

Arizona's Students FIRST Legislation:

Are There Winners and Losers

by

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## ABSTRACT

In *Roosevelt v. Bishop* (1994), Arizona public school districts and parents challenged Arizona's school financing system arguing that it was not "general and uniform" as required by the Arizona Constitution. The purpose of this study was to analyze Arizona's Students Fair and Immediate Resources for Students Today (Students FIRST) legislation, the remedy that resulted from the *Roosevelt* decision, empirically, and longitudinally. Three types of statistical analyses were conducted on a sample of 165 public school districts. Fiscal neutrality was measured for each of the eleven years of the study, to assess the association between the per-pupil Students FIRST funding level and the per-pupil property wealth. Multiple regression analysis was also conducted to assess if both property wealth and district size were associated with the distribution of Students FIRST funding. Finally, I analyzed the eleven-year average of the total Students FIRST funding distributed to school districts and assessed how the plaintiff districts ranked in the distribution. Overall, the findings revealed that Students FIRST met the fiscal neutrality standard in some, but not in all the categories and years of this study, per-pupil property wealth was only weakly related to, and district size was not associated with, Students FIRST funding. The analysis of average funding suggested that some property rich school districts benefited most from Students FIRST. These results suggest that the traditional measures used to assess the fiscal neutrality of operating funding may not be appropriate for assessing the fiscal neutrality of capital finance reforms. While the results of this study provide some

suggestive evidence that Students FIRST did not fulfill the Court's mandate, additional research is needed as to whether or not Arizona's capital finance system has resulted in disparities in funding that fall short of the constitutional standard.

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## CHAPTER 1

### INTRODUCTION

#### **Statement of the Problem**

When Thomas Jefferson first proposed the idea of a free, state-sponsored school system, he could not have predicted the legal challenges that have emerged regarding funding for quality public school facilities. State legislatures have traditionally delegated the majority of the responsibility for funding public schools to local taxpayers via property taxes which, in many cases, has created disparities between property rich and property poor districts. This disparity became the focal point of *Roosevelt v. Bishop* (1994), a challenge to Arizona's capital funding scheme for public school facilities.

Arizona's constitution provides for the creation and maintenance of a "general and uniform" public school system (Article XI, Section 1). In a series of lawsuits, school districts and parents have challenged the state's school financing system in the state's courts, arguing that it was not "general and uniform" as required by the Arizona Constitution (*Roosevelt v. Bishop*, 1994; First, 2007). In 1994, the Arizona Supreme Court ruled that, to comply with the general and uniform provision of the state's constitution, the legislature must fund public schools in a manner that does not create disparities among schools, districts, or communities. Although this ruling applied to all areas of school finance, in *Roosevelt* the Court found that only the capital funding scheme for school facilities was inequitable and thus, unconstitutional.

## **Purpose of Current Study and Research Question**

The purpose of my study was to analyze Arizona's Students Fair and Immediate Resources for Students Today (Students FIRST) legislation, the remedy that resulted from *Roosevelt v. Bishop* (1994), empirically, and longitudinally. I investigated whether or not Students FIRST created and maintained a general and uniform capital finance scheme. In addition, I assessed if the size and wealth of Arizona school districts were significant predictors of Students FIRST funding. The research question that guided this study was as follows: Did Students FIRST create a general and uniform capital finance scheme between fiscal year 1999 and fiscal year 2009?

My longitudinal analysis of Students FIRST had four components. First, I assessed the fiscal neutrality of Students FIRST by analyzing the capital funding provided to every district in the state under the legislation between 1999 and 2009. Second, I assessed if there was a relationship between property wealth and district size and the distribution of Students FIRST funding that suggested that the funds were allocated in a manner that was not general and uniform. Third, I assessed the fiscal neutrality of Students FIRST by analyzing the eleven-year average of total funding distributed to school districts. Finally, I used the eleven-year average of the Total Students FIRST funding that was disbursed to school districts to analyze how different categories of districts ranked in the distribution. These analyses allowed me to provide a preliminary assessment of the changes in capital funding that resulted from Students FIRST. My dissertation is the first

empirical study of Students FIRST. As Arizona schools experience cuts in education funding, my analysis may prove useful in determining whether or not capital funding for public school facilities is general and uniform. My analysis also contributes to the growing body of research that assesses court-ordered legislative remedies related to capital finance reform. My research provides a rigorous and systematic analysis of Students FIRST for Arizona policymakers to consider as they make decisions about education funding during a period of economic decline. Finally, my findings also suggest there are limitations with the standard that is currently used in school finance to assess the fiscal neutrality of capital funding reforms.

I introduce my topic and provide background information in Chapter One, in which I summarize the history of Arizona's finance system, the court cases that forced a reform of the capital finance scheme, and the Students FIRST legislation that remains in effect today. I present a conceptual framework to conclude the first chapter and I define key terms used throughout my study. In the second chapter, I present a review of the literature focusing on: 1) school finance litigation based on issues of equity; 2) school facilities litigation based on issues of equity and adequacy; 3) the research assessing school finance reforms; and 4) an equity measurement model to assess funding for public school facilities. I discuss my research design in Chapter Three and in the final two chapters I present my results and the implications of my study.

## **A Brief History of Arizona's School Finance System**

Arizona's overall school finance system provides funding based on an equalization formula. A state's funding formula is said to be equalized when funding by the state is provided in inverse relationship to a district's property wealth (Odden & Picus, 2008). Arizona's equalization formula has several components which work as follows. The state provides each school district with a base support level based on equal dollars per weighted students enrolled. Weights are used to account for district size, location, and grade span<sup>1</sup>. Other weights are added to the base support level to account for students with special needs and for districts that enroll students in kindergarten through third grade. These added weights provide additional money to districts. Enrollment is measured by the Average Daily Membership (ADM) which is the average number of students enrolled in a district during the first 100 days of the previous school year. A balance between local property tax rates and state and county equalization assistance generates the necessary revenue limit for each district (AASBO, 2010). The Arizona Legislature places limits on the amount of funding that can be generated without voter approval through the collection of property taxes from each school district. Because high wealth districts are able to raise substantial revenues via property taxes within their area, they receive less state and county assistance compared to low wealth, property poor districts that require greater

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<sup>1</sup> Additional adjustments account for districts with fewer than 500 students, for districts who are designated as "isolated", and for districts that serve preschool students with disabilities. Districts that serve students in grades 9-12 have additional weights to account for the higher costs associated with educating students in this grade span.

levels of state funding. Arizona's equalization formula calculates a district's Revenue Control Limit (RCL), Capital Outlay Revenue Limit (CORL), and Soft Capital Allocation (SCA).<sup>2</sup> Districts can raise additional funds through voter-approved overrides and bond issuance; districts are also eligible for additional federal money, such as Title I, based on the economic needs of its community.<sup>3</sup>

Annually, each district determines where to allocate their RCL, CORL and SCA funds and must adhere to the limits that are set for each category. In other words, once a district adopts its annual budget, that district is prevented from using M&O funds for capital expenditures and capital funds for M&O expenditures. Likewise, funds generated through voter approved overrides and bonds are restricted to the purposes described in the ballot language and in the voter pamphlet. M&O overrides are for M&O expenses. Bonds and capital overrides are for capital expenses. Both M&O and capital overrides last for a maximum of 7 years and must be reapproved by voters for districts to continue receiving these revenues. The use of federal funds, such as Title I, are also restricted and must supplement the district's annual budget.

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<sup>2</sup> The RCL provides funds for the Maintenance and Operation (M&O) budget which is used for expenditures such as salaries, benefits, and expenditures excluding capital expenses. The CORL provides funds for the Unrestricted Capital budget to maintain facilities, and to purchase furniture and equipment. The SCA is used for short-term capital expenses to meet academic standards including textbooks, instructional aides and technology.

<sup>3</sup> Through special elections, voters can authorize additional property taxes to: increase, up to 15%, a district's M&O budget for M&O expenses; authorize debt payment to issue and sell bonds for capital purposes; increase tax revenues for capital expenses. Title I money is based on the level of poverty within a school district.

Prior to 1998, local districts' capital funding for school facilities was heavily dependent on the sale of general obligation bonds as capital funds were insufficient to maintain school facilities. This system created disparities as property poor districts could not generate sufficient funding to provide adequate facilities even though the residents of these districts often paid higher property taxes than their counterparts in districts with greater property wealth (AASBO, 2010). In 1992, a group of poor districts and parents challenged this system of school financing in the state courts. In *Roosevelt v. Bishop* (1994) the Arizona Supreme Court ruled that the state's system for capital funding of facilities and equipment was unconstitutional because it violated the provision in the state constitution that required the state to provide a "general and uniform" system of public education (Arizona Constitution, Article XI, Section 1). The Supreme Court ordered the legislature to create a new capital funding scheme to comply with the Constitution. In 1998, the legislature passed Students FIRST which created the current school facilities funding scheme that is used to allocate capital funds to school districts from the state. Students FIRST funding is not equalized; Arizona provides Students FIRST funds to all public school districts, regardless of wealth.

### **Arizona Court Cases**

Article XI, Section 1 of Arizona's constitution requires the legislature to provide the state's citizens with a "general and uniform" educational system (Arizona Constitution). Subsequent sections provide the basic outlines of the



school financing system and empower the legislature to delegate powers and responsibilities to local school districts. In *Shofstall v. Hollins* (1973), a legal challenge was launched by Arizona taxpayers and school children in a property poor school district. They claimed the entire school finance scheme resulted in lower quality education and higher tax burdens in property poor districts.

Although the Arizona Supreme Court recognized education as a fundamental right protected by the state's constitution, and reaffirmed the general and uniform clause, they ruled that the state's school finance scheme was constitutional. The general and uniform provision under Article XI, Section 1 became the focus of *Roosevelt*.

#### **Roosevelt v. Bishop (1994)**

In *Roosevelt*, property poor districts and parents challenged the state's system of school financing a second time. In its deliberations the Supreme Court narrowed the scope of the case to capital financing. Ruling in favor of the plaintiffs, the Court described the state's school finance system, taken as a whole, as complicated. The ability for districts to fund their schools depended on the amount of property tax revenue they could generate (*Roosevelt v. Bishop*, 1994). While the state claimed that the financing of public schools was the responsibility of school districts, the court argued that the legislature must establish and maintain a public school system (i.e., the structure of a K-12 and higher education system) and then fund that public school system in a manner that is general and uniform. The Court noted the disparities in capital funding between districts and

argued that the quality of schools' facilities and equipment was directly proportional to the value of the property within each district. Property poor districts had higher tax rates but were unable to generate enough funds to meet their capital needs, whereas property rich districts had lower tax rates and an abundance of capital funds. According to the Court, this funding scheme produced a public school system that was not general and uniform because it directly caused substantial capital facility disparities across districts. While the Court did not directly address the issue of adequacy, it did note that there was a minimum threshold that all districts must meet: "Even if every student in every district were getting an adequate education, gross facility disparities caused by the state's chosen financing scheme would violate the uniformity clause" (*Roosevelt v. Bishop*, 1994, p.7). The Court ordered the legislature to reform the existing capital finance system in order to create a more equitable funding scheme for school facilities. In 1996, the Court ruled that the legislature's initial attempt to amend the financing system was inadequate because the legislation did not substantively alter the overall funding scheme. As I explain below, the legislature made additional attempts to comply with the *Roosevelt* decision. The last of these, Students FIRST, created the capital financing system for public school facilities in place today.

### **Hull v. Albrecht (1997) and Hull v. Albrecht (1998)**

In 1997, Governor Hull asked the Court to evaluate the Assistance to Build Classrooms (ABC) program, the legislature's second attempt to comply

with the *Roosevelt* order. The Court ruled that the ABC program did not meet the requirements of Article XI because it “delegated to the districts the responsibility to provide adequate capital facilities,” continued to create “substantial disparities” among districts, and ABC did not create nor did it meet an adequate facilities standard (*Hull v. Albrecht*, 1997, p. 13.) In response, the legislature passed Students FIRST which the Court assessed in 1998. The Court determined that Students FIRST established a system to identify and fund adequate capital facilities (*Hull v. Albrecht*, 1998). However, because this funding scheme allowed districts to opt-out of state funding and did not allow participating districts to issue general obligation funds, the Court found that the system continued to create two classes of districts and, thus, failed the general and uniform test. The state amended the Students FIRST program to comply with the Court’s ruling in 1998 by: 1) funding all school districts; and 2) allowing voters to continue authorizing overrides and bonds for their school facilities. Students FIRST continues to be Arizona’s system for providing capital financing to public school districts for school facilities. The Students FIRST program is funded by three main sources: 1) legislative appropriations to the SFB; 2) revenues generated by the Proposition 301 sales tax; and 3) state land revenues.

### **Students FIRST**

Students FIRST established the Schools Facilities Board (SFB) in 1999 which is charged with distributing capital funds on behalf of the state, for facilities to public school districts and ensuring that districts maintain minimum

facility standards. The SFB adopted Building Adequacy Guidelines which established minimum standards for existing and new school facilities in Arizona and minimum classroom space for students enrolled. The SFB administers three capital funds for three programs on behalf of the state that are separate from, and in addition to, the CORL funding I described earlier: Building Renewal, Deficiencies Correction, and New School Facilities. The state legislature decided to fully fund Students FIRST without an equalization formula. All of the funds from Students FIRST are distributed as described below without any consideration of the property wealth of each school district. Likewise, all three funds are administered separately; that is, the SFB awards districts funds for each program without considering the funds that districts may or may not be awarded from any of the other Students FIRST programs.

### **Building Renewal**

The Building Renewal fund was established to maintain the adequacy of school facilities once minimum standards are achieved. Prior to fiscal year 2008, the SFB provided funding to school districts for the maintenance of school facilities based on a building's square footage, age, and student capacity. In fiscal year 2008 the state cut funding to the Building Renewal fund and since fiscal year 2009 the state has not funded Building Renewal as originally designed. School districts must now apply for a Building Renewal Grant which is awarded based on priority need as determined by the SFB.

### **Deficiencies Correction**

The Deficiencies Correction fund was used to bring all existing school facilities to minimum standards by 2004. In 2004 the Deficiencies Correction fund was renamed the Emergency Deficiencies Program, an application-based program where districts must apply for funding from the SFB to correct facility deficiencies that threaten the immediate safety and operation of a school. If a school district has facilities that are below the Building Adequacy Guidelines, the SFB provides full funding to correct the deficiencies.

### **New School Facilities**

The third program under Students FIRST is the New School Facilities fund which is used to construct school space in districts based on the Building Adequacy Guidelines. If a district must construct additional school space to meet facility standards and/or to address increased student enrollment, the SFB provides full funding; this includes the construction of new schools. In order for a district to be eligible to receive funds for new school facilities, they must meet a set of criteria based on that district's enrollment projections and the additional square footage that will be needed to maintain the established facility standards. The SFB distributes new school facilities funds to school districts based on the following formula: (number of students) x (square footage) x (cost per square foot) = district allocation. In addition to the funds for building construction calculated by this formula, if a district must acquire land for new construction, the land costs are funded by the SFB.

To summarize Students FIRST, the state provides full funding to all school districts in the three categories described above. Unlike Arizona's overall public school funding scheme where property wealth is taken into consideration in determining the level of state funding provided to districts, Students FIRST funding is not based on an equalization formula. As ordered by the Arizona Supreme Court, the State allows districts to raise additional dollars beyond Students FIRST funding to build, remodel, and/or renovate schools that exceed the minimum standards through voter-approved capital overrides and general obligation bonds (*Albrecht, 1998*).

