

THE IMPACT OF FEDERALLY TAX EXEMPT PROPERTY OWNERSHIP ON  
NATIONAL COUNTY POVERTY RANK AND STUDENT ACHIEVEMENT

THE IMPACT OF FEDERALLY TAX EXEMPT PROPERTY OWNERSHIP ON  
NATIONAL COUNTY POVERTY RANK AND STUDENT ACHIEVEMENT

---

A Dissertation presented to  
The Faculty of the Graduate Education Department  
Southwest Baptist University

---

In Partial Fulfillment of the Requirements for the Degree

Doctor of Education

---

By

Sonia Shedd Kuessner B.S., M.N.A.S., Ed. S.

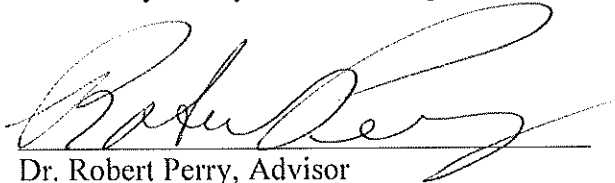
Dr. Robert Perry, Dissertation Advisor

January 2016

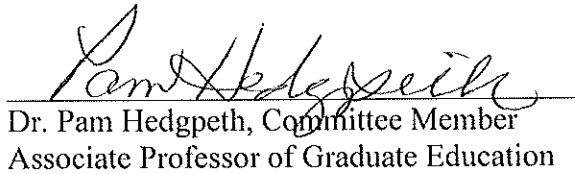
The undersigned, approved by the Department Chair of Graduate Studies in Education, have examined a dissertation entitled:

THE IMPACT OF FEDERALLY TAX EXEMPT PROPERTY OWNERSHIP ON  
NATIONAL COUNTY POVERTY RANK AND STUDENT ACHIEVEMENT

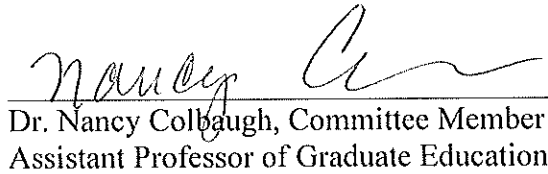
Presented by Sonia Shedd Kuessner a candidate for the degree of Doctor in Education  
and hereby certify that in their opinion it is worthy of acceptance.



Dr. Robert Perry, Advisor  
Professor Emeritus Graduate Education



Dr. Pam Hedgpeth, Committee Member  
Associate Professor of Graduate Education



Dr. Nancy Colbaugh, Committee Member  
Assistant Professor of Graduate Education

## Table of Contents

Table of Contents .....	i
List of Tables .....	vi
Abstract .....	vii
Chapter One .....	1
Introduction.....	1
Background.....	1
Problem Statement .....	4
Study Rationale.....	7
Theoretical Framework.....	10
Purpose of the Study .....	12
Primary Research Question.....	13
Research Subset Questions .....	13
Null Hypotheses.....	15
Definitions.....	15
Limitations .....	18
Delimitations.....	18
Researcher Disclosure.....	19
Summary.....	20
Chapter Two.....	22

Review of Related Literature .....	22
Introduction.....	22
Poverty Definitions .....	23
Theories on Poverty and Student Achievement.....	24
Rural Poverty and Student Achievement in Missouri.....	32
Rural Poverty and Quality of Life as a Poverty Indicator in Southeast Missouri.....	34
History of Federal Land Ownership in Southeast Missouri .....	35
Geographic Rural Poverty in Southeast Missouri.....	36
Payment in Lieu of Taxes (PILT) Revenue for Federal Property Counties .....	37
Two forms of Financial Support for Federal Property Schools .....	37
Secure Rural Schools Act .....	37
Federal Impact Aid .....	39
Missouri School Districts that Qualify For Federal Impact Aid.....	40
Funding for Southeast Missouri Federal Property School Districts .....	40
Local funding .....	40
State funding .....	41
Federal funding .....	42
Funding Disparity .....	43
NAFIS Survey Report.....	44
Summary .....	46

Chapter Three.....	47
Research and Methodology.....	47
Introduction.....	47
Participants.....	48
Participant Demographics of 11 Southeast Missouri Federal Property Counties.....	49
Participant Demographics of 15 Contiguous Southeast Missouri Federal Property School Districts.....	50
Sampling Selection .....	51
Data Collection .....	52
Federal land percent in each U.S. county data.....	53
Poverty data. ....	54
ACT data.....	55
Federal PILT payments to counties data.....	56
Federal funding support for Southeast Missouri Federal Property School Districts data.....	56
Data Analysis .....	57
Primary Research Question.....	58
Research Subset Questions .....	58
Null Hypotheses.....	59
Summary .....	60

Chapter Four .....	61
Analysis of the Data.....	61
Introduction.....	61
Data Analysis .....	62
Organization of data analysis.....	62
Research question one.....	65
Hypothesis one.....	65
Data analysis one. ....	65
Research question two. ....	65
Hypothesis two.....	66
Data analysis two. ....	66
Research question three. ....	66
Hypothesis three.....	66
Data analysis three. ....	66
Research question four.....	67
Hypothesis four.....	67
Data analysis four. ....	67
Summary .....	68
Chapter Five.....	69
Findings, Conclusions, and Implications .....	69

Introduction.....	69
Findings.....	73
Conclusions and Future Research.....	74
Research question one.....	74
Conclusions and future research for question one.....	74
Research question two.....	75
Conclusions and future research for research question two.....	75
Research question three.....	77
Conclusions and future research for research question three.....	77
Research question four.....	78
Conclusions and future research for research question four.....	78
Implications of this Study.....	80
Summary.....	81
References.....	83
Appendix A: Tables.....	105
Appendix B: Missouri Federal Property County Demographics.....	113
Appendix C: Missouri Department of Elementary and Secondary Education Demographic Definitions.....	117
Appendix D: Self-Reported Methodology from the SAIPE Website.....	122

**List of Tables**

Table 1: Federal Land Locations for Fiscal Year 2013 ..... 107

Table 2: Federal Property School Districts in Missouri..... 109

Table 3: Combined Demographic Data for All Missouri Public Schools 2012-2014... 111

Table 4: 15 Southeast Missouri Federal Property School Districts ..... 112

Table 5: SPSS Results Summary.....63

### **Abstract**

Education in the 21st century is subject to standardized testing with financial implications associated with testing. Under continued focus at the federal level to close the socioeconomic achievement gap, equitable distribution of funding is critical to ensure all schools have resources available to offset impacts of low socioeconomic status on student achievement. Some research (Bradshaw (2006) and Morrison (1999) indicates federal property may serve as a geographical barrier limiting economic development of the area and contribute to the rurality of some counties. Little research exists on the impact of federally tax-exempt property on national county poverty rank and student academic achievement. This study provides a method to analyze student ACT scores compared to national county poverty rank and revenue intended to offset the impact of federally tax-exempt property on student achievement in poor rural counties in Southeast Missouri as an initial step in identifying a true achievement gap related to economic status and isolating causes to begin finding solutions.

## **Chapter One**

### **Introduction**

#### **Background**

According to Congressional Research Services Report number R42346, in 2012 the federal government owned between 635 million and 640 million acres within the United States (U.S.). This represented approximately 28% of the 2.27 billion acres of land within the United States (Table 1 Appendix A). Federal property is tax exempt meaning it is removed from the local tax base as a method of generating local revenue for schools and counties (Congressional Research Services Report, 2012). Further, Congressional Research Report number R42346 stated that “Federal lands and resources have been important in American History by adding to the strength and stature of the federal government, serving as an attraction and opportunity for settlement and economic development, and providing a source of revenue for schools, transportation, national defense, and other national, state, and local needs.” (Congressional Research Services, 2012, p.1).

Counties impacted by the presence of federally tax exempt property receive revenue in the form of Payment in Lieu of Taxes (PILT). This revenue is received based upon the number of federal acres in the county (Congressional Research Services, 2014). Financial support for schools affected by the presence of federally tax exempt property within district boundaries is provided in the form of Federal Impact Aid and Federal Secure Rural Schools Revenue. Federal Impact Aid revenue is obtained through an annual application process while Federal Secure Rural Schools Revenue is entitlement funding. Entitlement funding is sent directly to the school based on a set formula; an

annual application process is not utilized. Both federal revenue sources are impacted by politics meaning the revenue amounts can vary greatly from year to year unlike local tax revenue that is based on an established tax rate and assessed valuation laws that limit large fluctuations in revenue (Congressional Research Services, 2013).

According to the United States Department of Interior and a 2013 Missouri Department of Transportation map displaying county and federal land locations, 75 counties in Missouri contained federal land in 2013. In Missouri, 36 school districts located in these counties contained federal land. For the purposes of this study, these districts were referred to as Federal Property Schools or Districts, meaning that at least 50% or more of the property in the school district was removed from the local tax base because it was owned by the federal government. Of the 36 Missouri School Districts, 15 were contiguous K-12 districts located in Southeast Missouri. The 15 school districts are located in 11 adjoining counties in Southeast Missouri (U.S. Department of Interior, 2014b; Missouri Department of Transportation, 2013; Missouri Department of Elementary and Secondary Education, 2014a). For the purposes of this study, the 11 counties were referred to as Southeast Missouri Federal Property Counties, meaning the counties contained at least one Federal Property School. County demographics for the 11 contiguous Southeast Missouri Federal Property Counties are located in Appendix B.

The combined averages of the 15 Southeast Missouri Federal Property Districts (Tables 1 and 2 Appendix A) indicate for the time period of this study, these schools made up approximately 1% of the student enrollment in the State of Missouri, had a combined attendance rate of 88.46%, which was slightly above the state average of 88.30%, and had 33% more students on free and reduced lunch than the State of Missouri

Sonia Kuessner

average of 49.90%. These schools also had a combined four year graduation rate of 90.49%, which was higher than the state average of 85.59%, a dropout rate 60% lower than the state average of 2.5 dropouts per district, a student to teacher ratio approximately 6% lower than the state average of 18 students per teacher, a student to administrator ratio 11% lower than the state average of 195 students per administrator, almost the same number of average years professional experience as the state average of 12.4 years professional experience, 30% fewer staff with professional degrees compared to the state average of 58.9 staff with professional degrees per district. They also payed teachers approximately 23% less than the state average of \$47,274, payed administrators 15% less than the state average of \$86,002, spent approximately 7% less per student on expenditures than the state average of \$9,836, had a tax rate approximately 12% less than the state average of \$3.3857, had an assessed valuation that comprises less than 1% of the state total of \$89,715,030,440, received 25% less local funds compared to the state average of 55.83%, received 23% more state funds than the state average of 34.26%, and receive approximately 58% more federal funds than the state average of 9.91% (Missouri Department of Elementary and Secondary Education, 2012-2014a-o).

The Missouri Budget Project (2014) found that each of these 15 school districts was underfunded by the Missouri Foundation Formula by at least \$500 per student with most districts being underfunded by over \$800 per student. The foundation formula set a specific tax rate of \$3.43 for every \$100 of assessed valuation in the district for the local tax rate in order to provide all revenue entitled to each district through the formula. If districts were unable to obtain a local tax rate of \$3.43 per \$100 of assessed valuation in the district, the district was not able to receive all revenue for each child in the district as

Sonia Kuessner

established through the Missouri Foundation Formula. (The Missouri Budget Project, 2014). These findings indicate that the 15 Southeast Missouri Federal Property School Districts in this study were much more susceptible to the effects of changes in funding at the state and federal level compared to other districts in Missouri. The findings regarding the poverty level in these 15 Southeast Missouri Federal Property School Districts were particularly troublesome. Research indicates poverty negatively impacts student achievement (Abbott, 2009; Coleman, 1966; Payne, 2005). Therefore, the need arises to investigate the correlational relationships among federal land ownership, poverty, and student achievement in the 15 Southeast Missouri Federal Property School Districts and the counties in which they are located.

### **Problem Statement**

According to a study by Fish-Greenlee in 2009, some local citizens, whose land was obtained primarily by eminent domain, to establish a national park and national forest in 2 of the 11 Southeast Federal Property Counties had perceptions that the federally tax exempt property had a negative impact on the local economy, local tax base, impacted funding for counties and schools, and contributed to the poverty level of the area.

In 2012, the United States ranked second highest in child poverty among the world's richest 35 countries (UNICEF Research Center, 2012). In 2014, more than 1600 counties across the nation had various amounts of federally tax exempt property (U.S. Department of Interior, 2014a). The extent to which large portions of federal property ownership within counties and school district boundaries are a contributor to rural poverty and poor student performance is unknown and may be difficult to isolate.

Throughout the United States and particularly in Missouri, conditions brought about by having large portions of federally tax exempt property may impact the rurality and socioeconomic status of the counties where large portions of federal property are located. This is because the federal property, mainly national forests and national parks, may contribute to geographical barriers inhibiting economic development in these counties. These counties receive federal revenue in the form of Payment in Lieu of Taxes (PILT) instead of local revenue generated through personal property taxes for federally owned property. This federal revenue may be less than what the property would generate if it were privately owned and generated local property tax revenue. This financial discrepancy may further contribute to a lower socioeconomic status in these counties because the counties have less revenue to stimulate the local economy and help develop the area.

Additionally, throughout the United States and particularly in Missouri, large portions of federally tax exempt property located within school district boundaries may be contributing to conditions that impact student academic achievement in schools because the federal property is tax exempt and therefore generates no local tax revenue. Schools receive federal revenue in the form of Federal Impact Aid (FIA) and Federal Secure Rural Schools (SRS) revenue because of the federal property located in district boundaries. Like PILT revenue for counties, the FIA and SRS revenue is not stable and subject to sequestration as well as federal budget approval, unlike local property taxes. The amount of FIA and SRS revenue schools receive due to the presence of federally tax exempt property in district boundaries may not be as much as the revenue the property would generate through the local taxation process. This discrepancy in funding may

Sonia Kuessner

contribute to factors within the school, such as low pay, fewer teachers with graduate degrees, and more inexperienced teachers, which research shows are factors that impact student achievement. Student academic achievement in these schools may be impacted by federally tax exempt property because there is less revenue available for resources to help offset the impact of lower socioeconomic status on student achievement.

According to a study conducted in 2014 by the Missouri Department of Elementary and Secondary Education on equity, students from low-income families, rural students, students with disabilities, students of color, and students with limited English proficiency were less likely to have access to great teachers and leaders. DESE described less effective teachers as those who were inexperienced, unqualified, or teaching out of their certification area. The research also found less qualified teachers were more predominant in schools with higher percentages of free and reduced price lunch (FRPL) students and in the state's most rural schools (Missouri Department of Elementary and Secondary Education, 2014c).

A review of district data for the 2012-2014 school years indicated, on average, rural Missouri schools with higher numbers of FRPL students had teachers with less experience than other schools in Missouri (Missouri Department of Elementary and Secondary Education Equity Plan, 2014c & Missouri Department of Elementary and Secondary Education, 2012-2014a-o). The equity study also analyzed teacher salaries in Missouri. Cost of living adjustments were made in the analysis. DESE found teachers in rural schools with higher numbers of FRPL students were being paid less than other teachers in Missouri. In summary, the research conducted to address the equity gaps in Missouri public schools found that "students in rural schools and schools with higher

Sonia Kuessner

rates of FRPL students are being taught by inexperienced, unqualified, out-of-field and less than effective teachers at greater rates than those students in schools with a low percentage of FRPL and more urban-located students.” (Missouri Department of Elementary and Secondary Education, 2014c, p.12).

The equity gap in Missouri Public Schools as indicated by the Missouri Department of Elementary and Secondary Education (2014c) may have had an impact on academic achievement. This study highlights various correlations between student academic achievement and national county poverty rank for schools and counties in Southeast Missouri with large portions of federally tax exempt property. These districts had high levels of FRPL students and the counties were identified as rural remote with the exception of one district and county (Missouri Department of Elementary and Secondary Education, 2012-2014a-o).

### **Study Rationale**

Counties face in poor rural areas due to the unstable nature of PILT, FIA, and SRS revenue that is intended to support the needs of counties and schools whose tax base has been impacted by federally tax exempt property. Little research exists on the impact this funding, or lack thereof, has on the ability of schools to bridge the socioeconomic achievement gap in Federal Property Schools. Unlike local taxes, PILT, FIA, and SRS revenue is very unstable because these revenue sources are subject to federal budget approval each year (Congressional Research Services, 2013). The Missouri Department of Elementary and Secondary Education (DESE) finalized The Educator Equity Plan in 2015. This plan was based on a study of Missouri schools, in an effort to reduce the inequalities that exist in Missouri’s poor rural schools and to allow all schools to gain

Sonia Kuessner

access to great teachers and leaders. This study was intended to provide more focused information on the unique problems schools located in Federal Property Counties face due to unstable funding. This instability may impact districts' ability to attract and retain more qualified and experienced teachers, provide additional curriculum support, and professional development opportunities focused on research-based best teaching practices shown to close the socioeconomic achievement gap for students attending schools impacted by federally tax exempt property in poor rural counties.

To accomplish this study, several areas were researched. The study viewed levels of poverty in each county in the United States, percentages of federal land in each county in the United States, the amount of revenue support for Federal Property Counties and Federal Property Schools in 11 rural Southeast Missouri with persistently high levels of poverty, and the academic achievement of students attending school in those counties.

This study compared the student academic achievement of 15 Southeast Missouri Federal Property Schools with the national county poverty rank for the primary county where each school was located to further investigate the impact of federally tax exempt property ownership on student academic achievement and national county poverty rank to determine if there was a relationship between the national county poverty rank of the 11 counties in this study and the academic achievement of students attending schools in these counties. To do this, the correlation between the percent of federal land in each county in the United States was compared to each county's national poverty rank had to be determined in research subset question two.

Next, revenue support for counties impacted by federal property must be examined. This was done through research subset question three. Counties that receive

Sonia Kuessner

federal Payment in Lieu of Taxes (PILT) as revenue support for federally tax exempt property may receive less PILT revenue than revenue the county would receive if the land was subject to local taxation. Investigating the relationship between the PILT revenue for 11 counties in Missouri with large portions of the county property being federally tax exempt property and the national county poverty rank of these same counties provided information regarding the impact of federal property on national county poverty rank.

Counties are not the only entity impacted by the presence of federally tax exempt property. Schools located in these counties are also impacted. Schools located in counties with federally tax exempt property receive federal SRS and FIA funding instead of local property tax revenue from the federal property to support the functions of the school. These schools may be receiving less revenue from SRS and FIA than what the federal property would generate if it was subject to local taxation. This may result in less revenue for resources to offset impacts of socio-economic status on student achievement.

Research subset question four investigated the relationship between the 10 year average SRS and FIA revenue received by 15 schools in Missouri impacted by large portions of federally tax exempt property and the student academic achievement of the students educated in the schools. The 15 schools were located in 11 adjoining counties in Southeast Missouri and contained large portions of federally tax exempt land.

The methods for investigating these relationships provided a scientific approach to investigate whether or not federally tax exempt property ownership was correlated with national county poverty rank as an indicator of the impact of federally tax exempt

property on the local economy and poverty of the Southeast Missouri Federal Property Counties as well as the student academic achievement in the area.

### **Theoretical Framework**

Poverty rates are often used as a measure for educational need because research has shown a correlation between poverty and low achievement (Center on Educational Policy, 2011). Studies have not been undertaken to determine if the federal government has imposed higher academic standards for students in one program while hindering the opportunity for academic success in another such as the ownership of property in certain counties in Missouri. Darling-Hammond (2012) may sum up the theories and concerns this study was based on when she states:

It's not fair to expect students to meet equally high standards if we do not provide them with equal education opportunity to standards for learning: indicators of learning opportunities-the availability of qualified teachers, appropriate courses, materials and equipment, and necessary services-should be published alongside test results, and states should be expected to show evidence of progress toward resource equalization along with evidence of learning (p. 15).

