsport City Schools was comprised of four distinct funds: general purpose, school nutrition services, federal school projects, and school special projects. The district noted that it prides itself on being fiscally responsible, and noted that over 75% of its budget was specifically directed to supporting instructional services. The district provided a detailed breakdown of its yearly

budgeting process that begins in November and ends in May. District financial information from the previous fiscal year was detailed in general fashion in the district's annual report. The most recent Tennessee Department of Education district profile data report (2016c) show that Kingsport had an average per-pupil expenditure of \$10,726.40. The funding percentages of Kingsport's overall budget included a federal funding percentage of 8.4%, a state funding percentage of 34.8%, and a local funding percentage of 56.8%.

Lake County, Tennessee, located in the remote and rural northwestern corner of the state, is served by the Lake County School System. The Lake County School System website (2017) did not have any information regarding budgeting, the budget process, or per-pupil expenditure. In addition, an informal search of Tennessee school districts classified as rural and remote, the researcher could not find a single district that shared budgetary information on their website. The Lake County School System website did provide information regarding a district five-year growth plan, but all contents were geared toward academic growth and achievement. The most recent Tennessee Department of Education district profile data report (2016c) showed that Lake County had an average per-pupil expenditure of \$11,416.20. The funding percentages of Lake County's overall budget included a federal funding percentage of 15.4%, a state funding percentage of 66.6%, and a local funding percentage of 18%.

The overall budgets of school districts in the state of Tennessee are comprised of a varying percentage of funding from federal, state, and local sources. The reason for differences between the percentages of funding from the various levels is directly attributed to Tennessee's Basic Education Plan funding formula and guidelines. The formula is designed to most effectively and equitably allocate the state's available educational funds. The degree to which a district's overall budget is funded through federal, state, and local sources varies primarily due to the tax revenue of specific localities. An area like Lake County that includes a small population and few industries

and businesses will have an educational budget that includes a larger percentage of funding from the state of Tennessee. Areas that have larger populations and more industry and businesses will have an educational budget that includes a larger percentage of funding from local governments (counties, cities).

Per-Pupil Expenditure

Definition and Calculations

Average figures for per-pupil expenditure can be determined for federal, state, and local educational organizations. Because the federal government is ultimately responsible for a small fraction of total educational budgets, federal government per-pupil expenditure is generally calculated using an average of all state per-pupil expenditures. The United States Code Annotated (2015) states that, “the term ‘average per-pupil expenditure’ means...without regard to the source of funds...the aggregate current expenditures...of all local educational agencies in the state...[and] any direct current expenditures by the State for the operation of those agencies; divided by the aggregate number of children in average daily attendance to whom those agencies provided free public education during that preceding year” (p.1538).

The National Center for Education Statistics (2016) explained that “current expenditures” is an umbrella term that has the following subcategories: instruction, student support, instructional services, operation and maintenance, administration, transportation, and food services. Instruction expenditures are related to teacher salaries and benefits. Student support expenditures account for counseling, health, attendance, and speech pathology services. Instructional staff services expenditures involve money spent on curriculum development, staff training, librarians and computers centers. Transportation expenditures involve, specifically, the transportation of students. Administration expenditures reflect money spent on general and school administration. Finally,

operation and maintenance expenditures and food services expenditures involve money spent for services to keep schools physically operational. The NCES noted that “current expenditures” does not refer to money spent on capital outlay, or money spent on future development of buildings and infrastructure. “Current expenditures” also does not reflect money spent in the servicing of debts.

The Offices of Research and Education Accountability (2016), an office under the supervision of the Tennessee Comptroller of the Treasury, explains how per-pupil expenditure in the State of Tennessee is calculated. Students are counted using two methods: average daily attendance (ADA) and average daily membership (ADM). ADM counts total students enrolled, and produces a lower per-pupil expenditure figure than the ADA. The ADM is used for calculating the BEP formula and funding for charter schools in the Achievement School District in Tennessee. ADA counts students who are present, which is a lower number of students than ADM and results in a higher per-pupil expenditure figure. The ADA is used for reporting purposes on the Tennessee Department of Education Report Card and for distributing specified money among districts that serve students within the same county. OREA reports that the per-pupil expenditure for the state of Tennessee is the result of dividing current expenditures by the ADA. Local school districts within the state of Tennessee calculate their per-pupil expenditure by dividing their current expenditures, excluding capital outlay and debt service, by the ADA within their district. This number is the figure that is reported on the Tennessee State Report Card that is published each year along with other educational statistics, measurements, and statistics.

Concepts of Equity and Adequacy in Educational Finance

Ladd, Chalk, and Hansen (1999) began their anthology of educational finance research by stating, “The U.S. system of educational finance is characterized by large disparities in funding and opportunities for K-12 education among schools, local school districts, and states” (p. 1). This

anthology included research by the Committee on Education Finance that was part of a major study ordered by the United States Congress in the mid-1990s. Funding and opportunity disparities, the authors explained, had historical, constitutional, and social beginnings. Ladd et al., highlighted that states are the major funding organization for education, local school districts assume much of the responsibility for raising money for schools, the property tax is the main source of school revenue, and revenue from property taxes varies significantly between districts within a state. Additionally, districts that have smaller property tax bases find it much more difficult to raise the needed funds for their local school districts. The authors also mentioned that schools and districts with higher proportions of students who require more than the average per-pupil expenditure are often those same schools and districts that have smaller property tax bases. Although those disparities were mitigated somewhat by higher contributions of funding from federal and state sources the authors described the disparities within and between states as significant.

Central to modern discussions about educational finance are the concepts of equity and adequacy. Berne and Stiefel (1999) suggested that defining equity in the context of educational finance can be difficult. The differing perspectives and values of individuals present challenges when discussing educational equity. Therefore, it is important to define this term in a manner that will remain relatively consistent for the purpose of research analysis. Generally speaking, educational equity is the goal of providing equal opportunity and access for all American students to succeed academically. It can be helpful to equate equity with inputs. Equity involves what is input into the educational system so that students may succeed. Equity demands that each student be provided with a level playing field on which to begin or continue his or her academic pursuits. Equity is providing an equal starting line for all students. The pursuit of equity as the goal of early school reform makes sense. Tracking the amount of money spent on education is numerical, clear, and detached. Berne and Steinfel reminded their readers that the authors of those early

educational finance reform works assumed that equal input would result in equal, leveled performance and outcome. The challenge to defining equity, as highlighted by the shifting focus of contemporary research and public policy discussion, is its inseparable connection with adequacy.

Guthrie and Rothstein (1999) examined the increasing prominence of adequacy in educational research, policy, and decision-making. Whereas equity can be more closely associated and defined as inputs, adequacy involves the capacity of the educational system to provide sufficient resources to achieve a pre-determined outcome or objective. The relative straightforwardness of determining numerical funding equity contrasts with the complexity of determining adequacy. Adequacy involves providing an intentional unequal playing field. That playing field must be unequal, and tilted in the balance of students who arrive to educational institutions with diverse needs, learning challenges, and a variety of societal and environmental experiences that require more inputs than the traditional student. More and more, adequacy is defined solely in the context of outputs, or goals that are identified. Guthrie and Rothstein noted that defining adequacy involves two main steps: identification of the objective or performance criteria to be met or attained and the resources necessary that will allow for students to meet or attain the identified objective or performance criteria. Given the appropriate amount and type of data it would be possible to identify the relationship between the level of a specific input and the effect of an identified outcome. Although this type of statistical analysis would surely be revolutionary in deciding issues of equity and adequacy as it relates to school finance, the authors noted that it would be difficult, and potentially impossible, to quantify certain variables within the educational process. Guthrie and Rothstein cautioned policy-makers in regards to attaching outcomes to inputs. Such an endeavor involves making decisions based on incomplete and potentially misleading data that could lead to erroneous assumptions involving cause and effect.

Hart and Teeter (2004) researched American public perception regarding the educational

system. Although their research focused on issues pertaining to educational finance, they included questions regarding public perception regarding the performance of the American school system. When analyzing surveys of all adults from 2001-2004 the researchers note that over 60% grade the nation's public schools at a C, D, or F. However, results from surveys in 2001, 2002, and 2004 note that the percentage of respondents grading community schools C, D, or F never rose above 34%. West (2014) found a similar phenomenon. When asked to assess and assign a grade to schools, 47% of respondents gave local schools an A or B, while just 20% gave America's public schools an A or B. West paired that fact with the results of research asking respondents to estimate how much is spent per-pupil nationwide and locally. To these questions, respondents estimated that the nationwide per-pupil expenditure was \$10,155, while the local per-pupil expenditure was \$6,486. West suggested that public perception seemed to imply that people were generally satisfied with their local school systems that seemed to achieve despite being funded well below the national average. When schools are under-funded, yet still achieve results, the public is more likely to give higher grades for perceived effectiveness. When the public feels that schools are over-funded or that money is being wasted, and schools are not achieving desired results, the public is more likely to give lower grades for perceived effectiveness. West concluded that increased transparency in educational funding might push the public perception of local schools and nationwide into greater balance. Indeed, Hart and Teeter (2004) added that public perception demonstrated that respondents both valued education highly and were willing to support additional tax increases for education; however, only when effectiveness and efficiency could be clearly demonstrated.

Baker et. al., (2015), examining the fairness of educational finance across all 50 states, defined fair school funding as, "a state finance system that ensures equal educational opportunity by providing a sufficient level of funding distributed to districts within the state to account for

additional needs generated by student poverty” (p. 2). The expressed purpose of the publication was to examine the extent to which state education systems provide equal opportunity for all students to learn regardless personal challenges that include: background, socio-economic level, geographic location, school district, etc.

Baker et. al., (2015) built their report on several core foundational understandings. They stated that fairness included an understanding that different levels of funding were needed to ensure that each child had an equal opportunity to learn. The report noted that the costs of education vary based on geographic location, teacher salaries, district and school size, population density of localities, and student characteristics. The authors declared that student poverty is the single greatest factor that affected educational funding levels, stating that, “student and school poverty correlates with, and is a proxy for, a multitude of factors that increase the costs of providing equal educational opportunity – most notably gaps in educational achievement, school district racial composition, English-language proficiency, and student mobility” (p.6). This claim was coupled with the suggestion that states should increase funding for school districts that serve communities that include high-poverty populations. The authors noted that levels of distribution were of no consequence if the base level of educational funding was insufficient to provide for the desired minimal outcomes.

Baker et. al., (2015) focused on three indicators (Early Childhood Education, Wage Competitiveness, Pupil-to-Teacher Ratios) that they used as key examples of how funding priorities of a particular state could impact the quality of the overall educational experience for all students. They concluded by advising that funding for education be improved, fair, and, most importantly, maintained. The researchers declared that, “sustaining investments in education is important to the long-term vitality of a state’s...civic and economic health and well-being” (p.36). Baker, Farrie, et al. (2017) highlighted five major findings. There were still large disparities between per-pupil

expenditure between states. In 2017, New York had the highest per-pupil expenditure (\$18,165), while Idaho expended the lowest per-pupil amount (\$5,838). Generally, states that funded education at the lowest levels in comparison with other states, allocated a lower percentage of the state's overall potential budget to education. This would seem to suggest that some states were, as a matter of policy rather than necessity, funding educational institutions at lower than average levels. Most substantially, the 2017 report found a correlation between low rankings on school funding fairness and poor state performance on key resource indicators that included less access to early childhood education, non-competitive salaries for instructors, and higher teacher-student ratios.

According to the Tennessee Department of Education (2016c), in every school district in Tennessee, the most cost-consuming budget line item was for the salaries of all district personnel. Inherent within the numbers of per-pupil expenditure is the amount of money each district pays its instructional faculty and staff. Adamson and Darling-Hammond (2012) sought to examine the unequal distribution of highly qualified teachers within school districts in New York and California. Their research found that those districts that had the lowest teacher salaries also had the highest levels of teacher turnover and the lowest average levels of teacher experience. Districts serving large populations of minority students and students in poverty were the districts who employed the highest number of under qualified teachers or teachers who were relatively new to the profession. Adamson and Darling-Hammond also found that districts that demonstrated increases in teacher salaries also experienced decreases in the number of under qualified teachers with little experience. According to this study, larger numbers of experienced and qualified teachers lead to increases in student achievement and growth. Adamson and Darling-Hammond were interested in improving the equity in school funding across the country, but their research has serious implications for this study. If one were to parse out the percentage of each Tennessee

school district's per-pupil expenditure that represented instructional salaries, what relationship might exist between it and achievement measures? However, before that question can be asked, there must be an examination of the overall relationship between per-pupil expenditure and achievement measures.

According to Baker and Welner (2010), state efforts between 1990 and 2005 that sought to establish equity and adequacy concerning educational financing were left unfinished while the presence of between-district disparities actually increased. Baker and Welner sought to investigate claims that they insisted were occurring with greater frequency, that states have gone far enough in fulfilling their responsibilities to decrease disparities between districts and that the funding imbalances remaining were due to inter-district disparities between schools. While accepting the claims that there were funding disparities within school districts, Baker and Welner conducted an empirical analysis of data and trends from 1990-2007 that revealed the continuing need for states to correct between district funding disparities. Baker and Welner concluded that there was not consistent progress or resolution of disparities that occur between districts in all states. Additionally, the researchers suggested their research may have raised a more critical question concerning whether between-district or in-district disparities resulted in more inequity. Recent policy suggested to the researchers that the solution to educational inequity was to shift how money was spent within districts. The researchers warned that a lack of complete and reliable data that can be generalized between states may lead to shallow and surface level solutions that seek to address a particular agenda rather than solve inequity itself.

Heuer and Stullich (2011) issued a report focused on the comparability of expenditures from the state and local level among schools within districts. This report, commissioned by the United States Department of Education, was intended to shed light on whether schools serving high-percentages of students in poverty (Title I) had comparable per-pupil expenditures as schools

that did not serve high-percentages of students in poverty (non-Title I). The researchers' findings centered around school specific personnel costs. It analyzed per-pupil personnel expenditures between Title I and non-Title I schools. Heuer and Stullich stated that, "per-pupil expenditures often varied considerably across schools within districts, and nearly half of all schools had per-pupil personnel expenditures that were more than 10 percent above or below their district's average" (p. x). This variance refers to all schools included in the research regardless of their respective student populations. When Heuer and Stullich analyzed districts that contained both Title 1 and non-Title I schools they found that, "more than 40 percent of Title I schools had lower personnel expenditures per-pupil than did non-Title I schools at the same school grade level" (p. xi). This finding emphasizes one of the hidden variables when confronting equity and adequacy involving educational funding. If schools that serve higher percentages of students experiencing poverty are spending less on personnel per-pupil, then one can conclude that those teachers are less experienced and have had fewer opportunities to experience student success than those teachers in schools serving lower concentrations of student poverty. At this point, the discussion on school finance must involve additional conversations regarding how teachers are used within districts, and whether students who need the most experienced, capable, and successful teachers are receiving the best possible instruction available within their school district.