### **Conceptual Framework**

The conceptual framework that I used for my analysis drew from three equity concepts that are widely used by researchers to assess states' school finance schemes: fiscal neutrality; horizontal equity; and vertical equity (Berne, & Stiefel, 1994; Rolle & Liu, 2007; Toutkoushian & Michael, 2007; Rolle, Houck, & McColl, 2008; Odden & Picus, 2008; Glenn, Picus, Odden, & Aportela, 2009; Odden, Picus, & Goetz, 2010). Because the *Roosevelt* (1994) decision centered on the general and uniform provision of Arizona's constitution, I focused my conceptual framework on fiscal neutrality in order to assess the equity of facilities funding in Arizona. As I explain below, of the three concepts described above, fiscal neutrality is the concept that is most consistent with the way the Arizona Supreme Court interpreted the meaning of "general and uniform." Currently, there are no measures specifically designed to assess the adequacy of school facilities

(Glenn, et al, 2009). Although my study did not seek to analyze the adequacy of school facilities in Arizona, it was an important aspect of court decisions regarding school funding and is a facet of Students FIRST. Therefore, I also addressed issues of adequacy in the literature review provided below.

### **Fiscal Neutrality**

“Traditional fiscal neutrality analysis assesses the relationship between current operating expenditures per pupil and property wealth per pupil” (Odden & Picus, 2008, p. 64). In a school finance system that is fiscally neutral, there should be no relationship between the funding level of each school district and the property wealth of each school district (Odden & Picus, 2008; Glenn, et al., 2009). The concept of fiscal neutrality, originally referred to as Proposition I, was developed in the late 1960’s by Northwestern University Law Professor John Coons and his two students, William Clune and Stephen Sugarman, as a legal strategy for challenging public school finance inequities (Minorini & Sugarman, 1999). Coons and his students were among a group of lawyers that were developing legal strategies aimed at addressing the funding inequalities associated with differences in property wealth. Coons, Clune, and Sugarman argued that districts in high property wealth communities could easily increase property tax revenues to support their local schools. Conversely, school districts that were located in property poor communities generated less money per-pupil through what were often higher property tax rates than more advantaged districts. Although many states offset this inequity via state aid formulas, Coons and his

team argued that property rich districts continued to have enormous wealth advantages, that poor districts had higher tax burdens than their wealthy counterparts, and that this was an unconstitutional form of wealth discrimination (Minorini & Sugarman, 1999). Coons, et al. argued that a state's finance scheme could be fiscally neutral through the use of a state aid formula that made every district equally wealthy. Once this was accomplished, the state could permit districts to set tax rates as high or as low as they wished, and thus maintain the traditional importance of local control (Minorini & Sugarman, 1999).

The fiscal neutrality theory played a role in two major school finance cases that I will refer to later in my literature review: *Serrano v. Priest* (1971) and *Rodriguez v. San Antonio Independent School District* (1973). Fiscal neutrality is an important concept in Arizona school finance. Equalizing state and county assistance, as previously described, is Arizona's attempt to ensure fiscal neutrality of the overall school finance scheme. Overrides and bond elections allow for local control as voters determine if additional taxes can be assessed in order to raise supplemental funds for their local schools. The *Roosevelt* (1994) and *Albrecht* (1998) decisions required a capital funding scheme that would be equitable in order to meet the general and uniform provision of Arizona's constitution while allowing for local control regarding overrides and bonds. However, the Arizona legislature fully funded Students FIRST without using an equalization formula and continued to allow voters the ability to authorize additional taxes for their schools. As a result, we do not know whether or not



Students FIRST creates a general and uniform school facilities finance system. In this analysis, I empirically assess Arizona's Students FIRST legislation, using conventional measures of fiscal neutrality.

### **Definition of Terms**

The equity finance concepts of horizontal and vertical equity, along with the principle of adequacy, are defined below as these terms are used to structure my review of the literature in Chapter Two.

*Equity:* Defining equity is complex. Educators and parents want to ensure policymakers distribute educational resources, including facilities, in a manner that does not give preference to any one district, school, or type of student (Rolle & Liu, 2007). However, creating a fair and equitable capital finance system can be challenging as there are three types of equity concepts to consider: fiscal neutrality which I previously discussed; and horizontal and vertical equity which I define below.

*Horizontal Equity:* Researchers have defined horizontal equity as the equal treatment of equals (Berne & Stiefel, 1994; Glenn, et al., 2009). Funding schemes based on horizontal equity assume that all students, all schools, and all districts are similar and should have comparable levels of funding (Odden & Picus, 2008). The base support level in Arizona's equalization formula reflects this type of equity because students are treated equally. There are seven commonly used statistics to measure for horizontal equity: Range, restricted range, federal range

ratio, coefficient of variation, Gini coefficient, McLoone Index, and Verstegen Index (Odden & Picus, 2008).

*Vertical Equity:* School finance literature refers to vertical equity as the unequal treatment of unequals (Berne & Stiefel, 1994; Glenn, et al., 2009). Vertical equity recognizes the differences among students and the costs associated with those differences (Odden & Picus, 2008). In Arizona's school funding scheme, the additional funding weights for special needs students and students at different grade levels are a form of vertical equity. No statistic exists that directly measures the vertical equity of a school finance system but there are two different approaches that can be used to assess vertical equity (Odden & Picus, 2008; Glenn, et al., 2009). Researchers can assign weights to students, adjust the funding according to those weights, and then use horizontal equity statistics to analyze the distribution of funds. Or researchers can remove all programs designed for vertical equity and assess the horizontal equity of the remaining programs (Odden & Picus, 2008).

*Adequacy:* Some researchers have attempted to define an adequate education by discussing the resources needed for a specific standard of education and the cost of those resources (Verstegen, 2004; Verstegen, 2007). Others have defined adequacy in terms of dollars per student (Baker & Duncombe, 2004; First, 2007; Thompson, et al., 2008). I draw upon Glenn, et al.'s (2009) definition of adequacy in school finance as, "providing sufficient funds to enable schools to educate their students to meet high standards" (p. 4). Although there is an

accepted statistic for measuring the adequacy of current operating funds, the Odden Picus Adequacy Index, there is no currently accepted measure to assess the adequacy of public school facilities (Glenn, et al., 2009). Equity and adequacy are conceptually distinct. Although funds to school districts can be distributed in an equitable manner, the amount of this funding may not necessarily be adequate.

### **Summary of Chapter 1**

My study was an empirical and longitudinal analysis of Arizona's Students FIRST legislation, assessing the equity of facilities funding in Arizona by measuring for fiscal neutrality. Currently there is no accepted measure to assess the adequacy of public school facilities. I sought to answer the following research question: Did Students FIRST create a general and uniform capital finance scheme between fiscal year 1999 and fiscal year 2009? In Chapter One, I provided an overview of Arizona's overall school finance system, the court cases that lead to a reform of the school facilities finance scheme, a summary of Students FIRST, a conceptual framework that guided my study, and definition of terms that is used throughout my research. In Chapter Two, I provide an overview of current research on school finance litigation and on the issues addressed in *Roosevelt v. Bishop* (1994).

## CHAPTER 2

### LITERATURE REVIEW

#### **Introduction**

Empirical studies evaluating the remedies of capital finance litigation are limited as is research that assesses the equity or adequacy of school facilities funding (Glenn, et al., 2009). The research describing court cases and decisions in individual state school funding systems is more robust. Because the physical environment is one component of providing students a quality education, more empirical research that evaluates the remedies of capital finance litigation is needed. My study adds to this body of research. In the section below, I review current literature regarding issues of equity and adequacy in school finance to demonstrate the need for and importance of analyzing Arizona's Students FIRST legislation. I will focus on four central themes I identified in the literature: 1) school finance litigation based on issues of equity; 2) school facilities litigation based on issues of equity and adequacy; 3) assessing school finance reforms; and 4) an equity measurement model to assess funding for public school facilities.

#### **School Finance Litigation Based on Issues of Equity**

Individual state constitutions provide for the creation and maintenance of public school systems. In 1973, the United States Supreme Court ruled that education is not a fundamental right under the federal constitution (*San Antonio v. Rodriguez*, 1973; Thompson, et. al., 2008). After *Rodriguez*, cases challenging state school financing systems were brought to state courts. Several state Supreme

Courts have ruled that education is a fundamental right (First, 2007; Thompson, et al., 2008). A few of these include: Alaska (*Kasayulie v. State*, 1999); Arizona (*Shofstall v. Hollins*, 1973; *Roosevelt*, 1994); Idaho (*Thompson v. Engelking*, 1975); Kentucky (*Rose v. Council for Better Education*, 1989); New Jersey (*Robinson v. Cahill*, 1973); New York (*Levittown v. Nyquist*, 1978); Texas (*Edgewood v. Kirby*, 1988); and Wyoming (*Washakie County School District v. Herschler*, 1980) (National Access Network, 2010). Of the states where courts were asked to affirm education as a fundamental right under their state constitutions, only Colorado rejected such a claim (*Lujan v. Colorado State Board of Education*, 1982). Some scholars argue that from 1971 to 1989, most school finance litigation was focused on issues of educational equity; starting in 1989, plaintiffs increasingly challenged state systems of school financing on adequacy grounds (Glenn & Picus, 2007; Dee & Levine, 2004).

California's most prominent school finance case was the first of the modern-era court decisions based on equity. The *Serrano v. Priest* (1971) verdict gained national attention and became the model for other state school finance litigation (Dayton & Dupre, 2006; Thompson, et al., 2008). The plaintiffs in *Serrano* claimed that California's finance system created funding disparities which affected the quality of schools. The California Supreme Court found the school funding system to be unconstitutional because the interdistrict inequalities in funding violated the state's equal protection clause. The *Serrano* decision led to a plethora of lawsuits and subsequent school funding reforms across the nation

(Dayton & Dupre, 2006; Thompson, et al., 2008). In June, 2010 the National Access Network reported that all but five states faced school finance litigation regarding issues of equity and adequacy since the *Serrano* decision. The results of all other state cases have been mixed, some in favor of the plaintiffs, others in favor of the states. As of March of 2010, 27 state courts ruled that their school finance systems were unconstitutional, 17 states have had courts determine that their finance systems were constitutional and in one state, Iowa, the parties reached a settlement before the court decided the case (National Access Network, 2010).

One of the most well-known school finance cases is *Abbot v. Burke*. Over the course of 20 decisions between 1985 and September 2010, New Jersey's Supreme Court has become extensively involved in shaping the state's school financing system. In *Abbott*, the Supreme Court has attempted to ensure parity in regular education funding between the state's poorest districts, known as Abbott districts, and the state's wealthiest suburban school districts (Erlichson, 2001). Because the Abbott districts comprised only 30 of the state's 551 school districts, Lauver, Ritter, and Goetz (2001) argued that the *Abbott* decisions focused on the state's poorest districts and the decisions did not address resource inequities statewide. Consequently, both non-Abbott districts and middle-wealth communities suffered as a result of New Jersey's school finance reform. Ritter and Lauver (2003) conducted a longitudinal analysis to assess this argument. Whereas the funding disparities narrowed between Abbott schools and wealthy

suburban schools, there were significant funding disparities between poor non-Abbott and rural districts and Abbott and suburban districts. Furthermore, middle-wealth districts were burdened by taxpayer disparities (Ritter & Lauver, 2003). Finally, Ritter and Lauver (2003) found that New Jersey's attempt to increase funding in poorer school districts in order to bring them to the same levels of wealthier districts, only perpetuated disparities and funding deficiencies statewide and were "associated with below-average academic performance" (p. 598). This study suggests that the remedies resulting from the *Abbott* decisions may have helped to narrow funding inequities between a few districts, but perpetuated funding inequities across all school districts in New Jersey. I will expand on the *Abbott* decisions and its effect on school facilities later in my literature review.

Along with New Jersey, other states have faced challenges to their school finance system based on issues of equity. The rulings have been mixed. In Texas, after the *Rodriguez* (1973) case was rejected by the U.S. Supreme Court, the Edgewood Independent School District was successful in its lawsuit claiming that the state's system for funding schools violated the Texas State Constitution (*Independent School District v. Kirby*, 1989). In New York, although the New York Court of Appeals ruled that the state constitution guarantees students the right to the opportunity of a basic education and found that substantial inequities in funding existed, the state constitution does not require equal funding (*Levittown v. Nyquist*, 1978). In 1982, the Colorado Supreme Court found that the state's education clause did not require absolute equality in providing funding for

educational services, concluding that education was not a fundamental right under the Colorado Constitution (*Lujan v. Colorado State Board of Education*, 1982).

Much of the early state-level litigation regarding school finance was concentrated on educational equity; more recent litigation has centered on issues of educational adequacy (Odden, et al., 2010; Education Next, 2009; Glenn & Picus, 2007; Dee & Levine, 2004). Researchers have found a key relationship between adequacy and equity in school finance; failing to fund schools in an equitable manner has often lead to inadequate schools (Odden, Archibald, & Femanich, 2003; Rolle, et al., 2008). Because the *Roosevelt* decision and Students FIRST legislation addresses equity and adequacy concerns and is based on funding for facilities, I review school facilities litigation based on issues of equity and adequacy next.

### **School Facilities Litigation Based on Issues of Equity and Adequacy**

Not all states have a formal funding scheme to provide for public school facilities. As of 2004, eleven states had no formal capital funding programs to assist school districts in maintaining and/or constructing facilities (Duncombe & Wang, 2009). In the states that do provide some form of capital funds for schools, state-provided funding for school facilities has been found to be generally inadequate (Thompson, et al., 2008). Consequently, funding for facilities has been largely a local responsibility which, because of the disparities in property tax wealth across districts, has often resulted in funding disparities and property tax inequities (Crampton, Thompson, & Vesely, 2004; Duncombe & Wang, 2009).



As a result, property poor school districts, or parents living in property poor school districts, have often challenged their state's school finance system (Plummer, 2006), as was the case in *Roosevelt*. In addition to Arizona, funding inequities and adequacy of school facilities have played roles in school finance cases in several states (Odden, et al., 2009). They include: Alaska (*Kasayulie v. State*, 1999); California (*Williams v. State of California*, 2000); Colorado (*Giardino v. Colorado State Board of Education*, 1998); Idaho (*Idaho Schools for Equal Educational Opportunity v. Evans* (ISEEO), 1993); Kentucky (*Rose v. Council for Better Education*, 1989); New Jersey (*Abbott Decisions*); and Wyoming (*Campbell County School District v. State*, 1995 and *State v. Campbell County School District*, 2001). Yet few states have reasonably good data detailing the condition of school facilities (Picus, Marion, Calvo, & Glenn, 2005). The last national report assessing school facilities was conducted by the United States General Accounting Office (GAO) in 2000; this GAO report only pertained to school construction and not to the conditions of school facilities (USGAO, 2000). The federal government has not documented the conditions of school facilities nationwide since 1996. This makes it difficult to analyze remedies from court decisions regarding facility finance litigation, limiting the amount of empirical studies (Glenn, et al., 2009).

Because New Jersey's *Abbott* decision is arguably one of the more prominent school finance cases in the country, one would suppose empirical studies assessing the remedies related to school facilities would exist. There are a

few studies that describe the history and implications of this litigation (Erlichson, 2001; Lauver, et al., 2001), and one that offers an empirical analysis of school funding inequities (Ritter & Lauver, 2003). But, as of October 2010, there are no empirical analyses assessing New Jersey's *Abbott* reforms pertaining to school facilities.