The theoretical framework for this study was based on the theory that socioeconomic status has a negative impact on student academic achievement and equity gaps may exist regarding resource equalization to help offset the negative impacts of socioeconomic status on student academic achievement (Abbott & Baker, 2009; Abbott & Joireman, 2001; Coleman, 1966; Lam, 1997; Moore, 2011; Payne, 2001; Sorhaindo, 2003). The theoretical framework was also based on theory proposed by Morrison (1999) and again by Bradshaw (2006) that geographic barriers contribute to lower family

Sonia Kuessner

income and socioeconomic status of the area impacted. The federal government ownership of large percentages of property in various counties in Missouri may be imposing the geographic barriers noted by Morrison (1999) and Bradshaw (2006).

“Redlining” was a practice once employed by banks when determining the geographical area on a map where the bank would choose to invest. Often, this followed geographical barriers such as rivers and highways. According to Linda Darling-Hammond (2012), a professor at Stanford University, Congress was inadvertently redlining schools in America through education policy, especially schools that serve socioeconomically disadvantaged students in high-need urban and rural communities. “Redlining” was evident through the No Child Left Behind reauthorization of the Elementary and Secondary Education Act. According to Darling-Hammond, there was no plan in NCLB legislation or the proposed ESEA to counter the “rapid slide of families into poverty, homelessness, and food insecurity; to address the inequitable distribution of federal, state, and local funds to schools; to improve teaching and learning conditions in underfunded, high-poverty schools; or to recruit and train expert teachers who will stay in these schools and stop the revolving door of untrained novices who leave children further behind” (Darling-Hammond, 2012, p. 11). Darling-Hammond pointed out Race to the Top initiatives did provide for some preschool funding, but it was minor in relation to the vast cuts that occurred in other areas of early childhood education funding. According to Darling-Hammond, preschool spending was almost \$700 per pupil less by the end of 2010 compared to 2001.

### **Purpose of the Study**

Students in rural areas are more susceptible to poverty than their suburban and urban counterparts (Kirby, 2007). Kirby relied on research from Tonies (1955) to explain the differences between small and large communities in terms of values and experiences, and how this affects attitudes in rural communities. Kirby's research revealed much information supporting the claim that rural poor face higher degrees of educational disadvantages than those faced by their urban and suburban counterparts, leading to lower educational aspirations among those living in rural poverty (Hass, 1998). Most education policy reform relies on urban poverty models. Kirby's study sheds light on the relationships between location, poverty, and education. Findings showed that poverty is not just an economic issue based on numbers of poor individuals; rather, it should be viewed in terms of a comprehensive causal explanation of why rural people are poor and its effects on educational aspirations and behaviors (Kirby, 2007).

This study is important for the success of students that may be affected by the presence of federal property within school district boundaries. The extent to which federal property contributes to rural poverty and poor student academic achievement is unknown with many variables in play. Hager, (1986) reported a claim by Carol Sue Joffe, in the "Federal Funds" editorial of the July 1977 issue of *American Education* that the United States Government is the nation's biggest property owner and employer, and that every state in the union had schools receiving federal impact aid funds in 1977 to support schools impacted by federally tax exempt property. The Federal Impact Aid program has been reduced since the 1970's, and this reduction has been the source of much litigation across the United States (Hager, 1986). The Federal Impact Aid program

Sonia Kuessner

has continued to be reduced due to sequestration Title XIII of the No Child Left Behind Act of 2001 (NCLB, 2002).

### **Primary Research Question**

1. What relationship existed between student academic achievement in Southeast Missouri Federal Property School Districts and the national county poverty rank of the primary county where the school was located?

### **Research Subset Questions**

2. What relationship existed between federally tax exempt property ownership and national county poverty rank for all counties in the Continental United States?
3. What relationship existed between PILT revenue and national county poverty rank for the Southeast Missouri Federal Property Counties?
4. What relationship existed between SRS and FIA revenue to Southeast Missouri Federal Property Schools and the student academic achievement of those schools?

The intent of this study was to provide information regarding the correlation between the student academic achievement of the 15 Southeast Missouri Federal Property School Districts and the national county poverty rank for the primary county where the district is located. ACT scores were chosen to represent academic achievement because the ACT was the only nationally norm referenced test each of the 15 Southeast Missouri Federal Property School Districts utilized. This study was also intended to determine if a relationship existed between federally tax exempt property and county poverty in Southeast Missouri.

To do this, information regarding the correlation between the amount of federal property within each county in the Continental United States and the national poverty rank had to be determined through research subset question two. This study looked at correlations between the amount of Federal Payment in Lieu of Taxes (PILT) support for Southeast Missouri Federal Property Counties and each county's national poverty rank through research subset question three. Further, this study correlated the amount of financial support for federally tax exempt property in the form of Federal Impact Aid and Secure Rural Schools funding in Southeast Missouri Federal Property School Districts during a 10 year period from 2004-2014 with those same schools' academic achievement as measured by the three year weighted ACT score for 2012-2014 through research subset question four. The reason for using 2004-2014 SRS and FIA revenue was because this 10 year span was the time involved in providing for the education of the students prior to taking the ACT test in 2012, 2013, and 2014.

A review of Federal Impact Aid and Secure Rural Schools funding was provided to educate school officials about possible revenue to which school districts may be entitled under Federal Impact Aid and Secure Rural Schools law to help offset the impact of poverty on students in schools impacted by federally tax exempt property in district boundaries. Federal financial support to counties in the form of Payment in Lieu of Taxes (PILT) was also reviewed to give a basic understanding of this type of county revenue.

In summary, information provided in this study will give county officials and school administrators information regarding the relationships between federal property ownership, national county poverty rank, student academic achievement, any trends in

Sonia Kuessner

sufficient funding support or lack thereof for Southeast Missouri Federal Property Counties and how this may impact county resources, and any trends in sufficient funding support or lack thereof for Southeast Missouri Federal Property Schools and how this may impact student academic achievement.

### **Null Hypotheses**

The following hypotheses were developed to answer the four research questions respectively.

H<sub>1</sub>: The student achievement based on the 2012-2014 weighted three year average ACT score of 15 Southeast Missouri Federal Property School Districts had no correlation to the county's national poverty rank for the primary county where the school district is located.

H<sub>2</sub>: The percent of federal land within all counties in the Continental United States was not correlated to the county's national poverty rank.

H<sub>3</sub>: The amount of Federal Payment in Lieu of Taxes (PILT) financial support for the 11 Federal Property Counties in Southeast Missouri had no correlation to the national poverty rank of each county.

H<sub>4</sub>: The combined 10 year average revenue to support federally tax exempt property received in the form of Secure Rural Schools and Federal Impact Aid funding was not correlated to the 2012-2014 weighted three year average ACT score of the 15 Southeast Missouri Federal Property School Districts.

### **Definitions**

The following definitions have been provided to give readers a clearer understanding of terms useful to this study. If the definition was derived from another

source, the citation follows the definition. If the definition was an operational definition for this study, the definition was not followed by a citation.

*Education:* “Throughout this research, ‘education’ refers to public education (k-12).” (Hager, 1986).

*Federal Property and Federal Land* may be used interchangeably and mean any property or land owned by the federal government that is tax exempt.

*Federal Property Counties:* In this study, Federal Property Counties indicates any county that contains at least one school district that is a Federal Property School District.

*Federal Property School District:* In this study, the term Federal Property School District indicates a K-12 public school district with at least 50% of the land in district boundaries owned by the federal government as tax exempt property.

*Federal Support:* “A process whereby the federal government attempts to make certain, through fiscal policy, that state educational bodies facilitate national objectives. The assurance of this process comes with controls that are placed on the federal funds which are provided to the states. The American Association of School Administrators has provided the following list of the five general categories of federal support:

- a. Aid to promote the cause of education.
- b. Aid to broaden the scope of education.
- c. Aid to educate individuals for whom the federal government accepts responsibility.
- d. Aid to improve the quality of education.
- e. Aid to compensate for deficiencies in the school tax base.” (Hager, 1986).

*Metropolitan and Micropolitan:* In this study, definitions for metropolitan and micropolitan are defined by the Office of Management and Budget in defining geographic entities used when collecting, tabulating, and publishing federal statistics. A metropolitan area is an urban area that has a population of 50,000 or more. A micropolitan area has an urban core with a population of at least 10,000 but less than 50,000 (Office of Management and Budget, 2010).

*Ozark National Scenic Riverways:* a specific National Park in the area where schools, as a focus of this study, are located. This National Park is referred to as ONSR throughout this study.

*Rural:* refers to any school or county location ranging from three locale codes prefixed as either rural fringe, rural distant, or rural remote (Office of Management and Budget, 2010).

*Rural, Distant:* refers to census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than 10 miles from an urban cluster.

*Rural, Fringe:* refers to census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster.

*Rural, Remote:* refers to census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster.

*Rural Poverty:* Because definitions of poverty are fluid, for the purposes of this study, rural poverty in Missouri is defined as any county in Missouri that ranks 40 or

below out of 115 counties in Missouri in terms of population with 1 being the least populous and 115 being the most populous county in Missouri. The counties that rank between 1 and 40 must also contain at least one school with 55% or more of the student population qualifying for Free or Reduced Price Lunch (FRPL).

### **Limitations**

There were no known factors that limited the researcher in completing the purpose of the study and testing the null hypotheses.

### **Delimitations**

1. For the purposes of this study, schools that contained federal land within district boundaries were referred to as Federal Property Schools or Federal Property Districts.
2. For the purposes of this study, research hypotheses 1, 3, and 4 were limited to contiguous public school districts in Southeast Missouri with 50 percent or more of the land in the school district's boundaries owned by the federal government and the primary county where the district was located.
3. For the purposes of this study, research question one and hypothesis one were limited to 11 Southeast Missouri Federal Property Counties and 15 Federal Property Schools located in these counties.
4. For the purposes of this study, research question two and hypothesis two were limited to all counties in the Continental United States.
5. For the purposes of this study, research question three and four and hypotheses three and four were limited to the 11 Southeast Missouri Federal Property Counties and the Federal Property Schools located in these counties.

6. For the purposes of this study, ACT scores were weighted based on the percent of graduates that took the ACT for 2012, 2013, and 2014. The weights were then averaged to obtain an overall ACT score to use in this study.
7. For the purposes of this study, Federal Impact Aid (FIA) and Secure Rural Schools (SRS) revenue for 2004-2014 was used because it was the revenue that was used to support the educational needs of students who took the ACT test 10 years prior 2012, 2013, and 2014.
8. For the purposes of this study, academic achievement involved only the ACT as it was the only nationally norm reference test all 15 Southeast Missouri Federal Property Districts have taken.
9. For the purposes of this study, federal land types included the Department of Defense (DOD), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), Forest Service (USFS), and National Park Service (NPS). Congressional Research Service Report R42346 provides more in depth definitions of each federal land type.

### **Researcher Disclosure**

During the course of this study, the researcher lived in a Southeast Missouri Federal Property County. The researcher has chosen to live in two of the Southeast Federal Property Counties in this study for over 20 years because of the unique beauty and history of the area that the Ozark National Scenic Riverways and Mark Twain National Forest help to preserve. She served as the superintendent of a Southeast Missouri Federal Property School for the duration of this study. The researcher is the

Sonia Kuessner

granddaughter of a family whose land was obtained by eminent domain during the time the Ozark National Scenic Riverways was being established in Carter and Shannon Counties in the 1960s. Being a generation removed, the researcher had no working knowledge of the events that took place while establishing the National Park. The researcher was keenly aware of any potential biases she may have had and took them into account as it is necessary for researchers in case studies to be sensitive of the inherent biases in this type of research (Merriam, 1998). The researcher also remained as neutral as possible throughout the entire process from the research and collection of data to the analysis and reporting of the findings in this study.

### **Summary**

Little research exists on the unique problems Federal Property Schools and Counties face in poor rural areas due to the unstable nature of PILT, FIA, and SRS revenue that is intended to support the needs of counties and schools whose tax base has been impacted by federally tax exempt property. Little research exists on the impact this funding, or lack thereof, has on the ability of schools to bridge the socioeconomic achievement gap in Federal Property Schools. There is a need to investigate the potential impact of federal property ownership on national county poverty rank and student academic achievement as well as equity gaps that may exist in rural schools located in Federal Property Counties in Missouri. There is a need to provide county and school officials with a brief description of financial support for schools and counties impacted by federally tax exempt property as well as a brief history of federal land acquisition in Southeast Missouri and how this land may contribute to the rurality and poverty of the area which may lead to an equity gap in schools. Further, there is a need to provide

Sonia Kuessner

county and school officials in Southeast Missouri with information regarding laws governing Federal Impact Aid and Secure Rural Schools funding for schools impacted by federal property as well as information regarding Payment in Lieu of Taxes (PILT) revenue for counties impacted by federally tax exempt land.

## **Chapter Two**

### **Review of Related Literature**

#### **Introduction**

Theories on poverty and its implications for student academic achievement and student success are plentiful. A review of studies on rural poverty in Missouri, specifically Southeast Missouri where the 15 Federal Property School Districts as subjects of this study were located provides information about the persistent poverty in Southeast Missouri. According to the demographic data of the 15 Southeast Missouri Federal Property Schools provided by the Missouri Department of Elementary and Secondary Education, the Southeast Missouri Federal Property School Districts were 1.5 times more reliant on federal revenue than the average for all districts in Missouri (Table 5 Appendix A). Federal funds under No Child Left Behind were intended to address the needs of children in poverty. An understanding of poverty was important for this study to outline the implications of poverty on student achievement. Studies that outlined the history of federal land acquisition in Southeast Missouri and the historical rural poverty of the area over time were also important for this study. A review of Secure Rural Schools (SRS) revenue and Federal Impact Aid (FIA) revenue for schools and Payment in Lieu of Taxes (PILT) revenue for counties impacted by the presence of federal land was conducted. This was done to aid in the understanding of the financial support intended to offset the financial impact of decreased tax revenue due to federally tax exempt property on schools' and counties. SRS and FIA were intended to help schools offset negative impacts of poverty on the academic achievement of students in poor rural

areas. Research showed many ways in which schools have successfully used resources to overcome the negative impacts of poverty.

### **Poverty Definitions**

Theories on individual poverty, cultural poverty, political-economic poverty, geographic poverty, and cumulative and cyclical poverty were examined to help define poverty and determine the types of community anti-poverty programs employed to help reduce the specific poverty in the community (Bradshaw, 2006).

Theories on individual poverty stem from ideas that the individual is lazy, makes poor choices, or has inherent disabilities. Cultural poverty stems from a particular group adopting values that are not productive to standard norms of success. Political-economic poverty stems from the poor experiencing barriers to education, housing, jobs, health care, safety, and political representation. Geographic poverty stems from social disadvantages due to location and geographical barriers. Cumulative and cyclical poverty stems from the interdependence on combinations of the previously mentioned theories as well as a strong link to community deficiencies reinforcing poverty cycles (Bradshaw, 2006).

Often, poverty is defined in school age children by federally subsidized lunch rates, census data, income tax data, and earned income credit information. Christie (2002) argued that these are flawed methods of measuring poverty. She stated that in 1999, the Legislative Office of Education Oversight (LOEO) in Ohio identified poverty based on cash assistance, medical assistance in the form of Medicaid, Healthy Start, food assistance in the form of food stamps, and disability assistance. A report from the California Public Policy Institute, *Poverty in California: Levels, Trends, and*

Sonia Kuessner

Demographic Dimensions, determined the federal definition for calculating poverty in California was misleading (Christie, 2002). Because definitions of poverty are fluid, for the purposes of this study, rural poverty in Missouri was defined as any county in Missouri that ranked 40 or below out of 115 counties in Missouri in terms of population with 1 being the least populous and 115 being the most populous county in Missouri. The counties that ranked between 1 and 40 had to contain at least one school with 55% or more of the student population qualifying for Free or Reduced Price Lunch (FRPL).

### **Theories on Poverty and Student Achievement**

Some of the earliest research on poverty and student achievement includes The Equality of Educational Opportunity Report, better known as the Coleman Report of 1966, which was conducted as a result of the Civil Rights Act of 1964. The main purpose of the Coleman Report was to investigate the educational opportunities for minorities compared to the white majority. This report was one of the first to investigate the relationship between what went into the educational process in terms of socioeconomic status, educational resources, and facilities compared to what came out of the educational process in the form of test scores. Results of the Coleman report showed vast disparities in educational resources between minority and non-minority groups. The report also revealed that socioeconomic conditions have a significant impact on student achievement for majority and minority groups. When the socioeconomic background of each of these groups was statistically controlled, lack of educational opportunities (input) in the form of poorer facilities, curriculum, and teacher quality were shown to have little difference between majority and minority groups regarding impact on student achievement (output). Findings reinforced that socioeconomic status impacted student

Sonia Kuessner

achievement for minority and non-minority groups alike. The general findings of the Coleman Report were supported by further studies including Blau & Duncan (1967), Dubow & Ippolito (1994), Garnezy (1991), and Hanushek (1989).

In 1970, the US government sponsored the National Assessment of Educational Progress (NAEP) to track student achievement across the nation. Data from NAEP showed a continued gap in achievement based on ethnicity (CEP, 2007). Student achievement has often been studied for similarities and differences between genders, age groups, ethnic groups, and geographical location. Fryer and Levitt (2005) revealed that socioeconomic factors explained 85% of the black-white achievement gap in math, and 100% of the reading gap at the beginning of kindergarten. They found blacks scored higher in reading than whites of the same socioeconomic status.

One reoccurring theme linked to student achievement regardless of gender, age, ethnicity, or geographical location, was that socioeconomic status and family income affect student achievement (Abbott & Baker, 2009; Abbott & Joireman, 2001; and Sorhaindo, 2003). Sorhaindo found a significant difference in academic achievement between low-poverty, medium-poverty, and high-poverty students on 4<sup>th</sup> and 8<sup>th</sup> grade math and language arts assessments, when low-poverty students scored higher than medium-poverty students and medium-poverty students scored higher than high-poverty students. Sorhaindo further studied the academic achievement of each poverty group (low, medium, and high), in schools with each of the following poverty levels (low, medium, high). Results showed that students in the high-poverty group scored lower on achievement tests in high-poverty schools. High-poverty groups scored higher in low-poverty schools and the opposite was true for low-poverty groups of students, indicating

Sonia Kuessner

the overall socioeconomic status of the school affected achievement of various poverty levels of students. These findings were consistent with those of Puma, Kurweit, Price, Ricciuti, Thompson, & Vander-Kiernan (1997). Lam's 1997 research further supported findings that the degree of socioeconomic disadvantage was correlated with student academic achievement.

Moore's 2011 study revealed a strong indirect correlation (-.761 to -.855) between poverty and student achievement. In this study, poverty was measured by the free and reduced lunch rate in Florida schools, and achievement was measured by using Florida's state standardized test. Silvernail et al. (2014) found a moderate negative relationship between school poverty levels and student achievement with a correlation coefficient of -.5874.

Reports from the National Center for Children in Poverty (2008) indicated children who grew up in impoverished conditions had less contact with educational resources such as reading materials and access to computers. These children also had less access to educated adults who could help them with school work. Further, they had lower levels of school attendance. "The lack of learning capital present in the lives of poor children has a negative impact on academic achievement, and concentrated poverty in schools exacerbates the issue" (Moore, 2011, p. 138). Previous research (Chertian, 1991; Entwisle and Alexander, 1992; Hare, 1980; Kennedy, et al., 1986; Lee & Croninger, 1994; Orland, 1990; Patterson, Kupersmidt, & Vaden, 1990; and White, 1982) reported on the differences in academic achievement among students of higher and lower socioeconomic status. More recently, Coley and Baker (2013), reviewed the repeatedly

documented negative relationship between the conditions of poverty and a wide range of educational and life outcomes.

Reardon (2011 & 2013) found the income achievement gap has grown significantly within the last 50 years. It was almost twice that of the black-white achievement gap in 2011 and 2013. This held true for measures of academic success including standardized achievement tests, college completion rates, and selective college enrollments. He also found the income achievement gap was already large prior to students entering kindergarten and did not grow significantly as the student moved through higher grades. Reardon offered five explanations of these findings: 1) income inequality has grown during this time period; 2) upward social mobility is not as easily attained compared to 50 years ago due to the rise in income inequality and the declining economy; 3) the economy has been segregated into high-skill, high-wage income and low-skill, low-wage income making social mobility more difficult than 50 years ago; 4) the focus on standardized tests as a measure of success, college admissions, and education policy have caused increased disparities in the income achievement gap; 5) the American family has changed over the last 50 years. High-income families are typically composed of two parents with college degrees. Low-income families have become homes with single parents with low levels of education. These findings and explanations indicated that high-income families are able to invest time and resources to help in the development of their children much more so than low-income families. The U.S. has become more residentially segregated and thus more income segregated.

