LEVELING THE PLAYING FIELD

WITH SCHOOL REVENUES AND EXPENDITURES:

DOES MONEY REALLY MATTER?

by

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Abstract

Education is often portrayed as the passport to the future and revered as the great equalizer for attaining the American Dream. Public schools in America strive to provide a path to the middle class for children from hard-working families in every community, particularly those who are living in poverty. However, there are notable inequities in the amount of revenues and expenditures for the public school system throughout the United States. Too often the schools serving students with the greatest needs receive the fewest resources. This is a social justice concern. In this dissertation, the principal goal was to examine how California K-12 public school districts were financed, the equitable (or inequitable) distribution of funding during 2011-12, and its relevance to the academic achievement gap. Statistical data analyses were conducted using quantitative methods such as regression analysis for the purpose of discerning the relationship between per pupil expenditures (PPE) and average teacher salaries, and between PPE and student achievement (API Base Scores and AYP Math Proficiency). The major findings indicated that there was no statistically significant relationship between the independent and dependent variables for this particular sample.

COMMITTEE MEMBERSHIP APPROVAL PAGE

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CHAPTER 1

INTRODUCTION

Public schools were established to provide a free education that was universally available to all children (Kober, 2007). Unlike private schools, which have the option of being "selective about whom to enroll, public school systems must serve all who live within their boundaries" (Kober, 2007b, p. 8).

> Our public schools must strive to provide equality in educational opportunity
> unlike any time in the nation's history. Meeting the equal-opportunity challenge
> in education requires funding at levels sufficient to provide a rigorous
> curriculum… delivered by well-trained teachers and supported by effective school
> and district leaders… for schools serving high numbers of low-income students,
> English-language learners, and students with other special needs. How we fund
> our public schools is…fundamental to the national effort to ensure all students
> have access to high quality educational opportunities. Sufficient school funding,
> fairly distributed to address concentrated poverty, is an essential precondition for
> the delivery of a high-quality education (Baker, Sciarra, & Farrie, 2010a, p. 1).

Adamson and Darling-Hammond (2011b) asserted that "the world's highest-achieving nations fund schools equally and offer comparable salaries to teachers across schools" (Adamson & Darling-Hammond, 2011a, p. 13). Yet, in the United States (U.S.), education resources continue to be very unbalanced - where education cost and funding

are heavily influenced - by two major factors: decentralization and concentrated student poverty. "Inequitable funding is a function of a highly decentralized system of governance that began when local communities created public schools more than 200 years ago" (Adamson & Darling-Hammond, 2011a). It is highly decentralized because K-12 public education is provided to students through separate systems operated by the 50 states with approximately 16,000 school districts and 100,000 schools at the local level. Districts and schools are primarily funded through financing systems under the jurisdiction of state law that is commonly known as "school funding" or the "finance formulas." These formulas are a combination of state, local, and federal funding (Baker et al., 2010a).

However, according to a 2007 Center of Education Policy report, equal access to high-quality education is not yet a reality (Kober, 2007). "Wide differences exist among schools, districts, and states in per pupil funding" (Kober, 2007, p. 8). "For historical reasons, overall funding varies systematically based on the type of school district (unified, elementary, or high school) and the size of the district. Past equalization efforts established funding targets based upon district type and size, and those differences have remained" (Rose, Sonstelie, Weston, & Johnson, 2010, p. 14). In a 2007 Center on Education Policy publication, author Nancy Kober (2007). reported that some reasons disparities in education funding and quality prevail are because education primarily remains a state and local function. Also, states and communities vary in wealth and have differences in their "capacity and willingness to tax their citizens" (Kober, 2007, p. 8).

In recent years, government policies have tried to equalize resources among schools in wealthy and poor communities. In addition, major court cases have focused on whether states are fulfilling their constitutional obligation to provide all students with an adequate education. Actually, "the sad reality is that gross funding inequities continue to exist in this country, and too often the schools serving students with the greatest needs receive the fewest resources. Too many children – often low-income and minority children – are denied access to high-quality education because they attend schools that are underfunded and under-resourced" (Baker & Cocooran, 2012, p. 1).

The federal government recognized the universal importance of education and assumed a larger role in financing public schools with the passage of the 1965 Elementary and Secondary Education Act (U.S. Department of Education, 2004). The Elementary and Secondary Education Act (ESEA) was a key factor of former President Johnson's War on Poverty campaign. The law's intent was to improve educational equity for students from lower income families by providing federal funds to school districts serving poor students. Federal assistance made available from Title I funds was intended to provide additional (or supplemental) "resources to Title I schools—rather than to compensate for an inequitable distribution of state and local funds that benefit more affluent schools" (Stullich, 2011, p. 1). Under these provisions, Title I would meet the educational needs of students by ensuring that all children had "a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and assessments" (U.S. Department of Education, 2014, p. 1).