In 2000, a lawsuit, *Williams v. State of California*, was filed on behalf of California school children to address inequities in its public school system (Powers, 2004). The plaintiffs argued that a variety of resources and conditions were missing in many of California's public schools, including unacceptable, deteriorating facilities (Glenn & Picus, 2007). The case was settled and approved by the court in 2004. Legislative proposals that were part of the terms of the settlement included facility maintenance and repair. Of the \$1.2 billion in additional spending which resulted from legislation, \$800 million was allocated to repair facilities at the academically lowest-performing schools (Glenn & Picus, 2007). Yet, no empirical studies have been conducted to evaluate the remedies of this litigation in relationship to equity and adequacy. Glenn and Picus (2007) did argue that the *Williams* settlement, "will lead at best to the provision of minimally acceptable educational facilities" but did not provide any empirical findings to support such a claim (p. 390).

Although empirical research in this area is very limited, a few studies can be found that are somewhat related. Picus, et al. (2005) conducted an empirical study assessing the quality of educational facilities in Wyoming. However, their

study focused on the relationship between facilities and student achievement and did not assess the remedies resulting from a court order. Dee & Levine (2004) presented empirical evidence that reforms due to litigation in Massachusetts increased state aid and spending to districts that received and spent the least prior to the reforms. But their study only briefly touched on capital expenditures and did not address the relationship between state aid and school facilities. Before I discuss how certain equity measurements can be used to specifically assess school facilities, I will summarize current research which uses equity measurements to examine school finance reforms more broadly.

### **Assessing School Finance Reforms**

Many contemporary studies have examined the outcomes of state school funding reforms. These include: Rubenstein, Doering, & Gess (2000); Lauver, Ritter, & Goertz (2001); Ritter & Lauver (2003); Dee & Levine (2004); Verstegen (2004); Vesely & Crampton (2004); Picus, et al. (2005); Glenn & Picus (2007); Maiden & Stearns (2007); Rolle & Liu (2007); Toutkoushian & Michael (2007); Verstegen (2007); Rolle, Houck, & McColl (2008); Baker & Elmer (2009); Glenn, et al. (2009); and Odden, Picus, & Goertz (2010). Although there are a number of approaches used by contemporary researchers to estimate educational adequacy, the debates about what constitutes an adequate education and how to assess adequacy were not within the scope of my study. Therefore, I narrowed my focus to the research that examines the equity measurements used to assess reforms in public school finance as a result of litigation.

There are three common elements used by contemporary researchers when performing equity analysis of school finance reforms: 1) conducting a longitudinal study; 2) measuring for horizontal equity; and 3) measuring for vertical equity. Longitudinal studies allow researchers to assess trends in school financing over time (Rolle & Liu, 2007), and generally compare indicators of school spending in a baseline year to spending subsequent to a school finance reform. Researchers that have conducted longitudinal studies and measured for both horizontal and vertical equity in order to analyze school finance reforms include: Rubenstein, et al. (2000); Rolle & Liu (2007); Rolle, et al. (2008); and Glenn, et al. (2009). Of these four studies, only Glenn, et al.'s (2009) study focused on equity analysis of finance reforms related to school facilities and is the only study that measured for fiscal neutrality. I will summarize the first three studies in this section and offer a more in-depth discussion of Glenn, et al.'s (2009) research later as their study pertained most closely to my analysis of Students FIRST.

Rubenstein, et al. (2000) analyzed school finance equity in Georgia between 1988 and 1996 after a major reform in the state's school funding system. This reform resulted from an unsuccessful challenge to Georgia's school funding system where the state's Supreme Court acknowledged the existence of large disparities in educational funding but found the funding scheme to be constitutional (*McDaniel v. Thomas*, 1981). The Quality Basic Education Act was Georgia's effort to improve equity in funding schools, utilizing an equalization

formula to distribute funds to districts. Rubenstein, et al.'s (2000) results reveal that, between 1988 and 1996, the overall funding system was within acceptable levels of equity, with higher levels of vertical equity than to horizontal equity. In the early 1990's when Georgia experienced a recession, overall equity worsened but then improved during the period of economic recovery. The researchers discovered that although the overall distribution of funds appeared to be more equitable in the latter part of their study, the relative share of revenues devoted to students in the low revenue districts appeared to decline. Finally, when examining the relationship between revenues and property wealth, Rubenstein, et al.'s (2000) study reveals Georgia's use of an equalization formula to distribute funds to school districts "greatly reduce the inequalities that might otherwise arise from differential property wealth" (p. 206).

Rolle and Liu (2007) examined levels of horizontal and vertical equity that resulted from Tennessee's Basic Education Program (BEP) from 1994 to 2003. This school finance reform was the outcome of Tennessee's Supreme Court ruling that the state's school funding scheme was unconstitutional as it failed to provide sufficient funding to all public school students (*Tennessee Small School Systems v. McWherter*, 1988). Rolle and Liu's (2007) research revealed that although local and state educational dollars per student increased between 1994 and 2003, Tennessee's BEP did not improve educational finance equity. Using multiple statistical techniques to measure for horizontal and vertical equity, the researchers provide strong evidence that levels of inequity have either remained constant or

decreased marginally. Rolle and Liu (2007) concluded that the “influences of state dollars on levels of equity were outweighed by local spending efforts, particularly in teacher salaries and at the extreme ends of expenditure distributions” (p. 348).

In 1997 North Carolina’s school finance system was challenged on the grounds that disparities in educational funding were unconstitutional (*Leandro v. State of North Carolina*, 1997). Although the North Carolina Supreme Court ruled in favor of the state, leaving the state’s finance scheme known as the Public School Fund (PSF) unchanged, no empirical study had been conducted prior to 2008 (Rolle, et al., 2008). The purpose of Rolle, et al.’s (2008) study was to offer an empirical examination of North Carolina’s PSF from 1996 to 2006, measuring for levels of horizontal and vertical equity. Using multiple statistical techniques, the researchers’ results reveal that during the ten-year period, levels of horizontal inequity remained constant or increased slightly, and the magnitude of those inequities remained large. Rolle, et al.’s vertical equity analyses reveal that North Carolina’s system for funding schools did not improve the vertical equity of the system and “the magnitude and influence of local district wealth per pupil is the primary predictor for expenditure levels across multiple spending categories” (p. 94). The researchers provide strong evidence suggesting that although overall student spending increased between 1996 and 2006, the levels of inequity remained constant or decreased only negligibly.

Finally, Glenn, et al.’s (2009) analysis of the Kentucky school finance reforms differed from the three studies described above in two ways. First, Glenn,

et al. (2009) measured for fiscal neutrality and second, their study assessed school finance reform pertaining to school facilities. Because my study analyzed the fiscal neutrality of Arizona's school facilities financing reforms, Students FIRST, I will now discuss the empirical study conducted by Glenn, Picus, Odden, & Aportela (2009) more in-depth.

### **An Equity Measurement Model to Assess Funding for School Facilities**

Glenn, et al., (2009) recently analyzed the equity of school facilities financing in the state of Kentucky, comparing changes to the state's finance system from 1990 to 2004, using measures commonly used to assess the equity of school districts' operating expenditures. As with the majority of school finance equity research, Glenn, et al. (2009) focused on the relationship between property wealth of each school district and their expenditures. According to the researchers, Kentucky is an interesting case to understand in more detail because it has an advanced facilities finance system with more than half of the funding provided by the state for school facilities. In response to the Kentucky Supreme Court ruling in *Rose v. Council for Better Education* (1989), in which the court found the entire school finance system to be unconstitutional, legislators enacted major reforms to Kentucky's school funding scheme including the system for facilities funding. Support Education Excellence in Kentucky (SEEK) was implemented in 1990, which provided additional funds for school facilities through the Capital Outlay and Facilities Support programs. These two programs were intended to achieve horizontal equity. The Capital Outlay program is a flat

grant from the state which is designed to provide districts with \$100 per-pupil annually. The Facilities Support Program of Kentucky (FSPK) is a mandatory tax of \$.05 that is levied by all districts on each \$100 equivalent value<sup>4</sup> within each school district. “The state equalizes the tax collection up to 150% of the average assessed per pupil equivalent value in the state” (Glenn, et al., 2009, p. 6). The Capital Outlay and FSPK programs provide the base level of funding for district facilities and are the foundation of Kentucky’s facilities finance system.

After 1990, the state enacted legislation to provide districts with additional facilities funding opportunities to achieve vertical equity. Between 1994 and 2004, Kentucky created six additional facilities funding programs in three areas, enrollment, facilities deficiencies and one area with no apparent connection to vertical equity. The two programs to assist growth school districts experiencing increases in enrollment are the First Growth Nickel (FGN) program enacted in 1994 and the Second Growth Nickel (SGN) enacted in 2004. Individually, each program allows growth districts to levy up to an additional five-cent equivalent tax. Districts choosing to levy for both the FGN and SGN receive equalization from the state for the First but not the Second Growth Nickel program (Glenn, et al., 2009). The two programs to correct for facility deficiencies were enacted in 2003. Kentucky’s School Facilities Construction Commission (SFCC) Offer of Assistance provides districts with unmet facility needs extra debt service to correct deficient buildings. The Urgent Needs fund is outside the normal funding

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<sup>4</sup> Taxpayers’ real property value plus additional elements of their personal property, such as car registration, comprise the equivalent value.



formula. Kentucky's SFCC provides emergency funding to districts with buildings that are far below established facility standards (Glenn, et al., 2009). Finally, in 2003 the legislature passed two additional programs, the Recallable Nickel, an additional tax that can be levied by all school districts but is subject to voter recall, and the Equalized Facility Funding (EFF) program, "that provides equalization funding to districts that levied, or have debt service on, a ten-cent equivalent tax rate for building purposes for which they have not received equalization" (Glenn, et al., 2009, p. 6). Glenn, et al. (2009) conducted an analysis of horizontal equity, vertical equity and fiscal neutrality with Kentucky's facilities finance scheme.

As mentioned in Chapter 1, horizontal equity is the equal treatment of equals. Glenn, et al. (2009) first evaluated the Capital Outlay and FSPK programs established by SEEK legislation which were designed to be horizontally equitable, and then the First Growth Nickel that was added in 1994. They calculated the federal range ratio, coefficient of variation, Gini coefficient, McLoone Index, and Verstegen Index for all years between 1990 and 2005. Their results indicate that the horizontal equity of the Capital Outlay and FSPK programs increased from 1990 through 1997, and that the programs have remained "extremely equitable since 1997" (Glenn, et al., 2009, p. 6). However, there was some evidence that the First Growth Nickel program increased the horizontal inequity in the top half of the distribution (i.e., the wealthier districts)

when the First Growth Nickel was added in 1994 since this program provided growing districts with an additional source of revenue.

The second horizontal equity analysis performed by Glenn, et al. (2009) included all eight programs. Glenn, et al.'s (2009) analysis helped to assess how the facilities funding programs enacted after 1990, which were oriented around vertical equity, affected the horizontal equity of the capital finance system. As previously defined, vertical equity is the unequal treatment of unequals, in this case districts experiencing rapid increases in enrollment, and districts below state school facility standards. Two programs, the Recallable Nickel and the Equalized Facility Funding programs, had no apparent connection to vertical equity but were still added to Kentucky's capital funding scheme and analyzed by the researchers (Glenn, et al., 2009). Their results indicate that the addition of these six programs caused Kentucky's overall facilities finance system to be less equitable than the two original foundation programs (Capital Outlay and FSPK). As with their first horizontal equity analysis, the majority of the inequities in Kentucky's system occurred in the top half of the distribution, suggesting that property wealthy districts received more facility funds. (Glenn, et al., 2009).

As I previously stated, no statistic exists to directly measure the vertical equity of any finance system; yet there are two approaches researchers can use to assess the vertical equity of a system (Odden & Picus, 2008; Glenn, et al., 2009). In the first approach researchers assign weights to students in need of extra services, adjust the funding according to those assigned weights and then assess

the funding using five different measures of horizontal equity (federal range ratio, coefficient of variation, Gini coefficient, McLoone Index, and Versteegen Index). In the second approach, researchers remove all programs intended to achieve vertical equity from the variables used to calculate horizontal equity; once removed, the five measures of horizontal equity are calculated (Odden & Picus, 2008).

To assess the vertical equity of Kentucky's capital funding system, Glenn, et al. (2009) used the second approach with modifications. The second horizontal equity analysis conducted by Glenn, et al., (2009), as previously described, provided the first step of measuring for equity of all eight programs. The researchers went further and investigated the extent to which the funding from the eight programs reached the intended districts. Glenn, et al., (2009) combined eight of the programs into four groups. The foundation programs (Capital Outlay and FSPK programs) were analyzed as one group, the two growth funds intended for growth districts (First and Second Nickel programs) as the second group, and analyzing the two facility deficiencies funds for districts with below standard facilities (SFCC Offer of Assistance fund and Urgent Needs funds) as a third group. The two programs determined by the researchers to have no apparent connection to vertical equity, the Recallable Nickel and the Equalized Facility Funding programs, were also grouped together and analyzed. Glenn et al.'s (2009) analyses reveal that Kentucky's system is far from achieving vertical equity. Their results are as follows.

The Capital Outlay and FSPK program funds, designed to achieve horizontal equity, were equitably distributed. The programs designed to achieve vertical equity for growing districts, the First and Second Nickel programs, reached their intended targets. Although districts with the most facility needs received the most facility funds from the SFCC Offer of Assistance fund and the Urgent Needs fund, the programs designed to reach vertical equity for districts with building needs, when the researchers totaled all eight capital funds, the distribution of funds was not vertically equitable. Districts with the least facility needs received the most overall facility funding and districts with the most facility needs received the least amount of funding. Small districts, both poor and not poor, possessed the most unmet needs and received the least amount of funding while growing districts had greater access to funding and, thus, higher quality school facilities. Poor but not small districts were in the middle.

To assess fiscal neutrality, the researchers assessed the correlations between districts' property wealth, and their revenues and expenditures and the elasticity<sup>5</sup> of these variables for each year in the analysis. Their findings show that Kentucky's system for facilities funding was fiscally neutral from 1990-2003. After adding five additional programs in 2003, the measure of elasticity of Kentucky's system indicated that wealthier districts had access to greater funding

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<sup>5</sup> "The elasticity measures the rate at which school spending increases as property wealth increases" (Glenn, et al., 2009, p. 8).

than poorer districts enabling growing districts<sup>6</sup> to have higher quality facilities. Thus, Kentucky's facilities finance system was no longer fiscally neutral (Glenn, et al., 2009).

In summary, the results of Glenn, et al. (2009) revealed that Kentucky's facilities finance system was fiscally neutral between 1990 and 2003. After 2003, when Kentucky added additional capital programs to meet the needs of certain districts (growth districts and those with below standard facilities) the school facilities finance system became less equitable and less fiscally neutral. In addition, school districts that were growing, which tended to be wealthier districts, had access to greater funding and better school facilities than all small and all poor school districts. Glenn, et al.'s (2009) findings suggest that the changes to Kentucky's facility finance system in 2003 lead to greater inequities and fell short of fiscal neutrality. While capital funding programs were added to the Kentucky's facility funding scheme to allow districts to raise additional revenues for capital purposes, the distribution of capital funds tended to go to districts least in need.

Glenn, et al. (2009) used conventional measures to assess for the fiscal neutrality of operations funding. As they acknowledged, there are no generally accepted equity standards for facilities. As a result, they used the standard for operating expenses for comparative purposes only. As I will suggest in Chapter 5, the findings I present in this study coupled with Glenn, et al.'s (2009) findings

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<sup>6</sup> Glenn, et al., (2009) find that growing districts tend to be property rich.

described above raise questions about whether or not the measures for fiscal neutrality used for operations funding are appropriate for assessing facilities funding.