In the 70's and 80's, little research had been conducted on the correlation between supplemental funding for socioeconomically disadvantaged students and its effects on

student achievement (Jencks, 1972b & Hanushek, 1989). Moore (2011) investigated the supplemental funding, or lack thereof, provided by each state to districts within the state that met established thresholds for socioeconomically disadvantaged students based on free and reduced lunch rates. Moore found a great degree of variance among the states regarding supplemental funding for socioeconomically disadvantaged students over and above the established state foundation formula. Some states provided no additional support to districts with high levels of socioeconomically disadvantaged students while others provided support. Moore developed a theoretical weighting method that ranked supplemental support on a scale of 0-.25 with zero representing no supplemental state funding for socioeconomically disadvantaged students to .25 representing states with the highest amount of supplemental support to districts with socioeconomically disadvantaged students. Missouri received a score of .25 along with Connecticut, Oklahoma, Oregon, and Vermont.

Though much research has been done identifying the socioeconomic achievement gap, findings are mixed as to the causes, current trends in, and ways to overcome the achievement gap (Blank, 2011; CEP, 2007; Dellamora, 2009; Eddy, 2008; Reardon, 2011; Holmes, 2012). Some (Payne, 2005) have created professional development tools to teach educators how to better understand the behaviors created by poverty. Others have scrutinized Payne's work claiming it is stereotyping those in poverty (Bohn, 2006; Gorski, 2006).

Studies are beginning to focus on the interactions of poverty stricken families to determine what actions are more likely to have more positive impacts on school readiness (Huggins, 2011). Stell (2006) concluded that increased differentiation in instruction

Sonia Kuessner

would help offset the impacts of ambient poverty on all students, especially minority students.

Coleman (1966) conducted subsequent research to investigate what characteristics schools possessed that contributed to academic achievement of students to overcome the socioeconomic achievement gap. Findings showed schools with high academic and disciplinary demands contributed to closing the socioeconomic achievement gap. Further, Coleman conducted research on the impact of family type on academic achievement. Coleman referred to this as social capital (Marshall, 1998). Orr (2000) concluded that students with more social capital had access to more educational resources at home. This contributed to their increased academic success compared to more socioeconomically disadvantaged students. In addition to social capital, Bourdieu, in 1977, defined cultural capital “as the general cultural background, knowledge, disposition, and skills that are passed from one generation to the next” (Urso, 2008). Urso concluded that students of higher socioeconomic backgrounds have more cultural capital. Berlin and Sum (1988) also concluded that poverty reduces the family’s ability to provide resources that children need to be prepared to succeed in the school setting. Kennedy et al. (1986), found the relationship between school poverty concentrations and student achievement was stronger than the relationship between family poverty status and student achievement, indicating that a lack of social and cultural capital had a cascading effect on poor students in schools with high concentrations of poor students.

Gamoran (2006) wrote a forty year retrospective of the Coleman Report from 1966-2006 that revealed strikingly similar findings to the Coleman Report of 1966. Gamoran found that socioeconomic status had a much greater impact on student

achievement than race, gender, or educational opportunities in the form of teacher quality, facilities, and supplies. This report also suggested that poor students' academic achievement is improved when schools focused on teacher quality, tutoring, and evidence-based best practices.

Additional studies that suggest schools and teaching affect academic achievement include Bowels and Levin (1968), Jencks (1972a), and Wynne, (1981). Sammons, Hillman, & Mortimore (1995) identified key correlates of effectiveness for schools as professional leadership, shared vision and goals, learning environment, concentration on teaching and learning, purposeful teaching, high expectations, positive reinforcement, monitoring progress, pupil rights and responsibilities, home-school partnerships, and the learning organization.

Mid-Continent Research for Education and Learning (2005) found that schools with high poverty and higher performing students were distinguished by strong school leadership and developed a strong academic climate. Steele (2009) reported on the importance of leadership when achieving high levels of performance. Muchado (2008) reported schools need to focus on climate to close the achievement gap because they cannot control demographics. Graber (2009) found that class size was not a factor determining academic achievement in high and low poverty schools. Graber attendance was a factor contributing to academic achievement in both high and low poverty schools. Stump et al (2013) reported characteristics of several rural schools in Maine that were successful at closing the achievement gap. These included staff clearly focusing on learning. Professional development was focused on rigorous learning processes such as modeled learning for colleagues and students. Decisions were driven by student data that

clearly identified achievement gaps and informed curricular decisions. Staff perceptions of their role in the educational process were generated by self-reflection focusing on how to improve their practice to enhance learning for students.

Some schools have been to employing professional development measures to teach educators about the impacts of ambient poverty. This includes the professional development training offered by Dr. Ruby Payne. Payne's theories of social class rules outline the subtle and informally taught rules for three social classes (poverty, middle class, and wealthy). Payne's work outlines the need and provides training for educators to understand the rules of each class in order to teach all classes of students effectively. Individuals of the three social classes view various aspects of life very differently. These aspects include possessions, money, personality, social emphasis, food, clothing, time, education, destiny, language, family structure, world-view, love, and driving force (Payne, 2001).

For example, members of the poverty class view possessions as people. The middle class views possessions as things. The wealthy class views possessions as rare items such as antiques or more abstractly as leaving a legacy. The poverty class views money as an item to be spent or used. The middle class views money as an item to be managed. The wealthy class views money as an item to be conserved or invested. Payne's work outlines the differences in how each class views the world through its own set of rules for each of the aspects of life. Payne's work provides a theoretical framework for members of each class to learn the perspectives of other classes. Payne's work is often used in the educational setting to provide educators with a well-rounded perspective

Sonia Kuessner

of social class ideologies (Payne, 2001). Payne's work supports the ideas of social and cultural capital previously described in this study.

Reardon (2011 & 2013) gave three suggestions states and schools can employ to help bridge the income-achievement gap for U.S. students. First, schools could devote a greater share of resources to the earlier grades such as kindergarten and preschool to help eliminate the self-perpetuating achievement gaps in the long run. Second, Reardon suggested more time in school such as summer school programs, after school programs, extended school day and school year programs may help close the achievement gap. Finally, as a result of residential segregation, states and schools can do more to ensure that all students have access to adequate resources such as computers, libraries, stimulating curriculum, and high quality teachers. All of these require financial resources.

### **Rural Poverty and Student Achievement in Missouri**

The Reports from the National Center for Children in Poverty revealed an increase in the number of children living in poverty in rural Missouri. While the number of children living in poverty increased in Missouri, the national trended shows the opposite. The number of children living in poverty in the U.S. in 1997 was 6,870,924 children and decreased to 5,017,306 children in 2007. The Annie E. Casey Foundation reported that 50% of the children under age eight live in low-income households in Missouri. Additionally, 19% of eight year olds had the cognitive knowledge and skill to be considered on track in school and may also lag in social-emotional and behavioral skills as a result of family socioeconomic status (AECF, 2012). According to the Missouri Department of Elementary and Secondary Education in 2013, 41.3% of students

from low-income homes scored proficient or advanced in mathematics, and 41.7% were proficient in English language arts. At third grade, 36% of students from low-income homes scored proficient on the MAP test compared to 63% of their non-free lunch peers (Missouri Department of Elementary and Secondary Education, 2013).

Stump (2013) reported rural schools faced greater challenges to ensuring students were college and career ready than their urban counterparts. Most of Missouri's public school districts were considered rural at the time of this study (Missouri Department of Elementary and Secondary Education, 2014c). To the contrary, Trani (2009) found as the size of the school district grew, the negative correlation between socioeconomic status and student achievement strengthened. Pratt-Ronco (2009) studied rural youth living in poverty to gain a better perspective of what perceptions they had regarding their barriers to success and social mobility. The overall finding was that while rural pervasive poverty haunted these youth, and they were isolated from resources, opportunities, and wealth, they showed great resilience, hope, and "grittiness" that came from their rural poor existence. The Rural School and Community Trust (Johnson & Strange, 2009), found that student achievement was higher for at risk students in smaller rural community schools compared to their urban counterparts. This was supported by the research of Dianne and Stephen Truscott in 2005.

A 2005 study by Dishman-Horst of a K-8 district in Missouri with a high incidence of students from poverty found that despite all the challenges of rural poverty, the school was able to achieve Distinction in Performance for five years in a row on the state accountability plan. The study attributed this to the understanding of the rural school, student, and rural poverty; setting high expectations and demanding

accountability; providing resources and developing collaboration; and providing examples of leadership qualities of principals and superintendents productive for small, rural schools with high incidence of poverty. Other researchers found a positive connection between strong leadership focusing on comprehensive school improvement and effective school improvement in impoverished schools (Charles A. Dana Center, 1999; Edmonds, 1979; Lezotte, 1996). Bingenheimer-Rendahl (2007) found isolation, district size, and lack of funds hindered the ability of rural districts to implement professional development models that used research based methods to improve student achievement as mandated by No Child Left Behind.

### **Rural Poverty and Quality of Life as a Poverty Indicator in Southeast Missouri**

According to a July 2014 report from the Rural Poverty Policy Institute (RPPI), the highest and most persistent poverty was located in the southeastern and southcentral United States with southeastern Missouri being the northern border for this type of poverty. According to RPPI, isolated pockets of this type of poverty exist in the northern United States but not to the extent it existed in the south and southeastern United States, including Southeast Missouri. All counties in this study that had at least one K-12 public school district with 50 percent or more federal land in district boundaries removed from local taxation were located in a persistently low poverty area in Missouri (RPPI, 2014).

According to the 2012-13 biennial report from the Missouri Department of Health and Human Services titled "Health in Rural Missouri", Southeast Missouri was an area of persistent poverty. This poverty was reflected in many aspects of life in the area. This report revealed this area as having much less access to health care; among the highest rates of death due to cancer, heart disease, and stroke; lower academic achievement in

Sonia Kuessner

terms of drop-out rates and lower college degrees compared to other areas in Missouri (Missouri Department of Health and Human Services, 2013).

### **History of Federal Land Ownership in Southeast Missouri**

A study by J. L. Murphy in 1982 provided a thorough historical analysis of the Southeastern Ozark area from pre-settlement times until the 1970s. This study primarily included Shannon, Carter, Dent, Ripley, Oregon, Wayne and Reynolds counties in Southeast Missouri. His research involved many credible archived documents from the U. S. Census Bureau (1820-1960), U. S. Department of the Interior, various books, articles, and studies of the region. This information was obtained with the help of the State Historical Society of Missouri and the Archives of the State of Missouri.

According to Murphy, Week's Law, enacted in 1911, allowed the U.S. Government to purchase privately owned land for the National Forests and created the National Forest Reserve Commission to consider lands to be purchased. In 1929, Missouri law allowed National Forests to be created in Missouri with the limitation of 2,000 acres per county (Murphy, 1982).

According to a study by Fish-Greenlee in 2009, over the years, the amount of land allowed for National Forests in each county was increased. In 1934, the limit on National Forest land permitted in each county in Missouri was removed. By 1935, Carter County contained 144,494 acres of National Forest, removing 44% of the county's land from its tax rolls. Shannon County contained 124,219 acres of National Forest, removing 19% of the county's land from its tax rolls.

In 1946, the State Forestry Act created a special taxation system for forestry land reducing the privately owned forest crop land assessed valuation. The U.S. Forest

Sonia Kuessner

Service began cutting timber with 25% of timber sales revenue going to the counties in the form of Payment in Lieu of Taxes (PILT) Revenue. In 1964, Ozark National Scenic Riverways was established in Southeast Missouri (Fish-Greenlee, 2009).

### **Geographic Rural Poverty in Southeast Missouri**

In 2013, slightly over 200 counties across the nation were designated as persistently low income counties. Most are in the southern states. Missouri only had five PLI counties, including Oregon, Washington, Shannon, Carter, and Reynolds (USDA, 2013). All were deeply rural and isolated due to the rough terrain of the Missouri Ozark Highlands. These counties have been designated PLI counties since the creation of the 1950 national designation process (Morrison, 1999). In 2013, U.S. Census Bureau statistics indicated all five counties are still PLI counties. These counties were five of the eleven that have school districts with at least 50% or more land federally tax exempt and therefore were focus counties for this study.

Morrison's 1999 study examined the difficulty of the five deeply rural, PLI counties in Missouri to develop economically. She attributed this difficulty primarily to lack of transportation infrastructure in these counties compared to a more urban economic hub. The cost associated with building this infrastructure was greater than other regions in Missouri and the United States due to the rough terrain of the Southeastern Ozarks. Morrison found the lack of infrastructure in these counties resulted in the following: 1) isolation from economic development, 2) these counties being persistently low income, 3) deeply-rural poverty below that of the national average, 4) limited technology access for these counties, 5) lower teacher salaries, 6) poorer educational resources, 7) higher proportions of students never attending high school, and 8) fewer students attending post-

Sonia Kuessner

secondary institutions. Morrison highlighted the economic resources of the region as that of water and timber. Morrison also explained the political power shift from rural counties to urban counties in Missouri as redistricting and political term limits occurred (Morrison, 1999).

### **Payment in Lieu of Taxes (PILT) Revenue for Federal Property Counties**

Payment in Lieu of Taxes provides funding to Federal Property Counties. However, this funding indirectly affects schools in those counties. PILT revenue is separate from the Secure Rural Schools Funding. PILT revenue can be used for a variety of county needs such as general road maintenance, building maintenance, and salaries. Many of these roads are utilized by schools for transporting students that live on private tracts of land scattered throughout the federal property (CRS, 2014). PILT revenue can be distributed to schools but typically is used for other vital county needs.

### **Two forms of Financial Support for Federal Property Schools**

#### **Secure Rural Schools Act**

The oldest form of financial support for Federal Property Schools is Secure Rural Schools funding with beginnings in the early 1900s when forest reserve was established. Secure Rural Schools Revenue is generated due to Activity such as logging on National Forest land. In 1907, the U.S. Congress established the National Forest System (FS) to manage these reserves (The Wilderness Handbook, 2004). In 1908, Forest Service payments were authorized to provide assistance to states and rural counties impacted by the loss of timbered land to the federal government as a result of the Forest Service land. This payment was intended to help offset the loss of revenue from property taxes and taxes on the sale of timber since the federal government was exempt from taxes. From

Sonia Kuessner

1908 through 2008, counties with FS land received 25% of the revenues derived from activities on Forest Service land located within the county. These activities primarily included timber sales, mineral extraction, day use, and grazing fees. These funds have been used to help maintain rural schools, roads, and improve watersheds and ecosystems (Eyler, 2011; Government Accountability Office Report, 2012; U.S. Department of Agriculture, 2014).

There is no application process for the SRS funds (also known as FS funds). Information for each county is derived from the USDA. (U.S. Department of Agriculture, 2014). Southeast Missouri Federal Property School Districts may receive Secure Rural School revenue due to activities such as logging in the Mark Twain National Forest in these counties. Counties can distribute the SRS funds to school districts in the county based on Average Daily Attendance (ADA) of students in the each school in the county, or based on the percentage of USFS acreage in district boundaries. (Congressional Research Services, 2013).

In 1993, legislation reduced the volume of timber cut, and therefore timber sales, on USFS land by 86% (Niemi, Whitetail, & Johnson, 1999). The peak timber cutting and sales in the nation occurred in 1989 where FS payments to counties for schools and roads was almost seven billion. In 2000, after the timber cutting decline, FS payments to counties was just over 250 million annually.

This decline prompted Congress to passed P.L. 106-393, better known as the Secure Rural Schools and Community Self-Determination Act of 2000. This act provided for temporary assistance for counties and schools based on historic trends rather than current timber sale revenues (Congressional Research Services, 2013).

### **Federal Impact Aid**

The second form of financial support for federal property schools is Federal Impact Aid. Federal Impact Aid (Impact Aid Public Law 81-815 & 81-874) was signed into law by President Truman. (National Association of Federally Impacted Schools, 2014a & b). These laws resulted after the U.S. Congress held hearings regarding the effects federal activities on communities and their schools. “These hearings revealed there was an unnatural burden placed on school districts because of federal activities.....and.....helped to remove property from the local tax base.” (Hager, 1986, p. 54).

The “Declaration of Policy” creating Public Law 81-874 reads as follows:

In recognition of the responsibility of the United States for the impact which certain federal activities have on the local educational agencies in the areas in which such activities are carried on, the Congress hereby declares it to be the policy of the United States to provide financial assistance for the local educational agencies upon which the United States has placed financial burdens by reason of the fact

- (1) the revenues available to such agencies from local sources have been reduced as a result of the acquisition of real property by the United States; or
- (2) such agencies provide the education for the children residing on federal property; or
- (3) such agencies provide education for the children whose parents are employed on federal property; or

(4) there has been a sudden and substantial increase in school attendance as the result of federal activities (U.S. Congressional Record; 81<sup>st</sup> Congress, 1950).

During this study, Federal Impact Aid was obtained through an annual application process and fell under the umbrella of No Child Left Behind. To qualify for Federal Impact Aid, a school district must have had property within district boundaries that was acquired by the federal government after 1938, and the assessed value of the federal land must have represented at least 10% of the assessed valuation of the entire local education agency's real property (Congressional Research Services, 2007).

### **Missouri School Districts that Qualify For Federal Impact Aid**

The U.S. Department of Elementary and Secondary Education was responsible for determining eligibility and distribution of funds for schools under No Child Left Behind. According to the U.S. Department of Education (2015), Missouri had between 15 and 17 schools that qualified annually for Federal Impact Aid Funds between 2010 and 2015. Some schools did not complete applications in a timely manner; thus, Federal Impact Aid funds were not received by those districts during that specific application year resulting in a fluctuation between 15 and 17 schools. For the years of 2010-2015, the combined Federal Impact Aid revenue for these Missouri Districts was between \$750,000 and \$800,000 annually (U.S. Department of Education, 2015).

### **Funding for Southeast Missouri Federal Property School Districts**

#### **Local funding.**

During this study, the Southeast Missouri Federal Property School Districts received local funding primarily from property taxes. Although generated at the federal

level, Secure Rural Schools (SRS) funding was distributed at the local level. SRS was received due to activities on Mark Twain National Forest land. SRS funding was an entitlement payment sent to schools that have National Forests. The revenue supporting SRS funding was derived in part from activities on the National Forest land such as timber sales or the sale of mineral rights. SRS funds were sent from the United States Department of Interior to the Division of Accounting in Jefferson City, Missouri and then distributed to each county in Missouri based on a formula applied to all counties across the nation. Although SRS revenue was ultimately received by Southeast Missouri Federal Property School Districts from the United States Department of Interior, a federal entity, it was considered a local funding source because the revenue was obtained in part from activities such as timber sales and mineral sales on the federal land at the local level. SRS activity revenue may have excluded districts from Federal Impact Aid funds depending on the amount of revenue generated through activities in the Mark Twain National Forest (Congressional Research Services, 2007 & Missouri Department of Elementary and Secondary Education, 2004-2014a-o).

**State funding.**

During this study, state funding for Southeast Missouri Federal Property School Districts was through the Missouri Department of Elementary and Secondary Education (DESE). The primary source of state funding was the Missouri State Foundation Formula (Missouri Department of Elementary and Secondary Education, 2004-2014a-o). This funding formula was based primarily on average daily attendance (ADA) and was derived from student enrollment and attendance data (Missouri Department of Elementary and Secondary Education, 2014b). The formula was funded at less than

Sonia Kuessner

100% since it was fully phased in during the 2012-2013 school year. The Missouri Budget Project found that each of the 15 school districts was underfunded by the Missouri Foundation Formula by at least \$500 per student with most districts over \$800 per student. This was due in part because it was difficult to generate local tax revenue in such poor counties where most of the tax base is occupied by the federal government as tax exempt land. The foundation formula set a specific standard for the local tax rate. If districts were unable to obtain that local tax rate, the district was not able to receive all revenue as established through the Missouri Foundation Formula for each child in the district. Research indicated that the 15 Southeast Missouri K-12 Public School Districts in this study were much more susceptible to the effects of changes in funding at the state and federal level compared to other districts in the state (The Missouri Budget Project, 2014).