The 2001 No Child Left Behind (NCLB) Act is a reauthorization of the ESEA holding public schools accountable for closing (Kober, 2007a) academic achievement and resource gaps. According to Luebchow (2009), a former policy analyst, school districts that receive federal NCLB Title I funding are required to use its state and local funds to provide comparable services to both high-poverty (Title I) and low-poverty (non-Title I) schools. "NCLB requires public schools to steadily raise achievement—and to close the test score gaps that exist for minority, poor, and special needs students—until 100% of U.S. students are performing at the same high level" (Kober, 2007, p. 10). Thus, NCLB provides a window of opportunity to address the teacher and resource inequities (Luebchow, 2009).

Re-Segregation of Schools

In 1954, the Supreme Court declared that public education is a fundamental right and must be made available to all students on equal terms in the United States. However, despite the landmark decision in *Brown v. Board of Education* (Warren, 1954) that segregated public schools violated the 14th Amendment's equal protection clause, our schools still remain separate and unequal (Spatig-Amerikaner, 2012) 60 years later. According to the data, "minority students disproportionately attend schools that are segregated by race and SES. For example, 38 and 43 percent of Black and Hispanic students, respectively, attend schools that have a student body composed of 90 to 100 percent minority students" (Coley & Baker, 2001, p. 5). The number of nearly all-

minority schools (defined as a school where fewer than 5% of the students are White) doubled between 1993 and 2006.

Furthermore, Whites were the least likely to attend schools with a high number of racial and ethnic (such as African American/Black and Hispanic/Latino) minorities. In fact, even though White students composed approximately 56% of the school age population, overall they attended schools where 76.6% of the population was White. In 2005-2006, 56% of Hispanic students attended a school in which at least half of the student population was Hispanic, and nearly 50% of black students attended a majority black school (Fry, 2007). Two thirds of these schools are in areas of concentrated poverty with very high levels of segregation. Thus, African American/Black and Hispanic/Latino students remain the most segregated from White students.

The evidence shows that the socioeconomic status (SES) of students is an important factor in relation to student performance. According to Spencer and Reno (2009), research studies revealed that "the schools' socioeconomic makeup has an even greater impact on student performance than" (p. 2) the students' family socioeconomic or racial category. Equally important, living in concentrated poverty constrains life opportunities such as educational attainment, future earning potential, in addition to adequate health and safety provisions. This is important because failing to disrupt the cycle of racialized poverty is creating and reinforcing pervasive educational inequities (Spencer & Reno, 2009).

Distribution of Resources

Research studies also showed that funding disparities existed geographically in various states, across districts in the same state, and among schools within the same district. Teacher salaries and health benefits were the largest budget expenditure in school districts. Adamson and Darling-Hammond (2011) asserted that disparities in teacher salaries during 2009 varied by more than 2 to1 for comparably educated and experienced teachers. For instance, in Oakland (Alameda County), the average teacher salaries were $55,000 whereas teacher salaries in Portola Valley (San Mateo County) averaged around $90,000 (Adamson & Darling Hammond, 2011).

There are concerns of equity and social justice related to per pupil expenditures (PPE), average teacher salaries and student achievement in high poverty schools. Systematically, there is less spending on the schools that serve high concentrations of students of color. These differentials in per-pupil spending are derived from both state and district spending policies (Spatig-Amerikaner, 2012).

Furthermore, school districts with high concentrations of minority students also paid teachers lower salaries, had higher turnovers, and unfavorable working conditions (Adamson & Darling Hammond, 2011). Overall, teachers earned less in high-poverty areas, compared to teachers in high-income areas where students had a greater advantage.

Hence, there were large achievement gaps between rich and poor students, as well as African American/Black, Hispanic/Latino students and White students coupled with substantial resource gaps. Thus, in this research dissertation, the linkages between per

pupil expenditures (PPE) as it pertains to average teacher salaries and student achievement in API Base Scores and AYP Math Proficiency were discussed.

Mathematics Achievement

In 1997, "the State Board of Education adopted academic content standards that established mastery of Algebra 1 as the expectation for all 8th graders" (Perry & Studier, 2004, p. 5). Thereafter, in 2000 state lawmakers specified that California public school students were required to pass Algebra 1, in order to earn a high school diploma, beginning with the class of 2004. Previously, only two years of Mathematics - without any specific course requirement - was needed for high school graduation (Perry & Studier, 2004).