### **Summary of Chapter 2**

I reviewed current literature regarding issues of equity and adequacy in school finance to demonstrate the need and importance of analyzing Arizona's Students FIRST legislation. I focused my literature review on four central themes: 1) school finance litigation based on issues of equity; 2) school facilities litigation based on issues of equity and adequacy; 3) assessing school finance reforms; and 4) an equity measurement model to assess public school facilities. With the exception of the research conducted by Glenn, et al. (2009), there is a void in the research analyzing the remedies of court-ordered school finance reforms pertaining to school facilities.

I present the methodology for my study in Chapter Three that, in part, modified the methods used in the Kentucky study I described above in order to address my research question: Did Students FIRST create a general and uniform capital finance scheme between 1999 and 2009?

## CHAPTER 3

### METHODOLOGY

#### **Introduction**

In *Roosevelt v. Bishop* (1994), the Arizona Supreme Court argued that education and schools will never be exactly equal and complete horizontal equality is not the intent of a general and uniform finance scheme. Yet the court argued that large inequities in funding fall short of the constitutional standard: “Funding mechanisms that provide sufficient funds to educate children on substantially equal terms tend to satisfy the general and uniform requirement. School financing systems which themselves create gross disparities are not general and uniform” (p. 7). My analysis assessed if the State of Arizona was successful in producing a general and uniform capital finance system via Students FIRST legislation. I predicted that a) the capital funding scheme created by the legislature in Students FIRST initially complied with the Court’s interpretation of the uniformity clause in *Roosevelt* (1994), but b) that Students FIRST did not sustain a general and uniform system over time. While the results of my study provide some suggestive evidence that Students FIRST did not fulfill the Court’s mandate in general, the results for the second prediction are mixed. Additional research is needed to assess whether or not Students FIRST has resulted in disparities in funding that fall short of the constitutional standard.

The variables I used in my study were: a) Students FIRST funding (SFF); b) property wealth; and c) the Average Daily Membership (ADM)<sup>7</sup> of school districts in Arizona. I conducted two types of statistical analyses to examine Students FIRST between 1999 and 2009. Because fiscal neutrality is the school finance concept that is most consistent with the way the Arizona Supreme Court interpreted the meaning of general and uniform, I first measured for fiscal neutrality using the conventional methods applied in contemporary school finance research (Odden & Picus, 2008; Glenn, et al., 2009). A fiscally neutral school finance system is one where there is a weak association between the funding level and the property wealth of each school district. I then conducted a multiple regression analysis to determine the association between the amount of total Students FIRST funding districts received and two predictor variables: 1) property wealth; and 2) school district size.<sup>8</sup>

As I discussed in Chapter Two, conducting a longitudinal study to assess trends in funding levels over time is one of three common elements used by contemporary researchers when performing equity analyses of school finance reforms, (Rolle & Liu, 2007). I did the same. Conducting a longitudinal study of Students FIRST legislation allowed me to assess trends in facilities funding between 1999 and 2009. By measuring for fiscal neutrality across this eleven-year

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<sup>7</sup> The Arizona Department of Education and the Arizona Auditor General use the 100<sup>th</sup> Day Average Daily Membership to determine the size of a school district; the higher the ADM of a district, the larger the school district is in comparison to a district with a lower ADM.

<sup>8</sup> Appendix B details the size categories of Arizona school districts as reported by Arizona's Auditor General.



period, my goal was to assess if this system initially created an equitable distribution of capital funds and if so, whether or not capital funding remained equitable over time.

### **Variables and Data Sources**

The unit of analysis was the school district. Each of my variables was measured on a per-pupil basis. My variables included funds districts received from the Building Renewal, Deficiency Correction, and New School Facilities programs; an additional variable totaled the funding each district received from all three programs. The other district-level variables utilized in my analysis were property wealth and ADM for each year between 1999 and 2009. Property wealth was measured using the secondary assessed valuation (SAV) of all state property residing within each school district because all voter-approved capital overrides and bonds are funded through the secondary tax rate. I used ADM to calculate per-pupil measures of all of the variables described above; ADM was also used as a measure of district size in my multiple regression analyses. Table 1 provides a summary of the variables I used in my study as described above.

The sources for my data are considered by the Arizona State Legislature, and various school and finance organizations (Arizona Association of School Business Officials, Arizona Department of Education, Stone & Youngberg, LLC) to be reliable and consistent sources of information on school district financing. SAV figures were drawn from the annual Property Tax Rates and Assessed

Table 1

*Summary of Variables*

Variable of Interest	Definition	Calculation
Property Wealth:  $X_{PW}$	Property Wealth was based on the Secondary Assessed Value (SAV) of all non-federal commercial and personal property within each school district.	District Property Wealth was calculated per pupil:  $X_{PW} = \frac{SAV}{ADM}$
Students FIRST Funding-Building Renewal:  $Y_{BR}$	Building Renewal funds were disbursed to school districts for the maintenance of school facilities.	Building Renewal was calculated per pupil:  $Y_{BR} = \frac{BRF}{ADM}$
Students FIRST Funding-Deficiencies Correction:  $Y_{DC}$	Deficiencies Correction funds were disbursed to school districts to bring school facilities to minimum standards.	Deficiencies Correction was calculated per pupil:  $Y_{DC} = \frac{DCF}{ADM}$
Students FIRST Funding-New School Facilities:  $Y_{NSF}$	New School Facilities funds were disbursed to school districts to construct school space in order to meet facility standards and/or construct new schools due to growth.	New School Facilities was calculated per pupil:  $Y_{NSF} = \frac{NSF}{ADM}$
Total Students FIRST Funding:  $Y_{TSF}$	Total Students FIRST funding was based on all funds disbursed to school districts from the Building Renewal, Deficiencies Correction, and New School Facilities funds.	Total Students FIRST funding was calculated per pupil:  $Y_{TSF} = \frac{TSF}{ADM}$

Values reports provided by the Arizona Tax Research Association (ATRA). The annual reports from the School Facilities Board (SFB) which lists all the Arizona school districts that received funding from each of the three programs were used to create the Students FIRST funding variables. ADM for each school district can be obtained from multiple sources, i.e., the SFB, each district's Annual Financial Report, the Arizona Department of Education, each district's expenditure budget, the Arizona Auditor General, however the figures for ADM are not consistent across these sources. I used the figures for ADM provided by the SFB as those were the figures it used to calculate and distribute Students FIRST disbursements to school districts during the ten-year period of my study.

### **Population and Sample**

The sample for my study was comprised of 165 public school districts in Arizona out of the population of 245 Arizona districts listed by ATRA during the eleven-year period of my study.<sup>9</sup> Initially, I reviewed descriptive statistics on a sample of 198 school districts, only omitting 47 districts. However, in my preliminary analyses I determined that this initial sample contained two sets of outliers which could have biased my results when I conducted my fiscal neutrality and multiple regression analyses. Thus, I narrowed my sample to 165 Arizona public school districts. Although omitting 80 school districts may seem high, between 1999 and 2009, the 165 districts included in my sample served an

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<sup>9</sup> The number of Arizona school districts varied from year to year due to consolidation and the addition of accommodation and special school districts during the ten-year period of my study.

average of 94% of Arizona's public school students attending conventional public schools.<sup>10</sup> Therefore, my sample districts served a majority of the public school students in the state. Appendix A lists the omitted districts and the reasons for their exclusion. With the exception of San Carlos Unified School District, all of the districts that were named parties in the *Roosevelt* (1994) and *Albrecht* (1997, 1998) cases were included in the sample.

I omitted 80 school districts for one or more of the following reasons: 1) missing ADM and/or SAV information; 2) overlapping tax jurisdictions; 3) consolidation of school districts; and 4) outlier conditions due to district size and Federal Impact Aid. Because the variables for property wealth and per-pupil Students FIRST funding for each school district are calculated on a per-pupil basis, the 16 districts that have missing information on any of the ADM or SAV variables were excluded. In addition, Arizona classifies some public school districts as accommodation school districts and special school districts which reside within regular school districts. SAV is not calculated for accommodation or special school districts, which excluded an additional 18 from my study. Other school districts overlap into more than one Arizona county which made it difficult to determine SAV. These districts have two different sets of property valuations from two different counties, which were calculated by two different county assessors. Thus, the 3 districts that reside in overlapping tax jurisdictions were

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<sup>10</sup> Charter schools are not included in my study as they do not receive capital funding for facilities via Students FIRST but are allocated additional assistance funding that can be used for capital purposes. Thus, they are not relevant to the analyses. According to NCES (2011) charter schools served approximately 10 percent of the school age students in 2008-2009.

also excluded from my study. In addition, the 10 school districts that were consolidated into larger districts were excluded due to incomplete ADM and SAV information. Finally, two types of outlier districts became evident when I initially reviewed the descriptive statistics for the 198 sample: a) Very small school districts; and b) high Federal Impact Aid<sup>11</sup> districts. A total of 33 districts were in these two categories.

### **Very Small School Districts**

Fifteen school districts that had an average ADM of 50 or below during the eleven-year period of my study and were categorized as Very Small School Districts by the Arizona Auditor General (Appendix B). Of those, 9 school districts were in the top 12% of districts ranked by property wealth and 12 were in the top quartile. Including these school districts in the sample, which were outliers on two key variables, size and property wealth, could skew the results of my analyses. Thus, 15 school districts were omitted due to being classified as very small.

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<sup>11</sup> Some school districts reside in large areas of land owned by the federal government which decreases property valuations. To compensate for this loss in property value, the Federal Government provides additional funds for school districts for use in their M & O and/or Capital funds. All Federal Impact Aid (FIA) districts were initially analyzed separately to compare the differences in property wealth between FIA and non-FIA districts. However, after reviewing initial descriptive statistics all but 18 FIA districts were included in my study because the majority had property wealth that was comparable to non-FIA districts.

## High Impact Aid Districts

In the fall of 2010, the Arizona Department of Education reported that 53 school districts received Federal Impact Aid (FIA) between 2007 and 2009<sup>12</sup>. Of these, 3 were classified as Accommodation or Special school districts, which had already been omitted from my study. I initially created a single indicator variable denoting the remaining 50 districts who received FIA in order to separate them from non-FIA districts. I had intended to study these districts separately. However, after an initial review of the descriptive statistics, it became apparent that not all FIA districts were the same. As a result, I separated the FIA districts by the amount of funds received in relation to state aid. Of the 50 remaining FIA districts, I classified 18 as being High Impact Aid districts based on two criteria: 1) a primary assessed tax rate of zero; and 2) the amount of FIA districts received was greater than 60% of the amount of state aide given by the Arizona legislature.<sup>13</sup> Appendix C provides additional information for the 53 districts that received FIA.

My sample of 165 Arizona public school districts was a representative sample of all Arizona school district for the following reasons: 1) it accounted for

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<sup>12</sup> The Arizona Department of Education did not have any records regarding the amount of Federal Impact Aid distributed to school districts prior to 2007.

<sup>13</sup> Having a Primary Assessed Value (PAV) tax rate of zero is an indication that there is not enough of a property tax base for the state to levy a PAV tax rate due to school districts residing in large areas of federal land. If a school district is levied a PAV tax rate but receives 60% or more of FIA in relation to their state aid, they were classified as a High Impact Aid district. Districts that received 60% or more of FIA were provided additional federal aid that is comparable or more than the state aid provided to all other school districts and, thus, were not as property poor as one might suppose.

districts that served an average of 94% of Arizona public school students attending conventional public schools; 2) it included districts with complete information in order to properly calculate the variables used in my study; and 3) it accounted for outliers that could have biased the results of my analyses.

### **Descriptive Statistics**

Table 2 provides descriptive statistics for the sample.

Throughout the eleven-year period of my study, the amount of funding distributed within and across the categories was inconsistent and varied widely.<sup>14</sup> With the exception of the Building Renewal funds, relatively small amounts of Students FIRST funds were distributed to districts in 1999 as the new funding scheme had just been enacted. Funding for Building Renewal was uneven. Building Renewal funds were not distributed in 2004 and there was a substantial decline in the amount of funding dispersed to school districts due to cuts by the state in 2008 and 2009. The greatest amounts of Deficiencies Correction funding were distributed between 2002 and 2005 as school facilities were being brought up to the new facilities standards established by the SFB. There was greater variation in Deficiencies Correction funding across districts between 2000 and 2006 as some school districts needed more funding to bring their facilities up to standards while other districts met and may have exceeded facility standards.

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<sup>14</sup> The large standard deviations for all of the variables and across all years suggest that the distribution of the variables was skewed, which I confirmed by inspecting the histograms for selected years. Most of the districts in the sample received small amounts of funding from Students FIRST.

Table 2

*Average Per-pupil Students FIRST Funding, Per-pupil Property Wealth and ADM*

Year	Building Renewal		Deficiencies Correction		New School Facilities		Total Students FIRST Funding		Property Wealth		ADM	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1999	\$145	\$135	\$7	\$34	\$18	\$216	\$169	\$254	\$93,576	\$287,289	4,354	8,916
2000	\$163	\$148	\$41	\$116	\$486	\$4,493	\$690	\$4,488	\$96,853	\$264,548	4,510	9,298
2001	\$243	\$224	\$126	\$213	\$214	\$1,613	\$583	\$1,633	\$96,020	\$205,129	4,517	9,201
2002	\$121	\$110	\$591	\$1,513	\$825	\$2,285	\$1,537	\$2,634	\$94,312	\$160,820	4,624	9,328
2003	\$69	\$67	\$1,825	\$4,208	\$620	\$2,396	\$2,513	\$4,695	\$96,489	\$141,254	4,738	9,432
2004	\$0	\$0	\$1,280	\$3,806	\$800	\$4,401	\$2,079	\$5,746	\$112,886	\$185,599	4,837	9,482
2005	\$90	\$135	\$219	\$857	\$611	\$2,303	\$921	\$2,428	\$110,878	\$152,370	4,993	9,613
2006	\$121	\$161	\$29	\$121	\$370	\$853	\$519	\$832	\$120,131	\$146,065	5,155	9,681
2007	\$119	\$127	\$11	\$63	\$488	\$1,512	\$618	\$1,487	\$141,415	\$156,342	5,285	9,720
2008	\$73	\$80	\$3	\$18	\$684	\$3,861	\$761	\$3,854	\$168,992	\$170,847	5,363	9,690
2009	\$23	\$133	\$13	\$68	\$447	\$3,160	\$483	\$3,160	\$175,588	\$175,052	5,346	9,586



After 1999, funding for New School Facilities ranged from a low of \$214 per-pupil in 2001 to a high of \$825 per-pupil in 2002. Although New School Facilities funding was more consistent than the other two programs throughout the eleven-year period, the variation in funding across districts was consistently higher. The large variation in funding for Deficiencies Correction and New School Facilities, programs designed to bring facilities to minimum standards, suggests that there was support for the plaintiff's position in the *Roosevelt* (1994) case that there were gross disparities in the condition of school facilities prior to the Court's decision. What remained to be analyzed was whether or not the distribution of Students FIRST funding after the *Roosevelt* (1994) decision was general and uniform.

Per-pupil property wealth grew consistently between 2002 and 2009, with a slight decrease between 2004 and 2005. The variation in property wealth across the districts in the sample was large and narrowed only slightly between various years. The wide range in property value suggested that it was important to assess if property wealth was associated with Students FIRST funding. The mean ADM grew slightly each year with a very small decrease in 2009. However, because there was a wide range in ADM between districts throughout the eleven-year period, I further analyzed the data to examine if, along with property wealth, there was a relationship between Students FIRST funding and the size of a school district.