Biddle and Berliner (2002) synthesized research into funding disparities that exist both between states, districts, and within districts. They found that there was unequal funding between public schools in the United States. At the time of publication, student funding ranged from a low of approximately \$4,000 dollars to a high of approximately \$15,000 dollars. Biddle and Berliner concluded that the most significant factor in the discrepancies between funding levels of districts was due to the potential of the surrounding community to support schools through property taxes. Biddle and Berliner took this assertion a step further by noting that school districts that were well-

funded and had low poverty rates had higher achievement scores than school districts that were under-funded and had high poverty rates. Their conclusions challenge the assertions of researchers such as Hanushek (1989) who stated that nearly two decades of research provided powerful and consistent proof that educational funding levels were not related to student achievement. The fundamental disagreement between these researchers highlights the need for continued research into the connection among educational funding and student achievement.

Local property taxes are the historical and long-standing revenue stream for school districts across the country. However, certain states have attempted to make changes to the traditional revenue streams of public education. Lindle, Knoepfel, and Pitts (2013) described the state of South Carolina's decision to replace funding schools through the property tax with a one cent addition to the sales tax. The researchers noted that South Carolina was not the first state to deviate from traditional methods of property tax based revenue streams. The state followed others who began funding education using less dependable and potentially unpredictable funding mechanisms. Lindle et al. found through an analysis of descriptive statistics that property tax was the most stable, reliable, and consistent source of revenue during the 10 years for which data were available. Additionally, revenue from the collections of property taxes actually increased unlike the other two sources of tax revenue. Income and sales tax revenue both failed to meet projections in 6 out of the 10 years for which data were available. Lindle et al. noted that recessions and a slowing in the growth of the American economy contributed to the underperformance of income and sales tax revenue streams. South Carolina experienced a decrease of over 33% in per-pupil expenditure that resulted in lay-offs, furloughs, and a reduction in the number of school days in the calendar. Lindle et al. noted these factors all have a positive impact on student achievement. The experience of South Carolina suggests the need for educational policy and decision makers to move slowly when considering new and creative solutions to funding public education.

Some literature has suggested that the source or the amount of money is less important than how that money is ultimately spent within districts. For example, Odden (2007) used previous research to describe ways in which redesigning the ways in which districts spend money could have a positive effect on student achievement data. Odden's analysis concluded that districts that experienced dramatic increases in student performance and achievement used many of the same strategies and practices, including: setting ambitious goals, analyzing student data, reviewing evidence supporting new curriculum, investing in teacher training, providing help for struggling students, creating smaller class sizes, using time more productively, instituting professional learning communities, providing leadership opportunities, and connecting with professionals in building partnerships and programs. Odden stated that schools that exhibited increased academic achievement were also able to do so while spending approximately the national average on per-pupil expenditure. Odden elaborated on this final point, stating that it suggested, "that with the current revenues in the nation's education system, schools should be able to dramatically increase student academic performance at least in some subject areas and at some grade levels through school restructuring and resource allocation" (p. 8). This conclusion reflects a frequent tendency of the literature to reflect seemingly different conclusions when analyzing data that focuses in on a particular grade level or subject area. Nevertheless, Odden demonstrated the potential for school districts and schools to better allocate existing school funds to more effectively capitalize on the potential of students to demonstrate achievement and mastery at a specific grade level or in a specific content area.

Terman and Behrman (1997) discussed the challenges of providing equity and adequacy in their analysis of research regarding educational finance and funding. They discussed whether it was even possible to determine the correct amount of money that should be spent on education in a specific school without first determining exactly what outcome was expected. Terman and

Behrman recommended that schools be provided a minimum level of funding that enables them to achieve predetermined levels of student achievement and mastery. The minimum level of funding should be based on the actual expenditures of schools that were demonstrating student achievement that met those predetermined levels. Terman and Behrman also studied whether money was distributed in an equitable manner. They suggested that in order to improve the academic outcome of students schools that served a high percentage of students in poverty should be provided with the financial support to conduct appropriate professional development and ensure access to technical support that would assist teachers in reaching all students. Terman and Behrman also discussed whether money that was already being spent on education could be used in a more efficient and effective manner. The researchers recommended that states commit to a few highly stable and reliable academic measures to verify whether schools are serving student population in a manner that is consistent with the expectations of the state. Finally, they stated that it would be wise for school systems to collect more detailed data pertaining to the use of educational monies so that adjustments could be made in the budgeting process to ensure continued effectiveness and efficiency in the future. Echoing the majority of the literature, the authors noted the additional challenges faced by schools and districts that serve a high percentage of students with special needs and students in poverty.

Banicki and Murphy (2014) conducted research involving the adequacy model for school funding which considered the effectiveness of an adequacy model that is evidenced-based. This particular funding model is based on adequacy, providing money to schools that would enable all students to reach pre-determined educational outcomes. Banicki and Murphy noted that an early example of an adequacy model was the 2001 No Child Left Behind Act, noting that a statistical approach to adequacy would be used where student achievement would be used as the independent variable. The dependent variable would be spending. This model was used to determine the

approximate level of funding that a school system needed to achieve the pre-determined level of academic achievement. This type of analysis reveals the predicted amount of money that it should take to meet the projected level of academic achievement. Although this model was in use in certain locations, including Washington State, it did not cover the ways in which money was spent, such as the types of programs and strategies in use in schools that met the pre-determined levels of academic achievement. In fact, one of the greatest disadvantages of this type of adequacy model is that it is designed to predict achievement for an average school, largely ignoring the widely accepted reality that schools serving high percentages of special needs students and students in poverty need additional resources. Banicki and Murphy stated that an adequacy model called the Effective School Wide Programs model, or the Evidence-Based Adequacy model, seeks to fund schools based upon predetermined levels of student achievement and research-based strategies and programs specifically designed and chosen as a means to facilitate the achievement of those predetermined levels of student achievement. Once educational priorities are set and programs and strategies are chosen to achieve those priorities, then a funding formula is applied to determine the cost of providing those specific programs and strategies to specific districts and schools so that all students can be successful. Banicki and Murphy noted that the central limitation to this funding model was that, “less than half of the states in the United States currently contribute sufficient funds to their respective education budgets to support this funding model” (p. 14). This model, properly funded, sought to achieve equity through adequacy; however, current educational funding levels would not allow for the success of this type of funding model.

Increased emphasis on accountability for students, schools, districts, and states has brought issues of alignment between student outcomes and financial inputs to the forefront. As funding sources come under increased scrutiny while decision and policy makers attempt to allocate money specifically tied to pre-determined student outcomes, research is beginning to focus on measuring

the degree to which funding is aligned with accountability. Della Sala and Knoeppel (2015) conducted a research analysis using finance and student achievement data from nine states to determine the degree to which inputs and predetermined outcomes were aligned. Research centered on the “opportunity gap,” a metric used to represent the misalignment between the equity of a state’s educational funding formula and the equity of student achievement outcomes as reflected in predetermined accountability measures. This research is more evidence of a shift from merely providing equal funding to providing unequal funding to enable all students to meet predetermined learning and achievement benchmarks. Della Sala and Knoeppel noted that none of the states measured had equitable finance systems and equitable student outcomes. Della Sala and Knoeppel concluded that the task of measuring the alignment of states’ finance systems and student achievement outcomes proved difficult. Recommendations of the researchers included a suggestion that additional foundational research was needed in order to more accurately frame the issue of equity in educational finance and accountability.

Achievement Measures

Graduation Rate

One of the most consistent measures of public school effectiveness has been the high school graduation rate. Although this measure has long been used to measure effectiveness, it has recently become one of the main indicators under accountability systems implemented around the country since the No Child Left Behind Act in 2001. When evaluating graduation rates it is critical that the researcher understands how the term is being used, and what exactly it is representing. The most universally accepted formula for calculating graduation rate was defined by Kena, Hussar, et al. (2016) as part of the National Center for Educational Statistics yearly report delivered to Congress. The *Condition of Education* report used the term “averaged freshman

graduation rate” or AFGR. The authors defined averaged freshman graduation rate as, “A measure of the percentage of the incoming high school freshman class that graduates 4 years later” (p.294). This figure is calculated by dividing the number of high school graduates in a class that received a traditional high school diploma by the total number of incoming freshman of that same class four years earlier. The determination of how many incoming freshman there were can be calculated by adding the total number of students in the 8th grade year, 9th grade year, and 10th grade year of the current graduating class. Then, one must divide that number by three. The resulting figure represents the number that is used as the total for the incoming freshman class. Using this formula, any student who drops out of school, fails to meet the required courses in the designated timeframe, transfers out of a district, or who achieves a G.E.D. or other equivalency degree counts negatively against a school’s, district’s, or state’s overall graduation rate. This measurement is less precise than a similar figure, the ACGR or the adjusted cohort graduation rate.

Kena, Hussar, et al. (2016) stated that the adjusted cohort graduation rate has been widely used only since 2010, due to a lack of the types of student data needed to compute the rate. The main difference is that while the AFGR measures graduation rate using averages of the incoming freshman class, the ACGR tracks data on an individual student level. This allows the ACGR to subtract any members of an incoming freshman cohort that transfer out of a district, emigrated, or passed away. It also allows for the addition of students who transfer into the district during a particular cohort’s 4 year measurement period. Although different formulas are used to compile the AFGR and the ACGR, the two measures are closely aligned when analyzing national graduation rates. In this way, the AFGR is used when discussing and analyzing graduation rates over a broader historical timeframe, reliably as far back as 1960. The ACGR is the graduation rate that is now used for reporting purposes on state and national report cards. The ACGR is officially defined in the United States Code Annotated (2015) as the national standard for how schools,

districts, and states compute graduation rates. However, independent researchers, think tanks, policy analysts, and others use their own methods for calculating and reporting graduation rates. This can prove to be confusing at best, and intentionally misleading at worst. It is imperative that before one begins to analyze research or findings pertaining to graduation rates that one is clear on what exactly that number represents.

Kena, Hussar, et al. (2016) presented information pertaining to historical graduation trends between 1990 and 2013. According to this data, and using the AFGR the high school graduation rate in 1990 was approximately 74% in the United States. From 1995 until 1999, the high school graduation rate for the United States dipped and hovered around 71%. The rate increased to 75% in 2005, dipped to 73% on 2006, and then steadily rose to 82% by the end of the 2012-2013 school year. This change represented an increase of 8% over the past 20 years. The adjusted cohort graduation rate for the United States for the 2012-2013 school year was 82%. This was identical to the AFGR that, as stated earlier, remains fairly similar to the ACGR when discussing nation-wide graduation rates. When viewed in the context of race and ethnicity subgroups, the data showed the following distribution: Asian-Pacific Islander-89%, White-87%, Hispanic-76%, Black-73%, and American Indian/Alaska Native-70% (p. 184). This discrepancy in race-ethnicity graduation rates has been a key measure in school reform movements.

Education Digest (2007) noted that the cost of students dropping out, or not finishing high school was around \$127,000 per student. The article stated that the United States could have saved over \$45 billion dollars a year if the percentage of dropouts was reduced by 50%. Education Digest suggested intervention programs that were proven to be successful such as: smaller schools, student personalization, high academic expectations, effective counseling, parent engagement, extended time in school, and highly trained faculties and staff that had access to high quality professional development. In 2000 the United States ranked 13th in graduation rate when

compared to similar countries in the OECD index (Murnane & Hoffman, 2013). Furthermore, although the United States graduation rate improved by 6% from 2000 to 2010 the United States was still below the OECD average for graduation rates. Murnane and Hoffman suggested that possible solutions to this reality all revolved around a fundamental and systematic change in the manner in which students experience high school. Those recommendations had little to do with funding mechanisms; instead, they centered on suggestions involving the types of curriculum, programs, and strategies utilized in United States' secondary schools. Graduation rates serve as a clear and understandable metric with which the United States public and policy makers judge the effectiveness of public schools in meeting the expectation of teaching, developing, and preparing the next generation of the informed and involved American citizenry.

ACT Test

Formerly the American College Testing Program, the ACT assessment is a college readiness assessment. According to ACT (2017) E.F. Lindquist, a University of Iowa professor, created the first version of the assessment by in 1959. Challenging the SAT assessment as the preferred and most widely used college entrance examination, the ACT has evolved throughout the decades. More recently ACT Inc. has begun developing, marketing, and selling a broad range of assessments and assessment programs to schools, districts, and states. The number of high school students taking the ACT college readiness exam has increased significantly. The ACT annual report (2015) stated that over 1.9 million members of the 2015 graduating class took the ACT test. This represented more approximately 59% of high school graduates in the United States. As the ACT assessment became more and more popular and ACT, the company, became more and more profitable, an increasing number of states used the ACT as a piece of agreed upon accountability measures at the state and district level. ACT noted that in 2015 20 states provided free

administration of the assessment for students within their public school systems. States that administer free assessments use that data as part of accountability systems and measurements to understand better the academic performance of their school systems. Tennessee is among the states that currently offers free administration of the ACT to students as part of the state accountability metrics. Beginning in the 2017-2018 school year, Tennessee requires that every student graduating from a secondary school within the state has taken the ACT.

Dickinson and Adelson (2016) conducted a study involving multiple achievement measures. The authors discussed the ACT assessment, describing it as, “historically used to identify higher performing students for selection into postsecondary education” (p. 8). They concluded that the content of the ACT is somewhat based on state standards, but seeks to compare the scores of test takers relative to one another rather than assess achievement to a set of pre-determined standards. Le, Hamilton, and Robyn (2000) authored a study that sought to determine the degree to which the ACT test was aligned with California’s state standards. The researchers determined that ACT questions included exclusively multiple-choice items, while state assessments in California allowed for more items that were open-ended. In 2015, ACT began offering a written section in addition to the traditional ACT college readiness assessment. Included in the ACT *Condition of College and Career Readiness* (2016) publication were findings related to the recent performance of those students who had taken the ACT assessment. The report noted a decline in the overall score of test takers in 2015, but explained that the dip was likely due to the increase in overall test takers rather than an actual drop in national performance average. Also discussed in the report were college and career readiness benchmarks. ACT has developed these benchmarks using the massive amount of data at its disposal each year. States find these college and career readiness standards useful in determining both the success of their state’s educational institutions as well as their performance relative to other states.

Funding and Achievement

Hanushek (1997) sought to determine the degree to which per-pupil expenditures effected student achievement and outcomes. The findings of Hanushek's comparison of research results covering 2 decades revealed that there was not a relationship between per-pupil expenditures and academic achievement. However, Hedges and Greenwald (1996) conducted a similar analysis using the same research and concluded the opposite. Hedges and Greenwald found that increasing per-pupil expenditures did have a significant impact on student achievement. Nearly 2 decades later research is still being conducted and analyzed to identify and define the impact and effect of educational expenditure on student achievement.