**Federal funding.**

The Southeast Missouri Federal Property School Districts receive federal funding primarily from entitlement funds authorized under No Child Left Behind. These districts also received Federal Special Education funds that were distributed to the Missouri Department of Elementary and Secondary Education. From DESE, payments were sent to each school on a monthly basis.

Federal Impact Aid was another form of federal revenue Southeast Missouri Federal Property School District may have received due to the presence of federal land in district boundaries. Federal Impact Aid (FIA) was received through an annual application process and was based on how many acres qualified for FIA and the local tax rate. This revenue was distributed directly to schools from the United States Department

Sonia Kuessner

of Education (Congressional Research Services, 2013; Missouri Department of Elementary and Secondary Education, 2004-2014a-o; United States Department of Education, 2002).

**Funding Disparity.**

An in depth review of one of the 15 Southeast Missouri Federal Property Schools in this study revealed Federal Impact Aid and Secure Rural Schools revenue were the only two sources of revenue provided to support tax exempt federal land. When both of these funding sources were fully funded, they represented one-third of the revenue that would be generated by the land if it were subject to local taxes (Missouri Department of Elementary and Secondary Education, 2004-2014n).

Additionally, Secure Rural Schools revenue can be distributed by the county to all school districts in the county based on student enrollment or percentage of federal property within each school's boundaries. In some instances, the revenue was dispensed to a district in the county with less amounts of federally tax exempt land because the district had a larger enrollment (increasing state aid) than the district with the smaller enrollment but with a larger portion of land removed from the local tax base. (Missouri Department of Elementary and Secondary Education, 2004-2014n). Finally, Missouri competes with other states for Federal Impact Aid and SRS funding. The knowledge base of Missouri's congressional representatives impacts their ability to advocate effectively for federal property schools across the nation, specifically those in Missouri, this contributes to the instability of these funding sources.

## **NAFIS Survey Report**

A report by Jocelyn Bissonnette from the National Association of Federally Impacted Schools (NAFIS) in October 2013 titled *Shortchanging our Future: Sequestration's Damage to Impact Aid Schools*, highlighted the results of the Budget Control Act of 2011 through survey data from school districts that received Federal Impact Aid. According to the report, Federal Impact Aid has historically been current year funded, meaning any cuts to the program are realized by the school districts the same year. This was the only federal program under NCLB that was current year funded. All others, such as Title I, were structured in a way that allowed school districts a year to plan for cuts. The report displayed the number of districts that budgeted for the effects of sequestration in 2012 and 2013. Nationwide, 400 schools that received Federal Impact Aid were surveyed in 2012 and 395 surveyed in 2013. There was at least a 75% response rate each year. In 2012, 36% budgeted for sequestration. The reason stated was lack of timely information to budget appropriately when dealing with Federal Impact Aid. In 2013-14, 86% of the school districts budgeted for the effects of sequestration to Federal Impact Aid as well as other federal programs that support Federal Impact Aid schools. The survey revealed specific categories of budget cuts to deal with the effects of federal sequestration. Of the 86% of schools that budgeted for sequestration in 2013-14, 144 reported delaying maintenance and purchases; 112 reported eliminating non-instructional staff; 102 reported increasing class sizes; 96 reported reducing staff professional development; 94 reported reducing instructional staff; 54 reported reducing academic programs; 46 reported eliminating extracurricular or summer activities; 41 cut transportation budgets; 8 have closed or consolidated buildings.

Further, Districts reported deficit spending, freezing salaries, combining positions, cutting trips and supplies, reducing community outreach services and increasing food prices as other methods to offset the federal cuts. The Rocky Mountain School in Oklahoma reported having “virtually no local tax base” due to federal presence. This district depended upon Federal Impact Aid revenue to help keep facilities updated. The superintendent reported that the district’s buildings are in dire need of plumbing, roofing, electrical, and network upgrades.

Other respondents reported the same issue of not being able to rely on the limited tax base in their district to help offset these federal cuts. Respondents also noted the need to implement new technology to meet the expectations of online assessments as well as the need to update curriculum with their state’s acceptance of the Federal Common Core Curriculum Standards. Respondents report that students in poverty across the nation were feeling the brunt of the federal cuts. This was because poverty stricken students were supported by other federal programs such as Title I and Head Start that were also being cut at the federal level. This was forcing valuable programs that support low socio-economic students to be reduced or eliminated, decreasing the chances of breaking the cycle of poverty for these students.

Educational professionals felt the effects of sequestration affect staff morale as well. Bissonnette (2013) summarizes the report by saying, “ it is clear that multiple rounds of federal budget cuts are having a significant impact on federally impacted districts, .....These districts already understand how to do more with less given the limited local tax base and address the unique challenges of their communities and student populations....Those communities most vulnerable to federal reductions-those that rely

disproportionately on federal funds, high-poverty districts-will continue to feel the brunt of federal budget cuts.” (Bissonnette, 2013, p.3). School leaders in these districts had to make tough choices in the absence of guidance, information, and resources. According to Bissonnette, instead of investing in our future, we were shortchanging it.

### **Summary**

Many theories outline the connection between socioeconomic status and student academic achievement. Some studies describe the differences between rural and urban poverty. Other studies discuss geographical barriers to economic development and poverty imposed by geographical barriers. Studies outline what schools have been doing with limited resources to improve student achievement through targeted professional development, high leadership expectations, and research-based, best teaching practices. Few studies discuss the connections between poverty, geographical barriers, and any support for poor rural counties and schools intended to offset the impacts of socioeconomic status on student achievement. A review of these studies was important to foster understanding of the need to examine a sample of schools in Southeast Missouri located in a persistently low poverty area with large portions of tax exempt land that may have historically served as a geographical barrier to economic development. Little research exists on resources provided to these schools intended to offset any negative impacts of a reduced tax base such as reduced resources for highly qualified teachers, funding for quality professional development, technology, and early childhood education in the form of SRS and FIA. This study provided a method to study these resources and their connection to national county poverty rates and student academic achievement.

## **Chapter Three**

### **Research and Methodology**

#### **Introduction**

This chapter describes the data and how it was obtained to research the impact of federal property ownership on county poverty rank and student achievement. This was done through a primary research question and hypothesis and three research subset questions and hypotheses labeled 2-4 in this study. The methods used to test each hypothesis is also described. This study revealed, through the primary research question and research hypothesis one, the correlation between the weighted three year (2012-2014) average ACT scores of 15 Southeast Missouri Federal Property School Districts with the national county poverty rank of the primary county in which each Southeast Missouri Federal Property School District was located. Research subset question two and hypothesis two revealed the correlation between the percent of federal property in each county in the United States and each county's national poverty rank. Research subset question three and hypothesis three revealed the relationship between county PILT revenue for the 11 contiguous counties in Missouri that contain Federal Property Schools and the national county poverty rank for each county. Research subset question four and hypothesis four revealed the relationship between the 10 year average federal funding support in the form of Federal Impact Aid and Secure Rural Schools revenue for Southeast Missouri School Districts and each of those districts' student academic achievement as measured by the three year (2012-2014) weighted average ACT scores.

## **Participants**

The participants used to research the primary research question and hypothesis one were students in the 15 contiguous Southeast Missouri Federal Property School Districts who took the ACT during the years of 2012, 2013, and 2014. The 2012-2014 three year weighted average ACT score, representing district student academic achievement, was correlated with the national poverty rank for the primary county where the 15 districts were located. The national county poverty rank was found in research subset question and hypothesis two.

The participants used for research subset question two and hypothesis two were each county in the Continental United States (excluding the District of Columbia, Guam, Virgin Islands, and Puerto Rico) for the correlation of each county's federal property percentage to each county's national poverty rank for 2013.

The third research subset question and hypothesis used data from each of the 11 Missouri Federal Property Counties to compare each county's national poverty rank in 2013 found through research subset question two with the amount of Federal Payment in Lieu of Taxes each county received in 2013.

Hypothesis four was used to examine research subset question four by investigating the relationship between the 2012-2014 average ACT scores for the 15 contiguous Southeast Missouri Federal Property Schools and the amount of federal funding-in the form of Secure Rural Schools funding and Federal Impact Aid-to support federal land in these districts from 2004-2014. 2012-2014 ACT scores were used because it allows for a three year average score calculation around 2013 which is the year national poverty data and federal property percentages were collected. The 2004-2014

Sonia Kuessner

SRS and FIA revenue was used because it represents the 10 year span of federal property revenue support for students prior to taking the ACT in 2012-2014.

The Federal Property School Districts were located in 11 contiguous Federal Property Counties in Southeast Missouri. The combined student demographics of the 15 district used in the study are located in Table 4 Appendix A. The families and community members of the 11 counties were also participants in this study.

Demographic data for the families in the 11 counties used in this study are located in Appendix B.

### **Participant Demographics of 11 Southeast Missouri Federal Property Counties**

During this study, in Missouri, 36 school districts contained at least 50% or more federal land within district boundaries. Table 2 Appendix A provides a list of the Federal Property Schools in Missouri with the schools being labeled 1 through 36. Table 2 also indicates the percent of each school district in each county. Counties are labeled A-Z. It is important to note 31 of the 36 school districts have at least 80% of the district located in one county. Of the 36 school districts, 18 were contiguous and were located in Southeast Missouri. Of the 18 school districts, three were K-8 districts and were not included in the data analysis for this study. This study is limited to the 15 contiguous Southeast Missouri K-12 Public School Districts that have 50% or greater amounts of land removed from the tax base as federally owned land. Referred to as Southeast Missouri Federal Property School Districts, these districts were indicated by an asterisk next to each district's number in table 2 Appendix A. District 36 and District 23 were the westernmost districts of the 15, District 34 and District 35 were the easternmost districts of the 15, District 22 and District 27 were the northernmost districts of the 15, and

Sonia Kuessner

District 13 was the southernmost district of the 15. General county demographic information for each county was obtained from the Bureau of Economic Analysis (2013a-k) located in Appendix B. Missouri was divided into 115 counties. For the demographic information in Appendix B, a rank of 1 out of 115 in terms of population meant the county would be the most populous county in the state of Missouri. In terms of per capita income, a rank of 1 out of 115 meant the county had the highest per capita income in the State of Missouri.

Information for table 2 was obtained by comparing a 2013 Missouri Department of Transportation state map (Missouri Department of Transportation, 2013) which displayed county boundaries and federal land locations with a 2014 (Missouri Department of Elementary and Secondary Education, 2014a) map produced by the Missouri Department of Elementary and Secondary Education that displayed county and school district boundaries for Missouri.

### **Participant Demographics of 15 Contiguous Southeast Missouri Federal Property School Districts**

A definition key, located in Appendix C, was provided by the Missouri Department of Elementary and Secondary Education on the school report card webpage and was included in this study to aid in understanding the demographics of the 15 Missouri schools in this study. Table 3 Appendix A provides combined demographic information for all public schools in Missouri. Table 4 Appendix A displays the combined average of each of the 15 Southeast Missouri Districts in this study as a final report compiled by averaging the 2012-2014 totals of each category of the 15 Missouri Federal Property Schools. The percent of state column was derived by dividing each

Sonia Kuessner

district value by the state value for the same criterion for a quick reference as to how each characteristic for the district compared to the state.

The combined averages of the 15 schools indicate these schools had almost the same number of average years of professional experience as the state average and had 30% fewer staff with professional degrees while paying teachers approximately 1% less than the state average and had a combined attendance rate slightly above the state average. These districts have 33% more students on free and reduced lunch than the State of Missouri average and had a combined four year graduation rate 5% higher than the state average with a dropout rate 60% lower than the state average. Their student to teacher ratio was approximately 6% lower than the state average with a student to administrator ratio 11% lower than the state average. Administrators' pay in these districts was 15% less than the state average. They spent approximately 7% less per student on expenditures than the state average and had a tax rate approximately 12% less than the state average. The districts had an assessed valuation that comprised less than 1% of the state total and received 25% less local funds compared to the state average. They received 23% more state funds than the state average and received approximately 58% more federal funds than the state average.

### **Sampling Selection**

The population of interest to investigate hypothesis two were all counties in the Continental United States. The populations of interest for the research to investigate hypotheses 1, 3, and 4 were school districts affected by federal ownership of large parcels of tax exempt land within a school district and the primary county where the school district was located. The specific interests were public school districts in the state of

Missouri. For hypotheses 1, 3, and 4, the researcher chose to utilize a purposive method of participant selection and established a set of criteria each district had to meet to be included in the study. The first criterion was the school district had to be a K-12 public school in Missouri. The second criterion was the percentage of land within the school district owned by the federal government had to be 50% or more of the total land area within the district. The third criterion was the school districts containing 50% or more federal land in district boundaries had to be contiguous. These criteria resulted in 15 schools in Southeast Missouri referred to as Southeast Missouri Federal Property School Districts in this study. The counties where these schools were located consisted of 11 contiguous counties on Southeast Missouri referred to as Southeast Missouri Federal Property Counties.

### **Data Collection**

All data was derived from online databases of various federal and state entities that collected the data. The means of verifying validity and reliability used by each entity is described in this section. The researcher downloaded the information from the database and paid a third-party to enter the data into an excel spreadsheet. The researcher then verified the accuracy of the spreadsheet prior to using Statistical Package for the Social Sciences Version 22 (SPSS 22) to conduct Pearson  $r$  correlational tests for hypotheses 1-4 in this study. The student utilized the SPSS 22 software owned by Southwest Baptist University along with the assistance of graduate faculty to ensure accurate use of the software program in conducting the tests.

**Federal land percent in each U.S. county data.**

Information regarding the total number of acres of federal land in each county in the United States for 2013 was obtained from the United States Department of the Interior's public information portal at <http://www.doi.gov/pilt/county-payments.cfm> (United States Department of Interior, 2014b). The acreage was converted to square miles by dividing the acreage amount by 640 because there are 640 acres in one square mile.

P.L. 97-258; 31 U.S.C. Chapter 69 outlines how the United States Department of Interior used information collected and housed through the Bureau of Reclamation to report the number and type of federal acres in each county in the United States through the Department of Interior's online public portal. The database used by the Bureau of Reclamation is located in Denver, Colorado.

The Bureau of Reclamation was divided among regional areas across the nation. Land transactions involving the Bureau of Land Management, National Parks, Forest Service, Department of Defense, and Fish and Wildlife services, and other federal entities were tracked at each regional office and reported to the main database in Denver on an annual basis. The software program that housed the information was called the Foundation Information for Real Property Management (FIRM) system in Denver. This system assigned a unique parcel code to each tract of land identifying whether land was being acquired or disposed of. Documentation of deed information was required to be housed in the database. The number of acres of federal land and land type in each county in the transaction was required to be coded and recorded in the FIRM system. An annual report was generated from the main database and sent to each Bureau of Reclamation

Sonia Kuessner

Regional Office for Verification. Additional information regarding the collection and maintenance procedures of the federal land database can be found by reviewing the Reclamation Manual (2006) and Land Record Guidelines (2011) provided by the Bureau of Reclamation.

The total square acreage of each county in the United States was obtained from the U.S. Census Bureau via State and County Quick Facts at <http://quickfacts.census.gov/qfd/index.html>. Data for the State and County Quick Facts were gathered by the American Community Survey from a large sample of families. The data were self-reported. As Fraenkel and Wallen (2003) suggested, the problems with survey research include issues such as failure to respond, partial response, and false response. The methodology for County and State Quick Fact collection by the U.S. Census Bureau was the same for the Small Area Income and Poverty Estimates (SAIPE) explained in the Poverty Data section later in this study. The square miles of federal property were divided by the total square miles in each county to determine a ratio percent of federal property in each county in the United States (United States Census Bureau, 2012).

**Poverty data.**

The poverty rank for each county in the United States was determined by the number of persons of all ages in each county living in poverty divided by the total population of all counties in the United States as reported by the U.S. Census Bureau for 2013 on the Small Area Income and Poverty Estimates (SAIPE) website at <http://www.census.gov/hhes/www/saipe/>.

The Small Area Income and Poverty Estimates were gathered by the American Community Survey from a large sample of families that self-reported data. Again, as Fraenkel and Wallen (2003) suggested, the problems with survey research include issues such as failure to respond, partial response, and false response. A regression model predicted the number of people living in poverty using single-year county level observations from the American Community Survey as the dependent variable and administrative records and census data as the predictors. Appendix D provides information obtained from the SAIPE website at <http://www.census.gov/did/www/saipe/methods/statecounty/20102013county.html> explaining the self-reported data methodology utilized by SAIPE for data collection.

**ACT data.**

ACT data was chosen because it was the only nationally norm referenced test all 15 Southeast Missouri Federal Property School Districts had in common. Other states have utilized the ACT. The students allowed to take the ACT represented students from all socioeconomic backgrounds because students who were on public assistance or who qualify for FRPL receive a fee waiver took the ACT test for free. The ACT test was chosen because this test was voluntary and typically taken by students planning to further their education after high school. Therefore, true academic achievement should have been reflected through ACT scores. The 2012-2014 three year average ACT data for the 15 contiguous Southeast Missouri Federal Property School Districts was obtained from the Missouri Department of Elementary and Secondary Education (DESE). DESE obtained this information directly for the ACT Company and reported it in each school district's annual report card. These report cards were available through the public

Sonia Kuessner

information database online at <http://mcds.dese.mo.gov/guidedinquiry> (Missouri Department of Elementary and Secondary Education, 2012-2014a-o). The average score for each year (2012, 2013, and 2014) was multiplied by the percent of graduates taking the test as reported by DESE to provide similar weights between years and school districts regarding ACT scores. Information regarding the reliability and validity of the ACT test was found on pages 51-71 of the 2014 ACT Technical Manual available online at [http://www.act.org/aap/pdf/ACT\\_Technical\\_Manual.pdf](http://www.act.org/aap/pdf/ACT_Technical_Manual.pdf).

**Federal PILT payments to counties data.**

Data gathered to research the relationship between the revenue paid to counties (not schools) for the 11 Southeast Missouri Federal Property Counties compared to each county's national poverty rank was studied through research hypotheses four. Federal PILT payments to counties was gathered from the United States Department of Interior's Payment in Lieu of Taxes 2013 Annual Report (USDA, 2013) at [www.doi.gov/PILT](http://www.doi.gov/PILT). PILT data for 2013 was correlated with each county's national poverty rank estimates from the U.S. Census Bureau for 2013.

**Federal funding support for Southeast Missouri Federal Property School Districts data.**

Data gathered to research the relationship between federal funding support in the form of Federal Impact Aid and Secure Rural Schools revenue for Southeast Missouri Federal Property School Districts was obtained from each district's Annual Secretary of the Board Report available through the Missouri Department of Elementary and Secondary Education public information portal at [www.dese.mo.gov/](http://www.dese.mo.gov/) (Missouri Department of Elementary and Secondary Education, 2004-2014a-o). This financial

report was evaluated annually by an outside auditor at each school and then again through the Department of Elementary and Secondary Education Finance Department for reporting accuracy. The Federal Impact Aid (accounting code 5411) and Secure Rural Schools revenue (accounting code 5231) data were gathered, combined, and averaged for a 10 year period beginning with the 2004-2005 school year and ending with the 2013-2014 school year. This 10 year federal funding support average was then correlated with each district's three year average ACT score to determine the relationship between federal property financial support and student academic achievement for Southeast Missouri Federal Property School Districts.

### **Data Analysis**

This study utilized IBM SPSS Statistics for Windows Version 22.0 to run all correlations. The Pearson  $r$  correlation was used to analyze four research hypotheses. Pearson  $r$  was ideal for measuring the correlation between ratio, percent, or interval data. The variables in this study represent both percentage and interval data. If the correlation coefficient between the variables was zero, there was no correlation (relationship) between the two variables. A positive correlation coefficient higher than zero but lower than 1.00 indicated a positive correlation between the variables with coefficients closer to 1.00 indicating a stronger positive correlational relationship. A positive correlational relationship meant that as one variable increases, the other increases also. A negative correlation coefficient lower than zero but higher than -1.00 indicated a negative correlation between the variables with coefficients closer to -1.00 indicating a stronger negative correlational relationship. A negative correlational relationship means that as one variable increases, the other variable decreases. Correlational coefficients between

+0.35 and -0.35 indicated a weak or no relationship between the variables. Correlational coefficients between +0.35 and +0.65 and -0.35 and -0.65 indicate moderate relationships between the variables. Correlational coefficients between +0.65 and +1.00 and -0.65 and -1.00 indicated strong relationships between variables (Gay, 2009, Ch. 8). The correlation obtained must reflect a true statistical relationship and not a chance relationship. Tests of significance were conducted using the level of significance of .05 meaning that the observed difference between the variables would occur by chance only 5 out of 100 results, or a 95% chance the results were not due to chance (Gay, 2009; p. 329).