## Fiscal Neutrality Analysis

To measure for fiscal neutrality I applied two common measures utilized in contemporary school finance research (Odden & Picus, 2008; Glenn, et al., 2009): a) the correlation coefficient for each of the four Students FIRST funding variables and property wealth; and b) the elasticity. According to Odden and Picus (2008), “Both fiscal neutrality statistics indicate whether the educational object is a function of some variable to which it should not be related, such as the local tax base” (p.65). It was important that I assessed the fiscal neutrality for the total amount of Students FIRST funding distributed and then for each of the three Students FIRST programs in order to assess if a) there was a relationship between funding and property wealth, and b) if so, if it differed by type of funding.

The correlation coefficient was calculated using the following formula:

$$R_{XY} = \frac{n \sum X_{PW} Y - \sum X_{PW} \sum Y}{\sqrt{[n \sum X_{PW}^2 - (\sum X_{PW})^2][n \sum Y^2 - (\sum Y)^2]}}$$

where

n is the size of the sample

$R_{XY}$  is the correlation coefficient between per pupil property wealth and per pupil Students FIRST funding

$X_{PW}$  is per-pupil property wealth

Y is per pupil Students FIRST funding broken down accordingly:

$Y_{BR}$  is per-pupil Building Renewal funds disbursed

$Y_{DC}$  is per-pupil Deficiencies Correction funds disbursed

$Y_{NSF}$  is per-pupil New School Facilities funds disbursed

$Y_{TSF}$  is per-pupil Total Students FIRST funds disbursed

For my analysis of fiscal neutrality, the correlation coefficient indicated the strength of the relationship between per-pupil funding from Students FIRST and per-pupil property wealth. Elasticity indicated the magnitude of that relationship. “Technically, the elasticity indicates the percent change in one variable, say, expenditures per pupil, relative to a 1 percent change in another variable, say, property wealth per pupil” (Odden & Picus, 2008, p.65). Odden and Picus (2008) strongly recommend assessing the correlation coefficient and elasticity jointly in order to properly measure for fiscal neutrality. The correlation coefficient ranges in value between -1.0 and 1.0. A negative correlation indicates that as per-pupil property wealth increased, per-pupil funding decreased; a positive correlation signifies that per-pupil property wealth increased as per-pupil funding increased.

The elasticity was calculated by regressing per-pupil Students FIRST funding on per-pupil property wealth and multiplying the regression coefficient by the ratio of average per-pupil property wealth to average per-pupil funding using the following formula (Odden & Picus, 2008):

$$e = b \left( \frac{\bar{X}_{PW}}{\bar{Y}} \right)$$

where

$e$  is the elasticity

$b$  is the regression coefficient

$\bar{X}_{PW}$  is the mean per-pupil property wealth

$\bar{Y}$  is the mean per-pupil Students FIRST funding broken down

accordingly:

$\bar{Y}_{BR}$  is mean per-pupil Building Renewal funds disbursed

$\bar{Y}_{DC}$  is mean per-pupil Deficiencies Correction funds disbursed

$\bar{Y}_{NSF}$  is mean per-pupil New School Facilities funds disbursed

$\bar{Y}_{TSF}$  is mean per-pupil Total Students FIRST funds disbursed

I used the Odden and Picus (2008) standard of a correlation of less than 0.5 with an elasticity of less than 0.1 to assess whether or not Students FIRST met the fiscal neutrality standard. If the correlation coefficient and elasticity did not meet these standards (i.e., are greater than 0.5 and 0.1, respectively), this would suggest that Students FIRST funding and property wealth were linked, the magnitude of that link was strong, and the system of facilities financing was not fiscally neutral. A correlation between funding and property wealth of less than 0.5 and the elasticity less than 0.1 would suggest that Students FIRST funding was fiscally neutral.

However, it is also possible that the elasticity standard set by Odden and Picus (2008) may be too stringent of a standard, particularly if assessing facilities funding. My findings, alongside the findings in the Kentucky study, suggest that

the traditional measures for fiscal neutrality should not be used to assess the equity of a facilities funding scheme. I also analyzed the eleven-year average of Total Students FIRST funding distributed to the sample school districts which helped to confirm that the current standard used to assess fiscal neutrality may not be appropriate to assess facilities funding. I discuss this further in Chapter Four and its implications in Chapter Five.

An initial review of the descriptive statistics suggested that it was important to conduct a longitudinal study because Students FIRST funding levels and property wealth varied considerably, both by category and over time, between 1999 and 2009. If I were to have only focused on one year, or a few selected years, my analyses of Students FIRST legislation may not have fully explained if a general and uniform capital funding scheme was created and sustained over time. My predictions were as follows.

### **Total Students First Funds**

I predicted that total Students FIRST funds were distributed in a manner that was more fiscally neutral than Building Renewal and New School Facilities. As I discuss in the chapter that follows, this was not necessarily the case. However, I also predicted that the total funding was not consistently fiscally neutral throughout the eleven-year period of my study due to: a) the inconsistency of total funding distributed; b) the wide variation in total funding across districts between 2000 and 2009 because of a consistently large amount of funds distributed under the New School Facilities program; and c) Students FIRST

funding in all categories was distributed without the use of an equalization formula.<sup>15</sup> Some of the findings I report in the next chapter were consistent with these predictions.

### **Building Renewal**

Building Renewal evolved into an application based program in the latter years of Students FIRST, where only certain school districts received funds and others did not. Therefore, I expected that this program might not be consistently fiscally neutral. I thought it likely that Building Renewal was fiscally neutral between 1999 and 2007 but became less fiscally neutral after 2007 when the state reduced funding and required that districts apply for Building Renewal grants. The results did not support this prediction.

### **Deficiencies Correction**

At the outset of my study, it seemed likely that funds from Deficiencies Correction were distributed in a fiscally neutral manner throughout the eleven-year period of my study because they were be distributed to low property wealth districts that had the greatest facility needs prior to the *Roosevelt* (1994) decision. After 2004, when this program was renamed the Emergency Deficiencies program, funds continued to be available to school districts who were unable to raise enough capital funds locally to meet the facility standards set by the SFB. This suggested that funds from this program would be largely distributed to low

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<sup>15</sup> As previously stated, Coons, et al. (Minorini & Sugarman, 1999) argued that a state's finance system could be fiscally neutral through the use of a state aid formula that made every district equally wealthy.

property wealth districts and in a manner that was fiscally neutral. This was true in some, but not in all, of the years of my study.

### **New School Facilities**

Of the three Student FIRST programs, I expected that the New School Facilities program to be the least fiscally neutral throughout the eleven-year period of my study. In this case, my prediction was correct. This program distributed funds to school districts that were growing and to school districts in need of additional space. An initial review of the SAV data from my sample indicated that districts that were growing tended to be property rich and districts that were classified as large and very large by the Arizona Auditor General. However, I also expected that after 2004, when facilities were brought up to standard, the New School Facilities funds went to districts with high property wealth. Because the Kentucky study conducted by Glenn, et al. (2009) suggested that districts with high property wealth tended to be large or very large, I presupposed the same would be true in Arizona. In other words, if Arizona followed the same pattern there would be a relationship between the total amount of Students FIRST funding districts received and the size of a school district for part of the eleven-year period of my study. This would indicate that Arizona's capital funding scheme was not general and uniform due to the New School Facilities program. Thus, I analyzed the relationship between funding and the property wealth and the ADM of school districts. When examining if the size of a

school district was associated with Students FIRST funding, I found no such association with the exception of 2007.

### **Analysis by Size of School Districts**

As previously discussed, the variation in ADM between districts was large. I conducted a multiple regression analysis to assess if an additional variable, school district size, might explain some of the variation in the distribution of Total Students FIRST funds. As a first step, I examined the regression coefficients that I calculated as part of my fiscal neutrality analysis to determine if there were specific years and funding categories that warranted further analysis. Based on these findings, I analyzed two funding categories separately for one year, 2007: 1) Total Students FIRST funding; and 2) New School Facilities. I examined the relationship between each of the two funding categories, property wealth and district size.

I used the following multiple regression equation:

$$Y = bX_{PW} + bX_{ADM} + a$$

where

Y is Students FIRST funding broken down accordingly:

$Y_{TSF}$  is per-pupil Total Students FIRST funds disbursed

$Y_{NSF}$  is per-pupil New School Facilities funds disbursed

$X_{PW}$  is per-pupil property wealth, the first independent variable

$X_{ADM}$  is the size of the school district, the second independent variable



- b is the regression weight for that particular variable
- a is the intercept

### **Analysis of Eleven Year Average**

In a final analysis, I used the techniques described above to assess the fiscal neutrality of an eleven-year average of Students FIRST funding. This analysis served two purposes. The funding districts received under the program was uneven from year to year so averaging the annual support accounted for this variation and also provided a summary measure of how each district fared under Students FIRST.

### **Summary of Chapter 3**

In this chapter I described the statistical analyses I conducted to: a) examine Students FIRST between 1999 and 2009, measuring for fiscal neutrality, and b) determine if there was an association between school district size and total Students FIRST funding. In addition to property wealth and ADM, the variables of interest were funding per district received each year between 1999 and 2009 from the Building Renewal, Deficiencies Correction, New School Facilities programs, and from the total Students FIRST funding of all three programs.

## CHAPTER 4

### FINDINGS

This chapter presents my findings on the relationship between Students FIRST funding and: 1) property wealth; and 2) school district size. Overall, my findings reveal that Students FIRST was not consistently fiscally neutral between 1999 and 2009. However, I discovered that the standard set by Odden and Picus (2008) when measuring for fiscal neutrality may be too stringent of a standard to accurately assess if Students FIRST created a general and uniform capital finance scheme. My findings also reveal that for all but one year, the size and property wealth of school districts were not significant predictors of Students FIRST funding. Property wealth was weakly correlated with the eleven-year average of Students FIRST funding.

#### **Fiscal Neutrality Findings**

As previously stated, to assess for fiscal neutrality, I applied two common measures: 1) the correlation coefficient, to determine the correlation between per-pupil Students FIRST funding and per-pupil property wealth; and 2) the elasticity, to measure the rate at which Students FIRST funding increased as property wealth increased. A correlation coefficient with a value of zero indicated there was no linear relationship between funding and property wealth.

To better explain my fiscal neutrality findings, I begin by presenting the results for total Students FIRST then present the findings for each of the three

Students FIRST programs individually. Table 3 provides the summary fiscal neutrality statistics for Total Students FIRST funding.

**Total Students FIRST Funding**

Table 3

*Fiscal Neutrality Statistics, Total Students First Funding*

Year	Correlation Coefficient	Elasticity
1999	0.05	0.02
2000	0.00	0.01
2001	0.05	0.00
2002	0.00	0.00
2003	0.07	0.08
2004	0.10	0.16
2005	0.08	0.12
2006	0.06	0.00
2007	0.19*	0.46
2008	0.10	0.44
2009	0.02	0.00
Standard	<0.50	<0.10
Correlation between the two measures	0.84	

In all eleven years of my study, there was a positive correlation between property wealth and Students FIRST funding, which indicates that per-pupil property wealth increased as per-pupil funding increased. Likewise, for all eleven years of my study, the elasticity for Total Students FIRST funding was below 1.0 (e between 0.00 and 0.46), which would suggest that the variables did not increase

at the same percentage rate. However, the correlations between the variables were weak or had no relationship ( $R_{XY}$  between 0.00 and 0.19). With the exception of 2007, none of the correlations were statistically significant. That having been said, Total Students FIRST funding met the Odden and Picus standard for fiscal neutrality for seven of the eleven years analyzed. In all four years that Total Students FIRST funding did not meet the Odden and Picus standard, it was because the elasticity was higher than .10; all of the correlations between property wealth and Total Students FIRST funding met the Odden and Picus standard. In the only year that the correlation between property wealth and Total Students FIRST funding was statistically significant, 2007 ( $R_{XY} = 0.19$ ,  $e = 0.46$ ), we can conclude that Total Students FIRST funding was less fiscally neutral than in any of the other years analyzed. As the analysis below will highlight, this result is driven by New Schools Facilities funding. In the other three years, the elasticity findings do not reveal much. This could be because the two measures of fiscal neutrality are related. As a final check on the results, I correlated the two measures for each year to see how tightly they are aligned. The results of this correlation are provided at the bottom of the table. For Total Students FIRST funding, the correlation between the correlation coefficient and elasticity was 0.84 ( $p < 0.01$ ).

### **Building Renewal**

Table 4 shows the summary fiscal neutrality statistics for the Building Renewal program.

Table 4

*Fiscal Neutrality Statistics, Building Renewal*

Year	Correlation Coefficient	Elasticity
1999	0.10	0.03
2000	0.11	0.04
2001	0.15	0.00
2002	0.16*	0.00
2003	0.04	0.02
2004	No Funds Distributed	
2005	0.01	0.01
2006	-0.05	-0.05
2007	-0.04	-0.04
2008	-0.05	-0.05
2009	0.17*	0.00
Standard	<0.50	<0.10
Correlation between the two measures	0.67	

Fiscal neutrality results for the Building Renewal program were mixed and were similar to the findings for Total Students FIRST funding. The correlations between property wealth and Building Renewal were between -.05 and .17. Applying the Odden and Picus elasticity standard of <.01, this program was fiscally neutral in all ten years. Likewise, in only two of the ten years I analyzed the correlations, although weak, were statistically significant ( $R_{XY} = 0.16$  in 2002 and 0.17 in 2009).

In 2002 and 2009 the elasticity calculations suggest that these statistically significant correlations are not substantively meaningful; the elasticity was well under the Odden and Picus standard of 0.10 ( $e = 0.00$  in 2002 and in 2009) indicating that Building Renewal was fiscally neutral on this measure. The elasticity results for the other eight years reveal little. As with Total Students FIRST funding, the two measures of fiscal neutrality are strongly correlated.

### **Deficiencies Correction**

Table 5 shows the summary fiscal neutrality statistics for the Deficiencies Correction program.

As with the Building Renewal program, the fiscal neutrality analysis of the Deficiencies Correction program reveal very little. Property wealth and Deficiencies Correction funding were positively correlated between 2002 and 2006 ( $R_{XY}$  between 0.03 and 0.9) and again in 2009 ( $R_{XY} = 0.05$ ). While these correlations are weak, they are also counterintuitive to the extent that we might expect property poor districts to receive more funding in this category and these results suggest the opposite. Property wealth and Deficiencies Correction funding were negatively correlated between 1999 and 2001 ( $R_{XY}$  between -0.02 and -0.06) and again in 2008 ( $R_{XY} = -0.03$ ) indicating that as property wealth decreased Deficiencies Correction funding increased in these three years. However, in all eleven years, the relationships between these variables were weak; they were not statistically significant.

Table 5

*Fiscal Neutrality Statistics, Deficiencies Correction*

Year	Correlation Coefficient	Elasticity
1999	-0.02	-0.03
2000	-0.06	-0.06
2001	-0.05	-0.04
2002	0.03	0.00
2003	0.09	0.16
2004	0.07	0.09
2005	0.03	0.00
2006	0.07	0.25
2007	0.00	-0.02
2008	-0.03	-0.15
2009	0.05	0.29
Standard	<0.50	<0.10
Correlation between the two measures	0.78	

Again, consistent with my previous findings, the elasticity was well under 1.0 for all eleven years in the analysis (e between -0.15 and 0.29) indicating that property wealth and funding did not decrease or increase at the same percentage rate. Based on the Odden and Picus standard for fiscal neutrality, the Deficiencies Correction program was fiscally neutral in eight of the eleven years analyzed. While the elasticity statistic did not meet the Odden and Picus standard in 2003, 2006, and 2009 as the elasticity was higher than .10, because the correlation

between property wealth and Deficiencies Correction funding is so low, the elasticity statistic provides little additional information.