Griffore, Phenice, and Hsieh (2014) examined multiple variables as predictors or indicators of student success as measured by achievement tests in 8th grade. The researchers sought to examine the relationship between per-pupil expenditure, pre-k enrollment, 4th grade achievement data, and 8th grade achievement data. The results showed that student achievement, as measured by the 4th grade assessments, were the best predictor of student achievement on 8th grade assessments. The study found that per-pupil expenditure was not a significant predictor of student achievement on 8th grade assessments. The researchers concluded that although per-pupil expenditure did not significantly predict achievement, it was not appropriate to interpret their results as a call for funding to be but cut from educational budgets and programs. Instead, their conclusions surmised that resources may not be sufficiently allocated to those children with special needs or abilities within certain districts. The researchers noted that resources could be allocated to specifically target identified curriculum areas that require intervention, such as mathematics, language, or science. Their conclusions were grounded in the idea that it was not the level at which each variable was introduced that was most important. The researchers indicated that the quality,

character, and intentionality with which the variables were introduced were likely to have a large effect on student outcomes. The mere enrollment in pre-K programs is not as much of a factor if the curriculum, teaching, etc. is not sufficient and successful. Likewise, the amount of money spent per-pupil is not as impactful as how that amount of money spent per-pupil is allocated.

Johnson (2004) analyzed the relationship between achievement and educational finance in Nebraska school systems. The Rural School and Community Trust, a non-profit that works to address and highlight the relationship between successful school and the communities that they serve, funded Johnson's research. The study noted that it is important to appreciate that the cost of providing education to students varies depending on the unique and individual challenges that some students and student populations face. The study isolated data from the 2001-2003 school years from districts across Nebraska. Dividing the districts according to achievement results, the researchers then analyzed relevant statistical information pertaining to student demographics, free and reduced lunch rates, percentage of ESL students, percentage of adults with high school diplomas, median household income, and assessed property value. The researchers noted challenging realities existed when they compared the 23 lowest achieving school districts with the 51 highest achieving school districts. Among those challenging realities were that the lowest achieving school districts, on average, recorded \$95,747 per-pupil less in assessed property value, \$534 lower current per-pupil expenditure, and \$2,409 lower average teacher salary. Johnson concluded that school systems that serve higher percentages of students who face the most challenges are those districts with the fewest resources to address those challenges. For school districts with the least percentage of students that face additional challenges, there were more financial resources available. In Nebraska, during the years from which data were analyzed, there was a correlation between the amount of money spent for each child's education and individual student achievement.

Lips and Watkins (2008) engaged in educational research on behalf of the Heritage Foundation, a self-proclaimed politically conservative think-tank that seeks to promote and fund research that supports its ideological beliefs. The conclusions of their study contrast with Johnson (2004) findings. Lips and Watkins analyzed the amount of federal public education spending in the United States from 1970-2005 and compared it to multiple measures of academic achievement during the same time span. Conclusions from the study noted that increases in the amount of financial resources allocated by the United States federal government have not led to similar increases in student performance. This conclusion is based on comparisons between the amounts of funding, or input, for the educational system, and the degree to which students demonstrate success through standardized tests, graduation rates, and other measures. Lips and Watkins further suggested that law and policy makers resist any suggestion or proposal that seeks to broadly and indiscriminately increase educational funding. Instead, the researchers echo what they contend to be the majority opinion of educational researchers, which is to improve the method with which educational funds are allocated. According to Lips and Watkins these methods should be improved through educational reforms involving develop effective professional development for school leaders and expanding school choice options.

Gross, Booker, and Goldhaber (2009) conducted a research study that involved reviewing the Comprehensive School Reform Demonstration (CSR D) project from the late 1980s to the early 2000s. The CSR D involved money that was allocated for states and districts to use in order to improve their lowest performing schools. The researcher's study focuses on the effect that CSR D funds had on improving academic achievement of students in low performing schools from the state of Texas. Gross et al. found in schools that received CSR D funds there was not an effect on student achievement. The study's conclusions also indicated that it was possible that if schools had a higher degree of fidelity concerning implementation of CSR D their results could demonstrate an

effect. However, the researchers' findings were consistent with government studies and evaluations of the program. The Office of Management and Budget (2002) released a profile of the CSR program and determined that there was not a direct relationship between the level of funding through the CSR program and student achievement. The government's own assessment of the program noted that it was only successful at meeting the stated objectives to a small and limited extent. However, both the researchers and the government concluded that the results might be inconclusive because much of the data were self-reported by the states, and that data collection was left incomplete.

Womack (2000) attempted to determine if there was a direct relationship between academic achievement and expenditures. Womack analyzed available data that reported ACT scores in the mid 1900s from the state of Arkansas. The study divided school districts in Arkansas into categories based on the variables of the study. For example, one analysis divided districts into categories based on average ACT score. Womack found that for the bottom two-thirds of reporting districts, there was not a relationship between per-pupil expenditure and academic achievement as measured by the average ACT score. However, the data represented by the remaining third indicated that there was a relationship between per-pupil expenditure and achievement. The researcher's conclusions included a potential explanation for this discrepancy that is not evident in the majority of research. Womack argued that for districts whose average ACT scores place them in the bottom two-thirds of the data, are using funds for, what he calls, "survival." This category of spending refers to money spent on items other than instruction. Those districts whose average ACT scores place them in the top third of the data reflect an ability, according to the researcher, to allocate more money toward instructional goals, objectives, and programs. Unlike previous research that merely indicates a need for a more effective allotment of funds, Womack attempted to describe a specific manner in which fund allotment may not be equitable, by necessity, among

school districts.

Neymotin (2010) sought to discover if a relationship existed between school funding and student achievement in Kansas public schools. The researcher discussed changes that were made to the manner in which Kansas schools were financed after revisions were made to the formula used by the state to allocate educational funds. The researcher found that changes made to the formula used to allocate money to Kansas schools had little to no effect on student achievement as measured by graduation rates and test scores. Neymotin noted that how funds were allocated after being received by school districts is not explicated by the data analysis. Echoing the conclusions drawn by Womack (2000), Neymotin posed two essential questions: whether school districts that actually need additional money are receiving it, and if funds are being allocated by school districts in the most effective and efficient manner that has the greatest, measurable effect on student achievement. A discussion of the role of poverty and other variations in student demographics was also highlighted as an unseen variable that affects the validity of the data being analyzed.

Barnett, Jensen, and Ritter (2010) assessed achievement gaps in the state of Arkansas in the context of substantial increases in educational funding throughout the state. The research evaluated changes in achievement gaps between the majority white student population and the minority Hispanic population, as well as evaluated changes in the poverty gap. Analysis of achievement gap data from 2003-2007 indicated a stable or widening difference between majority white students and Hispanic students. Although both groups varied, and state standards and benchmarks changed during the collection of the analyzed data, gaps between the majority and subgroups were, at most, consistent. Data pertaining to the difference in achievement between students who do not live in poverty and students who live in poverty show a widening of the gap across all years in which data were collected. The researchers concluded that their data reveal that minority students and students who live in poverty were still not receiving the educational support

that they needed to demonstrate proficiency on state and national assessments. Barnett et al. suggested that state lawmakers begin collecting data pertaining to school expenditures on the school level. It was suggested that this type of data collection would allow for a more detailed approach to identifying ways in which funds can be allocated for the maximum benefit of all students, and in particular, minority students and students who live in poverty.

Similar research by Vasquez, Heilig, and Williams (2010) sought to analyze the effect of financial inputs on the academic achievement of Latino-serving elementary schools in an urban setting. The researchers viewed urban elementary schools with a majority Latino population as new ground in educational research concerned with the effect of money on student achievement. The research used a data set of 419 individual elementary schools from three urban school districts in the state of Texas. This data included math and reading scores from 2005-2008. The researchers examined pass rates on elementary school tests over time and their relationship to changes in educational funding, school size, and student demographics. Vasquez et al. found that increases in instructional, curriculum, and leadership spending did not have an effect on reading scores in majority Latino schools. However, increased instructional spending did have a significant relationship with mathematics scores. The researchers suggested that increasing overall operating expenditures shows promise for improving overall test scores. This suggestion was included after an acknowledgement that the idea of broad increases in educational funding was in opposition to the majority of the research influencing state legislators in Texas. The researchers recommended more research to determine what specific components of school level expenditures need additional funding.

Chung (2015) examined the effect of a change in the funding formula in Maryland that increased money given to school districts that had larger proportions of disadvantaged students. The study found that the intentional alteration of the Maryland's funding formula improved equity

within the state. School districts that served larger portions of disadvantaged students did receive additional monies. This additional revenue was aimed at providing all students an equal opportunity to learn the required skills and standards. However, the research also found little evidence that this additional funding resulted in a narrowing of the achievement gap between student groups. Although this research was limited by using only student dropout rates and graduation rates as indicators of student success, the researcher noted that the data revealed achievement gaps remained relatively stable throughout the time period for which data were examined. Conclusions of this study centered on the fact that even though Maryland achieved its goal of creating more educational equity, the effect on student outcomes is tenuous at best, and non-existent at worst. The researcher urged continuing research that studies the ways in which educational dollars are spent at the district and school level.

In a similar study, and as part of a broader research study into the effect of the federal government's *First to the Top* program, Cantrell (2013) sought to define the relationship between the cost of education and student outcomes in the state of Tennessee. This study found that there was no relationship between the amount of per-pupil expenditure and student academic achievement. Cantrell noted that the study involved a narrow, slim snapshot of time in the midst of rapid and significant change within the Tennessee educational system. However, the research concluded that there was a need to research further into how money was being spent at the local level, rather than the amount of money spent at the local level.

James et. al., (2011) analyzed patterns of educational resource allocation and their relationship to student achievement. Professional development was found to have a significant negative effect on every measure of student achievement. Teacher salary had a positive effect on three different measures of student achievement. Pupil services, technology and other spending had a negative effect on two of the variables, while media services and instruction did not have a

significant effect on any of the measures of student achievement. These findings led the researchers to conclude that due to limited educational resources, districts and schools should clearly identify the manner in which educational resources are spent. The conclusions of this study indicate that districts and schools should direct educational resources towards teacher salaries and benefits and not towards professional development.

Bibb and McNeal (2012) conducted research that sought to determine the relationship between per-pupil expenditure and student achievement. Using statistical information gleaned from state reports in 2008, the researchers analyzed student data from the state of Tennessee. The researchers examined several measures including: high school student achievement, per-pupil expenditure, school district enrollment, and several selected student demographics. Concerning high school student achievement, the researchers used the ACT assessment and the Tennessee Comprehensive Assessment Program (TCAP) writing assessment. Bibb and McNeal found that per-pupil expenditure and district enrollment did not have a significant relationship to student achievement levels of high school students. The researchers did find a significant relationship between economically disadvantaged students and student achievement of high school students. Conclusions from this study revolved around the idea that the amount of money was not as important as the manner in which the money was spent. The researchers suggested that districts seek to spend money in ways, such as professional development for faculty and staff, which would provide the most benefit for students. Bibb and McNeal also stated that districts should spend money to train educators on how best to educate students who are economically disadvantaged. These findings echoed previous conclusions reached by Bibb (2009) in a similar study that sought to identify the relationship between funding and achievement in the state of Tennessee. Bibb and McNeal (2012) concluded his first research analysis by urging lawmakers and educational leaders to place the emphasis on examining those systems that have large proportions of students with

disabilities and students who are economically disadvantaged who, nevertheless, demonstrate proficient and advanced levels of academic achievement.

Jefferson (2005) reviewed the available literature concerning research involving educational spending and student achievement. Jefferson noted that educational spending, and increasing educational spending, does have the potential to improve educational opportunities for students. However, the researcher urged caution to those who may seek to translate the potential for improved educational opportunity into improved academic achievement for students. Jefferson discussed how one of the most important aspects of educational spending is how available monies were spent. The researcher also noted that the fact that the research does not definitively find a direct, causal relationship between money and achievement does not mean that there was no relationship whatsoever. Jefferson noted that with educational money came student opportunity, and that student opportunity provides the opportunity for learning to occur.

Chapter Summary

Educational spending has evolved throughout the history of the American educational system. What was once a community based enterprise, education has evolved into a complex web of interconnected local, state, and federal agencies. Local control of education is still the predominant force for districts and schools throughout the United States. However, the federal government has become a greater influence and driver behind educational policies and reforms since the passage of the ESEA in the 1960s. Although Federal money accounts for a fraction of overall state and district educational budgets, it still represents a sizeable investment into a system that is charged with the education of all students. Each state allocates money to local districts according to a funding formula that has been approved by the state legislature. In Tennessee, the BEP, or Basic Education Plan, is the funding formula used to determine the amount of educational

dollars allocated to each district. This total is broken down to represent the amount of money spent for each student within a district, or per-pupil expenditure. As educational systems face increasing scrutiny and accountability associated with student outcomes, large debates exist over the influence of increased educational dollars. What began as a push to gain educational equity has transformed into a demand for adequacy. The current educational climate is no longer satisfied with equal spending, instead demanding that educational dollars translate into improved academic achievement across all groups and subgroups. The majority of educational research points to the conclusion that there is not a relationship between spending and achievement. However, most studies conclude that further research is needed. Specifically, there is a need for increased study into how educational dollars are spent at the district and school level. Nevertheless, research that seeks to elucidate the relationship between educational spending and academic achievement remains a valuable tool for educational policy and decision makers. Conclusions should be used to inform future decisions regarding the role of money in the American educational system.

CHAPTER 3

METHODOLOGY

This study was an examination of the relationships between academic achievement of school districts in Tennessee and per-pupil expenditure. The purpose of this study was to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district. Research was conducted to determine whether per-pupil expenditure had a relationship to academic achievement. The Statistical Package for the Social Sciences (SPSS) was used to calculate results of the relationship between academic achievement of school districts in Tennessee and per-pupil expenditure.

A quantitative framework was used to compare significant relationships of per-pupil expenditure and academic achievement. The data collected for this research represents three years: 2013, 2014, and 2015. Relationships were examined between academic achievement and per-pupil expenditure for each year, and all districts with all data points in a given year were divided into three classifications: Above Average, Average, and Below Average. A quasi-experimental design was used in this study due to the fact that public data already existed and collecting additional data was not necessary. Included in this chapter are: The Research Questions and Null Hypotheses, Population, Sample, Instrumentation, Data Collection, Data Analysis, and Summary.

Research Questions and Null Hypotheses

The following research questions and corresponding null hypotheses were addressed during the study.

Research Question 1

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

H₀₁: There is no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year.

Research Question 2

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

H₀₂: There is no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

Research Question 3

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year?

H₀₃: There is no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year?

Research Question 4

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-15 school year?

H₀₄: There is no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-15 school year?

Research Question 5

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

H₀₅: There is no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

Research Question 6

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

H₀₆: There is no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure in the 2015-2016 school year?

Population

This research is a quantitative, nonexperimental study regarding the effectiveness of per pupil expenditure on the ACT scores and graduation rates of students in secondary schools in the state of Tennessee. The population will consist of all secondary schools in the State of Tennessee. Data were accessed from the Tennessee State Report Card website. Through the research process, it became apparent that there are districts listed on the Tennessee State Report Card website that do not serve secondary students, and several districts listed as serving secondary students that do not contain information on either ACT scores, graduation rates, or per-pupil expenditure (PPE).

The sample included all districts that serve secondary students that have all of the following data points for each of the individual school years examined: ACT composite scores, graduation rates, and per-pupil expenditure (PPE). All districts that reported the necessary data points for the specific school year identified were divided into 3 distinct subgroups: above average, average, and below average. The distinction between above average, average, and below average was determined for each of the three years examined in this study. Once the range of per-pupil expenditure had been determined for the 2014, 2015, and 2016 school years, districts were

assigned into one of three classifications based on whether their per-pupil expenditure placed them in the top third of school districts (above average), the middle third of school districts (average), or the bottom third of school districts (below average).