### **Primary Research Question**

1. What relationship existed between student academic achievement in Southeast Missouri Federal Property School Districts and the national county poverty rank of the primary county where the school was located?

### **Research Subset Questions**

2. What relationship existed between federally tax exempt property ownership and national county poverty rank for all counties in the continental United States?
3. What relationship existed between PILT revenue and national county poverty rank for the Southeast Missouri Federal Property Counties?
4. What relationship existed between SRS and FIA revenue to Southeast Missouri Federal Property Schools and the student academic achievement of those schools?

Subset question two had to be examined to determine the national county poverty rank of the Southeast Missouri Federal Property Counties. Research subset question two examined the correlational trend of the relationship between percentage of federal property ownership in each county in the U.S. and national county poverty rank to provide a stronger data set regarding any potential trend in findings. Research subset question three examined the relationship between any funding support for federal property and the national county poverty rank for the Southeast Missouri Federal Property Counties. This investigation revealed any trends in sufficient funding support or lack thereof for Southeast Missouri Federal Property Counties and how this impacted county resources. Research subset question four examined the relationship between any funding support for federal property located in Southeast Missouri Federal Property School Districts and the academic achievement of students that attended Southeast Missouri Federal Property School Districts. This investigation revealed any trends in sufficient funding support or lack thereof for Southeast Missouri Federal Property Schools and how this impacted student academic achievement.

### **Null Hypotheses**

H<sub>1</sub>: The student achievement based on the 2012-2014 weighted three year average ACT score of 15 Southeast Missouri Federal Property School Districts had no correlation to the county's national poverty rank for the primary county where the school district was located.

H<sub>2</sub>: The percent of federal land within all counties in the Continental United States was not correlated to the county's national poverty rank.

H<sub>3</sub>: The amount of Federal Payment in Lieu of Taxes (PILT) financial support for the 11 Federal Property Counties in Southeast Missouri had no correlation to the national poverty rank of each county.

H<sub>4</sub>: The combined 10 year average revenue to support federally tax exempt property received in the form of Secure Rural Schools and Federal Impact Aid funding was not correlated to the 2012-2014 weighted three year average ACT score of the 15 Southeast Missouri Federal Property School Districts.

### **Summary**

How data was obtained to research four hypotheses and the methods used to test each research hypothesis was explained. This study revealed, through research hypothesis one, the correlation between the weighted three year (2012-2014) average ACT scores of contiguous Southeast Missouri Federal Property School Districts with the county's national poverty rank of the primary county in which each school district is located.

Research hypothesis two revealed the correlation between the percent of federal land in each county in the United States and each county's national poverty rank. The third research hypothesis revealed the relationship between federal PILT for Southeast Missouri Federal Property Counties and each county's national poverty rank. This study revealed, through research hypothesis four, the relationship between the 10 year average funding support for federal property schools in Southeast Missouri and each school's student academic achievement as measured by a weighted three year average ACT score for 2012-2014.

## **Chapter Four**

### **Analysis of the Data**

#### **Introduction**

Most counties in the United States contain some form of federally tax exempt property. During this study, in Southeast Missouri, large portions of federally tax exempt property in the form of National Forests and National Parks may have been impacting the socioeconomic status and rurality of 11 contiguous Federal Property Counties by creating a geographical barrier to economic development. The 11 counties showed indicators of persistent poverty. Further, the tax exempt property may have been contributing to a socioeconomic achievement gap of students that attended 15 schools located in these Federal Property Counties because the tax exempt property could have been limiting the revenue available for resources to help offset negative impacts of socioeconomic status on student achievement.

The primary purpose of this study was to investigate the impact of federal property ownership on national county poverty rank and student academic achievement for 11 Southeast Missouri Federal Property Counties and 15 schools located in these counties.

To investigate this relationship, data was collected to determine the national county poverty rank for each county within the Continental United States. This was compared to the percent of federal property within each county to determine if a statistically significant correlation existed between the two variables. Then, any revenue support for the federal property sent to the 11 Southeast Missouri Federal Property Counties in the form of Payment In Lieu of Taxes (PILT) was compared to the national

Sonia Kuessner

county poverty rank for each county to determine if any statistically significant correlation existed between the two variables. Next, any revenue support sent to schools to support the federally tax exempt property in the form of Secure Rural Schools (SRS) Revenue and Federal Impact Aid (FIA) was compared to the student academic achievement of the students in the 15 Federal Property Schools in these counties in Southeast Missouri to determine if any statistically significant correlation existed between the variables.

## **Data Analysis**

### **Organization of data analysis.**

The data analysis for this study was organized into a primary research question and corresponding hypothesis with three subset questions and hypotheses. The primary research question and corresponding hypothesis were referred to as research question one and hypothesis one. The subset questions and corresponding hypotheses were referred to as research questions two through four. The data analysis was listed immediately following each research question and associated hypothesis. Table 5 provides a brief summary of the data produced through SPSS.

Table 5: SPSS Results Summary

Primary Research Question 1	Mean	Standard Deviation	Pearson Correlation	Significance (2-tailed)
3 Year Average Weighted ACT Score	11.30657	1.6101		
National County Poverty Rank for Primary County	.00001080	.000006550	-.110	.697
Subset Research Question 2				
Percent of Federal Property Ownership in County	.0796	.1767		
National County Poverty Rank	.00004914	.0001776	.013	.468
Subset Research Question 3				
PILT Revenue Dollars to Counties	108066.82	44690.73		
National County Poverty Rank	.00001172	.000007383	-.461	.153
Subset Research Question 4				
10 Year Average FIA & SRS Revenue Dollars to Schools	144658.09	97655.94		
3 Year Average ACT Score	11.3057	1.6101	-.079	.779

**Research question one.**

What relationship existed between student academic achievement in Southeast Missouri Federal Property School Districts and the national county poverty rank of the primary county where the school was located?

**Hypothesis one.**

The student achievement based on the 2012-2014 weighted three year average ACT score of 15 Southeast Missouri Federal Property School Districts had no correlation to the county's national poverty rank for the primary county where the school district was located.

**Data analysis one.**

Based on the results of the Pearson  $r$  calculation presented in Table 5, the researcher did not reject null hypothesis one. A relationship existed between the between the 2012-2014 weighted three year average ACT score of the 15 Southeast Federal Property School Districts and the national poverty rank for the primary Federal Property County where the school was located. However, this relationship was not statistically significant at .05. A small inverse relationship of  $-.110$  existed at a significance of  $.697$  meaning there was a weak chance as the national county poverty rank (the higher the rank, the more poverty in the county) of each of each county increased, the average ACT score decreased for the 15 Federal Property Schools in these counties.

**Research question two.**

What relationship existed between federally tax exempt property ownership and national county poverty rank for all counties in the continental United States?

**Hypothesis two.**

The percent of federal land within all counties in the Continental United States was not correlated to the county's national poverty rank.

**Data analysis two.**

Based on the results of the Pearson  $r$  calculation presented in Table 5, the researcher did not reject null hypothesis two. A relationship did exist between the percent of federal land within all counties in the Continental United States and the county's national county poverty rank. However, this relationship was not statistically significant at .05. A small direct relationship of .013 existed at a significance of .468 meaning that as the percent of federal land increased in each county in the Continental United States, there was a weak chance the national county poverty rank of each county increased.

**Research question three.**

What relationship existed between PILT revenue and national county poverty rank for the Southeast Missouri Federal Property Counties?

**Hypothesis three.**

The amount of Federal Payment in Lieu of Taxes (PILT) financial support for the 11 Federal Property Counties in Southeast Missouri had no correlation to the national poverty rank of each county.

**Data analysis three.**

Based on the results of the Pearson  $r$  calculation presented in Table 5, the researcher did not reject null hypothesis three. A relationship did exist between the amount of PILT revenue sent to the 11 Southeast Missouri Federal Property Counties and

Sonia Kuessner

the national poverty rank of each county. However, this relationship was not statistically significant at .05. An indirect relationship of  $-.461$  existed at a significance of  $.153$  meaning as the amount of PILT revenue received by each county increased, there was a moderate chance the national county poverty rank of these counties decreased at this level of significance. The results of test three indicate the highest degree of significance and the strongest correlation of all tests in this study.

**Research question four.**

What relationship existed between SRS and FIA revenue to Southeast Missouri Federal Property Schools and the student academic achievement of those schools?

**Hypothesis four.**

The combined 10 year average revenue to support federally tax exempt property received in the form of Secure Rural Schools and Federal Impact Aid funding was not correlated to the 2012-2014 weighted three year average ACT score of the 15 Southeast Missouri Federal Property School Districts.

**Data analysis four.**

Based on the results of the Pearson  $r$  calculation presented in Table 5, the researcher did not failed to reject null hypothesis four. A relationship existed between the SRS and FIA revenue paid to the 15 Southeast Missouri Federal Property Schools and the three year weighted ACT scores for 2012-2014 for these same schools. However, this relationship was not statistically significant at .05. An indirect relationship of  $-.079$  existed at a significance of  $.779$  meaning there was a weak chance as the amount of SRS and FIA revenue increased to these schools, the average ACT scores of these schools decreased.

## **Summary**

The results of testing four hypotheses in this study reveal the null hypothesis was supported in each test. The null hypotheses stated there was no relationship between the variables being tested. Although the Pearson  $r$  value was not zero, the results were not statistically significant at .05. Chapter five provides conclusions of the study, future research needs, and implications of the findings.

## **Chapter Five**

### **Findings, Conclusions, and Implications**

#### **Introduction**

During this study, throughout the United States and particularly in Missouri, large portions of federally tax exempt property may have been contributing to the rurality and socioeconomic status of the counties where these large portions of federal property were located. This was because the federal property, mainly national forests and national parks, may have contributed to geographical barriers inhibiting economic development in these counties (Morrison, 1999). These counties received federal revenue in the form of Payment in Lieu of Taxes (PILT) instead of local revenue generated through personal property taxes for federally owned property. In some cases, this revenue was less than what the property would have generated if it had been privately owned and generated local property tax revenue. This financial discrepancy could have contributed further to a lower socioeconomic status in these counties because the counties had less revenue to stimulate the local economy and help develop the area.

Further, according to a study by Fish-Greenlee in 2009, some citizens living in counties in Missouri with large portions of federally tax exempt property perceived the property to have negative impacts on the local economy, poverty of the area, and funding for counties and schools in the area.

The federal property could have been impacting student academic achievement in these schools. This was because the federal property was tax exempt and therefore generated no local tax revenue to support these schools. These schools received federal revenue in the form of Federal Impact Aid (FIA) and Federal Secure Rural Schools (SRS)

Sonia Kuessner

revenue because of the federal property was located in district boundaries. Like PILT revenue for counties, the FIA and SRS revenue was not stable and subject to sequestration as well as federal budget approval unlike local property taxes. The amount of FIA and SRS revenue schools received due to the presence of federally tax exempt property in district boundaries may not have been as much as the revenue the property would generate through the local taxation process. This discrepancy in funding may have contributed to the student academic achievement in these schools impacted by federally tax exempt property because there was less revenue available for resources to help offset the impact of lower socioeconomic status on student achievement.

The Missouri Department of Elementary and Secondary Education (DESE) finalized The Educator Equity Plan in 2015. This plan was based on 2014 data collected from Missouri schools, in an effort to reduce the inequalities that existed in Missouri schools and to allow all schools to gain access to great teachers and leaders.

According to the supporting information driving the need for DESE to develop an equity plan, students from low-income families, rural students, students with disabilities, students of color, and students with limited English proficiency were less likely to have access to great teachers and leaders. DESE described less effective teachers as those who were inexperienced, unqualified, or teaching out of their certification area.

According to the research in the 2015 Missouri Department of Elementary and Secondary Education Equity Plan, less qualified teachers were more predominant in schools with higher percentages of FRPL students and in the state's most rural schools. On average, rural Missouri schools with higher numbers of FRPL students had teachers

with less experience than other schools in Missouri (Missouri Department of Elementary and Secondary Education Equity Plan, 2014c & Missouri Department of Elementary and Secondary Education, 2012-2014a-o). In summary, the research conducted to address the equity gaps in Missouri public schools found that “students in rural schools and schools with higher rates of FRPL students are being taught by inexperienced, unqualified, out-of-field and less than effective teachers at greater rates than those students in schools with a low percentage of FRPL and more urban-located students.” (Missouri Department of Elementary and Secondary Education, 2014c, p.12).

The equity gap in Missouri Public Schools as indicated by the Missouri Department of Elementary and Secondary Education (2014c) may have had an impact on academic achievement. The rationale for this study was to highlight various correlations between student academic achievement and national county poverty rank for schools and counties in Southeast Missouri with large portions of federally tax exempt property. These districts had high levels of FRPL students and the counties were identified as rural remote with the exception of one district and county (Missouri Department of Elementary and Secondary Education, 2012-2014a-o).

The intent of this study was to provide information regarding the correlation between the student academic achievement of the 15 Southeast Missouri Federal Property School Districts and the national county poverty rank for the primary county where the district was located as the primary research question. ACT scores were chosen to represent academic achievement because the ACT was the only nationally norm referenced test each of the 15 Southeast Missouri Federal Property School Districts utilized.

To do this, information regarding the correlation between the amount of federal property within each county in the Continental United States and the national poverty rank had to be determined through research subset question two. This study looked at correlations between the amount of Federal Payment in Lieu of Taxes (PILT) support for Southeast Missouri Federal Property Counties and each county's national poverty rank through research subset question three. Further, this study correlated the amount of financial support for federally tax exempt property in the form of Federal Impact Aid and Secure Rural Schools funding in Southeast Missouri Federal Property School Districts during a 10 year period from 2004-2014 with those same schools' academic achievement as measured by the three year weighted ACT score for 2012-2014 through research subset question four. The reason for using 2004-2014 SRS and FIA revenue was because this 10 year span was the time involved in providing for the education of the students prior to taking the ACT test in 2012, 2013, and 2014.

Three of the four research questions in this study were limited to 11 contiguous counties in Southeast Missouri that exhibited consistently low poverty rates as well as 15 schools within these 11 counties that contained large portions of federally tax exempt property. One research question involved every county in the Continental United States concerning the percentage of federal property ownership in each county and the county's national poverty rank.

The literature review in this study provided an extensive review of studies that supported a negative correlation between the low socioeconomic status and student academic achievement. The review also revealed many studies that provided information regarding what schools have done to reduce the socioeconomic achievement gap

## **Findings**

The Pearson  $r$  calculation failed to reject any of the four null hypotheses in this study at a significance of .05 meaning that a relationship did not exist between the variables for all four tests.

At a significance of .697, research test one revealed a weak indirect relationship between the three year average ATC score of students in 15 Southeast Missouri Federal Property Schools and the national county poverty rank of the primary county where the school was located. This indicated as the county poverty rank increased, the average ACT score decreased at a significance of .697.

At a significance of .468, research test two revealed a weak direct relationship between the percent of federally tax exempt property in each county in the Continental United States and each county's national county poverty rank. This indicated as the percentage of federal property increased in each county, the amount of poverty in each county increased at a significance of .468.

Test three revealed the strongest correlation between the variables with the highest degree of significance in this study. At a significance of .153, research test three revealed a moderate indirect relationship between the amount of PILT revenue received by 11 Southeast Missouri Federal Property Counties and each county's national county poverty rank. This indicated as the amount of PILT revenue decreased for each county, the amount of poverty in that county increased at a significance of .153.

At a significance of .779, research test four revealed a weak indirect relationship between the amount of FIA and SRS revenue paid to 15 Southeast Missouri Federal Property Schools and the three year weighted ACT score of students in those schools. At

this level of significance, as the amount of revenue decreased in each district, the ACT scores increased.

## **Conclusions and Future Research**

### **Research question one.**

What relationship existed between student academic achievement in Southeast Missouri Federal Property School Districts and the national county poverty rank of the primary county where the school was located?

### **Conclusions and future research for question one.**

Null hypothesis one was supported by the results of the test. Findings for research question one displayed a correlation between the student academic achievement (measured by a three year weighted average ACT score for 15 Southeast Missouri Federal Property Schools) and the national county poverty rank for the primary county where each school was located although it was not a statistically significant relationship. This did not support research (Abbott & Baker, 2009; Abbott & Joireman, 2001; Coleman, 1966; Lam, 1997; Moore, 2011; Payne, 2001; Sorhaindo, 2003) that showed poor socioeconomic status had negative impacts on student academic achievement.

Because this research question was limited to 15 schools in Southeast Missouri that met specific criteria regarding federal property ownership,  $n$  was small for this test and the true relationship between national county poverty rank and student academic achievement may not have been revealed. At a .05 level of significance, this finding indicated that the poverty rank of the 15 Southeast Missouri Federal Property Schools was not related to the academic achievement of the students attending those schools. This test did reveal a weak indirect relationship with a Pearson  $r$  value of  $-.110$  between the

variables at a lower level of significance of .697. This finding indicated that the poverty rank of each county where the schools were located may have negative impacts of the student academic achievement in the 15 schools located in this county. Because  $n$  for this test was small, it would be beneficial to expand this test to more school districts across the county to decrease the probability the results were due to chance and potentially reveal a stronger Pearson  $r$  correlation for the test. Future research in other states is feasible because this research question utilized the ACT which is a nationally norm reference test utilized by many states that measures student academic achievement. Poverty rank for all counties could be obtained from the U.S. Census Bureau. Additionally, poverty rank could be disaggregated by upper and lower poverty bounds rather than the average used in this study to identify any trends in data. The analysis could also focus only on persistently low income counties and those defined as rural or rural remote as identified by the U.S. Census Bureau rather than all counties in the U.S. to focus research more directly at rural poverty and student academic achievement.

**Research question two.**

What relationship existed between federally tax exempt property ownership and national county poverty rank for all counties in the continental United States?

**Conclusions and future research for research question two.**

Null hypothesis two was supported by this test. Findings of research question two indicated a weak direct relationship between the percentage of federal property in each county in the Continental United States and each county's national poverty rank. However, at a significance of .05, there was no statistical correlation between the two variables. The  $n$  value for this research question was very large. It included every county

Sonia Kuessner

in the Continental United States. With over 1600 counties in the U.S., this test provided strong support that the percent federal property ownership in each county in the United States has no statistically significant impact on each county's national county poverty rank. However, at a significance of .468, a very weak positive correlation existed between the percent of federal property in each county and each county's national county poverty rank indicating as the amount of federally tax exempt property increased, the amount of poverty in each county increased.

This test was conducted based on the idea of geographical rural isolation presented by Morrision (1999) and Bradshaw (2006) to determine if federally tax exempt property was related to national county poverty rank because large portions of federally tax exempt property could have been contributing to rural geographical isolation in the counties where this property is located. The results of this test were not statistically significant and therefore not supportive of the idea that federally tax exempt property contributes to geographical rural isolation and rural poverty.

This test was conducted using all forms of federally tax exempt property including national forests, national parks, and military institutions. Typically, military institutions are located near urban centers. Future research needs to be conducted to isolate more rural counties with federal property consisting of national parks and national forests. This future test is feasible by isolating rural counties identified by the U.S. Census Bureau and comparing the percentage of federal land in these counties to the national county poverty rank of only those counties that are identified as rural by the U.S. Census Bureau. Additionally, this test could include counties across the United States that are identified as rural and persistently low income, by the U.S. Census Bureau, to the

Sonia Kuessner

percentage of federally tax exempt property in the form of national forests and national parks. Removing military acreage from the federal property acreage for this question could be done easily as the U.S. Department of Interior disaggregates federally tax exempt property by type and county location in the online database. This would further focus research on poor rural counties.

**Research question three.**

What relationship existed between PILT revenue and national county poverty rank for the Southeast Missouri Federal Property Counties?