### **New School Facilities**

The fiscal neutrality results from the New School Facilities program are similar to the findings from the other two Students FIRST programs. The correlations were both positive and negative but also consistently weak, and were not statistically significant in ten of the eleven years of the analysis. The New School Facilities program was fiscally neutral in seven of the eleven years analyzed, with this program being less fiscally neutral in 2004, 2005, 2007 and 2008 because the elasticity statistic was higher than the Odden and Picus standard for fiscal neutrality. In 2007, however, the correlation coefficient was statistically significant, the elasticity rose above the standard and, thus based on the Odden and Picus standard, this program was less fiscally neutral in this year compared to any of the other years analyzed. Comparing these findings with the findings for Total Students FIRST funding and the other funding categories indicates that this program was driving the results reported for Total Students FIRST funding results outlined above. Table 6 contains the results of the New School Facilities analysis.



Table 6

*Fiscal Neutrality Statistics, New School Facilities*

Year	Correlation Coefficient	Elasticity
1999	-0.01	-0.03
2000	0.00	0.00
2001	0.03	0.00
2002	-0.03	0.00
2003	-0.03	-0.16
2004	0.07	0.28
2005	0.08	0.18
2006	0.06	0.00
2007	0.20*	0.58
2008	0.10	0.49
2009	0.01	0.00
Standard	<0.50	<0.10
Correlation between the two measures	0.91	

**Summary of Findings for Fiscal Neutrality**

The fiscal neutrality analysis revealed that most of the correlations between Students FIRST funding and property wealth were weak or had no relationship in all the eleven years of my study and in all four categories that I investigated. The Odden and Picus standard was met in most of the years of my study suggesting that Students FIRST was for the most part fiscally neutral according to this standard. However, in the majority of the years and across all funding categories analyzed, there were only three years where the correlations

were statistically significant: a) in 2002 and 2009 in the Building Renewal program; and b) in 2007 in the Total Students FIRST funding category and in the New School Facilities program.

The results also illustrate that the two measures of fiscal neutrality, the correlation coefficient between property wealth and funding, and the elasticity statistic are strongly related. Because the elasticity statistic indicates the percentage change in funding relative to property wealth, it is often used to calculate the dollar value of a one percent change in property values (Odden & Picus, 2008). The findings here suggest that the correlation coefficient should be the threshold test for fiscal neutrality. Once the correlation coefficient suggests that a funding scheme is not fiscally neutral, then the elasticity statistic helps us better understand, in real terms, what that means. That having been said, as I discuss in more detail in the final chapter, these results, coupled with the findings of Glenn et al. (2009) also suggest that the conventional fiscal neutrality measures used for assessing operational funds may have limited utility for assessing the fiscal neutrality of capital financing schemes.

### **Multiple Regression Findings**

I conducted multiple regression analyses to assess the relationship between property wealth and ADM which serves as an indicator of district size on Total Students FIRST funding and the New School Facilities program for 2007 because that was the only year that: 1) the correlations were significant; and 2) the elasticity was above the Odden and Picus elasticity standard of 0.10. Although I

ran the regression and inspected the models for all eleven years of my study,<sup>16</sup> I only report the 2007 findings in Table 7.

Table 7

*Relationship Between Total Students First (TSF)/New School Facilities, and Property Wealth/ADM*

Variables	2007	
	TSF	NSF
Constant	.196 (.042)*	.196 (.043)*
PW	2.46 (.015)*	2.48 (.014)*
ADM	-0.30 (.766)	-0.18 (.861)
F Statistic (df)	3.23 (2)	3.22 (2)
R <sup>2</sup>	0.04	0.04

\* $p < .05$

### **Total Students FIRST**

When conducting multiple regression for 2007, the overall model significantly predicted Total Students FIRST funding ( $R^2 = 0.04$ ,  $F(2, 162) = 3.23$ ,  $p < .05$ ). Property wealth was a significant predictor of total funds: as property wealth increased, Total Students FIRST funding increased ( $t = 2.46$ ;  $p = .015$ ). However, ADM was not a significant predictor of Total Students FIRST funding ( $t = -0.30$ ;  $p = .77$ ).

<sup>16</sup> Complete multiple regression statistics can be found in Appendix D.

## **New School Facilities**

The results for the New School Facilities program mirror that of Total Students FIRST funding. The overall model was statistically significant although the  $R^2$  was low ( $R^2 = 0.04$ ,  $F(2, 162) = 3.22$ ,  $p < .05$ ). As property wealth increased, New School Facilities funding increased ( $t = 2.48$ ;  $p = .014$ ). However, ADM was not a significant predictor of funding for the New School Facilities program ( $t = -0.18$ ;  $p = .86$ ). Adding district size then, did not change the results of the initial analysis.

### **Assessing the Fiscal Neutrality of the Eleven Year Average**

Because the funds district received via Students FIRST varied widely across districts and also year to year, as a final step, I averaged the per-pupil total Students FIRST funding category and the per-pupil property wealth for all eleven years of my study and conducted the fiscal neutrality analysis described above for this eleven-year average. I then identified the districts that were below and above the means in terms of: a) per-pupil property wealth; and b) per-pupil Total Students FIRST funding. The eleven-year average allows me to more effectively assess the cumulative impact of the program, as well as better understand how individual districts fared under the program overall. Appendix E lists the eleven-year, per-pupil average of total Students FIRST funding and property wealth for my sample.

Table 8 provides the Means and Standard Deviation of the eleven-year averages of property wealth and Total Students FIRST funding for the full

sample. As a point of comparison, the last three columns provide these figures for the three school districts that were the original plaintiffs in the in the *Roosevelt* (1994) lawsuit.

Table 8

*Per-pupil Average of Plaintiff School Districts in Roosevelt v. Bishop (1994)\**

11-Year Avg	11-Year Average Full Sample Mean (S.D.)	Roosevelt	Superior	Isaac
TSF Funding	\$989 (\$1,500)	\$210	\$668	\$336
PW	\$118,831 (\$166,570)	\$52,307	\$28,220	\$24,805

\*Although San Carlos Unified was the fourth original plaintiff district, it was not included in my sample because it was a High Impact Aid district.

When taking the eleven-year average of my sample, the variation in per-pupil Total Students FIRST funding and per-pupil property wealth across the districts was large. Understandably, these statistics are similar to the descriptive statistics that I reported in the previous chapter when I examined the Students FIRST funding categories and property wealth by individual years. All three of the plaintiff school districts were well below the sample means for both Total Students FIRST funding and per-pupil property wealth. This suggests that these three property poor districts received fewer Students FIRST funds when compared to the majority of the public school districts in my sample.

Table 9

*Relationship Between the Eleven-year Per-pupil Average of Total Students FIRST*

*Funding and Property Wealth*

		TSF
PW	Pearson Correlation	.22
	Sig. (2-tailed)	.005**
	Elasticity	.24
	N	165

\*\* $p < .01$

Table 9 summarizes my correlation and elasticity statistics. The correlation between the eleven-year average of Total Students FIRST funding and property wealth was statistically significant. Although there was a weak correlation between these two variables, this correlation was stronger than most of the individual years and funding categories that I previously analyzed. In addition, the elasticity was higher than the Odden and Picus standard suggesting that Students FIRST was moving away from fiscal neutrality. My findings here suggest that property rich districts may have benefited to a greater extent from this type of funding scheme than districts with less property wealth. In the final chapter I discuss this finding further as I present the implications of my study.

## CHAPTER 5

### SUMMARY, DISCUSSION, IMPLICATIONS AND CONCLUSIONS

The Arizona Supreme Court's ruling in *Roosevelt v. Bishop* (1994) required Arizona to address inequities in public school facilities. I sought to analyze Arizona's Students Fair and Immediate Resources for Students Today, the legislative remedy to the *Roosevelt* (1994) decision. Specifically, I investigated if Students FIRST created a general and uniform capital funding scheme between 1999 and 2009. Recall from the literature review that few empirical studies have evaluated the remedies of capital finance litigation and the equity of school facilities funding (Glenn, et al., 2009). My dissertation is significant as it is the first empirical study of Students FIRST and contributes to the growing body of research that assesses court-ordered legislative remedies related to capital finance reform.

I replicated an equity measurement model, used in Glenn, et al.'s (2009) Kentucky study, to assess the fiscal neutrality of Arizona's current public schools capital finance scheme. Like Glenn et al.'s study of Kentucky's capital finance scheme, my findings using traditional measures of fiscal neutrality did not reveal much, particularly in the analyses of individual years. Taken together, the two studies suggest that the techniques developed to assess the equity of operations funding may not sufficiently assess the fiscal neutrality of Students FIRST and other similar capital finance reforms. Bear in mind that the standard used by Glenn, et al. (2009), that I also adopted here, was developed to analyze the

distribution of operating expenses and not to analyze the distribution of capital funds. Thus, my study cannot appropriately suggest whether or not Students FIRST is general and uniform without conducting additional tests using another relevant measure more tightly aligned with facilities financing.

However, the findings I report here can be used as a springboard for further research since my findings suggest inequities do exist. Generally speaking, property wealth was not a significant predictor of the facilities funding provided under Students FIRST except for a few years and across select programs. Yet, when property wealth was a significant predictor in certain categories and in three of the eleven years of my study, the school districts that resided in areas of increasing property wealth also experienced an increase in Students FIRST funding. This suggests that Students FIRST may not be a general and uniform funding scheme. Coupled with my findings from Chapter Four, a final analysis aimed at elucidating the results of the fiscal neutrality analysis of the eleven-year average highlights how this could be cause for concern and suggests the need for additional research.

When I correlated the eleven-year average of the per-pupil total Students FIRST funding distributed to districts and the eleven-year average of per-pupil property wealth, my findings implied that property rich school districts may have benefited most from Students FIRST. The following table summarizes these findings.



Table 10 shows that of the 5 school districts whose average property wealth were far above the mean,<sup>17</sup> 3 were also above the mean eleven-year average of per-pupil Total Students FIRST funding. Only 23 of the 113 school districts that were below the mean eleven-year average in property wealth received Total Students FIRST funding that was above the mean.

Table 10

*Eleven Year Average of Per-pupil PW and TSF Funding*

Mean PW, 11-year Average (M = \$118,831)	Number of Districts	Number of Districts Above Mean TSF Funding (M = \$989)	Number by Category Above the Mean Funding	
			DC Program	NSF Program
Below the Mean (\$1,802 - \$110,529)	113	23	5	18
Above the Mean (\$119,922 - \$376,913)	47	17	9	8
Far Above the Mean (\$628,700 - \$1,625,434)	5	3	1	2
<b>TOTAL</b>	<b>165</b>	<b>43</b>	<b>15</b>	<b>28</b>

<sup>17</sup> There was a wide gap between one school district that was above the mean and had an average per-pupil property wealth of \$376,913 and the next district above the mean with a per-pupil property wealth of \$628,700. Because of this gap, I categorized districts with an average property wealth above \$600,000 as Far Above the Mean.

The last two columns of Table 10 show the two categories of Students FIRST programs which caused each district's Total Students FIRST funding to be above the mean: a) Deficiencies Corrections; and b) New School Facilities. These results were not driven by Building Renewal, the program designed to maintain minimum facility standards, as no district was above the mean as a result of funding from Building Renewal.

Although my yearly analysis Students FIRST funding revealed that ADM was never a significant predictor of funding in any of the Students FIRST categories studied, when I compared districts by the eleven-year average, I found that the majority of school districts that were above the eleven-year mean of Total Students FIRST funding received funds intended for new facilities. In other words, these results were driven by the New School Facilities program. Recall from Chapter One that the number of students served by a district and the square footage are part of the calculations to determine the funding allocation for this program; expanding existing facilities to meet the Building Adequacy Guidelines, and building additional facilities due to an increase in ADM, will increase the overall square footage in a school district. Thus, an additional variable that was not included in my analyses, or in Glenn et al.'s (2009) analyses, might be more appropriate for analyzing the outcomes of the Students FIRST funding scheme: square footage.

Table 11

*Median, Range, and Percentile Ranking - Eleven-year Average*

<i>N</i> 165	Per-pupil PW Median \$63,256 Range \$1,802 - \$1,623,632	Percentile Ranking PW	Per-pupil TSF Funding Median \$572 Range \$60- \$13,860	Percentile Ranking TSF Funding
<b>Plaintiff Districts</b>				
Roosevelt	\$52,307	35.2	\$210	17.0
Superior	\$28,220	12.7	\$668	55.8
Isaac	\$24,805	10.3	\$336	33.9
<b>Bottom Five Districts PW</b>				
Indian Oasis	\$1,802	0.6	\$711	58.8
Gadsden	\$10,843	1.2	\$786	62.4
Naco	\$12,175	1.8	\$809	64.2
Somerton	\$15,175	2.4	\$320	29.7
Pima	\$16,695	3.0	\$500	46.7
<b>Top Five Districts PW</b>				
Riverside	\$628,700	97.6	\$1,632	84.8
Arlington	\$642,355	98.2	\$1,738	86.7
Cochise	\$663,631	98.8	\$824	64.8
Continental	\$753,973	99.4	\$203	14.5
Saddle Mt.	\$1,625,434	100	\$2,863	93.9
<b>Bottom Five Districts TSF Funding</b>				
Kyrene	\$108,137	66.7	\$60	0.6
Osborn	\$150,526	78.2	\$80	1.2
Madison	\$209,743	87.3	\$82	1.8
Catelina Foothills	\$101,310	63.0	\$90	2.4
Fountain Hills	\$172,807	83.0	\$90	3.0
<b>Top Five Districts TSF Funding</b>				
Yarnell	\$215,522	88.5	\$5,094	97.6
Young	\$234,949	91.5	\$5,217	98.2
JO Combs	\$44,771	27.9	\$6,268	98.8
Pategonia Union	\$368,357	96.4	\$7,798	99.4
Red Rock	\$343,096	95.8	\$13,919	100

Finally, Table 11 summarizes the median and range of my sample and the distribution of school districts<sup>18</sup> in five different categories: 1) plaintiff school districts; 2) school districts that were in the bottom-half of the property wealth distribution; 3) school districts that were in the top-half of the property wealth distribution; 4) school districts that were in the bottom-half of the total funding distribution; and 5) school districts that were in the top-half of the total funding distribution. I discuss each of these categories in turn below.

### **Plaintiff Districts**

The Superior and Isaac School Districts were below the twentieth percentile of the per-pupil property wealth distribution and Roosevelt was below the fortieth percentile. Yet none of the three rose above the sixtieth percentile in the average Total Students FIRST funding distribution. This suggests that the plaintiff school districts in the *Roosevelt* (1994) case did not receive substantial funding from Students FIRST between 1999 and 2009.

### **Bottom and Top School Districts According to Per-pupil Property Wealth**

Of the five school districts that had the lowest average of property wealth, none rose above the seventieth percentile in the average per-pupil Total Students FIRST funding distribution. And of the top five property rich school districts, three were above the eightieth percentile in the per-pupil Students FIRST funding distribution. Here again, it appears that property rich school districts received a generous portion of the funding distributed under Students FIRST.

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<sup>18</sup> Appendix E lists the distribution of my sample according to the eleven-year average of per-pupil property wealth and per-pupil Total Students FIRST funding.