For the 2014 school year, 116 school districts reported all necessary data points. Of those districts, the per-pupil expenditure ranged from a low of \$7492 to a high of \$11877. The below average classification, which included 39 districts, had a per-pupil expenditure ranging from a low of \$7492 to a high of \$8540. The average per-pupil expenditure for the below average classification was \$8199. The average classification, which included 38 districts, had a per-pupil expenditure ranging from a low of \$8554 to a high of \$9129. The average per-pupil expenditure for the average classification was \$8830.69. The above average classification, which included 39 districts, had a per-pupil expenditure ranging from a low of \$9158 to a high of \$11877. The average per-pupil expenditure of the above average classification was \$9870.68.

For the 2015 school year, 117 school districts reported all necessary data points. Of those districts, the per-pupil expenditure ranged from a low of \$7270 to a high of \$12355. The below average classification, which included 39 districts, had a per-pupil expenditure ranging from a low of \$7270 to a high of \$8501. The average per-pupil expenditure for the below average classification was \$8164. The average classification, which included 39 districts, had a per-pupil expenditure ranging from a low of \$8567 to a high of \$9188. The average per-pupil expenditure for the average classification was \$8854.64. The above average classification, which included 39 districts, had a per-pupil expenditure ranging from a low of \$9158 to a high of \$11877. The average per-pupil expenditure of the above average classification was \$9891.51.

For the 2016 school year, 124 school districts reported all necessary data points. Of those districts, the per-pupil expenditure ranged from a low of \$7194 to a high of \$13063. The below average classification, which included 41 districts, had a per-pupil expenditure ranging from a low

of \$7194 to a high of \$8733. The average per-pupil expenditure for the below average classification was \$8323.89. The average classification, which included 42 districts, had a per-pupil expenditure ranging from a low of \$8754 to a high of \$9363. The average per-pupil expenditure for the average classification was \$9053.26. The above average classification, which included 41 districts, had a per-pupil expenditure ranging from a low of \$9364 to a high of \$13063. The average per-pupil expenditure of the above average classification was \$10129.06.

Instrumentation

All data used in the research were gathered from the Tennessee Department of Education website (TDOE). All data were published and accessible to the public through the Tennessee State Report Card, first accessible online as of 2008. This database is updated annually to reflect reported data from the entire state for the most recent academic calendar year. The database includes searchable tabs pertaining to information regarding the following categories: profile, value-added, comparisons, college-career readiness, accountability, educational climate, teachers, and career and technical information. The Tennessee State Report Card ties specific districts to their reported data in a way that is inherently identifiable. The validity and reliability of the quantitative research method was easier to ascertain using statistical tests that were formulated to ensure both validity and reliability.

Data Collection

Ex post facto data were collected from the Tennessee Department of Education website. All pertinent school district information reported appeared on the Tennessee State Report Card website. This publicly reported and available data were collected by accessing the Tennessee State Report Card website. The researcher recorded data related to each school district that reported data in all three of the following categories: per-pupil expenditure, graduation rates, and ACT composite scores. The researcher made separate spreadsheets for each of the academic years that were to be studied: 2013-2014, 2014-2015, and 2015-2016. Each spreadsheet contained the district name, county, locale classification, graduation rate, ACT composite scores, and per-pupil expenditure. Per-pupil expenditure was collected using the ADA formula for each of the academic years for which data was available. Districts were assigned to a classification for each of the academic years for which data was collected. Those classifications represented approximately one-third of the overall districts reporting data for each of the academic years for which data was collected, and were named above-average, average, and below average. After districts were assigned a classification, the researcher used the Statistical Package for the Social Sciences (SPSS) to conduct appropriate statistical analysis that allowed for a determination of the relationship between variables.

Data Analysis

A series of Analysis of Variances (ANOVAs) was used to determine if there were significant differences in academic achievement, as measured by high school graduation rate and ACT composite scores, among schools that were classified above average, average, and below average based on their per-pupil expenditure in each of the academic years for which data was available. All data were analyzed at the .05 level of significance.

Chapter Summary

Chapter 3 presented an outline of the methodology of this research, including: The Research Questions and Null Hypotheses, Population, Sample, Instrumentation, Data Collection, Data Analysis, and Summary. This research was conducted using a quantitative research approach. The purpose of this study was to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district. Districts that reported all necessary data points in a year for which data was collected were divided into three classifications: above average, average, and below average. Statistical tests were then conducted to determine if there was a significant difference between academic achievement among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the academic year for which data was collected. The quantitative approach represents the most expeditious, efficient, and effective method that can be used to better understand the effect of per pupil expenditure on students' academic success within those districts. This study is preliminary correlational research onto which further studies may add additional insight into the relationship between money and academic achievement.

CHAPTER 4

RESULTS

This study sought to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district. Research was conducted to determine whether a significant difference existed in academic achievement measures (high school graduation rate and mean ACT score) among school districts in the state of Tennessee that were classified as above average, average, and below average in relation to their per-pupil expenditure (PPE) in the 2013-2014, 2014-2015, and 2015-16 school years. The sample included all districts that serve secondary students that have all of the following data points for each of the individual school years examined: ACT composite scores, graduation rates, and per-pupil expenditure (PPE). All districts that reported the necessary data points for the specific school year identified were divided into 3 distinct subgroups: above average, average, and below average. The distinction between above average, average, and below average was determined for each of the three years examined in this study. Once the range of per-pupil expenditure had been determined for the 2013-2014, 2014-2015, and 2015-2016 school years, districts were assigned into one of three classifications based on whether their per-pupil expenditure placed them in the top third of school districts (above average), the middle third of school districts (average), or the bottom third of school districts (below average). A series of Analysis of Variances (ANOVAs) was used to determine if there were significant differences in academic achievement, as measured by high school graduation rate and ACT composite scores, among schools that were classified above average, average, and below average based on their per-pupil expenditure in each of the academic years for which data

was available. All data were analyzed at the .05 level of significance. Research Questions 1, 3, and 5 examined the relationship of graduation rates to per-pupil expenditure in the 2013-2014, 2014-2015, and 2015-2016 school years. Research Questions 2, 4, and 6 examined the relationship of ACT composite scores to per-pupil expenditure in the 2013-2014, 2014-2015, and 2015-2016 school year.

Research Question 1

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

H₀₁: There is no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year.

A one-way analysis of variance was conducted to evaluate the relationship between per-pupil expenditure and high school graduation rates of school districts in Tennessee during the 2013-2014 school year. The factor variable, per-pupil expenditure, included three levels: top-third, middle-third, bottom-third. The dependent variable was the high school graduation rates for school districts in Tennessee during the 2013-2014 school year. The ANOVA was not significant, $F(2,113) = 2.905$, $p = .059$. The mean high school graduation rate for the 2013-2014 school year for the bottom third level was greater, but not significantly greater than middle third or top third levels. Therefore, the null hypothesis was retained. The strength of the relationship between per-pupil expenditure and high school graduation rates, as assessed by η^2 , was small (.049). Overall, the results indicate that there was not a significant difference in high school

graduation rates during the 2013-2014 school year as compared by per-pupil expenditure. The means and the standard deviations for the three per-pupil expenditure groups are reported in Table 1.

Table 1

2013-2014 High School Graduation Rate Means and Standard Deviations of 3 PPE Groups

PPE Group	N	M	SD
Bottom Third	39	.92321	.040563
Middle Third	38	.91584	.044262
Top Third	39	.89685	.061836

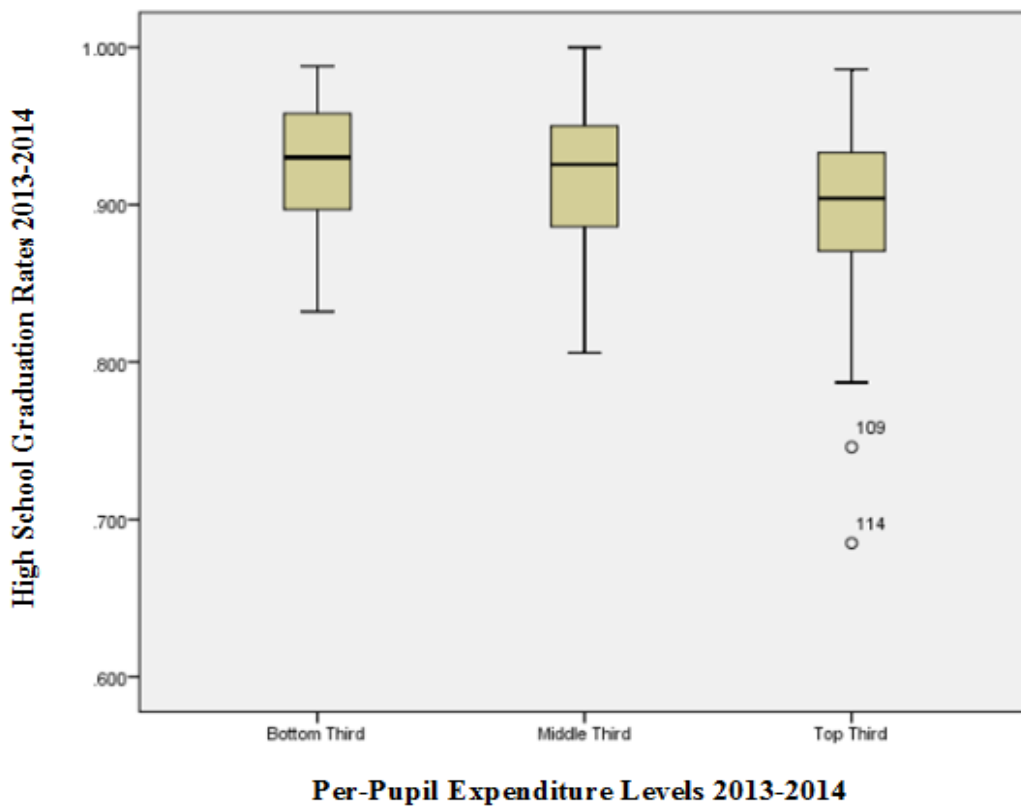


Figure 1. High school graduation rates for 2013-2014 by level of per-pupil expenditure

Research Question 2

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

H_{02} : There is no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

A one-way analysis of variance was conducted to evaluate the relationship between per-pupil expenditure and the ACT composite scores of school districts in Tennessee during the 2013-2014 school year. The factor variable, per-pupil expenditure, included three levels: top-third, middle-third, bottom-third. The dependent variable was the ACT composite scores for school districts in Tennessee during the 2013-2014 school year. The ANOVA was not significant, $F(2,113) = .675, p = .511$. Therefore, the null hypothesis was retained. The strength of the relationship between per-pupil expenditure and ACT composite score, as assessed by η^2 , was small (.012). The results indicate that there was not a significant difference in ACT composite scores during the 2013-2014 school year as compared by per-pupil expenditure. The means and the standard deviations for the three per-pupil expenditure groups are reported in Table 2.

Table 2

2013-2014 ACT Composite Scores and Standard Deviations of 3 PPE Groups

PPE Group	N	M	SD
Bottom Third	39	19.1282	.87146
Middle Third	38	18.9000	1.13400
Top Third	39	19.2385	1.73972

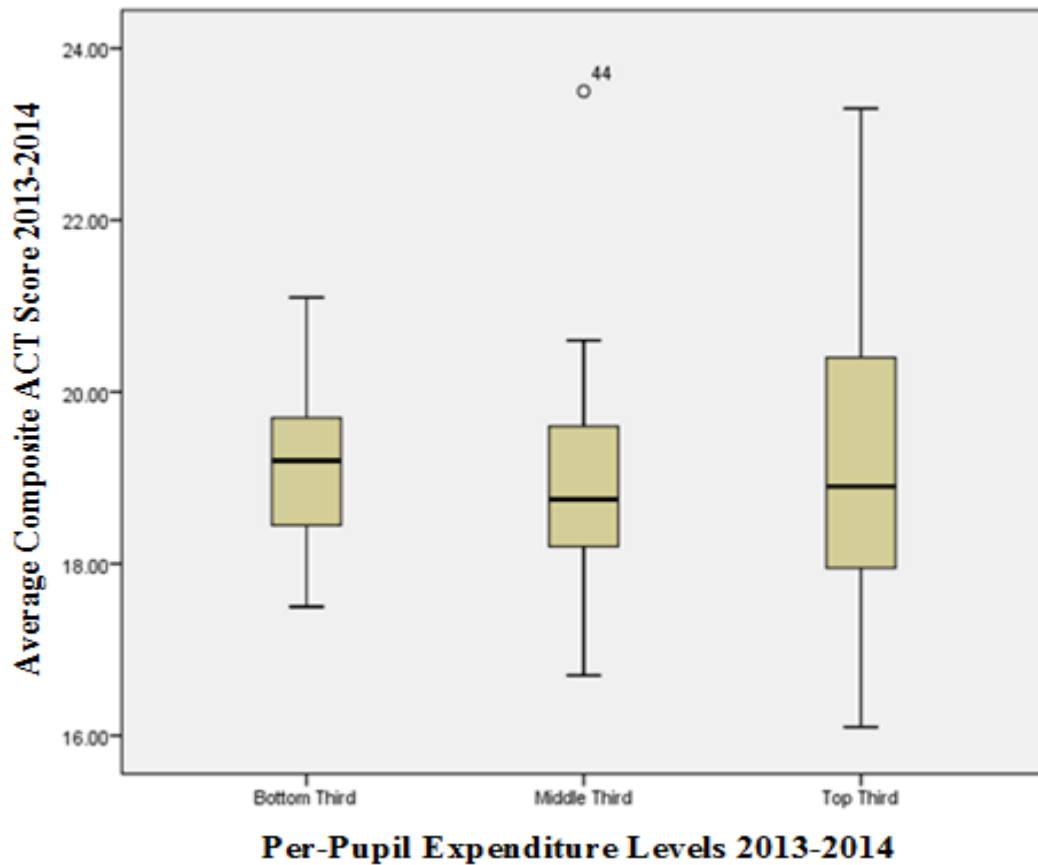


Figure 2. ACT composite scores for 2015-2016 by level of per-pupil expenditure

Research Question 3

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year?

H₀₃: There is no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year?

A one-way analysis of variance was conducted to evaluate the relationship between per-pupil expenditure and high school graduation rates of school districts in Tennessee during the 2014-2015 school year. The factor variable, per-pupil expenditure, included three levels: top-third, middle-third, bottom-third. The dependent variable was the high school graduation rates for school districts in Tennessee during the 2014-2015 school year. The ANOVA was not significant, $F(2,114) = 2.156, p = .120$. Therefore, the null hypothesis was retained. The strength of the relationship between per-pupil expenditure and high school graduation rates, as assessed by η^2 , was small (.036). The results indicate that there was not a significant difference in high school graduation rates during the 2014-2015 school year as compared by per-pupil expenditure. The means and the standard deviations for the three per-pupil expenditure groups are reported in Table 3.