**Conclusions and future research for research question three.**

The null hypothesis for test three was supported by the results because there was no statistically significant relationship between the variables. This test revealed the strongest correlation between variables at the highest level of significance for this study. This test did not support the research of Bradshaw (2006) and Morrison (1999) indicating that the federally tax exempt property in these 11 Southeast Missouri Federal Property Counties may not be serving as a geographical barrier impacting the socioeconomic status of the county. At a significance of .153, the Pearson  $r$  correlation was  $-.461$ . Although this test revealed a stronger negative correlation between PILT revenue support for federal property and the national county poverty rank for Southeast Missouri Federal Property Counties, it was still not a statistically significant correlation. At this level of significance, the results of this test indicated that as county PILT revenue provided to Southeast Missouri Federal Property Counties decreased, the amount of poverty in those same counties increased. This test was limited to 11 Southeast Missouri Federal Property Counties to make the test manageable. This test could be repeated for other Federal

Sonia Kuessner

Property Counties in other states because all states in the U.S. receive PILT revenue for federally tax exempt property located in each county within the state to provide a larger sample and provide stronger evidence as to whether or not a relationship exists between financial support in the form of PILT for federally tax exempt property and national county poverty rank. Isolating PILT revenue by rural and persistently low income counties as reported by the U.S. Census Bureau would focus more keenly on poor rural counties in the U.S.

**Research question four.**

What relationship existed between SRS and FIA revenue to Southeast Missouri Federal Property Schools and the student academic achievement of those schools?

**Conclusions and future research for research question four.**

The null hypothesis for this test was supported because the results showed no significant relationship between the SRS and FIA financial support for federal property schools and those schools' student academic achievement as measured by the ACT. At a significance of .779, the Pearson  $r$  was -.079. Although this relationship was not statistically significant, it revealed a weak, indirect relationship between financial support for Southeast Missouri Federal Property Schools and the student academic achievement of those same schools. This meant, at this level of significance, as the financial support in the form of SRS and FIA decreased, the student academic achievement increased. This lends support to the idea that federal property ownership does not have negative impacts on student academic achievement in the 15 Southeast Missouri Federal Property Schools.

These results indicated there was no relationship between the variables, or these schools may be employing research-based best teaching practices to close the

Sonia Kuessner

socioeconomic achievement gap in the absence of financial resources to offset the impacts of poverty on student achievement as indicated by previous studies (Bowels and Levin, 1968; Jencks 1972a; Sammons, Hillman, & Mortimore, 1995; Steele, 2009; Stump, 2013; and Wynne, 1981). There were 15 schools utilized in this test. Expanding this test could reveal a statistically significant relationship. Most states utilize the ACT as a nationally norm referenced test. It is important to note that all states may not administer the test with consistency. For example, Missouri now requires all high school juniors to take the test. Other states allow students to take the test voluntarily as an indicator of college readiness. This test could be repeated in other states across the U.S. because all Federal Property Schools in the United States receive SRS and FIA revenue due to the presence of federally tax exempt property in district boundaries. Future research could disaggregate between FIA and SRS revenue to schools instead of combining them. This would be beneficial because FIA revenue is sent to all federal property schools including military installations. The financial distribution of FIA for military installations is based on the number of students whose families are associated with the military base. This revenue is sent to the school where the students attend. Most military installations across the U.S. are located near urban centers as a means for transporting military personnel via a large airport is needed. All other FIA revenue distribution methods for federally tax exempt property are based on the number of acres encompassed and removed from the local tax base where the federal property is located. Secure Rural Schools revenue is distributed to rural schools directly due to national forests in the area. This disaggregation would further focus future studies on rural communities.

### **Implications of this Study**

At a statistically significant level, the results of this study indicated federal property ownership did not help nor hinder the county poverty rank of Southeast Missouri Federal Property Counties nor did it impact Southeast Missouri Federal Property School Districts in terms of the academic achievement of students as measured by the ACT for students in these schools. Although not statistically significant, a relationship did exist for each of the four research tests in this study. Because there were only 11 counties and 15 schools primarily utilized in this study, additional research is needed to provide a larger testing sample. Results of this study imply other factors may be contributing to the persistent poverty of the area. Such factors might include generational and cyclic poverty factors as well as general marketable resource availability in the area.

Finding no relationship between student academic achievement for the 15 Southeast Missouri Federal Property Schools and the National County Poverty Rank for the 11 primary counties where the schools were located could indicate these schools were employing research-based best practices as described in the literature review to reduce the socioeconomic achievement gap for students attending these schools. The findings of this study support the data driving the need for a Missouri Educator Equity Plan because the 15 Southeast Missouri Federal Property Schools had demographics of high poverty and lower numbers of certified, experienced staff. However, the results of this study did not indicate a gap in the achievement of students in these schools necessitating additional investigation into the research-based best teaching practices, professional development

Sonia Kuessner

models, leadership expectations, and other processes employed by these schools to bridge this gap.

This study provides unbiased, scientific data for school administrators working in Federal Property Schools in Southeast Missouri to use while communicating with the public regarding the impact of federally tax exempt property on counties and schools. Results of this study may impact perceptions of federally tax exempt property in Southeast Missouri.

There has been no research on this topic in Southeast Missouri or elsewhere in the nation. This study may foster future research in Southeast Missouri or other locations across the nation with large portions of federally tax exempt property. This study serves as a model to begin isolating factors contributing to poverty in Southeast Missouri.

### **Summary**

To date, there has been no research conducted to provide valid and reliable scientific data regarding the impact of federally tax exempt property ownership on national county poverty rank and student academic achievement. This study was intended to give county officials and school administrators information regarding the relationships between federal property ownership, national county poverty rank, and student academic achievement. This study was limited to 11 contiguous counties in Southeast Missouri that contained at least one school district with 50% or more of the land in district boundaries classified as federally tax exempt property.

This study revealed no statistically significant relationship between national county poverty rank and student academic achievement for the 11 Southeast Missouri Federal Property Counties and the 15 school districts located in these counties. Further,

Sonia Kuessner

this study revealed no statistically significant relationship between the percent of federally tax exempt property in each county in the Continental United States and each county's national poverty rank. This study revealed no statistically significant relationship between the amount of financial support in the form of Payment in Lieu of Taxes (PILT) to 11 contiguous counties in Southeast Missouri impacted by federally tax exempt property and the national county poverty rank of those same counties. This study also revealed no statistically significant relationship between the amount of financial support paid to 15 schools located in these 11 counties and the academic achievement of students in these schools as measured by ACT scores.

This study provided introductory research regarding the relationship among federally tax exempt property ownership, national county poverty rank, and student academic achievement for 11 contiguous Southeast Missouri Counties and 15 Federal Property Schools located in these counties. Although these counties contain large portions of federally tax exempt property, there were no statistically significant correlations indicating the federal property negatively or positively impacted the poverty rank of the counties or academic achievement of students attending schools in these counties. There may be no true correlation, or these schools may be effectively employing research-based best practices that are closing the socio-economic achievement gap for students. This would explain why there was no negative relationship between national county poverty and student academic achievement in these schools.

This study serves as a model that can be employed by others that wish to study the impact of federally tax exempt property on student academic achievement elsewhere and to isolate variables that may be contributing to persistent poverty in Southeast Missouri.

## References

- Abbott, M., & Baker, D. (2009). *The relationships among achievement, low income, and ethnicity in Washington State-a second look*. (Technical Report No. 2). Retrieved from Lynnwood, WA: Washington School Research Center, Seattle Pacific University, Washington website: <http://files.eric.ed.gov/fulltext/ED529417.pdf>
- Abbott, M. L., & Joireman, J. (2001). *The relationship among achievement, low income, and ethnicity across six groups of Washington State students*. (Technical Report No. 1). Retrieved from Washington School Research Center, Seattle Pacific University, Washington website: <http://www.spu.edu/orgs/research/WSRC-TechnicalReport-1-CorrectedFinal.pdf>
- ACT, Inc. (2014). *ACT technical manual*. Retrieved from [http://www.act.org/aap/pdf/ACT\\_Technical\\_Manual.pdf](http://www.act.org/aap/pdf/ACT_Technical_Manual.pdf)
- Annie E. Casey Foundation. (2012). *The Annie E. Casey foundation 2012 kids count data book: state profiles of child well-being*. Baltimore, MD: Annie E. Casey Foundation.
- Berlin, G., & Sum, A. (1988). *Toward a more perfect union: basic skills, poor families and our economic future*. Occasional Paper 3. Project on Social Welfare and the American Future. New York: Ford Foundation. Retrieved from <http://files.eric.ed.gov/fulltext/ED297037.pdf>
- Bingenheimer-Rendahl, F. (2007). *How factors of Arizona's rural districts impact the implementation of models of professional development required by No Child Left Behind*. (Order No. 3240011, The University of Arizona). ProQuest Dissertations

and Theses, 153. Retrieved from

<http://search.proquest.com/docview/304895186?accountid-14196>. (304895186)

Bissonnette, J. (2013). *Report: Shortchanging our future: sequestration's damage to impact aid schools*. National Association of Federally Impacted Schools.

Retrieved from <http://www.nafidc.org>

Blank, R. K. (2011). *Closing the achievement gap for economically disadvantaged students: analyzing change since No Child Left Behind using state assessments and the National Assessment of Educational Progress*. Washington, DC: Council of Chief State School Officers. (ERIC Document Reproduction Service No. ED 518986)

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure*. New York: Wiley. Retrieved from [amazon.com](http://amazon.com)

Bohn, A. (2006). A framework for understanding Ruby Payne. *Rethinking Schools Online* 21(2). Retrieved from <http://www.dlackey.org/weblog/docs/A%20Framework%20for%20Understanding%20Ruby%20Payne%20-%20Volume%2021%20No.%202%20-%20Winter%202006%20-%20Rethinking%20Schools%20Online.pdf>

Bowles, S., & Levin H.M. (1968). The determinants of scholastic achievement – an appraisal of some recent evidence. *Journal of Human Resources*, 3(1), 3-24.

Retrieved from

<http://www.jstor.org/discover/10.2307/144645?uid=3739744&uid=2134&uid=2486589323&uid=2&uid=70&uid=3&uid=2486589313&uid=3739256&uid=60&sid=21105257717423>

Bradshaw, T.K. (2006). *Theories of poverty and anti-poverty programs in community development*. Working Paper Series. Working Paper No. 06-05. Rural Poverty

Research Center. Retrieved from <http://www.rupri.org/Forms/WP06-05.pdf>

Bureau of Economic Analysis. (2013a). *Butler County, Missouri Bureau of Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29023&areatype=29023>

Bureau of Economic Analysis. (2013b). *Carter County, Missouri Bureau of Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29035&areatype=29035>

Bureau of Economic Analysis. (2013c) *Crawford County, Missouri Bureau of Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29055&areatype=29055>

Bureau of Economic Analysis. (2013d). *Dent County, Missouri Bureau of Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29065&areatype=29065>

Bureau of Economic Analysis. (2013e). *Iron County, Missouri Bureau of Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29093&areatype=29093>

Bureau of Economic Analysis. (2013f). *Madison County, Missouri Bureau of Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29123&areatype=29123>

Bureau of Economic Analysis. (2013g). *Oregon County, Missouri Bureau of Economic*

Sonia Kuessner

*Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29149&areatype=29149>

Bureau of Economic Analysis. (2013h). *Reynolds County, Missouri Bureau of Economic*

*Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29179&areatype=29179>

Bureau of Economic Analysis. (2013i). *Shannon County, Missouri Bureau of Economic*

*Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29203&areatype=29203>

Bureau of Economic Analysis. (2013j). *Washington County, Missouri Bureau of*

*Economic Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29221&areatype=29221>

Bureau of Economic Analysis. (2013k). *Wayne County, Missouri Bureau of Economic*

*Analysis*. Retrieved from

<http://www.bea.gov/regional/bearfacts/action.cfm?fips=29223&areatype=29223>

Bureau of Reclamation. (2011). *Land record guidelines*. Chapter 3. Retrieved from

<http://www.usbr.gov/lands/LandsHandbook/Chapter03.pdf>

Bureau of Reclamation. (2006). *Reclamation manual*. Directives and Standards.

Retrieved from <http://www.usbr.gov/recman/lnd/lnd09-02.pdf>

Center on Educational Policy. (2007). *Answering the question that matters most has*

*student achievement increased since No Child Left Behind?* Retrieved from

[file:///C:/Users/skuessner/Downloads/CEP\\_Report\\_StudentAchievement\\_053107](file:///C:/Users/skuessner/Downloads/CEP_Report_StudentAchievement_053107)

[%20\(1\).pdf](#)

Center on Educational Policy. (2011). *State test score trends though 2008-2009 part 4: is*

Sonia Kuessner

*achievement improving and are gaps narrowing for Title I students?* Retrieved from: <http://files.eric.ed.gov/fulltext/ED523130.pdf>

Charles A. Dana Center. (1999). *Hope for urban education: a study of nine high-performing, high-poverty, urban elementary schools* (Washington, DC: U.S. Department of Education, Planning and Evaluation Service, 1999). Retrieved from <http://files.eric.ed.gov/fulltext/ED438362.pdf>

Chertain, V.I. (1991). The relationship between parental income and academic achievement in Xhosa children. *Journal of Social Psychology* 131(6), 889-891.

Christie, K. (2002). Caring trumps compliance. *Phi Delta Cappan*, 83(7), 490. Retrieved from <http://eagle.sbuniv.edu:2076/ehost/detail/detail?sid=d422b14d-ccd4-4df8-afe8-ea2d130febb1%40sessionmgr4002&vid=0&hid=4201&bdata=JnNpdGU9ZWwhvc3QtbGl2ZQ%3d%3d#db=aph&AN=6278936>

Coleman, J.S., & National Center for Educational Statistics (1966). *Equality of educational opportunity*. Retrieved from <http://files.eric.ed.gov/fulltext/ED012275.pdf>

Coley, R., & Baker, B. (2013). *Poverty and education: finding the way forward*. Report of the ETS Center for Research on Human Capital and Education. Retrieved from [https://www.ets.org/research/policy\\_research\\_reports/publications/report/2013/jqkw](https://www.ets.org/research/policy_research_reports/publications/report/2013/jqkw)

Congressional Research Service. (2007). *Impact aid for public k-12 education: Reauthorization under the Elementary and Secondary Education Act*. Report

Sonia Kuessner

Number RL34119. Retrieved from  
[assets.opencrs.com/rpts/rl34119\\_20070803.pdf](http://assets.opencrs.com/rpts/rl34119_20070803.pdf)

Congressional Research Service. (2012). *Federal land ownership: overview of data.*

Report number R42346. Retrieved from  
<http://www.fas.org/sgp/crs/misc/R42346.pdf>

Congressional Research Services. (2013). *Reauthorizing the Secure Rural Schools and Community Self-determination Act of 2000.* Report Number R41303. Retrieved from <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R41303.pdf>

Congressional Research Services. (2014). *PILT (payments in lieu of taxes): somewhat simplified.* Report Number RL31392. Retrieved from  
<http://new.nationalaglawcenter.org/wp-content/uploads/assets/crs/RL31392.pdf>

Darling-Hammond, L. (2012). Redlining our schools. *Nation*, 294(5), 11-5. Retrieved from <http://eagle.sbuniv.edu:2076/ehost/pdfviewer/pdfviewer?sid=2f6cdadd-2c3e-4943-a1c7-216e5056f411%40sessionmgr4002&vid=4&hid=4201>

Dellamora, E. (2009). *“Who cares about these kids?”: a case study of the impact of No Child Left Behind on educational opportunity for impoverished youth.* (Order No. 3361966, New York University). ProQuest Dissertations and Theses, 403-n/a. Retrieved from  
<http://search.proquest.com/docview304956284?accountid=14196>. (304956284)

Dishman-Horst, M. (2005). *The Missouri k-8 school: a case study of leadership and its effect on achievement of children from poverty in a rural setting.* (Order No. 3235137, University of Missouri-Columbia). ProQuest Dissertations and Theses, 143-143 p. Retrieved from

<http://search.proquest.com/docview/305421635?accountid=14196>. (305421635)

Dubow, E. F., & Ippolito, M. F. (1994). Effects of poverty and quality of the home environment on changes in the academic and behavioral adjustment of elementary school-age children. *Journal of Clinical Child Psychology*, 23(4). 401-412.

Retrieved from

<http://eagle.sbuniv.edu:2067/ehost/pdfviewer/pdfviewer?sid=6d930937-6fed-4879-97a4-c1b1290c4829%40sessionmgr115&vid=0&hid=101>

Eddy, L. E. (2008). *Closing the achievement gap: effective teachers in high poverty, high minority elementary schools*. (Order No. 3320585, University of Denver).

ProQuest Dissertations and Theses, 197-n/a. Retrieved from

<http://search.proquest.com/docview/304635715?accountid=14196>. (304635715)

Edmonds, R. R. (1979). Effective Schools for the urban poor. *Education Leadership* 37, 15-27.

Entwisle, D. R., & Alexander, K. L. (1992). Summer setback: race, poverty, school composition, and mathematics achievement in the first two years of school. *American Psychological Review* 57(1), 72-84.

<http://eagle.sbuniv.edu:2098/stable/pdfplus/2096145.pdf?&acceptTC=true&jpdConfirm=true>

Eyler, R. (2011). *Rural policy: Secure Rural Schools Act economic impact*. Economic Forensics and Analytics. Retrieved from <http://econforensics.com/media/reports/>

Fish-Greenlee, K. (2009). *We are the horses: Identity work in the southeastern Missouri*

*Ozarks*. (Order No. 3373446, University of Kansas). ProQuest Dissertations and Theses, 182. Retrieved from [\(http://search.proquest.com/docview/304907249?Accounted=14196\)](http://search.proquest.com/docview/304907249?Accounted=14196). (304907249)

Fraenkel, J. R., & Wallen, N. E. (2003). *How to design and evaluate research in education* (5<sup>th</sup> Ed.). Boston: McGraw-Hill Higher Education.

Fryer, R. G., & Levitt, S. D. (2005). *The black-white test score gap through third grade* (Working paper No. w11049). Cambridge, MA: National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w11049.pdf>

Gamoran, A., & Long, D.A. (2006). *Equality of educational opportunity: a 40-year Retrospective* (WCER Working Paper No. 2006-9). Madison: University of Wisconsin-Madison, Wisconsin Center for Education Research: Retrieved November 1, 2014, from [http://www.wcer.wisc.edu/publications/workingpapers/working\\_paper\\_no\\_2006\\_09.pdf](http://www.wcer.wisc.edu/publications/workingpapers/working_paper_no_2006_09.pdf)

Gay, L. R., Mills, G.E., et al. (2009). *Educational research: competencies for analysis and applications*. 9 ed. Pearson.

Garnezy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist*, 34 (4). 416-430.

Gorski, Paul. (2006, February 9). The classist underpinnings of Ruby Payne's framework. *Teachers College Record*. Retrieved from [http://scholar.google.com/scholar\\_url?hl=en&q=http://gsueds2007.pbworks.com/f/The%2BClassist%2BUnderpinnings%2Bof%2BRuby%2BPayne.doc&sa=X&sci sig=AAGBfm135Fl8zbNESZvn2PvTrNsfj3-Bng&oi=scholar](http://scholar.google.com/scholar_url?hl=en&q=http://gsueds2007.pbworks.com/f/The%2BClassist%2BUnderpinnings%2Bof%2BRuby%2BPayne.doc&sa=X&sci sig=AAGBfm135Fl8zbNESZvn2PvTrNsfj3-Bng&oi=scholar)

Graber, C.R. (2009). *Factors that are predictive of student achievement outcomes and an analysis of these factors in high-poverty schools versus low-poverty schools.*

(Order No.3390834, Miami University). ProQuest Dissertations and Theses.

Retrieved from:

<http://search.proquest.com/docview/305080642?accountid=14196>. (305080642)

Government Accountability Office. (2012). *Payments to counties: more clarity could help ensure county expenditures are consistent with key parts of the Secure Rural*

*Schools Act.* Report No. GAO-12-7775 to the Committee on Energy and Natural

Resources, U. S. Senate. Retrieved from <http://gao.gov/assets/600/592477.pdf>

Hager, C. T. (1986). *The loss of impact aid and implications for American public school systems.* (Order No. 8710663, The University of North Carolina at Greensboro).