## **Bottom and Top School Districts According to Per-pupil Total Students**

### **FIRST Funding**

What may be the strongest argument that property rich school districts benefited most from the Students FIRST legislation were the percentile results of three school districts that were above the ninetieth percentile of the per-pupil funding distribution. Red Rock, Patagonia Union, and Young were all school districts that were also above the ninetieth percentile of the average per-pupil property wealth distribution.

The results here illustrate well what the correlation shown in Table 9 means in real terms. Taken as a whole, the results above suggest that quite a few, but not all property wealthy districts received substantial funding under Students FIRST, whereas many, but not all property poor districts did not.

### **Implications**

So what are the implications of my study? Overall, my findings imply that this is just the first step in gaining a deeper understanding of Students FIRST. For Arizona policymakers the results documented here suggest that Students FIRST may not have created a general and uniform capital funding scheme. Further research is needed in order to understand the implications of distributing Students FIRST funds without an equalization formula. For Arizona school districts, my study should not be taken as an indication that Arizona's system is completely flawed. Rather, my findings imply that additional analyses are needed in order to better understand whether or not Students FIRST is general and uniform.

Table 12

*Summary of Students FIRST Funding Distribution, 1999-2009*

	Building Renewal	Deficiencies Correction	New School Facilities	Total Funding
Total Amount <i>N 165</i>	\$599,059,738	\$992,482,502	\$2,487,956,898	\$4,079,499,138

Consider the information summarized in Table 12: 1) Between 1999 and 2009, the State of Arizona distributed just over \$4 billion dollars in Students FIRST funds to the 165 public school districts in my sample; 2) The program that was allocated the least amount of funds was the program intended to ensure school districts maintained minimal standards. In total, only \$600,000 was distributed under the Building Renewal program. In contrast, the largest portion of the total funding, approximately \$2.5 billion, was distributed via the New School Facilities program; and 3) just under \$1 billion was distributed for Deficiencies Correction. This, coupled with my findings that indicated that the New School Facilities program drove much of my results, implies that the school districts that were growing and/or in need of additional facility space benefited most from Students FIRST in the eleven years of my study; it also implies that these districts were not always the most disadvantaged in terms of their ability to raise funds to address facility needs. Thus, there are a number of policy implications that can be drawn from these findings.

In Chapter One, I noted the following: 1) the state legislature decided to fully fund Students FIRST without an equalization formula; and 2) all of the funds from Students FIRST were distributed without any consideration of the property wealth of each school district. These two points along with the findings presented above and the results presented in Chapter Four, suggest that while Students FIRST did not create egregious inequalities in funding, it may not be fully equitable and may have cost Arizona taxpayers millions of dollars. Arguably, the state legislature could have required the funds to be distributed more equitably using an equalization formula. It is likely that the state would have spent far less money if it had targeted the funds to the districts most in need rather than making them available to all districts regardless of need. Any cost savings that resulted from using an equalization formula could have been used to supplement the funds provided to school districts that were not able to raise sufficient funds to meet and maintain minimal facility standards as opposed to building new facilities in high property wealth districts. Moving forward, as fiscal demands continue to challenge the state, policymakers may wish to explore the option of establishing an equalization formula to distribute Students FIRST funds. Yet further research is needed, using an improved equity model specifically designed to assess facilities funding, in order to confirm that: 1) Students FIRST may not be fully equitable; and 2) that Arizona could have approached funding Students FIRST in a manner that was more cost effective and possibly more equitable than the current funding scheme.

## Conclusion

When evaluating the remedies of capital finance litigation and analyzing the equity in public school facilities, researchers might consider approaching their studies differently than the methods that are presently used. Recall from Chapter 1, when measuring for fiscal neutrality, finance experts have traditionally assessed the relationship between two variables: 1) current operating expenditures per-pupil and 2) property wealth per-pupil (Odden & Picus, 2008). My findings suggest that, when assessing the equity of a capital funding scheme, square footage may be a more appropriate variable to use in tests of fiscal neutrality than property wealth alone.

Although it is tempting to conclude that there are clear winners and losers as a result of the Students FIRST legislation, my findings merely point to some evidence of inequality that is not definitive. The results of my study revealed gaps in the ability of school finance experts to effectively assess inequity in the funding of public school facilities. Simply stated, the conventional measures I used to assess the fiscal neutrality of Students FIRST did not appropriately assess if Students FIRST created a general and uniform capital finance scheme between 1999 and 2009. I suggest that school finance researchers need to look further and develop measures to better assess the equity of capital funding.

Fifteen years after the *Roosevelt* (1994) decision, Arizona continued to have some public school districts that were property poor and some that were property rich. The range in property wealth across districts can create disparities



on many different levels. I am concerned about the recent cuts in Students FIRST funding. Rather than seeking alternative revenues to support public school facilities, the Arizona Legislature has chosen to make deep cuts to capital funding, especially in the Building Renewal program. School districts are presently finding it challenging to raise enough revenue to meet facility standards. As suggested in a recent newspaper article, (Ortega, 2011) Arizona may be reversing any gains that it may have made as a result of the Students FIRST legislation. As was the case before the *Roosevelt* (1994) decision, schools residing in property rich districts may be forced to raise additional funds for the upkeep of their facilities via bonds and capital overrides. However, with declining property values, even property rich school districts may find it challenging to raise enough revenues to meet minimum facility standards (Hansen, 2011). And what about the property poor districts that relied on Students FIRST funding to meet their facilities needs? These districts may have no choice but to wait for a new legal challenge that will allow the Arizona Supreme Court to assess whether or not inequities continue today.

I close my dissertation with many more questions than when I started my study. If Students FIRST does not fully address inequities in school facilities funding and possibly reinforces existing inequalities, who might be the victims? The children that attend Arizona public schools in some districts are now faced with the possibility of deteriorating classrooms and unsafe conditions. What does this say about our priorities when Students First funding has been slashed, and for

many school districts, eliminated? Students in property poor districts may have very different learning environments from those in more affluent areas and with better facilities. How will we be judged when future generations reflect on how we cared for our young, for those most vulnerable, and for the marginalized?

I began my dissertation with a discussion of the court case that was central to my study, *Roosevelt v. Bishop* (1994). And so, I conclude my dissertation with an excerpt from the *Roosevelt* opinion written by Justice Fredrick J. Martone to remind those who have an interest in Students FIRST of the responsibility that the Arizona Legislature has to fund its public school system in an equitable manner so that everyone wins, and no one loses:

As the conventioners who drafted Arizona's constitution foresaw, public education has been a key to America's success. The education provisions of the constitution acknowledge that an enlightened citizenry is critical to the existence of free institutions, limited government, economic and personal liberty, and individual responsibility. Financing a general and uniform public school system is in our collective self-interest. (*Roosevelt v. Bishop*, 1994, p.23)

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APPENDIX A  
OMITTED SCHOOL DISTRICTS



District	No ADM	No SAV	In-complete ADM	In-complete SAV	Over-lapping Tax	Consolidation	High IA	ADM Below 50
Ash Fork			X		X			
Alpine Elementary								X
Apache Elementary								X
Ash Creek Elementary								X
Benson Elementary			X	X		X		
Benson Union			X	X		X		
Benson Unified			X	X		X		
Bicentennial Union			X					
Blue Elementary								X
Bouse Elementary								X
Buena	X			X				
Buena Elementary	X			X				
Buena Union	X			X				
Cedar Unified							X	
Champie Elementary	X							
Chevelon Butte	X							
Chinile Unified							X	
Chloride Elementary			X			X		
Clark County	X	X						
Coconino County		X	X					
Congress Elementary			X					
Crown King Elementary								X
Eagle Elementary	X							
Empire Elementary	X							

District	No ADM	No SAV	In-complete ADM	In-complete SAV	Over-lapping Tax	Consolidation	High IA	ADM Below 50
Esperanza Accommodation		X	X					
Forrest Elementary	X							
Fort Huachuca Accommodation		X	X					
Fort Thomas Unified							X	
Fredonia-Moccasin			X	X		X		
Ganado Unified							X	
Gila Bend Unified							X	
Gila County		X	X					
Greenlee Alternative		X	X					
Greenlee County		X	X					
Graham County		X	X					
Hackberry Elementary								X
Hillside Elementary								X
Kayenta Unified							X	
Kingman Elementary			X	X		X		
Kingman Unified			X	X		X		
Klondyke Elementary	X							
Littlefield Elementary			X	X		X		
Littlefield Unified			X	X		X		
Maricopa County		X	X					
Mary C O'Brien Accommodation		X	X					
Mcnary Elementary							X	
McNeal Elementary								X
Mohave County	X	X						
Mohave Union			X	X		X		

District	No ADM	No SAV	In-complete ADM	In-complete SAV	Over-lapping Tax	Consolidation	High IA	ADM Below 50
Mobile Elementary								X
Navajo County	X	X						
Owens-Whitney Elementary								X
Parker Unified							X	
Peach Springs Unified							X	
Pima Accommodation		X	X					
Pinal County		X	X					
Pinon Unified							X	
Rainbow Accommodation		X	X					
Reddington Elementary	X							
Red Mesa Unified							X	
Rucker Elementary	X							
San Carlos Unified							X	
Sanders Unified							X	
San Fernando Elementary								X
Santa Cruz County		X	X					
Sacaton Elementary							X	
Sedona-Oak Creek					X			
Sentinel Elementary								X
Sierra Vista Unified		X						
Skull Valley Elementary								X
Tuba City Unified							X	
Walnut Grove Elementary	X							
Wickenburg Unified					X			
Williamson Valley	X							

District	No ADM	No SAV	In-complete ADM	In-complete SAV	Over-lapping Tax	Consolidation	High IA	ADM Below 50
Valentine Elementary							X	
Whiterivier Unified							X	
Window Rock Unified							X	
Yavapai Accommodation		X	X					
Yucca Elementary								X
Yuma County		X	X					
Total: 80	16	19	28	12	3	10	18	15

APPENDIX B  
SIZE CATEGORIES OF SCHOOL DISTRICTS

Size Categories* ADM	Very Small 0 – 199	Small 200 – 599	Medium 600 – 1,999	Medium-Large 2K–7,999	Large 8K–19,999	Very Large 20K & Above
1999	32	28	39	42	15	9
2000	32	27	40	42	15	9
2001					15	10
2002					15	10
2003					16	10
2004					16	10
2005					16	10
2006					17	9
2007					17	9
2008					19	11
2009					19	11

\*School districts from my sample are sorted according to the size categories used in the 2009 Auditor General’s Dollars Spent in the Classroom and Prop 301 Report. Reports regarding classroom dollars were not required until 2000 and the reports did not categorize districts by size until 2001. The Very Small category was added in 2003 and the Medium-Large category was added in 2009.

APPENDIX C  
IMPACT AID SCHOOL DISTRICTS

## Impact Aid Information for 2007, 2008, 2009

LEA	FIA AVG	State Aid AVG	%	PAV Tax
Dysart Unified District	\$66,760	\$83,071,048	0.08%	Yes
Mesa Unified District	\$335,840	\$272,099,780	0.12%	Yes
Vail Unified District	\$64,118	\$33,446,722	0.19%	Yes
Litchfield Elementary District	\$75,458	\$35,111,042	0.21%	Yes
Tucson Unified District	\$768,933	\$213,074,229	0.36%	Yes
Palominas Elementary District	\$29,735	\$7,604,360	0.39%	Yes
Yuma Elementary District	\$172,531	\$39,581,405	0.44%	Yes
Somerton Elementary District	\$56,520	\$11,553,953	0.49%	Yes
Flagstaff Unified District	\$435,949	\$29,560,730	1%	Yes
Laveen Elementary District	\$165,472	\$16,284,212	1%	Yes
Maricopa Unified District	\$207,792	\$22,425,839	1%	Yes
Miami Unified District	\$40,780	\$4,662,190	1%	Yes
Tombstone Unified District	\$20,384	\$3,263,242	1%	Yes
Mohave Valley Elementary District	\$74,297	\$5,810,936	1%	Yes
Camp Verde Unified District	\$92,840	\$5,257,898	2%	Yes
Coolidge Unified District	\$396,912	\$18,436,260	2%	Yes
Fountain Hills Unified District	\$60,899	\$2,575,089	2%	Yes
Casa Grande Union High District	\$307,703	\$11,855,496	3%	Yes
Sierra Vista Unified District	\$663,305	\$22,236,615	3%	Yes
Joseph City Unified District	\$16,529	\$452,530	4%	Yes
Stanfield Elementary District	\$105,402	\$2,970,301	4%	Yes
Clarksdale-Jerome Elementary District	\$64,762	\$1,341,017	5%	Yes
Seligman Unified District*	\$18,132	\$318,238	6%	Yes
Fredonia-Moccasin Unified District	\$134,003	\$1,537,333	9%	Yes
St. Johns Unified District	\$208,596	\$2,152,431	10%	Yes
Globe Unified District	\$849,962	\$7,962,027	11%	Yes
Winslow Unified District	\$1,637,961	\$9,234,264	18%	Yes
Holbrook Unified District	\$3,493,641	\$9,326,532	37%	Yes
Page Unified District	\$4,249,683	\$9,787,469	43%	Yes
Indian Oasis-Baboquivari Unified	\$2,398,326	\$5,277,388	45%	Yes
Grand Canyon Unified District	\$691,405	\$1,354,068	51%	Yes
Sanders Unified District	\$3,094,642	\$5,378,102	58%	No



LEA	FIA AVG	State Aid AVG	%	PAV Tax
Ganado Unified School District	\$5,531,625	\$9,401,059	59%	No
Valentine Elementary District	\$240,776	\$335,395	72%	Yes
Tuba City Unified District	\$7,844,169	\$10,641,696	74%	No
Cedar Unified District	\$2,351,267	\$3,052,550	77%	No
Parker Unified School District	\$5,622,376	\$6,750,293	83%	No
Mcnary Elementary District	\$1,117,979	\$1,147,294	97%	No
Pinon Unified District	\$7,059,319	\$6,977,911	101%	No
Ft Thomas Unified District	\$2,600,763	\$2,565,566	101%	No
Sacaton Elementary District	\$2,499,612	\$2,439,278	102%	No
Gila Bend Unified District	\$173,210	\$167,461	103%	Yes
Red Mesa Unified District	\$5,452,052	\$5,218,204	104%	No
Chinle Unified District	\$20,890,362	\$19,844,935	105%	No
Window Rock Unified District	\$13,573,732	\$12,594,967	108%	No
Kayenta Unified District	\$12,135,485	\$10,988,338	110%	No
San Carlos Unified District	\$6,875,444	\$6,218,581	111%	No
Whiteriver Unified District	\$12,181,332	\$10,394,340	117%	No
Peach Springs Unified District	\$1,148,376	\$857,626	134%	Yes
Ft. Hachua Accommodation District**	\$7,264,016	\$0	-	No
Gila County Regional Special District**	\$13,315	\$0	-	No
Rainbow Accommodation District**	\$12,112	\$0	-	No