Table 3

2014-2015 High School Graduation Rate Means and Standard Deviations of 3 PPE Groups

PPE Group	N	M	SD
Bottom Third	39	.92156	.044889
Middle Third	39	.90977	.047694
Top Third	39	.89877	.052553

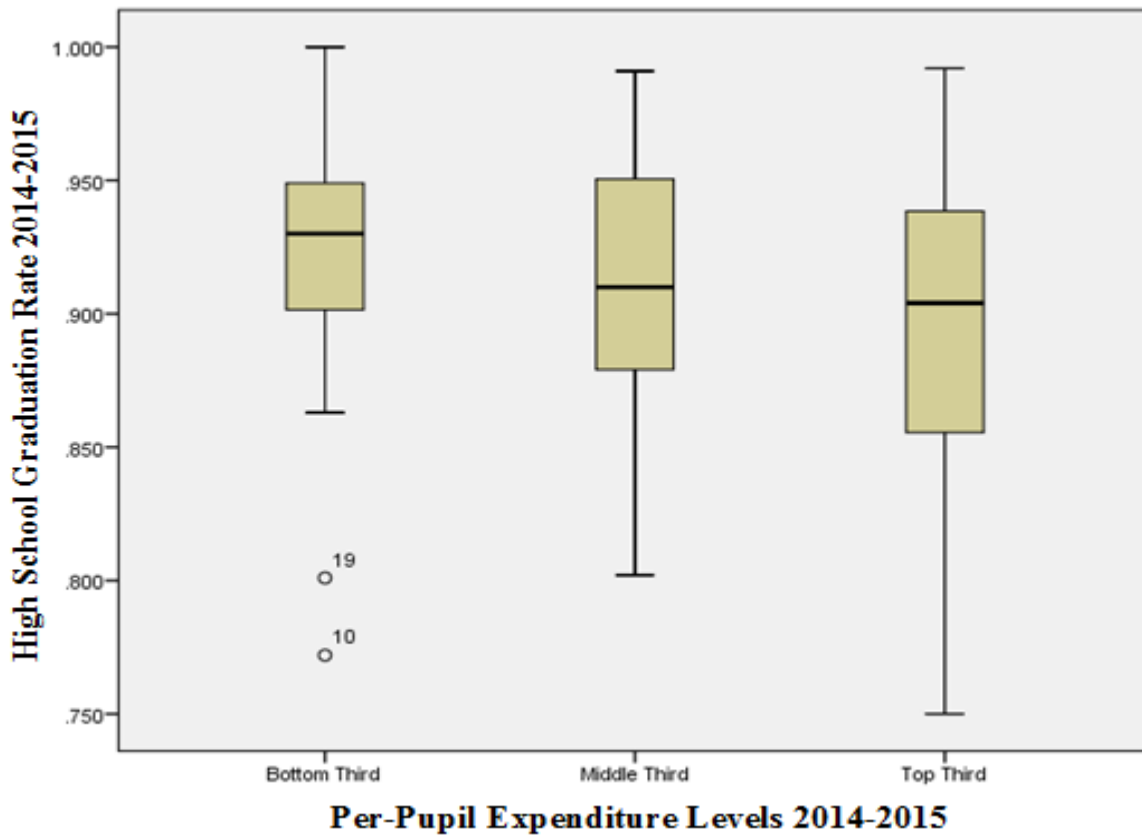


Figure 3. High school graduation rates for 2014-2015 by level of per-pupil expenditure

Research Question 4

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-15 school year?

H₀₄: There is no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-15 school year?

A one-way analysis of variance was conducted to evaluate the relationship between per-pupil expenditure and ACT composite scores of school districts in Tennessee during the 2014-2015 school year. The factor variable, per-pupil expenditure, included three levels: top-third, middle-third, bottom-third. The dependent variable was the ACT composite score for school districts in Tennessee during the 2014-2015 school year. The ANOVA was not significant, $F(2,114) = 1.004, p = .369$. Therefore, the null hypothesis was retained. The strength of the relationship between per-pupil expenditure and ACT composite score, as assessed by η^2 , was small (.017). The results indicate that there was not a significant difference in ACT composite scores during the 2014-2015 school year as compared by per-pupil expenditure. The means and the standard deviations for the three per-pupil expenditure groups are reported in Table 4.

Table 4

2014-2015 ACT composite Scores and Standard Deviations of 3 PPE Groups

PPE Group	N	M	SD
Bottom Third	39	19.1821	.95086
Middle Third	39	18.9205	1.21161
Top Third	39	19.3718	1.89972

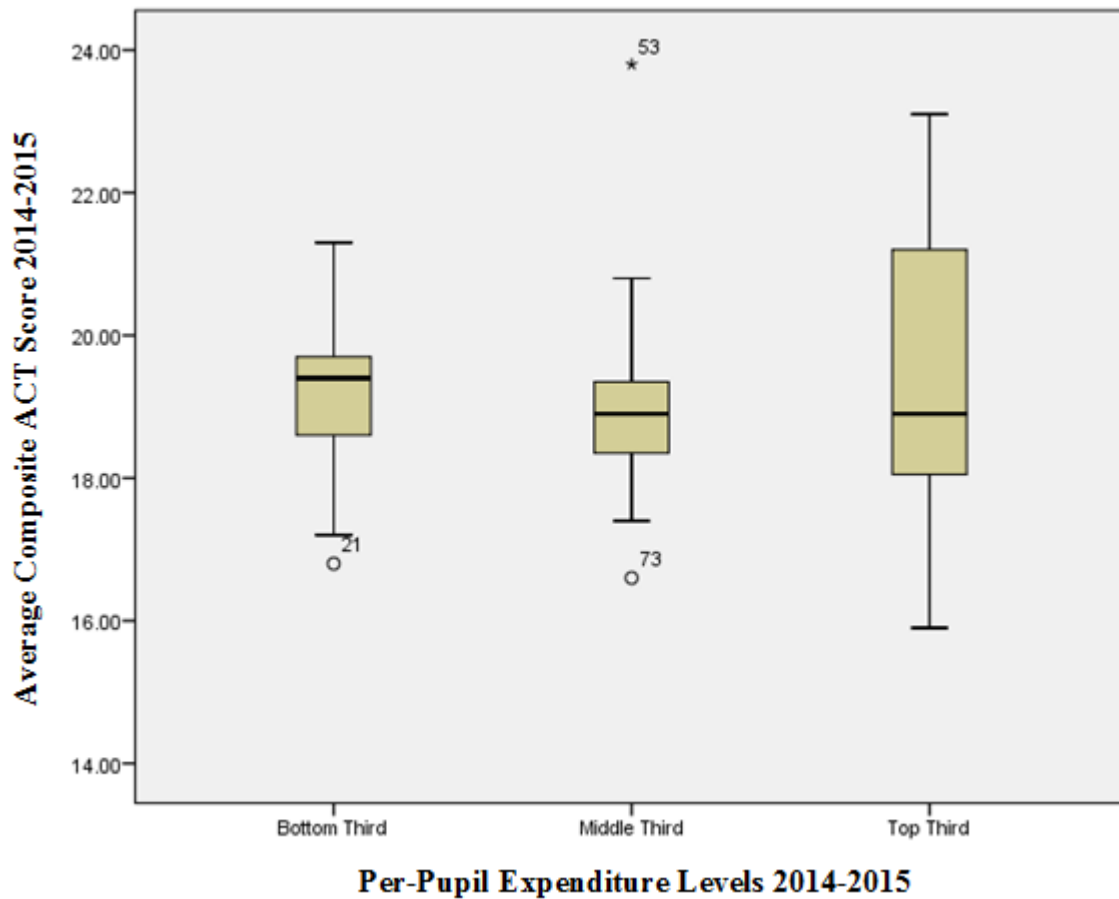


Figure 4. ACT composite scores for 2014-2015 by level of per-pupil expenditure

Research Question 5

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

H₀₅: There is no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

A one-way analysis of variance was conducted to evaluate the relationship between per-pupil expenditure and high school graduation rates of school districts in Tennessee during the 2015-2016 school year. The factor variable, per-pupil expenditure, included three levels: top-third, middle-third, bottom-third. The dependent variable was the high school graduation rates for school districts in Tennessee during the 2015-2016 school year. The ANOVA was significant, $F(2,121) = 4.292, p = .016$. Therefore, the null hypothesis was rejected. The strength of the relationship between per-pupil expenditure and high school graduation rates, as assessed by η^2 , was small (.066).

Because the overall F test was significant, post hoc multiple comparisons were conducted to evaluate pairwise difference among the means of the three groups. A Tukey procedure was selected for the multiple comparisons because equal variances were assumed. There was a significant difference in the means between the bottom third and the top third of per-pupil expenditure levels during the 2015-2016 school year ($p=.011$). The bottom third had a mean graduation rate of 93.537%, and the top third had a mean graduation rate of 90.422%. However,

there was not a significant difference in the means between the bottom third and the middle third of per-pupil expenditure levels ($p=.390$), nor was there a significant difference in the means between the middle third and the top third of per-pupil expenditure levels ($p=.238$). The 95% confidence intervals for the pairwise differences, as well as, the means and standard deviations for the three per-pupil expenditure groups, are reported in Table 5.

Table 5

2015-2016 High School Graduation Rates Means and Standard Deviations of 3 PPE Groups with 95% Confidence Intervals of Pairwise Differences

PPE Group	N	M	SD	Bottom Third	Middle Third
Bottom Third	41	.93537	.034849		
Middle Third	42	.92145	.052435	-.01121 to .03904	
Top Third	41	.90422	.054799	.00587 to .05642	-.00789 to .04236

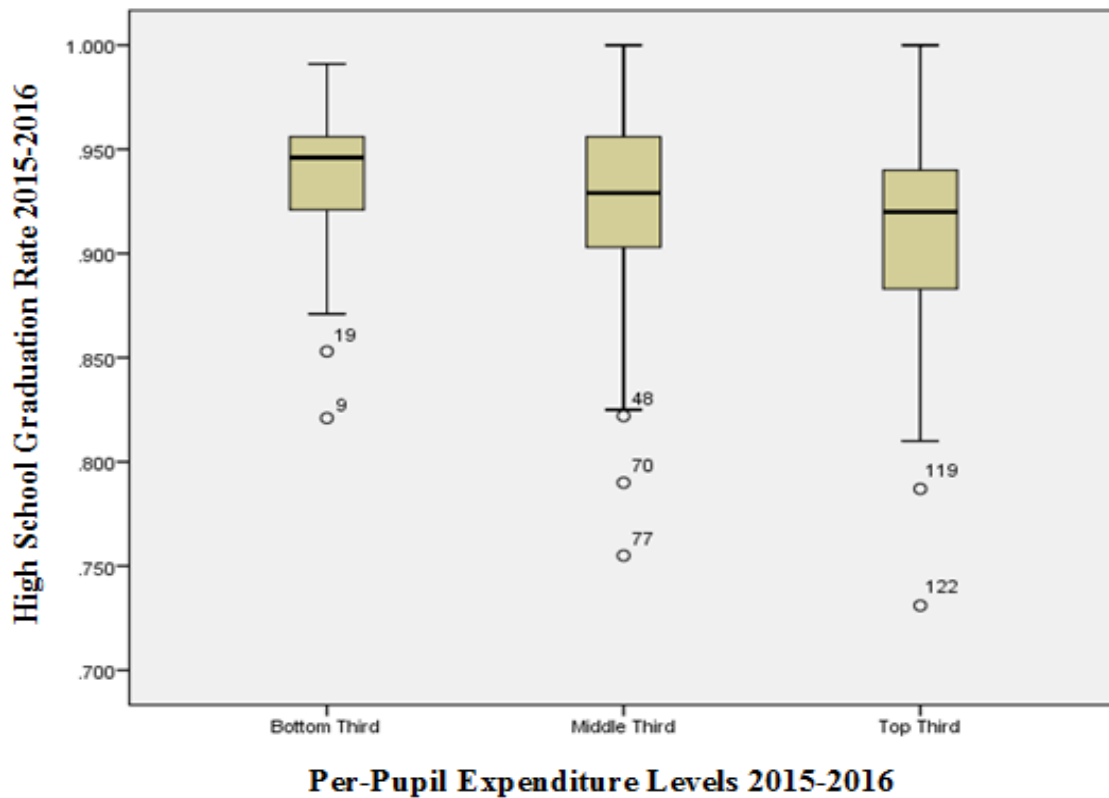


Figure 5. High school graduation rates for 2015-2016 by level of per-pupil expenditure

Research Question 6

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

H_{06} : There is no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure in the 2015-2016 school year?

A one-way analysis of variance was conducted to evaluate the relationship between per-pupil expenditure and ACT composite score of school districts in Tennessee during the 2015-2016 school year. The factor variable, per-pupil expenditure, included three levels: top-third, middle-third, bottom-third. The dependent variable was the ACT composite score for school districts in Tennessee during the 2015-2016 school year. The ANOVA was not significant, $F(2,121) = .133, p = .875$. Therefore, the null hypothesis was retained. The strength of the relationship between per-pupil expenditure and ACT composite score, as assessed by η^2 , was small (.002). The results indicate that there was not a significant difference in ACT composite scores during the 2015-2016 school year as compared by per-pupil expenditure. The means and the standard deviations for the three per-pupil expenditure groups are reported in Table 1.