ProQuest Dissertations and Theses, 172-172 p. Retrieved from

<http://search.proquest.com/docview/303420679?accountid=14196>. (303420679)

Hanushek, E. A. (1989). The impact of differential expenditures on school performance.

*Educational Researcher* 18(4), 45-51. Retrieved from

<http://202.120.223.158/download/8a70ad90-8d3e-46d7-88cd-bb756f0ecc1d.pdf>

Hare, B. R. (1980). Self-perception and academic achievement: variations in a

desegregated setting. *American Journal of Psychiatry* 137, 683-689.

Hass, T., & Nachtigal, P. (1998). *Place value: An educator's guide to good literature on*

*rural lifeways, environments, and purposes of education.* Charleston, West

Virginia: Clearinghouse on Rural Education and Small Schools.

Holmes, S. L. (2012). An investigation of no child left behind and its primary purpose to

close the achievement gap. (Order No. 3548524, Northern Arizona University).

ProQuest Dissertations and Theses, 167. Retrieved from  
<http://search.proquest.com/docview/1282362009?accountid=14196>.  
(1282362009)

Huggins, A.S. (2011). *A study of family interactions affecting school readiness for rural preschoolers of poverty*. (Order No. 3439946, Capella University). ProQuest Dissertations and Theses, 159. Retrieved from  
<http://search.proquest.com/docview/852369913?accountid=14196>. (852369913)

IBM (2013). SPSS for Windows Version 22.0. Armonk, NY: IBM Corp.

Impact Aid Law. P.L. 81-815; 64 § 967 (1950)

Impact Aid Law. P.L. 81-874; 644 § 1100 (1950)

Internal Revenue Service. (2013). *Internal Revenue Service Bulletin 2013-52*. Retrieved from [http://www.irs.gov/irb/2013-52\\_IRB/ar18.html](http://www.irs.gov/irb/2013-52_IRB/ar18.html)

Jencks, C. (1972a). *Inequality: a reassessment of the effect of family and schooling in America*. New York: Basic Books. Retrieved from amazon.com

Jencks, C. S. (1972b). The Coleman report and the conventional wisdom, in Mosteller, F., & Moynihan, D.P. (Ed). *On Equality of Educational Opportunity*. New York: Random House.

Johnson, J., & Strange, M. (2009). *Why rural matters 2009: state and regional challenges and opportunities*. Arlington, VA: Rural School and Community Trust.

Kennedy, M. M., Berman, B.F., Dermaline, R. E., Moore, M. T., Myers, D. E., Chaikind, S., Strong, W., Von Glatz, A., Reisner, E. R., Apling, R. N., & Bogart, J. (1986). *The effectiveness of Chapter 1 services*. Second Interim Report from the National

Assessment of Chapter 1. Washington, D.C.; Office of Educational Research and Improvement, U. S. Department of Education. Retrieved from <http://files.eric.ed.gov/fulltext/ED281919.pdf>

Kirby, A.M. (2007). *What matters around here: A community study of rural education and poverty*. (Order No. 3282138, Michigan State University). ProQuest Dissertations and Theses. Retrieved from <http://search.proquest.com/docview/304846878?accountid=14196>. (304846878P)

Lam, S. F. (1997). *How the family influences children's academic achievement*. New York: Garland.

Lee, V. E., & Croninger, R. G. (1994). The relative importance of home and school in the development of literacy skills for middle-grade students. *American Journal of Education* 102(3), 286-329. Retrieved from <http://www.jstor.org/action/showShelf?candidate=10.2307/1085739>

Lezotte, L. (1996). *Correlates of effective schools*. Association for Effective Schools, Inc. Retrieved February 10, 2015 from <http://www.mes.org/correlates.html>

Marshall, G. (1998). Coleman report. *A dictionary of sociology*. Retrieved from <http://www.encyclopedia.com/doc/1O88-ColemanReport.html>

Merriam, S. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass Inc.

Mid-Continent Research for Education and Learning. (2005). *Final report-high needs schools-what does it take to beat the odds?* ERIC Document No 486626. Retrieved from <http://files.eric.ed.gov/fulltext/ED486626.pdf>

Missouri Department of Elementary and Secondary Education. (2004-2014a). *Annual*

Sonia Kuessner

*secretary of the board report*. Alton School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014b). *Annual secretary of the board report*. Arcadia Valley School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014c). *Annual secretary of the board report*. Bunker School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014d). *Annual secretary of the board report*. Clearwater School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014e). *Annual secretary of the board report*. Couch School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014f). *Annual secretary of the board report*. Eminence School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014g). *Annual secretary of the board report*. Fredricktown School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014h). *Annual secretary of the board report*. Greenville School District. Retrieved from  
[www.dese.mo.gov](http://www.dese.mo.gov)

Sonia Kuessner

Missouri Department of Elementary and Secondary Education. (2004-2014i). *Annual secretary of the board report*. Iron Co. C-4 School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014j). *Annual secretary of the board report*. Poplar Bluff School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014k). *Annual secretary of the board report*. Salem School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014l). *Annual secretary of the board report*. Southern Reynolds County School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014m). *Annual secretary of the board report*. Valley School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014n). *Annual secretary of the board report*. Van Buren School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2004-2014o). *Annual secretary of the board report*. Winona School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014a). *District Report Card*. Alton School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Sonia Kuessner

Missouri Department of Elementary and Secondary Education. (2012-2014b). *District Report Card*. Arcadia Valley School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014c). *District Report Card*. Bunker School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014d). *District Report Card*. Clearwater School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014e). *District Report Card*. Couch School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014f). *District Report Card*. Eminence School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014g). *District Report Card*. Fredricktown School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014h). *District Report Card*. Greenville School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014i). *District Report Card*. Iron Co. C-4 School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014j). *District Report Card*. Poplar Bluff School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014k). *District Report Card*. Salem School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014l). *District Report Card*. Southern Reynolds County School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Sonia Kuessner

Missouri Department of Elementary and Secondary Education. (2012-2014m). *District Report Card*. Valley School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014n). *District Report Card*. Van Buren School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2012-2014o). *District Report Card*. Winona School District. Retrieved from [www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Department of Elementary and Secondary Education. (2013). *Achievement Level Report*. Retrieved from [www.dese.mo.gov/](http://www.dese.mo.gov/)

Missouri Department of Elementary and Secondary Education. (2014a). *District Boundaries and County Map*. Retrieved from:  
<http://mcds.dese.mo.gov/quickfacts/District%20and%20School%20Information/School%20Districts%20Map%20-%20County%20Boundaries.pdf>

Missouri Department of Elementary and Secondary Education. (2014b). *District Profiles*. Retrieved from: [www.dese.mo.gov/profiles/VanBuren](http://www.dese.mo.gov/profiles/VanBuren)

Missouri Department of Elementary and Secondary Education. (2014c). *Educator equity plan*. Retrieved from  
<http://dese.mo.gov/sites/default/files/Educator%20Equity%20Plan-5.pdf>

Missouri Department of Elementary and Secondary Education. (2015). *Definitions for school report card pages*. Retrieved from <http://dese.mo.gov/data-system-management/definitions-school-report-card-pages#html#1>

Missouri Department of Health and Human Services. (2013). *Health in rural Missouri: biennial report 2012-2013*. Retrieved from  
<http://health.mo.gov/living/families/ruralhealth/pdf/biennial2013.pdf>

Sonia Kuessner

Missouri Department of Transportation. (2013). *Missouri highway, county, & federal land map centennial edition*. Retrieved from Representative Rick Stream, District 90.

Moore, J.A. (2011). *Poverty and student achievement: The application of compensatory practices to education funding in the state of Florida*. (Order No. 3514903, University of Florida). ProQuest Dissertations and Theses. Retrieved from: <http://search.proquest.com/docview/1027746468?accountid=14196>. (1027746468)

Morrison, K.B. (1999). *The poverty of place: A comparative study of five rural counties in the Missouri Ozarks*. (Order No. 9946282, University of Missouri-Columbia). ProQuest Dissertations and Theses. Retrieved from: <http://search.proquest.com/docview/304512892?accountid=14196>. (304512892)

Muchado, C. L. (2008). *Teacher attitudes, achievement, poverty, and academic performance index*. (Order No. 3324403, Oklahoma State University). ProQuest Dissertations and Theses, 154-n/a. Retrieved from <http://search.proquest.com/docview/275772996?accountid=14196>. (275772996)

Murphy, J. L. (1982). *A history of the southeastern Ozark region of Missouri*. (Order No. 8325404, Saint Louis University). ProQuest Dissertation and Theses, 330-330 p. Retrieved from <http://search.proquest.com/docview/303255455:accountid=14196>. (303255455)

National Association of Federally Impacted Schools, Inc. (2014a). *About Us*. Retrieved from [www.nafisdc.org/aboutus](http://www.nafisdc.org/aboutus)

National Association of Federally Impacted School, Inc. (2014b). Bluebook-section

8002. Retrieved from:

[http://media.wix.com/ugd/423d5a\\_db2cd290977a4b4bbb2fc03a5b2634560.pdf](http://media.wix.com/ugd/423d5a_db2cd290977a4b4bbb2fc03a5b2634560.pdf)

National Center for Children in Poverty. (2008). Report: *Low-income children in the United States: national and state trend data 1997-2007*. Retrieved from

[http://www.nccp.org/publications/pdf/text\\_851.pdf](http://www.nccp.org/publications/pdf/text_851.pdf)

Niemi, E., Whitetail, & Johnson, A. (1999). the sky did not fall: the Pacific Northwest's response to logging reductions. *Earth life Canada Foundation*. Retrieved from

<http://pages.uoregon.edu/whitelaw/432/articles/SkyDidNotFallFull.pdf>

No Child Left Behind (NCLB) Act of 2001. (2002). Pub. L. No. 107-110, § 115, Stat. 1425.

Office of Management and Budget. (2010). Standards for defining metropolitan and micropolitan statistical areas; notice. *Federal Register* (75) No. 123.

Orland, M. E. (1990). Demographics of disadvantage: intensity of childhood poverty and its relationship to educational achievement, In Gooland, J.I. & Keating, P. (Eds.) *Access to Knowledge: An Agenda for our Nation's Schools*, 43-58. New York: College Entrance Examination Board.

Orr, A.J. (2000). Racial differences in academic achievement: the effects of wealth.

(Order No. 9971358, University of Notre Dame). ProQuest Dissertations and Theses. Retrieved from

<http://search.proquest.com/docview/304636632?accountid=14196>. (304636632)

Patterson, C.J., Kupersmidt, J. B., & Vaden, N. A. (1990). Income level, gender, ethnicity, and household composition as predictors of children's school based competence. *Child Development* 61(2). 485-494. Retrieved from

Sonia Kuessner

<http://www.jstor.org/discover/10.2307/1131109?uid=3739744&uid=2134&uid=2486583863&uid=2&uid=70&uid=3&uid=2486583853&uid=3739256&uid=60&sid=21105256840823>

Payne, R. (2001). *Learning structures: Modules 10-16 workbook*. United States: Aha! Process, Inc.

Payne, R. (2005). *A framework for understanding poverty*. Aha! Process, Inc. Highlands, TX. Retrieved from amazon.com

P.L. 97-258; 31 U.S.C. Chapter 69.

Pratt-Ronco, E. (2009). *Adolescents living in rural poverty: success, resilience, and barriers to social mobility*. (Order No. 3360143, Boston College). ProQuest Dissertations and Theses, 197. Retrieved from <http://search.proquest.com/docview/304831143?accountid=14916>. (304831143)

Puma, M.J., Kurweit, N., Price, C., Riccuiti, A., Thompson, W., & Vander-Kiernan, M. (1997). *Prospectus: student outcomes final report*. Cambridge, MA: Abt. Associates Inc., (ERIC Document Reproduction Service No. ED 413411)

Reardon, S.F. (2011). The widening academic achievement gap between the rich and the poor: new evidence and possible explanations. In R. Murane & G. Duncan (Eds.), *Whither Opportunity? Rising inequality and the Uncertain Life Chances of Low-Income Children*. New York: Russell Sage Foundation Press. Retrieved from <http://cepa.stanford.edu/sites/default/files/reardon%20whither%20opportunity%20-%20chapter%205.pdf>

Reardon, S.F. (2013). The Widening Income Academic Gap. *Educational Leadership*

70(8), p. 10-16. Retrieved from <http://www.ascd.org/publications/educational-leadership/may13/vol70/num08/The-Widening-Income-Achievement-Gap.aspx>

Rural Poverty Policy Institute. (2014). *Persistent poverty dynamics; understanding poverty trends over 50 years*. Retrieved from

[http://www.rupri.org/Forms/Poverty\\_MillerWeber\\_July2014.pdf](http://www.rupri.org/Forms/Poverty_MillerWeber_July2014.pdf)

Sammons, P., Hillman, J., & Mortimore, P. (1995). Key characteristics of effective schools: a review of school effectiveness research. Clearinghouse No: UD 030746. (ERIC Document Reproduction Service No. ED389826). Retrieved from <http://files.eric.ed.gov/fulltext/ED389826.pdf>

Silvernail, D., Sloan, J., Paul, C., Johnson, Al, Stump, E. (2014). *The relationships between school poverty and student achievement in Maine*. Gorham, ME: Maine Education Policy Research Institute. Retrieved from

[http://usm.maine.edu/sites/default/files/cepare/poverty\\_achievement\\_Web.pdf](http://usm.maine.edu/sites/default/files/cepare/poverty_achievement_Web.pdf)

Sorhaindo, L.R. W. (2003). *The relationship between degrees of poverty and student achievement*. (Order No. 3086343, University of Miami). ProQuest Dissertations and Theses. Retrieved from:

<http://search.proquest.com/docview/305323502?accountid=14196>. (305323502)

Steele, T. D. (2009). *Closing the achievement gap: what can be done?* (Order No. 3355438, University of Southern California). ProQuest Dissertations and Theses, 139. Retrieved from

<http://search.proquest.com/docview/304996852?accountid=14196>. (304996852)

Stell, W. L. (2006). *Effects of ambient poverty on student achievement among ethnic subgroups*. (Order No. 3239847, East Carolina University). ProQuest

Sonia Kuessner

Dissertations and Theses, 80- 80 p. Retrieved from

<http://search.proquest.com/docview/304936921?accountid=14196>. (304936921)

Stump, E., Silvernail, D., Fallona, C., Gunn, L. (2013). *Maine's improving schools: an examination of distinguishing features of a sample of Maine's improving public schools*. Gorham, ME: Maine Education Policy Research Institute. Retrieved from

[https://usm.maine.edu/sites/default/files/cepare/Imp%20Schools%20report%202013\\_B1.pdf](https://usm.maine.edu/sites/default/files/cepare/Imp%20Schools%20report%202013_B1.pdf)

The Missouri Budget Project. (2014). *A shaky foundation: Missouri underfunding the school formula*. Retrieved from [http://www.mobudget.org/wp-content/uploads/2014/06/A\\_Shaky\\_Foundation.pdf](http://www.mobudget.org/wp-content/uploads/2014/06/A_Shaky_Foundation.pdf)

The Wilderness Act Handbook. (2004). 5<sup>th</sup> Ed. Retrieved from

<http://wilderness.org/resource/wilderness-act-handbook-40th-anniversary-edition>

Tonies, F. (1955). *Communities and organization*. London: Routledge and Kegan Paul.

Trani, R. (2009). *The relationship between student achievement, school district economies of scale, school district size, and student socioeconomic status* (Order No. 3405770). Available from ProQuest Dissertations & Theses Global.

(219970906). Retrieved from

<http://search.proquest.com/docview/219970906?accountid=14196>

Truscott, D., & Truscott, S. (2005). Differing circumstances, shared challenges: finding common ground between urban and rural schools. *Phi Delta Kapan*, 10,123-130.

UNICEF. (2012). *Measuring child poverty new league tables of child poverty in the*

Sonia Kuessner

*world's richest countries*. Retrieved from [http://www.unicef-irc.org/publications/pdf/rc10\\_eng.pdf](http://www.unicef-irc.org/publications/pdf/rc10_eng.pdf)

United States Census Bureau. (2012). *County Quick Facts*. Retrieved from <http://quickfacts.census.gov/qfd/index.html>

United States Census Bureau. (2013). *Small area income and poverty estimates*. Retrieved from <http://www.census.gov/hhes/www/saipe/>

United States Congress. (1950). *Congressional Record No. 1124, 1101-1109*. 81<sup>st</sup> Congress, 2<sup>nd</sup> Session.

United States Department of Agriculture. (2013). *Persistent poverty by U.S. county*. Retrieved from <http://www.ers.usda.gov/topics/rural-economy-population/rural-poverty-well-being/geography-of-poverty.aspx>

United States Department of Agriculture. (2014). Department website. *Secure Rural Schools history and current status*. Accessed December, 2014.

United States Department of Education. (1981). *A nation at risk*. Retrieved from <http://www2.ed.gov/pubs/NatAtRisk/index.html>

United States Department of Education. (2002). Office of the Undersecretary. Title VIII. In *No Child Left Behind: a desktop reference* (p. 173-174). Retrieved from <http://www2.ed.gov/admins/lead/account/nclbreference/reference.pdf>

United States Department of Education. (2015). "Re: Missouri Federal Impact Aid Information Request." Message to Researcher. 15 May 2015. E-mail.

United States Department of the Interior. (2013). *Payment in lieu of taxes annual report*. Retrieved from [http://www.doi.gov/pilt/upload/2013\\_PILT\\_AnnualReport.pdf](http://www.doi.gov/pilt/upload/2013_PILT_AnnualReport.pdf)

United States Department of the Interior. (2014a). *Payment in lieu of taxes annual report*.

Sonia Kuessner

Retrieved from [http://www.doi.gov/pilt/upload/2014\\_PILT\\_AnnualReport.pdf](http://www.doi.gov/pilt/upload/2014_PILT_AnnualReport.pdf)

United States Department of Interior. (2014b). Department Website. Accessed

December 2014 at [www.doi.gov](http://www.doi.gov)

Urso, C.J. (2008). *Student achievement in high-poverty schools: A grounded theory on school success on achievement tests*. (Order No. 3301427, Miami University).

ProQuest Dissertations and Theses. Retrieved from

<http://search.proquest.com/docview/193487824?accountid=14196>. (193487824)

White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin*, 91(3), 461-481.

Wynne, E. A. (1981). Looking at good schools. *Phi Delta Kappan*, 62(5), 377-81.

Retrieved from

<http://eagle.sbuniv.edu:2098/stable/pdfplus/20385899.pdf?&acceptTC=true&jpd>

Confirm=true<http://www.census.gov/content/dam/Census/library/publications/2014/demo/p60-249.pdf> (income and poverty report)

<http://www.census.gov/prod/2013pubs/p60-245.pdf>

**Appendix A: Tables**

Table 1 displays the total number of federally owned land acres by state in 2013 according to the United States Department of Interior Payment in Lieu of Taxes National Summary Report. Land from the District of Columbia, Guam, Puerto Rico, and the Virgin Islands was included in the total U.S. federal land distribution list but not in the quantitative portion of this study. Land from these four areas represented less than .0085 percent of the total federal land acreage. In 2013, the total number of federally owned acres was 606,441,190 acres. This included acreage from National Parks, National Forests, Bureau of Land Management, Bureau of Reclamation, Army Core of Engineers, Army Acres, Fish and Wildlife Service, small amounts from University Research Centers, and other federal sources. According to the 2014 United States Department of Interior Payment in Lieu of Taxes National Report Summary, the total federal land ownership increased to 606,947,993 acres.