\*Only 2009 FIA dollars for Seligman Unified District reported

\*\*Accommodation and Special Districts Do Not Receive State Aid

APPENDIX D  
MULTIPLE REGRESSION STATISTICS

### Relationship Between Total Students First Funding, Property Wealth, and ADM

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Constant (Sig.)	.131 (.244)	.044 (.853)	.102 (.430)	.158 (.130)	.179 (.071)	.151 (.155)	.121 (.304)	.065 (.708)	.196 (.042)*	.101 (.435)	.045 (.848)
PW	.472 (.637)	-.008 (.994)	.462 (.644)	-.239 (.811)	.607 (.545)	1.07 (.288)	.928 (.355)	.738 (.462)	2.46 (.015)*	1.15 (.251)	.160 (.873)
ADM	-1.58 (.116)	-.563 (.574)	-1.17 (.244)	-2.03 (.044)*	-2.16 (.032)*	-1.49 (.139)	-1.11 (.268)	-2.69 (.788)	-0.30 (.766)	-0.40 (.693)	-.515 (.607)
F Statistic	1.42	0.16	0.85	2.07	2.70	1.89	1.20	0.35	3.23	0.84	0.17
R <sup>2</sup>	0.02	0.002	0.01	0.03	0.03	0.02	0.02	0.004	0.04	0.01	0.002

\* $p < .05$

### Relationship Between New School Facilities Funds, Property Wealth, and ADM

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Constant (Sig.)	.032 (.921)	.037 (.896)	.065 (.712)	.094 (.490)	.067 (.694)	.084 (.565)	.094 (.486)	.060 (.746)	.196 (.043)*	.101 (.438)	.039 (.886)
PW	-.124 (.902)	-.028 (.978)	.337 (.737)	-.483 (.630)	-.521 (.603)	.812 (.418)	.901 (.369)	.765 (.446)	2.48 (.014)*	1.17 (.242)	.065 (.948)
ADM	-.396 (.693)	-.469 (.640)	-.719 (.473)	-1.14 (.256)	-.734 (.464)	-.597 (.551)	-.675 (.501)	.153 (.879)	-0.18 (.861)	-0.34 (.737)	-.469 (.640)
F Statistic	0.08	0.11	0.34	0.71	0.37	0.57	0.72	0.30	3.22	0.83	0.12
R <sup>2</sup>	0.001	0.001	0.004	0.01	0.004	0.01	0.01	0.004	0.04	0.01	0.001

\* $p < .05$

APPENDIX E

ELEVEN-YEAR, PER-PUPIL AVERAGE OF TOTAL STUDENTS FIRST

FUNDING AND PROPERTY WEALTH

Rank Order: Eleven-year Average Per-pupil Property Wealth

LEA Name	PW Mean \$188,831 Median \$63,256
Indian Oasis-Baboquivari Unified District	\$1,802
Gadsden Elementary District	\$10,843
Naco Elementary District	\$12,175
Somerton Elementary District	\$15,175
Pima Unified District	\$16,695
Winslow Unified District	\$17,834
Eloy Elementary District	\$19,363
Mammoth-San Manuel Unified District	\$19,523
Cartwright Elementary District	\$19,656
Thatcher Unified District	\$20,039
Nogales Unified District	\$20,849
Globe Unified District	\$21,118
Holbrook Unified District	\$21,742
Sunnyside Unified District	\$22,436
Safford Unified District	\$22,960
Hayden-Winkelman Unified District	\$24,616
Isaac Elementary District	\$24,805
Colorado City Unified District	\$24,815
Duncan Unified District	\$25,284
Douglas Unified District	\$27,810
Superior Unified School District	\$28,220
Crane Elementary District	\$28,504
St Johns Unified District	\$28,745
Snowflake Unified District	\$29,339
Glendale Elementary District	\$30,001
Flowing Wells Unified District	\$30,246
Pendergast Elementary District	\$30,785
Alhambra Elementary District	\$31,018

LEA Name	PW Mean \$188,831 Median \$63,256
Ajo Unified District	\$34,288
Coolidge Unified District	\$34,783
Willcox Unified District	\$36,575
Santa Cruz Valley Unified District	\$38,952
Peoria Unified School District	\$39,373
Bisbee Unified District	\$39,857
Maricopa Unified School District	\$40,409
Elfrida Elementary District	\$41,035
Miami Unified District	\$41,283
Altar Valley Elementary District	\$42,370
Marana Unified District	\$43,488
Florence Unified School District	\$43,603
Pomerene Elementary District	\$43,663
Gilbert Unified District	\$43,876
Mesa Unified District	\$43,900
Double Adobe Elementary District	\$44,127
Tombstone Unified District	\$44,153
J O Combs Unified School District	\$44,771
Page Unified District	\$45,603
St David Unified District	\$45,837
Tucson Unified District	\$47,393
Camp Verde Unified District	\$47,964
Murphy Elementary District	\$48,754
Vail Unified District	\$49,353
Palominas Elementary District	\$49,957
Santa Cruz Elementary District	\$50,110
Casa Grande Elementary District	\$50,897
Laveen Elementary District	\$51,758
Wellton Elementary District	\$51,858
Roosevelt Elementary District	\$52,307

LEA Name	PW
	Mean \$188,831 Median \$63,256
Avondale Elementary District	\$53,233
Chino Valley Unified District	\$54,309
Sahuarita Unified District	\$54,927
Aguila Elementary District	\$55,239
Buckeye Elementary District	\$55,600
Yuma Elementary District	\$56,481
Mayer Unified School District	\$56,655
Humboldt Unified District	\$56,808
Creighton Elementary District	\$57,361
Hyder Elementary District	\$57,511
Littleton Elementary District	\$57,964
Queen Creek Unified District	\$58,625
Grand Canyon Unified District	\$58,672
Ray Unified District	\$59,014
Tolleson Elementary District	\$59,109
Fowler Elementary District	\$59,265
Chandler Unified District	\$59,462
Stanfield Elementary District	\$59,579
Show Low Unified District	\$59,981
Toltec Elementary District	\$60,454
Solomon Elementary District	\$61,116
Union Elementary District	\$61,255
Liberty Elementary District	\$61,620
Clifton Unified District	\$61,878
Deer Valley Unified District	\$63,256
Apache Junction Unified District	\$63,554
Dysart Unified District	\$64,596
Washington Elementary School District	\$64,886
Higley Unified School District	\$65,655
Amphitheater Unified District	\$71,669

LEA Name	PW
	Mean \$188,831 Median \$63,256
Litchfield Elementary District	\$72,320
Paloma School District	\$75,069
Palo Verde Elementary District	\$81,421
Blue Ridge Unified District	\$81,511
Yuma Union High School District	\$83,731
Paradise Valley Unified District	\$83,788
Bullhead City School District	\$84,192
Flagstaff Unified District	\$84,924
Bowie Unified District	\$86,120
Mohawk Valley Elementary District	\$86,141
Payson Unified District	\$88,221
Canon Elementary District	\$89,940
Cottonwood-Oak Creek Elementary District	\$93,865
Phoenix Elementary District	\$96,432
Picacho Elementary District	\$98,064
Catalina Foothills Unified District	\$101,310
Mohave Valley Elementary District	\$102,528
Lake Havasu Unified District	\$104,062
San Simon Unified District	\$104,430
Beaver Creek Elementary District	\$107,299
Balsz Elementary District	\$108,057
Kyrene Elementary District	\$108,137
Wilson Elementary District	\$108,892
Nadaburg Unified School District	\$109,223
Tanque Verde Unified District	\$110,529
Clarkdale-Jerome Elementary District	\$119,922
Tolleson Union High School District	\$123,917
Heber-Overgaard Unified District	\$123,930
Williams Unified District	\$124,651
Tempe Elementary School District	\$126,590



LEA Name	PW
	Mean \$188,831 Median \$63,256
Antelope Union High School District	\$131,074
Glendale Union High School District	\$131,193
Kirkland Elementary District	\$132,802
Prescott Unified District	\$133,859
Pearce Elementary District	\$139,791
Patagonia Elementary District	\$141,059
Santa Cruz Valley Union High School Dist	\$145,118
Casa Grande Union High School District	\$150,034
Concho Elementary District	\$150,153
Round Valley Unified District	\$150,175
Osborn Elementary District	\$150,526
Valley Union High School District	\$152,492
Morristown Elementary District	\$159,222
Quartzsite Elementary District	\$160,766
Sonoita Elementary District	\$162,840
Tonto Basin Elementary District	\$164,405
Scottsdale Unified District	\$168,452
Agua Fria Union High School District	\$172,697
Fountain Hills Unified District	\$172,807
Bonita Elementary District	\$176,374
Salome Consolidated Elementary District	\$178,002
Bagdad Unified District	\$181,030
Wenden Elementary District	\$181,444
Vernon Elementary District	\$187,915
Topock Elementary District	\$198,105
Madison Elementary District	\$209,743
Seligman Unified District	\$211,158
Yarnell Elementary District	\$215,522
Buckeye Union High School District	\$219,606
Mingus Union High School District	\$219,716

LEA Name	PW
	Mean \$188,831 Median \$63,256
Colorado River Union High School District	\$229,002
Phoenix Union High School District	\$232,269
Young Elementary District	\$234,949
Joseph City Unified District	\$266,178
Tempe Union High School District	\$268,736
Cave Creek Unified District	\$279,473
Maine Consolidated School District	\$282,254
Oracle Elementary District	\$315,361
Morenci Unified District	\$330,692
Red Rock Elementary District	\$343,096
Patagonia Union High School District	\$368,357
Pine Strawberry Elementary District	\$376,913
Riverside Elementary District	\$628,700
Arlington Elementary District	\$642,355
Cochise Elementary District	\$663,631
Continental Elementary District	\$753,973
Saddle Mountain Unified School District (formerly Ruth Fisher)	\$1,625,434

Rank Order: Eleven-year Average Per-pupil Total Students FIRST Funding

LEA Name	TSF Funding Mean \$989 Median \$572
Kyrene Elementary District	\$60
Osborn Elementary District	\$80
Madison Elementary District	\$82
Catalina Foothills Unified District	\$90
Fountain Hills Unified District	\$90
Mohave Valley Elementary District	\$107
Paradise Valley Unified District	\$110
Tempe Union High School District	\$127
Amphitheater Unified District	\$137
Picacho Elementary District	\$137
Lake Havasu Unified District	\$137
Chino Valley Unified District	\$143
Phoenix Elementary District	\$149
Bullhead City School District	\$150
Wilson Elementary District	\$158
Beaver Creek Elementary District	\$165
Tempe Elementary School District	\$168
Flowing Wells Unified District	\$177
Phoenix Union High School District	\$177
Page Unified District	\$187
Yuma Elementary District	\$190
Scottsdale Unified District	\$198
Washington Elementary School District	\$199
Continental Elementary District	\$203
Willcox Unified District	\$207
Mesa Unified District	\$207
Safford Unified District	\$209
Roosevelt Elementary District	\$210

LEA Name	TSF Funding Mean \$989 Median \$572
Stanfield Elementary District	\$225
Alhambra Elementary District	\$234
Payson Unified District	\$240
Marana Unified District	\$246
Santa Cruz Valley High School District	\$250
Thatcher Unified District	\$250
Heber-Overgaard Unified District	\$254
Sunnyside Unified District	\$255
Mingus Union High School District	\$257
Glendale Union High School District	\$258
Prescott Unified District	\$260
Blue Ridge Unified District	\$263
Morenci Unified District	\$265
Colorado River Union High School District	\$282
Creighton Elementary District	\$283
Show Low Unified District	\$293
Glendale Elementary District	\$297
Tucson Unified District	\$298
Round Valley Unified District	\$302
Cottonwood-Oak Creek Elementary District	\$319
Somerton Elementary District	\$320
Palominas Elementary District	\$325
Pine Strawberry Elementary District	\$327
Gilbert Unified District	\$331
Nogales Unified District	\$331
Peoria Unified School District	\$331
Clarkdale-Jerome Elementary District	\$332
Isaac Elementary District	\$336
Murphy Elementary District	\$338
Camp Verde Unified District	\$341

LEA Name	TSF Funding Mean \$989 Median \$572
Eloy Elementary District	\$344
Clifton Unified District	\$348
Valley Union High School District	\$353
Tanque Verde Unified District	\$356
Grand Canyon Unified District	\$357
Wellton Elementary District	\$368
Flagstaff Unified District	\$373
Concho Elementary District	\$379
Topock Elementary District	\$416
Pendergast Elementary District	\$431
Mohawk Valley Elementary District	\$434
Apache Junction Unified District	\$434
Cartwright Elementary District	\$441
Bisbee Unified District	\$472
Balsz Elementary District	\$475
Patagonia Elementary District	\$479
Pomerene Elementary District	\$485
Winslow Unified District	\$494
Pima Unified District	\$500
Deer Valley Unified District	\$507
Humboldt Unified District	\$507
Duncan Unified District	\$521
Cave Creek Unified District	\$522
Oracle Elementary District	\$533
Mammoth-San Manuel Unified District	\$572
Pearce Elementary District	\$575
Quartzsite Elementary District	\$577
Avondale Elementary District	\$580
Snowflake Unified District	\$586
Casa Grande Elementary District	\$592

LEA Name	TSF Funding Mean \$989 Median \$572
Solomon Elementary District	\$605
Crane Elementary District	\$638
Douglas Unified District	\$646
Superior Unified School District	\$668
Joseph City Unified District	\$671
Sahuarita Unified District	\$671
Morristown Elementary District	\$673
San Simon Unified District	\$689
Indian Oasis-Baboquivari Unified District	\$711
Chandler Unified District	\$725
Toltec Elementary District	\$729
St Johns Unified District	\$742
Santa Cruz Valley Unified District	\$744
St David Unified District	\$784
Gadsden Elementary District	\$786
Ajo Unified District	\$805
Liberty Elementary District	\$808
Naco Elementary District	\$809
Cochise Elementary District	\$824
Elfrida Elementary District	\$848
Litchfield Elementary District	\$849
Salome Consolidated Elementary District	\$855
Yuma Union High School District	\$857
Canon Elementary District	\$862
Altar Valley Elementary District	\$883
Holbrook Unified District	\$884
Globe Unified District	\$885
Hayden-Winkelman Unified District	\$891
Williams Unified District	\$891
Hyder Elementary District	\$907

LEA Name	TSF Funding Mean \$989 Median \$572
Mayer Unified School District	\$942
Miami Unified District	\$969
Tombstone Unified District	\$973
Bagdad Unified District	\$973
Palo Verde Elementary District	\$1010
Kirkland Elementary District	\$1012
Casa Grande Union High School District	\$1029
Tolleson Elementary District	\$1033
Fowler Elementary District	\$1058
Wenden Elementary District	\$1071
Vail Unified District	\$1136
Seligman Unified District	\$1208
Tonto Basin Elementary District	\$1276
Bonita Elementary District	\$1311
Antelope Union High School District	\$1368
Aguila Elementary District	\$1499
Laveen Elementary District	\$1501
Tolleson Union High School District	\$1508
Agua Fria Union High School District	\$1569
Littleton Elementary District	\$1592
Colorado City Unified District	\$1630
Riverside Elementary District	\$1632
Paloma School District	\$1634
Sonoita Elementary District	\$1711
Arlington Elementary District	\$1738
Queen Creek Unified District	\$1825
Bowie Unified District	\$1838
Santa Cruz Elementary District	\$1847
Coolidge Unified District	\$1862
Maine Consolidated School District	\$1972

LEA Name	TSF Funding Mean \$989 Median \$572
Dysart Unified District	\$2001
Ray Unified District	\$2100
Buckeye Elementary District	\$2107
Nadaburg Unified School District	\$2512
Higley Unified School District	\$2642
Buckeye Union High School District	\$2645
Saddle Mountain Unified School District	\$2863
Double Adobe Elementary District	\$2902
Vernon Elementary District	\$2935
Florence Unified School District	\$3129
Union Elementary District	\$3260
Maricopa Unified School District	\$3834
Yarnell Elementary District	\$5094
Young Elementary District	\$5217
J O Combs Unified School District	\$6268
Patagonia Union High School District	\$7798
Red Rock Elementary District	\$13,919