Table 6

2015-2016 ACT Composite Scores and Standard Deviations of 3 PPE Groups

PPE Group	N	M	SD
Bottom Third	41	19.6512	1.09616
Middle Third	42	19.6714	1.71795
Top Third	41	19.8146	1.78333

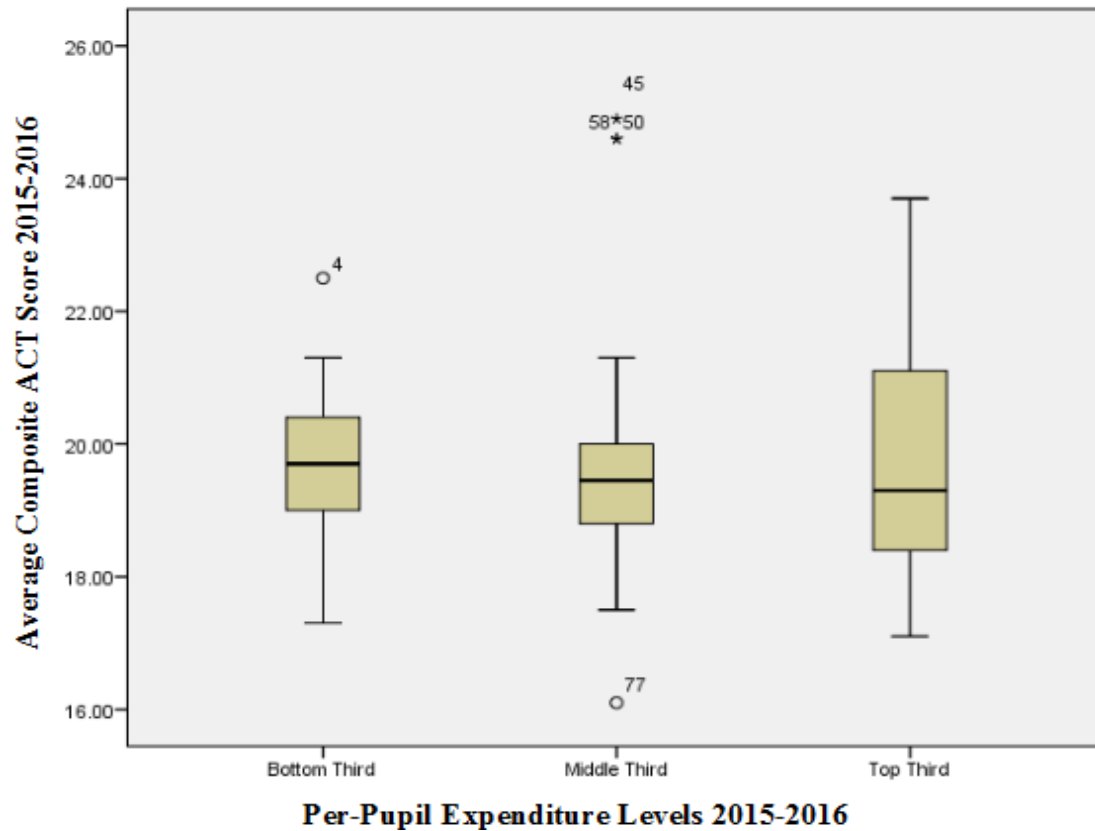


Figure 6. ACT composite scores for 2015-2016 by level of per-pupil expenditure

Chapter Summary

The purpose of this study was to examine the relationship between academic achievement as related to per-pupil expenditure. *Ex post facto* data from the Tennessee State Report Card were used to analyze 6 research questions and 6 null hypotheses. A series of Analysis of Variances (ANOVAs) was used to determine if there were significant differences in academic achievement, as measured by high school graduation rate and ACT composite scores, among schools that were classified above average, average, and below average based on their per-pupil expenditure in each of the academic years for which data was available. All data were analyzed at the .05 level of significance. Research Questions 1, 3, and 5 examined the relationship of

graduation rates to per-pupil expenditure in the 2013-2014, 2014-2015, and 2015-2016 school years. The results for Research Questions 1 and 3 indicated that the high school graduation rates during the 2013-2014 and 2014-2015 school year were not significantly affected by per-pupil expenditure. However, the results for Research Question 5 were significant, and that there was a significant difference in the means between the bottom-third and the top-third of per-pupil expenditure levels during the 2015-2016 school year. Research Questions 2, 4, and 6 examined the relationship of ACT composite score to per-pupil expenditures in the 2013-2014, 2014-2015, and 2015-2016 school years. The results for all of the research questions indicated that the ACT composite score during all years was not significantly affected by per-pupil expenditure.

CHAPTER 5

FINDINGS, IMPLICATIONS, AND CONCLUSIONS

This study was an examination of the relationships between academic achievement of school districts in Tennessee and per-pupil expenditure. The purpose of this study was to investigate and identify possible relationships between academic achievement, as measured by high school graduation rate and ACT composite scores of individual school districts within the state of Tennessee, and the per-pupil expenditure of each district. A series of Analysis of Variances (ANOVAs) were used to determine whether a significant difference existed in academic achievement measures (high school graduation rate, mean ACT score) among school districts in the state of Tennessee that were classified as above average, average, and below average in relation to their per-pupil expenditure (PPE) in the 2013-2014, 2014-2015, and 2015-16 school years. Chapter 5 summarizes the findings, implications for practice, recommendations for future research, and a conclusion.

Summary of Findings

Research Question 1

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

Results for Research Question 1 showed no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year. Regardless of whether a district reported an above average, average, or

below average per-pupil expenditure, high school graduation rates were not significantly different.

This result is aligned with the conclusions of Hanushek (1997) whose analysis, comparing research that spanned nearly 2 decades, revealed that there was not a relationship between per-pupil expenditures and academic achievement. However, Hedges and Greenwald (1996) conducted a similar analysis using the same research as Hanushek. Hedges and Greenwald found that increasing per-pupil expenditures does have a significant impact on student achievement. The contrasting results of these two studies shed light on the wide spectrum that exists within the framework of educational researchers who are seeking to define the relationship between educational expenditures and academic achievement.

Research Question 2

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year?

Results for Research Question 2 showed no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2013-2014 school year. Regardless of whether a district reported an above average, average, or below average per-pupil expenditure, the ACT composite scores were not significantly different.

The results of Research Question 2 correspond to the findings of Womack (2000) who conducted a study to determine if there was a direct relationship between academic achievement and expenditures. Womack split school districts in Arkansas into 3 categories based on ACT score. The bottom two-thirds of schools showed no relationship between per-pupil expenditure and ACT composite score. However, an analysis involving the top-third of schools did indicate a

relationship between per-pupil expenditure and academic achievement as measured by the ACT composite score. Womack argued that districts in the bottom two-thirds were using money for “survival.” Womack defined “survival” spending as expenditures that were based primarily on the operation and administration of the school. Whereas the bottom two-thirds of schools were spending money on survival, the top-third was free to spend additional money on other budgeted items, such as programs that more greatly benefit the ability of students to learn.

Research Question 3

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year?

Results for Research Question 3 showed no significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year. Regardless of whether a district reported an above average, average, or below average per-pupil expenditure, high school graduation rates were not significantly different.

This result echoes the findings of Neymotin (2010) who sought to discover if a relationship existed between school funding and academic achievement in Kansas public schools. After Kansas revamped the manner in which funds were distributed to local school districts from the state, Neymotin analyzed districts that ended up receiving additional money from the state. Neymotin found that districts that were able to increase their per-pupil expenditure due to additional money experienced little to no effect on student achievement as measured by graduation rates and other measures of student success. Neymotin proposed that simply because districts were receiving additional money did not mean that they were spending it wisely on

programs, initiatives, and trainings that would lead to an increase in teacher effectiveness and student success.

Research Question 4

Is there a significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-15 school year?

Results for Research Question 4 showed no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year. Regardless of whether a district reported an above average, average, or below average per-pupil expenditure, the ACT composite scores were not significantly different.

The results of the ANOVA test for Research Question 4 reflect the findings of Bibb and McNeal (2008) who conducted research that sought to determine the relationship between per-pupil expenditure and student achievement in Tennessee. Bibb and McNeal used average ACT scores as their measure of student academic achievement. They then tested that data using the per-pupil expenditure of each district in the state. Bibb and McNeal found that there was not a significant relationship between the variable used in their study, except in one instance. The researchers argued that districts should seek to spend money in more effective ways that are proven to have a greater impact on student academic achievement.

Research Question 5

Is there a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average

in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

Results for Research Question 5 showed a significant difference in high school graduation rates as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2014-2015 school year. There was not a significant difference between the means of the bottom-third and middle-third. Nor was there a significant difference between the means of the middle-third and top-third. However, there was a significant difference in the means between the bottom-third and the top-third in per-pupil expenditure levels during the 2015-2016 school year. School districts that reported a below average per-pupil expenditure had an average graduation rate of 93.5%, while districts that reported an above average per-pupil expenditure had an average graduation rate of 90.4%.

Research Question 5 reflects the initial results from Johnson (2004) who studied the relationship between achievement and educational finance in Nebraska school districts. Johnson found that there was a correlation between the amount of money spent for each child's education and individual student achievement. However, Johnson found that correlation to be consistent with the theory that the higher the per-pupil expenditure the higher the academic achievement. The result of Research Question 5, on the surface, suggests the opposite. In fact, the actual result merely shows a significant difference. Additionally, the fact that the data shows that schools who reported below average per-pupil expenditure experienced higher graduation rates creates more questions than it answers. It speaks to the numerous instances in the literature where researchers urge a deeper examination into how money is spent rather than merely the amount being spent.

Research Question 6

Is there a significant difference in ACT composite scores as reported by the TDOE state

report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year?

Results for Research Question 6 showed no significant difference in ACT composite scores as reported by the TDOE state report card among districts that were classified as above average, average, and below average in relation to their Per Pupil Expenditure (PPE) in the 2015-2016 school year. Regardless of whether a district reported an above average, average, or below average per-pupil expenditure, the ACT composite scores were not significantly different.

These results echo Cantrell (2013) who conducted a broader study into the effect of the federal government's *First to the Top* program, analyzed data to identify and define possible relationships between the cost of education and student outcomes in the state of Tennessee. The study found that there was not a relationship between per-pupil expenditure and the academic achievement of students. Additionally, Chung (2015) studied the effect of a change in the funding formula in Maryland. Chung analyzed achievement gaps before and after the alteration in the manner in which money was distributed to local school districts. Chung found that there was little evidence that additional funding resulted in a narrowing of any of the achievement gaps analyzed.

Recommendations for Future Research

I recommend that future educational research focus its efforts more on individual students. Past and current educational research regarding educational finance has been limited due to the size and scope of studies. It has been difficult to identify any significant relationship between educational finance and student success. Though there are limited exceptions, including Hedges and Greenwald (1996) and Johnson (2004), studies involving states and districts that seek to examine relationships between funding and achievement often fail to do so. Future researchers should shift the focus of their studies. Instead of focusing on multiple states or districts, research

should use individual schools, or even specific grade bands within a limited number of individual schools. Admittedly, this will limit the ability to generalize results. However, when focused on individual schools and grade bands, it may prove easier to deduce the specific ways in which money is being spent that have the strongest relationship to academic achievement for students.

I recommend that future research should be conducted by using the same data set, but with a different focus. As stated previously, the literature shows a lack of relationship between educational finance and academic achievement. Future research should isolate those school districts that fall into the bottom third of yearly per-pupil expenditure and demonstrate a high ACT composite score to identify certain programs, policies, and practices that contribute to the academic achievement of students within that district. Research should also isolate those districts that fall into the bottom third of yearly per-pupil expenditure and have high graduation rates in order to determine effective programs, policies, and practices. The results of studies like these may enable other districts to replicate those programs, policies, and practices in their own schools with hopes of increasing academic achievement.

Implications for Practice

The data used in this study is publicly available from the Tennessee State Report Card located on the Tennessee Department of Education's website. This resource includes easily accessible data using software that allows the user to select, sort, and compare all school districts within the state. There were schools that were classified in the bottom third of per-pupil expenditure that exceeded the highest mean scores for each of the three years studied. School leaders should identify those schools that fall into the bottom third of yearly per-pupil expenditure and have high graduation rates to identify certain programs, policies, and practices that contribute to the academic achievement of students within that district. School leaders should identify those

districts that fall into the bottom third of yearly per-pupil expenditure and have high graduation rates in order to determine effective programs, policies, and practices. Those districts that have a lower-per-pupil expenditure and academic achievement measures that are higher than all means for a given year have lessons to teach other districts that may not be experiencing the same level of student success. Individual school districts should investigate those high-performing districts that most closely fit their own district's profile, though surely high-performing districts of all shapes and sizes have beneficial lessons to teach.

District and school leaders should ensure that detailed data pertaining to the use of educational monies is analyzed each year so that adjustments can be made in the budgeting process to ensure continued-effectiveness and efficiency in the future. This type of analysis and reflection could result in an identification of cost effective practices and programs that should be replicated and repeated each school year.

Conclusions

In every classroom, in every school, in every district, and in every state, educational professionals in America are charged with educating all students. This identical expectation remains constant despite the geographic, cultural, and socio-economic diversity that exists within the American educational landscape. The degree to which educators are successful in fulfilling this charge is evaluated using multiple measures of academic achievement. These measurements quantify the learning taking place within the American educational system. Analysts and policy makers use the differences among measures of groups and subgroups to illustrate the success or failure of states, districts, schools, and teachers in reaching and teaching all students.

Even with the increasing prominence of the federal government's place in public education, state and local governments are still primarily responsible for the financing of

elementary and secondary schools within their borders. Sciarra and Hunter (2015) contended that each state is responsible for the distribution of approximately 90% of all school funding for elementary and secondary schools. These funds are dispersed according to individual state systems that allocate revenue to school districts, as well as allow for a determined amount of local tax revenue to potentially supplement the state's primary allocation.

It is worth noting that the data contained in the appendices were analyzed to determine the number of districts that were assigned to the bottom third of yearly per-pupil expenditures that had average high school graduation rates and ACT composite scores that exceeded the highest mean scores in all three categories in each of the three years studied. In the 2013-2014 school year there were 12 school districts in the bottom third of per-pupil expenditure that exceeded the highest mean scores for graduation rate and ACT composite score in all three categories. In the 2014-2015 school year there were 14 school districts in the bottom third of per-pupil expenditure that exceeded the highest mean scores for graduation rate and ACT composite score in all three categories. In the 2015-2016 school year there were 13 school districts in the bottom third of per-pupil expenditure that exceeded the highest mean scores for graduation rate and ACT composite score in all three categories. However, when looking for school districts that were classified in the bottom third of per-pupil expenditure that exceeded the highest mean scores for graduation rate and ACT composite score in all three categories in all three years, there were only two: McKenzie Special School District and Wilson County. McKenzie Special School District is located in Carroll County in West Tennessee. In 2016, the district served 1,367 students. There were 89 teachers and 8 administrators in the district. McKenzie had an economically disadvantaged student percentage of 41.1%. Wilson County is east of Nashville in Middle Tennessee. In 2016, the district served 17,544 students. There were 1,040 teachers and 96 administrators in the district. Wilson County Schools had an economically disadvantaged student percentage of 15.3%.

The vast majority of studies included in this literature review and this study itself fail to identify a significant relationship between educational finance and academic achievement. It is perplexing to think that there are not stronger links between the considerably obvious fact that money has to play at least some part in the learning process. Facilities, instructors, administrators, support staff, textbooks, and technology all cost money. There are no school districts in the United States that do not spend money. Money matters, but the question of how much money matters, and its relationship to academic achievement has, to this point in time, eluded educational researchers. It would seem logical that there is a baseline of spending that must be met before students can learn in a school environment. It also would seem logical that there is a ceiling of spending at which point no additional resource can be allocated to significantly improve academic achievement. I suggest that it is between this theoretical baseline and ceiling where the vast majority, if not all, school systems are located. The reality is that just because districts are spending a certain dollar amount per-pupil does not mean that each pupil will achieve at the same or even comparable rate. Learning is a complex and complicated concept that involves a multitude of factors that converge in each moment to provide the context for knowledge acquisition. One cannot conclude that the lack of consistent research showing a connection between academic achievement and per-pupil expenditure indicates a need or mandate to decrease educational funding. These results speak more to the reality that per-pupil expenditure is but one of the multitudes of variables that must be present for learning to occur.