*Table 1: Federal Land Locations for Fiscal Year 2013*

State	Fiscal Year 2013 Acres	Percent of Total Acres
Alabama	800,531	0.1320%
Alaska	225,121,997	37.1218%
Arizona	28,192,513	4.6488%
Arkansas	3,270,764	0.5393%
California	43,993,102	7.2543%
Colorado	23,740,926	3.9148%
Connecticut	12,042	0.0020%
Delaware	7,403	0.0012%
District of Columbia*	6,959	0.0011%
Florida	2,570,575	0.4239%
Georgia	1,276,806	0.2105%
Guam*	932	0.0002%
Hawaii	135,457	0.0223%
Idaho	32,597,631	5.3752%
Illinois	483,385	0.0797%
Indiana	314,627	0.0519%
Iowa	188,585	0.0311%
Kansas	548,581	0.0905%
Kentucky	1,254,402	0.2068%
Louisiana	752,776	0.1241%
Maine	118,184	0.0195%
Maryland	41,884	0.0069%
Massachusetts	39,758	0.0066%
Michigan	2,167,358	0.3574%
Minnesota	2,897,866	0.4778%
Mississippi	1,638,300	0.2701%
Missouri	2,060,556	0.3398%
Montana	27,326,422	4.5060%
Nebraska	518,024	0.0854%
Nevada	56,723,119	9.3534%
New Hampshire	766,979	0.1265%
New Jersey	40,455	0.0067%
New Mexico	22,511,529	3.7121%
New York	60,075	0.0099%
North Carolina	1,721,314	0.2838%
North Dakota	1,719,264	0.2835%
Ohio	360,202	0.0594%
Oklahoma	1,497,586	0.2469%
Oregon	31,228,987	5.1495%

Sonia Kuessner

Pennsylvania	655,575	0.1081%
Puerto Rico*	29,923	0.0049%
Rhode Island	6	0.0000%
South Carolina	778,606	0.1284%
South Dakota	2,758,519	0.4549%
Tennessee	1,262,280	0.2081%
Texas	2,624,449	0.4328%
Utah	32,851,851	5.4172%
Vermont	413,637	0.0682%
Virgin Islands*	13,879	0.0023%
Virginia	2,052,057	0.3384%
Washington	11,823,527	1.9497%
West Virginia	1,245,457	0.2054%
Wisconsin	1,358,562	0.2240%
Wyoming	29,865,006	4.9246%
<hr/> Total	<hr/> 606,441,190	

\*Table 1 includes federal acreage in Guam, Puerto Rico, Virgin Islands, and District of Columbia that is equal to .0085 percent of the total federal acreage for 2013.

*Table 2: Federal Property School Districts in Missouri*

District	County Label and Percent of District in the County
District 1	60% in County L 40% in County M
District 2	100% in County N
District 3	100% in County O
District 4	100% in County P
District 5	100% in County Q
District 6	100% in County R
District 7	100% in County M
District 8	100% in County S
*District 9	100% in County G
District 10	100% in County T
District 11	100% in County E
District 12	100% in County J
*District 13	100% in County A
District 14	100% in County U
District 15	100% in County V
District 16	100% in County R
District 17	100% in County U
*District 18	90% in County J 10% in County F
District 19	100% in County W
District 20	90% in County M 10% in County L
District 21	100% in County O
*District 22	100% in County I

Sonia Kuessner

*District 23	90% in County B 10% in County K
*District 24	100% in County C
*District 25	90% in County D 5% in County E 5% in County F
District 26	100% in County L
*District 27	50% in County H 10% in County G 40% in County J
*District 28	50% in County E 40% in County B 10% in County G
District 29	40% in County Q 40% in County P 10% in County X 10% in County O
*District 30	90% in County K 10% in County E
District 31	80% in County N 10% in County Y 10% in County Q
*District 32	90% in County E 10% in County B
*District 33	100% in County B
*District 34	95% in County F 5% in County Z
*District 35	95% in County D 5% in County C
*District 36	100% in County A

\* Indicates the district is one of the 15 Federal Property School Districts used in this study.

*Table 3: Combined Demographic Data for All Missouri Public Schools 2012-2014*

State of Missouri	2012	2013	2014	2012-2014 Average
K-12 Total Enrollment	886,116	888,174	887,368	887,219
Attendance Rate	87.80%	87.80%	89.30%	88.30%
Free/Reduced Lunch	49.50%	49.90%	50.30%	49.90%
Four Year Graduation Rate	83.71%	85.72%	87.34%	85.59%
Dropout Rate	2.9	2.3	2.3	2.5
Students to Classroom Teachers	18	18	18	18
Students to Administrators	195	195	195	195
Years of Experience for Professional Staff	12.5	12.4	12.3	12.4
Professional Staff with Advanced Degrees	58.8	59.1	58.9	58.9
Average Regular Term Teacher Salary	\$45,708	\$46,223	\$46,756	\$46,229
Average Total Teacher Salary	\$46,735	\$47,243	\$47,844	\$47,274
Average Administrator Salary	\$84,787	\$86,019	\$87,199	\$86,002
Average Current Expenditures per ADA	\$9,542	\$9,840	\$10,127	\$9,836
Adjusted Incidental Tax Rate of the District	\$3.3754	\$3.3842	\$3.3976	\$3.3857
Assessed Valuation of the District	\$89,200,77 9,060	\$90,184,34 1,192	\$89,759,97 1,068	\$89,715,03 0,440
Percent of Revenue-Local	55.26%	55.94%	56.28%	55.83%
Percent Revenue-State	33.92%	34.51%	34.35%	34.26%
Percent Revenue-Federal	10.82%	9.56%	9.36%	9.91%

*Table 4: 15 Southeast Missouri Federal Property School Districts Combined Compared to the State of Missouri*

Southeast Missouri Combined	2012-2014 Averages Combined	Percent of State
Total Enrollment	982	0.11%
Attendance Rate	88.46%	100.18%
Free/Reduced Lunch	66.04%	132.34%
Four Year Graduation Rate	90.49%	105.73%
Dropout Rate	1.0133	40.53%
Students to Classroom Teachers	17	93.95%
Students to Administrators	174	88.99%
Years of Experience for Professional Staff	12.37	99.75%
Professional Staff with Advanced Degrees	40.78	69.19%
Average Regular Term Teacher Salary	35,528	76.85%
Average Total Teacher Salary	36,663	77.55%
Average Administrator Salary	72,816	84.67%
Average Current Expenditures per ADA	9,133	92.85%
Adjusted Incidental Tax Rate of the District	2.9721	87.78%
Assessed Valuation of the District	69,810,007	0.08%
Percent of Revenue-Local	42.15%	75.51%
Percent Revenue-State	42.21%	123.22%
Percent Revenue-Federal	15.63%	157.67%

**Appendix B: Missouri Federal Property County Demographics**

Sonia Kuessner

#### County A

In 2013, County A had a population of 10,966 and ranked 84 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$26,616 ranking it 111 out of 115 in terms of per capita income. This represented 65% of the state average of \$40,663 and 59% of the national average of \$44,765 (Bureau of Economic Analysis, 2013g).

#### County B

In 2013, County B had a population of 8,297 and ranked 98 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$25,378 ranking it 115 out of 115 in terms of per capita income. This represented 62% of the state average of \$40,663 and 57% of the national average of \$44,765 (Bureau of Economic Analysis, 2013i).

#### County C

In 2013, County C had a population of 43,083 and ranked 26 out of the 115 Missouri Counties in terms of population. It was considered a Micropolitan Statistical Area in 2013. The per capita income was \$36,489 ranking it 38 out of 115 in terms of per capita income. This represented 90% of the state average of \$40,663 and 82% of the national average of \$44,765 (Bureau of Economic Analysis, 2013a).

#### County D

In 2013, County D had a population of 13,404 and ranked 77 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$28,115 ranking it 104 out of 115 in terms of per capita

Sonia Kuessner

income. This represented 68% of the state average of \$40,663 and 63% of the national average of \$44,765 (Bureau of Economic Analysis, 2013k).

#### County E

In 2013, County E had a population of 6,599 and ranked 104 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$28,583 ranking it 101 out of 115 in terms of per capita income. This represented 70% of the state average of \$40,663 and 64% of the national average of \$44,765 (Bureau of Economic Analysis, 2013h).

#### County F

In 2013, County F had a population of 12,431 and ranked 80 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$30,486 ranking it 88 out of 115 in terms of per capita income. This represented 75% of the state average of \$40,663 and 68% of the national average of \$44,765 (Bureau of Economic Analysis, 2013f).

#### County G

In 2013, County G had a population of 15,730 and ranked 68 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$30,343 ranking it 89 out of 115 in terms of per capita income. This represented 75% of the state average of \$40,663 and 68% of the national average of \$44,765 (Bureau of Economic Analysis, 2013d).

#### County H

In 2013, County H had a population of 24,543 and ranked 47 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in

Sonia Kuessner

2013. The per capita income was \$33,989 ranking it 66 out of 115 in terms of per capita income. This represented 84% of the state average of \$40,663 and 76% of the national average of \$44,765 (Bureau of Economic Analysis, 2013c).

#### County I

In 2013, County I had a population of 25,172 and ranked 44 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$27,369 ranking it 107 out of 115 in terms of per capita income. This represented 67% of the state average of \$40,663 and 61% of the national average of \$44,765 (Bureau of Economic Analysis, 2013j).

#### County J

In 2013, County J had a population of 10,344 and ranked 86 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$31,049 ranking it 85 out of 115 in terms of per capita income. This represented 76% of the state average of \$40,663 and 69% of the national average of \$44,765 (Bureau of Economic Analysis, 2013e).

#### County K

In 2013, County K had a population of 6,291 and ranked 106 out of the 115 Missouri Counties in terms of population. It was not considered a metropolitan area in 2013. The per capita income was \$28,431 ranking it 106 out of 115 in terms of per capita income. This represented 70% of the state average of \$40,663 and 64% of the national average of \$44,765 (Bureau of Economic Analysis, 2013b).

**Appendix C: Missouri Department of Elementary and Secondary Education  
Demographic Definitions**

## **Definitions for Missouri School Report Cards**

The following definitions were directly quoted from the Missouri Department of Elementary and Secondary Education website to aid with data interpretation (Missouri Department of Elementary and Secondary Education, 2015).

### **Total Enrollment**

Head count taken the last Wednesday of September of all resident and non-resident students in grades K through 12 enrolled in the attendance center. Each student (part-time, full-time or kindergarten) should be counted as one.

Desegregation transfer students are reported as residents of the district in which they attend school. Enrollment for students attending alternative schools and area vocational schools should be reported at the students' regular school in their home district.

### **Proportional Attendance Rate**

Attendance targets use the individual student's attendance rate and set the expectation that 90% of the students are in attendance 90% of the time.

### **Student Eligible for Free or Reduced-Price Lunch**

The percentage of resident pupils who are reported by the district as eligible for free or reduced-price meals on the last Wednesday in January.

### **Four-Year Graduation Rate**

The four-year adjusted cohort graduation rate is the number of students who graduate in four (4) years with a regular high school diploma divided by the number of students who form the adjusted cohort for the graduating class rounded to the tenth. From the beginning of 9<sup>th</sup> grade, students who are entering that grade

for the first time for a cohort that is subsequently “adjusted” by adding any students who transfer into the cohort later during the 9<sup>th</sup> grade and the next three (3) years and subtracting any students who transfer out, emigrate to another country, or die during the same period.

### **Dropout Rate**

For grades 9-12 the number of dropouts divided by the total of September enrollment, plus transfers in, minus transfers out, minus dropouts, added to September enrollment, then divided by two.

### **Staffing Ratios**

The September enrollment divided by the number of teachers or administrators:

Students to Classroom Teachers: The ratio of students in grades K-12 to regular classroom teachers (Core Data position code 60), excluding special education, remedial reading, Title I, and vocational teachers.

Students to Administrators: The ratio of students in grades K-12 to central office and building-level administrators (Core Data position codes 10 and 20).

### **Professional Staff with Advanced Degrees**

The percentage of the professional staff (Core Data position codes 10-60) whose highest degree is above a bachelor’s degree.

### **Average Teacher Salaries**

The average regular term (base) salary of teachers (Core Data position code 60) and the average “total” salary (includes extended-contract salary, Career Ladder

Supplement and extra-duty pay) for teachers in the district. Fringe benefits are not included.

**Average Administrator Salaries**

The average administrator salary (Core Data position codes 10 and 20). Fringe benefits are not included.

**Average Current Expenditures per ADA**

The average current expenditure per pupil, in average daily attendance (ADA), for the district.

**Adjusted Tax Rate of the District**

The actual tax rates (after rollbacks) levied by the district, for the incidental fund and filed with the county clerk by September 1.

**Assessed Valuation of the District**

The total assessed property value of the school district minus tax-increment-financed valuation, as of December 31 of the previous calendar year.

**Sources of Revenue**

Local: All local and county revenues (including “Proposition C” money), received in the General, Special Revenue, and Capital Projects funds, divided by total revenues received in these funds.

State: All state revenues received in the General, Special Revenue, and Capital Projects funds, divided by total revenues received in these funds.

Federal: All federal revenues received in the General, Special Revenue and Capital Projects funds, divided by total revenues received in these funds.

**Accreditation Status**

School districts are accredited according to standards set by the State Board of Education. The three levels of accreditation are: Accredited, Provisionally Accredited, and Unaccredited.

**Appendix D: Self-Reported Methodology from the SAIPE Website**

The following information is a direct quote from the SAIPE website regarding poverty data reliability and validity. The SAIPE website is

<http://www.census.gov/did/www/saipe/methods/statecounty/20102013county.html> .

For the 2010 estimates, the only change in methodology was the incorporation of population estimates based on the decennial 2010 counts. Control populations used for the 2010 release of the American Community Survey (ACS), all population-based inputs, and the denominator for the published SAIPE poverty rates are derived from these decennial 2010 counts.

- We estimate a regression model that predicts the number of people in poverty using single-year county-level observations from the American Community Survey as the dependent variable, and administrative records and census data as the predictors. A single year ACS sample estimate is used for every county, even those below 65,000 population for which the ACS data are unpublished. Although we use only the counties with nonzero reported poverty in the ACS to estimate the equation, we make regression "predictions" for all 3,142 county-level entities in the SAIPE universe (which excludes Kalawao, HI).
- The official, published direct ACS county estimates are single-year estimates only for sufficiently large counties (greater than 65,000 people); three-year or five-year accumulations of ACS data will be used in constructing estimates for smaller counties. Since modeling produces estimates with reduced sampling error, we feel we can use single-year ACS estimates for all counties in our models. We also feel it is important to do since primary uses of the SAIPE estimates (e.g., their use in

- allocation of federal funds) effectively involve comparing poverty estimates across places. For such uses, having all the estimates on a common basis is important, so that if we wanted to use multi-year ACS estimates for small counties, we should probably also use them for the large counties.
- The model is multiplicative; that is, we model the number of people in poverty as the product of a series of predictors which are numbers (not rates) and have unknown errors. When estimating the coefficients in the model, we take logarithms of the dependent and all independent variables. While we may omit reference to logs in the description, all variables in the county regression models for numbers of people in poverty are logarithmic.
- The ACS estimates for different counties are of different reliability because of the size of the sample in the counties. Our estimates take this factor into account.
- To use the information contained in the direct survey estimates for the counties in the ACS with nonzero reported poverty, we combine the regression predictions with these direct estimates using Empirical Bayes (or "shrinkage") techniques. The Empirical Bayes techniques weight the contribution of the two components (regression and direct estimates) based on their relative precision.
- We control the estimates for the counties of a given state to sum to the independently derived state estimate (which in turn has been controlled to sum to the ACS national estimate).

- We provide a confidence interval, which represents uncertainty from both sampling and from modeling, for each estimate.

#### Estimation of the Model Equation

ACS sampling variances are not constant over all counties. When calculating model parameters, we avoid giving observations with larger variances (a great deal of uncertainty) the same influence on the parameter estimates as observations with smaller variances (less uncertainty) by, in effect, weighting each observation by the inverse of its uncertainty. Representing this uncertainty requires recognizing that it arises from two sources:

- uncertainty about where the estimates lie relative to the true values for each county (sampling error), and
- uncertainty about where the true county values lie with respect to the regression surface (lack of fit).

To estimate the lack-of-fit component, we estimate the residual variance by a maximum likelihood procedure. Next we estimate the ACS regression parameters using the variance components as observational weights with a maximum likelihood procedure.

#### Combining Model and Direct Survey Estimates

Final estimates are weighted averages of direct ACS estimates, where they exist, and the model predictions. The two weights for each county add to 1.0, and we compute the weight on the model prediction as the sampling variance divided by the total variance (sampling plus lack-of-fit) of the direct estimate. With this technique, the larger the sampling variance of the direct estimate, the smaller its contribution and the

larger the contribution from the prediction model. These weights are commonly referred to as "shrinkage weights" and the final estimates as "shrinkage" or "Empirical Bayes" estimates. For counties that have zero poor children in sample, the weight on the model's predictions is 1.0 and the weight on the direct survey estimate is zero.

#### Controlling to State Estimates

The last steps in the production process are transforming the county estimates from the log scale to estimates of numbers and controlling them to the independently derived state estimates. We make a simple ratio adjustment to the county-level estimates to ensure that they sum to the state totals. We control model-based estimates at the state level to the national level direct estimates derived from the ACS. We adjust the estimated standard errors of the county estimates to reflect this additional level of control. We do not control estimates of county median household income to the state medians. This would require that the estimation model produce the entire household income distribution, rather than just the median as it does now.

The estimates for the number of school-aged children in poverty are handled slightly differently. The Department of Education, a major sponsor of the SAIPE program, requires that the estimated number of school-aged children in poverty be integers. We use an algorithm to round the counties' estimates in a way that forces the sum of the estimates of school-aged children in poverty for the counties to sum to the estimate for the state. Note that this algorithm is first applied to the states' estimates, so they are integers and add to the integer-valued national estimate.

#### Standard Errors and Confidence Intervals

One goal of our small area estimation work is to provide estimates of the uncertainty surrounding the estimates of the numbers of people in poverty. The model-based estimates shown in the tables are accompanied by their 90-percent confidence intervals. These intervals were constructed from estimated standard errors. For the model-based estimates, the standard error depends mainly on the uncertainty about the model and the ACS sampling variance. While the variance of the shrinkage weights could also be a significant component of uncertainty about our estimates (if sizeable and ignored, we would be underestimating the standard errors), our research indicates that its contribution is negligible.

#### Predictor and Dependent Variables

For 2010, the dependent variable is based on the single-year 2010 ACS sample. The predictor variables described below use aggregated 2009 federal tax filings, SNAP benefits, Bureau of Economic Analysis (BEA) data and 2010 population estimates. SNAP stands for Supplemental Nutrition Assistance Program, which was known as the federal Food Stamp Program prior to October 1, 2008. For further information on these variables see [Information About Data Inputs](#).

#### The Model for Total Number of People in Poverty

The model is multiplicative; that is, we model the number of people in poverty as the product of a series of predictors that are numbers (not rates), and we model the unknown errors. To estimate the coefficients in the model, we take logarithms (logs) of the dependent and all independent variables. Our choice of a multiplicative model is motivated, in part, by the fact that the distribution of the number in poverty has a huge range -- from zero in some counties to more than a million in the largest county

(with a mean of 10,000), based on Census 2000 -- and the distribution is highly skewed. Taking the log of all variables makes their distributions more centered and symmetrical and has the effect of diminishing the otherwise inordinate influence of large counties on the coefficient estimates. Another advantage of a multiplicative model is that it makes it plausible to maintain that the (unobserved) errors for every county, no matter how large or small, are drawn from the same distribution.

The predictor variables in the regression model used to estimate the total number of people in poverty are:

- the log of the number of tax return exemptions (all ages) on returns whose adjusted gross income falls below the official poverty threshold for a family of the size implied by the number of exemptions on the form;
- the log of the number of SNAP benefits recipients in July of the previous year;
- the log of the estimated total resident population as of July 1;
- the log of the total number of tax return exemptions; and
- the log of the Census 2000 estimate of the total number of people in poverty.

The dependent variable is the log of the total number of people in poverty in each county as measured by the ACS. We combine the regression predictions, in the log scale, with the logs of the direct ACS sample estimates, and then transform the results into estimates of the numbers of people in poverty. Finally, we control the estimates to the independent estimates of state totals.” (United States Census Bureau, 2013, website).

The total number of people of all ages living in poverty for each county in the United States in 2013 reported by SAIPE for the low 90% Confidence Interval and the upper

bound 90% Confidence Interval were averaged for each county. The county average number of people of all ages living in poverty was then divided by the total population of all combined counties to obtain each county's poverty rank among the U.S. Population. The data set for this correlation includes all 3,142 counties in the United States. The entire dataset is too large to report in print in this study.