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APPENDICES

APPENDIX A

Data of Tennessee Districts for 2013-2014

County	Graduation Rate	ACT Composite Score	Per-Pupil Expenditure	Level of PPE
MCKENZIE	97.1%	20.3	\$7,492.00	Bottom Third
SEQUATCHIE COUNTY	85.6%	20.7	\$7,635.00	Bottom Third
WILSON COUNTY	96.3%	19.7	\$7,716.00	Bottom Third
CHESTER COUNTY	88.4%	19.2	\$7,854.00	Bottom Third
UNION COUNTY	87.1%	18.4	\$7,923.00	Bottom Third
WHITE COUNTY	92.5%	18.6	\$7,928.00	Bottom Third
GRAINGER COUNTY	88.1%	18.4	\$7,952.00	Bottom Third
BEDFORD COUNTY	90.8%	18.4	\$7,980.00	Bottom Third
CHEATHAM COUNTY	91.2%	19.4	\$7,993.00	Bottom Third
CAMPBELL COUNTY	87.6%	17.5	\$8,037.00	Bottom Third
HUNTINGDON	94.4%	19.8	\$8,080.00	Bottom Third
GREENE COUNTY	93.7%	19.4	\$8,100.00	Bottom Third
WEAKLEY COUNTY	93.0%	20.3	\$8,126.00	Bottom Third
SUMNER COUNTY	89.5%	20.2	\$8,181.00	Bottom Third
LEWIS COUNTY	87.1%	18.2	\$8,184.00	Bottom Third
HOLLOW ROCK - BRUCETON	93.2%	18.3	\$8,190.00	Bottom Third
HENDERSON COUNTY	96.4%	19.4	\$8,201.00	Bottom Third
ONEIDA	98.8%	19.4	\$8,216.00	Bottom Third
LAWRENCE COUNTY	94.5%	18.8	\$8,221.00	Bottom Third
OVERTON COUNTY	91.2%	18.3	\$8,229.00	Bottom Third
CUMBERLAND COUNTY	93.0%	19.5	\$8,271.00	Bottom Third
HAMBLEN COUNTY	91.0%	19.1	\$8,279.00	Bottom Third
MCMINN COUNTY	95.7%	18.5	\$8,294.00	Bottom Third
MACON COUNTY	86.0%	19	\$8,297.00	Bottom Third
SCOTT COUNTY	85.4%	17.5	\$8,315.00	Bottom Third
SMITH COUNTY	97.4%	19.6	\$8,316.00	Bottom Third
CROCKETT COUNTY	95.9%	18.6	\$8,332.00	Bottom Third
RUTHERFORD COUNTY	92.5%	20.1	\$8,365.00	Bottom Third
TIPTON COUNTY	97.8%	20	\$8,369.00	Bottom Third
TROUSDALE COUNTY	96.9%	19.2	\$8,396.00	Bottom Third
WASHINGTON COUNTY	91.0%	19.8	\$8,398.00	Bottom Third
STEWART COUNTY	96.1%	19.5	\$8,419.00	Bottom Third
LINCOLN COUNTY	95.4%	19.7	\$8,465.00	Bottom Third

WEST CARROLL SP DIST	90.7%	18.8	\$8,465.00	Bottom Third
BRADLEY COUNTY	93.1%	18.9	\$8,467.00	Bottom Third
MORGAN COUNTY	97.9%	17.5	\$8,472.00	Bottom Third
CANNON COUNTY	95.1%	17.9	\$8,533.00	Bottom Third
MARSHALL COUNTY	89.9%	19	\$8,534.00	Bottom Third
DICKSON COUNTY	90.7%	19.2	\$8,540.00	Bottom Third
MAURY COUNTY	87.0%	18.9	\$8,554.00	Middle Third
POLK COUNTY	87.6%	18.1	\$8,555.00	Middle Third
PUTNAM COUNTY	92.6%	19.8	\$8,559.00	Middle Third
WILLIAMSON COUNTY	94.4%	23.5	\$8,587.00	Middle Third
MCNAIRY COUNTY	94.3%	19.1	\$8,593.00	Middle Third
SOUTH CARROLL	96.6%	19.4	\$8,596.00	Middle Third
GILES COUNTY	87.2%	18	\$8,620.00	Middle Third
MARION COUNTY	84.0%	18.9	\$8,687.00	Middle Third
DEKALB COUNTY	94.9%	17.8	\$8,690.00	Middle Third
MEIGS COUNTY	100.0%	18.5	\$8,712.00	Middle Third
JEFFERSON COUNTY	89.7%	19.9	\$8,724.00	Middle Third
PICKETT COUNTY	94.4%	19.6	\$8,737.00	Middle Third
TRENTON	83.5%	18.9	\$8,742.00	Middle Third
MONTGOMERY COUNTY	93.4%	19.6	\$8,756.00	Middle Third
ROBERTSON COUNTY	95.1%	18.9	\$8,758.00	Middle Third
WARREN COUNTY	89.1%	18.5	\$8,765.00	Middle Third
DYER COUNTY	95.0%	19.9	\$8,784.00	Middle Third
DYERSBURG	83.2%	21.1	\$8,784.40	Middle Third
OBION COUNTY	87.7%	19	\$8,802.00	Middle Third
RHEA COUNTY	85.3%	18.4	\$8,809.00	Middle Third
BLOUNT COUNTY	89.1%	19.7	\$8,851.00	Middle Third
MILAN	96.8%	20.2	\$8,854.00	Middle Third
DECATUR COUNTY	94.4%	18.5	\$8,860.00	Middle Third
CLAY COUNTY	96.8%	18.5	\$8,870.00	Middle Third
UNICOI COUNTY	93.6%	18.2	\$8,876.00	Middle Third
RICHARD CITY	92.0%	18.3	\$8,905.00	Middle Third
LAUDERDALE COUNTY	97.0%	17.6	\$8,926.00	Middle Third
HICKMAN COUNTY	92.5%	18.1	\$8,927.00	Middle Third
LOUDON COUNTY	87.1%	17.5	\$8,943.00	Middle Third
FRANKLIN COUNTY	89.1%	18.6	\$8,947.00	Middle Third
MONROE COUNTY	95.2%	18.3	\$8,969.00	Middle Third
WAYNE COUNTY	95.8%	18.2	\$9,010.00	Middle Third
CARTER COUNTY	88.6%	18.2	\$9,015.00	Middle Third
UNION CITY	88.6%	20.6	\$9,077.00	Middle Third
HOUSTON COUNTY	95.8%	19.1	\$9,096.00	Middle Third
LENOIR CITY	90.8%	20	\$9,096.00	Middle Third

COCKE COUNTY	93.9%	18	\$9,115.00	Middle Third
FAYETTE COUNTY	80.6%	16.7	\$9,117.00	Middle Third
SULLIVAN COUNTY	92.6%	20.4	\$9,129.00	Top Third
JACKSON COUNTY	87.4%	18.8	\$9,158.00	Top Third
COFFEE COUNTY	88.9%	19.2	\$9,161.00	Top Third
CLAIBORNE COUNTY	95.3%	18.2	\$9,175.00	Top Third
HUMPHREYS COUNTY	84.5%	18.7	\$9,235.00	Top Third
FENTRESS COUNTY	93.8%	17.7	\$9,240.00	Top Third
GRUNDY COUNTY	90.0%	17.7	\$9,280.00	Top Third
HENRY COUNTY	92.0%	19.3	\$9,335.00	Top Third
KNOX COUNTY	88.7%	20.4	\$9,341.00	Top Third
CLEVELAND	84.1%	19.6	\$9,356.00	Top Third
ROANE COUNTY	92.8%	18.8	\$9,370.00	Top Third
JOHNSON CITY	90.4%	22.1	\$9,392.00	Top Third
HAWKINS COUNTY	91.5%	18.8	\$9,397.00	Top Third
BLED SOE COUNTY	92.4%	18.5	\$9,486.00	Top Third
SEVIER COUNTY	86.2%	20.2	\$9,546.00	Top Third
HARDEMAN COUNTY	86.3%	17.1	\$9,577.00	Top Third
HAYWOOD COUNTY	85.2%	16.9	\$9,592.00	Top Third
HARDIN COUNTY	91.0%	18.9	\$9,605.00	Top Third
BENTON COUNTY	94.5%	19	\$9,626.00	Top Third
ELIZABETHTON	96.6%	20.9	\$9,665.00	Top Third
PERRY COUNTY	91.9%	17.9	\$9,666.00	Top Third
HANCOCK COUNTY	89.5%	16.7	\$9,684.00	Top Third
MADISON COUNTY	94.5%	17.8	\$9,747.00	Top Third
HAMILTON COUNTY	82.6%	19	\$9,752.00	Top Third
MOORE COUNTY	86.7%	18	\$9,795.00	Top Third
MARYVILLE	96.6%	23.2	\$9,798.00	Top Third
VAN BUREN COUNTY	91.5%	18.1	\$9,802.00	Top Third
ANDERSON COUNTY	94.0%	19.3	\$9,804.00	Top Third
TULLAHOMA	90.9%	20.4	\$9,955.00	Top Third
BRISTOL	88.7%	20.9	\$10,325.00	Top Third
JOHNSON COUNTY	98.6%	19.8	\$10,333.00	Top Third
SHELBY CO	74.6%	17.7	\$10,333.00	Top Third
KINGSPORT	90.3%	22	\$10,353.00	Top Third
ALCOA	98.2%	21.3	\$10,658.00	Top Third
GREENEVILLE	98.6%	21.6	\$10,860.00	Top Third
LAKE COUNTY	89.4%	16.1	\$11,149.00	Top Third
HUMBOLDT	68.5%	17.6	\$11,205.00	Top Third
DAVIDSON COUNTY	78.7%	18.4	\$11,453.00	Top Third
OAK RIDGE	89.7%	23.3	\$11,877.00	Top Third

APPENDIX B

Data of Tennessee Districts for 2014-2015

County	Graduation Rate	ACT Composite Score	Per-Pupil Expenditure	Level of PPE
GIBSON CO SP DIST	94.6%	19.7	\$7,270.00	Bottom Third
CHESTER COUNTY	93.3%	19.7	\$7,681.00	Bottom Third
WILSON COUNTY	95.7%	20	\$7,691.00	Bottom Third
WHITE COUNTY	94.0%	18.7	\$7,721.00	Bottom Third
BEDFORD COUNTY	92.8%	18.4	\$7,756.00	Bottom Third
MCKENZIE	98.0%	20.1	\$7,756.00	Bottom Third
MCNAIRY COUNTY	86.8%	18.6	\$7,790.00	Bottom Third
MCMINN COUNTY	93.1%	18.9	\$7,870.00	Bottom Third
SEQUATCHIE COUNTY	77.2%	19.4	\$7,905.00	Bottom Third
DEKALB COUNTY	95.8%	17.7	\$7,982.00	Bottom Third
LEWIS COUNTY	86.3%	18.5	\$7,985.00	Bottom Third
ROBERTSON COUNTY	95.2%	19.4	\$8,077.00	Bottom Third
CROCKETT COUNTY	96.5%	19.1	\$8,094.00	Bottom Third
HAMBLEN COUNTY	93.0%	19.7	\$8,109.00	Bottom Third
PICKETT COUNTY	95.2%	19.7	\$8,148.00	Bottom Third
LINCOLN COUNTY	96.4%	19.6	\$8,153.00	Bottom Third
HUNTINGDON	100.0%	18.7	\$8,158.00	Bottom Third
MACON COUNTY	80.1%	18.5	\$8,167.00	Bottom Third
RUTHERFORD COUNTY	93.9%	19.9	\$8,237.00	Bottom Third
SCOTT COUNTY	90.1%	16.8	\$8,242.00	Bottom Third
TIPTON COUNTY	97.7%	19.7	\$8,279.00	Bottom Third
GREENE COUNTY	92.1%	18.9	\$8,282.00	Bottom Third
CAMPBELL COUNTY	87.6%	17.2	\$8,290.00	Bottom Third
SMITH COUNTY	90.7%	18.5	\$8,324.00	Bottom Third
HOLLOW ROCK - BRUCETON	88.5%	18	\$8,332.00	Bottom Third
LAWRENCE COUNTY	92.8%	19.2	\$8,387.00	Bottom Third
CANNON COUNTY	88.1%	18.6	\$8,402.00	Bottom Third
SUMNER COUNTY	91.6%	20.4	\$8,402.00	Bottom Third
ONEIDA	94.1%	19.4	\$8,406.00	Bottom Third
HENDERSON COUNTY	96.3%	19.5	\$8,412.00	Bottom Third
CHEATHAM COUNTY	90.1%	20.8	\$8,413.00	Bottom Third
OVERTON COUNTY	90.6%	18.9	\$8,426.00	Bottom Third
BRADLEY COUNTY	92.1%	18.8	\$8,429.00	Bottom Third
GRAINGER COUNTY	89.3%	18	\$8,436.00	Bottom Third
WEAKLEY COUNTY	93.8%	19.7	\$8,439.00	Bottom Third
DICKSON COUNTY	90.2%	21	\$8,473.00	Bottom Third

DYER COUNTY	94.2%	21.3	\$8,483.00	Bottom Third
CUMBERLAND COUNTY	91.7%	19.6	\$8,491.00	Bottom Third
WASHINGTON COUNTY	88.8%	19.7	\$8,501.00	Bottom Third
MONROE COUNTY	94.7%	17.9	\$8,567.00	Middle Third
WEST CARROLL SP DIST	95.6%	18.9	\$8,573.00	Middle Third
MARSHALL COUNTY	92.2%	18.9	\$8,584.00	Middle Third
MAURY COUNTY	90.8%	18.6	\$8,584.00	Middle Third
MORGAN COUNTY	95.8%	17.9	\$8,598.00	Middle Third
WARREN COUNTY	91.1%	18.4	\$8,601.00	Middle Third
FRANKLIN COUNTY	90.5%	18.7	\$8,610.00	Middle Third
JEFFERSON COUNTY	94.6%	19.5	\$8,628.00	Middle Third
POLK COUNTY	91.1%	17.9	\$8,629.00	Middle Third
MONTGOMERY COUNTY	96.5%	19.4	\$8,675.00	Middle Third
MEIGS COUNTY	96.7%	19.2	\$8,703.00	Middle Third
HARDIN COUNTY	87.5%	18.9	\$8,709.00	Middle Third
OBION COUNTY	87.9%	19.1	\$8,732.00	Middle Third
WILLIAMSON COUNTY	95.5%	23.8	\$8,740.00	Middle Third
MILAN	95.4%	20.6	\$8,750.00	Middle Third
LOUDON COUNTY	86.9%	18.8	\$8,777.00	Middle Third
UNION COUNTY	91.9%	17.4	\$8,803.00	Middle Third
PUTNAM COUNTY	93.4%	19.6	\$8,816.00	Middle Third
TROUSDALE COUNTY	98.7%	20.8	\$8,817.00	Middle Third
HUMPHREYS COUNTY	91.0%	18.9	\$8,856.00	Middle Third
BLOUNT COUNTY	90.5%	19.7	\$8,867.00	Middle Third
LAUDERDALE COUNTY	99.1%	17.6	\$8,877.00	Middle Third
DECATUR COUNTY	89.5%	18.6	\$8,907.00	Middle Third
TRENTON	85.7%	18.6	\$8,917.00	Middle Third
GILES COUNTY	83.6%	18.2	\$8,952.00	Middle Third
ROANE COUNTY	91.8%	19	\$8,960.00	Middle Third
HICKMAN COUNTY	93.4%	18.4	\$8,966.00	Middle Third
STEWART COUNTY	97.4%	19.4	\$9,003.00	Middle Third
RHEA COUNTY	81.2%	18.6	\$9,006.00	Middle Third
KNOX COUNTY	90.0%	20.7	\$9,043.00	Middle Third
FENTRESS COUNTY	98.5%	17.4	\$9,044.00	Middle Third
COFFEE COUNTY	89.9%	20	\$9,068.00	Middle Third
GRUNDY COUNTY	86.0%	17.6	\$9,088.00	Middle Third
FAYETTE COUNTY	80.2%	16.6	\$9,126.00	Middle Third
HAWKINS COUNTY	90.4%	19.3	\$9,132.00	Middle Third
CARTER COUNTY	84.2%	18.3	\$9,134.00	Middle Third
LENOIR CITY	87.9%	18.9	\$9,136.00	Middle Third
JACKSON COUNTY	84.6%	18.4	\$9,166.00	Middle Third
HOUSTON COUNTY	92.2%	19.2	\$9,188.00	Middle Third

SULLIVAN COUNTY	93.4%	19.9	\$9,190.00	Top Third
PERRY COUNTY	94.8%	18	\$9,212.00	Top Third
RICHARD CITY	93.3%	20.1	\$9,224.00	Top Third
UNION CITY	88.8%	21.1	\$9,230.00	Top Third
CLAY COUNTY	95.9%	18.4	\$9,238.00	Top Third
CLEVELAND	86.0%	18.9	\$9,239.00	Top Third
COCKE COUNTY	89.8%	18.3	\$9,247.00	Top Third
SOUTH CARROLL	91.9%	17.8	\$9,253.00	Top Third
CLAIBORNE COUNTY	90.4%	17.7	\$9,283.00	Top Third
HENRY COUNTY	94.0%	19.6	\$9,285.00	Top Third
UNICOI COUNTY	89.5%	18.1	\$9,362.00	Top Third
JOHNSON CITY	91.9%	21.8	\$9,434.00	Top Third
MADISON COUNTY	91.0%	17.3	\$9,489.00	Top Third
BLED SOE COUNTY	83.8%	19.2	\$9,496.00	Top Third
WAYNE COUNTY	92.5%	18.2	\$9,506.00	Top Third
ANDERSON COUNTY	97.0%	19.9	\$9,536.00	Top Third
ELIZABETHTON	91.0%	21.4	\$9,537.00	Top Third
SEVIER COUNTY	85.3%	20.3	\$9,614.00	Top Third
VAN BUREN COUNTY	98.5%	18.4	\$9,622.00	Top Third
MARION COUNTY	82.8%	18.7	\$9,697.00	Top Third
BENTON COUNTY	94.3%	18.4	\$9,714.00	Top Third
HAMILTON COUNTY	85.4%	18.9	\$9,729.00	Top Third
HANCOCK COUNTY	83.6%	17.4	\$9,762.00	Top Third
HARDEMAN COUNTY	89.8%	17.7	\$9,821.00	Top Third
BRISTOL	90.4%	21.3	\$9,830.00	Top Third
HAYWOOD COUNTY	85.3%	17.4	\$9,888.00	Top Third
MOORE COUNTY	90.4%	18.5	\$9,947.00	Top Third
DYERSBURG	87.3%	21.7	\$9,968.00	Top Third
MARYVILLE	94.2%	23	\$10,161.00	Top Third
TULLAHOMA	81.9%	22.4	\$10,178.00	Top Third
ALCOA	99.2%	22	\$10,320.00	Top Third
KINGSPORT	93.7%	22.2	\$10,439.00	Top Third
JOHNSON COUNTY	94.4%	19.2	\$10,449.00	Top Third
LAKE COUNTY	85.2%	16.4	\$10,813.00	Top Third
GREENEVILLE	96.2%	21.3	\$10,862.00	Top Third
HUMBOLDT	85.7%	15.9	\$11,121.00	Top Third
SHELBY CO	75.0%	16.9	\$11,222.00	Top Third
DAVIDSON COUNTY	81.6%	18.7	\$11,496.00	Top Third
OAK RIDGE	90.0%	23.1	\$12,355.00	Top Third

APPENDIX C

Data of Tennessee Districts 2015-2016

County	Graduation Rate	ACT Composite Score	Per-Pupil Expenditure	Level of PPE
GIBSON CO SP DIST	94.6%	20.8	\$7,194.30	Bottom Third
BEDFORD COUNTY	92.1%	18.6	\$7,711.30	Bottom Third
CHESTER COUNTY	97.1%	19.4	\$7,792.60	Bottom Third
ARLINGTON	96.4%	22.5	\$7,821.20	Bottom Third
HOLLOW ROCK - BRUCETON	96.1%	17.9	\$7,831.00	Bottom Third
MCKENZIE	95.8%	20.5	\$7,857.80	Bottom Third
WILSON COUNTY	95.1%	20.8	\$7,858.80	Bottom Third
WHITE COUNTY	93.4%	18.6	\$7,955.80	Bottom Third
SEQUATCHIE COUNTY	82.1%	19.9	\$7,966.70	Bottom Third
DEKALB COUNTY	97.6%	18.8	\$8,045.00	Bottom Third
MCNAIRY COUNTY	94.7%	19.6	\$8,184.50	Bottom Third
LEWIS COUNTY	95.5%	18.2	\$8,240.30	Bottom Third
SMITH COUNTY	93.8%	19.7	\$8,279.30	Bottom Third
LAWRENCE COUNTY	93.9%	19	\$8,302.70	Bottom Third
WEAKLEY COUNTY	93.0%	20.8	\$8,311.90	Bottom Third
TROUSDALE COUNTY	95.3%	20.6	\$8,324.40	Bottom Third
BRADLEY COUNTY	92.0%	19.8	\$8,352.30	Bottom Third
HUNTINGDON	97.9%	19.8	\$8,362.50	Bottom Third
CANNON COUNTY	85.3%	19.3	\$8,379.00	Bottom Third
CROCKETT COUNTY	99.1%	19.1	\$8,381.90	Bottom Third
GREENE COUNTY	96.3%	19.4	\$8,382.70	Bottom Third
TIPTON COUNTY	96.5%	20.4	\$8,402.50	Bottom Third
HAMBLEN COUNTY	94.3%	20.2	\$8,436.70	Bottom Third
CUMBERLAND COUNTY	87.4%	20.4	\$8,443.10	Bottom Third
MCMINN COUNTY	95.3%	19.4	\$8,462.10	Bottom Third
OVERTON COUNTY	87.1%	19.7	\$8,474.10	Bottom Third
LINCOLN COUNTY	93.8%	19.3	\$8,489.30	Bottom Third
RUTHERFORD COUNTY	95.2%	20.8	\$8,495.00	Bottom Third
WASHINGTON COUNTY	90.2%	20.8	\$8,549.70	Bottom Third
MONROE COUNTY	91.6%	18.5	\$8,553.20	Bottom Third
JEFFERSON COUNTY	91.8%	19.7	\$8,557.70	Bottom Third
DICKSON COUNTY	93.5%	19.9	\$8,566.00	Bottom Third
RICHARD CITY	92.9%	17.3	\$8,582.60	Bottom Third
HUMPHREYS COUNTY	95.6%	19.9	\$8,588.40	Bottom Third
SCOTT COUNTY	90.8%	17.3	\$8,601.90	Bottom Third
MONTGOMERY COUNTY	94.8%	20	\$8,646.50	Bottom Third

SUMNER COUNTY	92.2%	21.3	\$8,655.80	Bottom Third
MARSHALL COUNTY	95.1%	19	\$8,664.60	Bottom Third
CAMPBELL COUNTY	88.7%	18	\$8,717.40	Bottom Third
DYER COUNTY	94.6%	21.2	\$8,718.70	Bottom Third
PICKETT COUNTY	96.5%	19.5	\$8,729.10	Middle Third
FAYETTEVILLE	95.8%	19.5	\$8,733.10	Middle Third
PUTNAM COUNTY	93.0%	20.5	\$8,754.60	Middle Third
ROBERTSON COUNTY	94.4%	19.3	\$8,761.00	Middle Third
GERMANTOWN	94.4%	24.9	\$8,764.80	Middle Third
MILAN	99.2%	19.5	\$8,795.20	Middle Third
GRAINGER COUNTY	91.1%	17.9	\$8,805.20	Middle Third
MARION COUNTY	82.2%	19	\$8,815.20	Middle Third
DECATUR COUNTY	93.5%	19.3	\$8,820.70	Middle Third
COLLIERVILLE	92.4%	24.6	\$8,852.30	Middle Third
MACON COUNTY	82.5%	19.7	\$8,857.00	Middle Third
MAURY COUNTY	92.1%	19.6	\$8,882.90	Middle Third
MORGAN COUNTY	95.3%	18.3	\$8,908.20	Middle Third
WARREN COUNTY	93.8%	18.6	\$8,910.20	Middle Third
POLK COUNTY	91.7%	18.5	\$8,913.20	Middle Third
FRANKLIN COUNTY	90.9%	19.1	\$8,922.80	Middle Third
ONEIDA	95.6%	19.5	\$8,933.20	Middle Third
WILLIAMSON COUNTY	95.5%	24.6	\$8,945.60	Middle Third
WEST CARROLL SP DIST	94.4%	18.4	\$8,965.90	Middle Third
LENOIR CITY	92.4%	20.2	\$9,023.40	Middle Third
BARTLETT	88.6%	20.8	\$9,071.00	Middle Third
HENDERSON COUNTY	96.2%	19.6	\$9,082.80	Middle Third
GILES COUNTY	87.6%	18.5	\$9,088.30	Middle Third
CHEATHAM COUNTY	91.9%	20	\$9,090.30	Middle Third
KNOX COUNTY	90.3%	21.1	\$9,098.70	Middle Third
OBION COUNTY	89.2%	20	\$9,113.50	Middle Third
TRENTON	96.8%	19.6	\$9,113.70	Middle Third
SOUTH CARROLL	100.0%	19.8	\$9,121.70	Middle Third
MEIGS COUNTY	99.1%	19.1	\$9,137.10	Middle Third
RHEA COUNTY	79.0%	19.2	\$9,144.00	Middle Third
GRUNDY COUNTY	96.0%	17.5	\$9,170.20	Middle Third
LAUDERDALE COUNTY	97.5%	17.9	\$9,209.00	Middle Third
BLOUNT COUNTY	92.8%	21.3	\$9,227.50	Middle Third
COFFEE COUNTY	91.1%	19.7	\$9,230.60	Middle Third
HOUSTON COUNTY	97.2%	19.4	\$9,247.60	Middle Third
STEWART COUNTY	94.9%	20.7	\$9,257.30	Middle Third
FAYETTE COUNTY	75.5%	16.1	\$9,261.30	Middle Third
HAWKINS COUNTY	95.1%	20.4	\$9,262.60	Middle Third

CLAY COUNTY	96.3%	19.3	\$9,263.10	Middle Third
WAYNE COUNTY	91.6%	18.4	\$9,318.00	Middle Third
JACKSON COUNTY	87.2%	19	\$9,326.80	Middle Third
LOUDON COUNTY	85.9%	18.8	\$9,354.20	Middle Third
HARDIN COUNTY	90.1%	19	\$9,363.10	Middle Third
CLEVELAND	90.0%	20.4	\$9,364.70	Top Third
ROANE COUNTY	94.6%	19.7	\$9,410.40	Top Third
CARTER COUNTY	88.8%	19	\$9,478.60	Top Third
HICKMAN COUNTY	93.3%	18.6	\$9,495.90	Top Third
COCKE COUNTY	89.7%	18.2	\$9,516.30	Top Third
HENRY COUNTY	91.9%	20.7	\$9,563.20	Top Third
SULLIVAN COUNTY	94.7%	20.8	\$9,572.80	Top Third
UNION CITY	91.0%	22.2	\$9,606.20	Top Third
UNICOI COUNTY	90.6%	19.3	\$9,623.00	Top Third
HAYWOOD COUNTY	92.4%	17.2	\$9,631.00	Top Third
CLAIBORNE COUNTY	92.0%	18.3	\$9,643.00	Top Third
JOHNSON CITY	91.0%	22.8	\$9,683.30	Top Third
MADISON COUNTY	92.4%	17.8	\$9,695.90	Top Third
UNION COUNTY	88.9%	19.3	\$9,700.10	Top Third
ELIZABETHTON	96.6%	20.3	\$9,721.00	Top Third
HAMILTON COUNTY	83.8%	19.8	\$9,728.30	Top Third
HANCOCK COUNTY	83.3%	17.9	\$9,734.00	Top Third
PERRY COUNTY	92.3%	18.7	\$9,765.10	Top Third
BRADFORD	92.6%	21.1	\$9,783.30	Top Third
FENTRESS COUNTY	100.0%	17.9	\$9,825.30	Top Third
BRISTOL	86.1%	21.7	\$9,841.00	Top Third
TULLAHOMA	93.5%	21.1	\$9,846.20	Top Third
ANDERSON COUNTY	95.5%	20.8	\$9,869.50	Top Third
VAN BUREN COUNTY	94.9%	19.1	\$9,888.30	Top Third
HARDEMAN COUNTY	88.5%	17.5	\$9,940.20	Top Third
BENTON COUNTY	94.4%	19.1	\$9,958.50	Top Third
DYERSBURG	86.1%	20.2	\$10,097.20	Top Third
BLEDSON COUNTY	87.9%	19	\$10,120.50	Top Third
SEVIER COUNTY	87.4%	21.1	\$10,206.30	Top Third
MILLINGTON	81.0%	18.7	\$10,277.70	Top Third
JOHNSON COUNTY	92.3%	20.1	\$10,389.30	Top Third
MARYVILLE	94.0%	23.7	\$10,396.90	Top Third
KINGSPORT	95.5%	22.7	\$10,726.40	Top Third
HUMBOLDT	92.3%	17.1	\$10,869.70	Top Third
GREENEVILLE	94.6%	22.5	\$10,944.60	Top Third
SHELBY CO	78.7%	17.5	\$11,015.00	Top Third
MOORE COUNTY	92.3%	18.4	\$11,025.40	Top Third

ALCOA	100.0%	22.1	\$11,132.10	Top Third
LAKE COUNTY	73.1%	18.2	\$11,416.20	Top Third
DAVIDSON COUNTY	81.0%	18.7	\$11,725.90	Top Third
OAK RIDGE	88.3%	23.1	\$13,063.00	Top Third

VITA

JAY ANDREW IRVIN

- Education: Ed.D. Educational Leadership, East Tennessee State University,
(2017) Johnson City, Tennessee
M.Ed Secondary Education, Milligan College, (2006)
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B.A. History, Milligan College (2005)
Milligan College, Tennessee
Dobyns-Bennett High School, (2001)
Kingsport, Tennessee
- Professional Experience: Social Studies/English Teacher, Dobyns-Bennett High School;
Kingsport, TN (2011-2017)
Director of Youth Ministries, Covenant Presbyterian Church;
Johnson City, Tennessee (2009-2011)
Social Studies/English Teacher, David Crockett High School;
Washington County, Tennessee (2006-2009)
Social Studies/English Intern Teacher, Kingsport City Schools;
Kingsport, Tennessee (2005-2006)
- Honors and Awards: Teacher of the Year Dobyns-Bennett High School, Building
Level (2015-2016)
Teacher of the Year Dobyns-Bennett High School, Building
Level (2015-2014)