Mathematics is considered a gatekeeper and pathway to higher education (Lucey, 2014). Previous "studies show that algebra helps students learn abstract thinking skills, which are applicable to many subjects, and increases the probability that students will attend college" (Perry & Studier, 2004, p. 5). The highest math class a student takes in high school has a considerable influence on both college acceptance and college choice (Lucey, 2014). California School Boards Association President, Lucey (2014) stated that, "Senior level math courses determine whether a student is on track for community college, state school, or the University of California system and serve as the gateway into the science, engineering and medical professions" (p. 1). In this dissertation, emphasis is given to eighth grade middle school performance outcomes in Mathematics.

Achievement Gap

Substantial academic achievement gaps persist among different racial/ethnic and income groups from kindergarten through 12th grade. In this dissertation, emphasis is given to eighth grade middle school API for Mathematics Proficiency.

There is an overrepresentation of low-scoring African American/Black and Hispanic/Latino students and an underrepresentation of high-scoring students at the Proficient and Advanced levels. Across reading and math, less than 3 percent of African American/Black and Hispanic/Latino children are at the advanced level; by twelfth grade it is less than 1 percent" (Auguste, Hancock, & Laboissiere, 2009, p. 11). Simply put, African American/Blacks and Hispanic/Latinos are achieving at lower academic levels than Whites and Asian/Pacific Islanders, and students in high-poverty schools are doing worse than their peers in low-poverty schools (National Science Foundation, 2004).

Moreover, in a 2011 report, Reardon (2011) asserted that the income achievement gap between the poor and non-poor is twice as large as the academic achievement gap between African American/Black and White students. For instance, "the achievement gap between children from high- and low income families is roughly 30 to 40 percent larger among children born in 2001 than among those born twenty-five years earlier" (Reardon, 2011, p. 4).

Problem Statement

There are disparities in funding (including revenues, expenditures, and teacher salaries) and student achievement coupled with demographic characteristics in school

districts – and in schools within the same districts. Current funding for schools is inequitably distributed, not deliberately tied to student demographics, largely state controlled, and lacking appropriate accountability measures. In California, per pupil expenditures vary across school districts (Rose et al., 2013).

Moreover, high-needs schools composed largely of African American/Black and Hispanic/Latino low-income students receive fewer resources compared to their White counterparts with low-needs and higher incomes. "High-need schools are specifically defined to include those that are urban, rural, high minority, high student poverty, and low performing" (Jones, Alexander, Rudo, Pan, & Vaden-Kiernan, 2006, p. 10) with students who are failing, at risk of educational failure or in need of special assistance and support (United States Department of Education, 2016). The students at these particular schools "may face multiple difficulties such as drug and alcohol use, low reading skills, learning disabilities, disciplinary problems and personality conflicts with teachers" (Little, 2013, p. 1).

According to the Center for American Progress Report, Spatig-Amerikaner (2012) analyzed U.S. Department of Education data that showed U.S. schools spent $334 more on every White student than on every non-White student. The mostly White (90%) schools spent $733 more per student than the mostly non-White (90%) schools.

There are differences in average teacher salaries across states and between districts in the same state. Teachers in low-income schools were paid less where students have the greatest need. On the other hand, teachers in high-income schools were paid more. As previously mentioned, teacher salaries are the largest expenditure category for

most school districts. However, inexperienced teachers with lower pay are overrepresented in Title I schools where there are high concentrations of low-income students. Additionally, there are concentrations "of more experienced and highly credentialed teachers (along with their corresponding high salaries) in" (Education Trust - West, 2005, p. 1) schools that are predominantly White and more affluent.

This is important because Title I, Part A of the Elementary and Secondary Education Act of 1965 (ESEA) required a local educational agency (LEA) to meet three fiscal requirements related to the expenditure of regular State and local funds. The three fiscal requirements were to "maintain fiscal effort with State and local funds; provide services in its Title I schools with State and local funds that were at least comparable to services provided in its non-Title I schools; and use Part A funds to supplement, not supplant regular non-Federal funds" (Department of Education, 2008, p. 9). The purpose of these requirements was to ensure funds were made available to provide additional services along with existing services by a LEA for participating children and level the playing field.

Along with the combined inequitable distribution of resources, there is a persistent academic achievement gap between African American/Black, Hispanic/Latino, and White students. McKinsey and Company (2009) claim that within the United States, White students generally perform better on standardized tests than African American/Black students. At the same time, rich students generally perform better than poor students, and students with similar backgrounds perform differently across school systems and classrooms.

Purpose of the Study

The purpose of this research study is to examine how California school districts are financed and the distribution of funding in K-12 public schools prior to the implementation of the Local Control Funding Formula (LCFF). I intend to assess the disparities that exist in schools and school districts as they pertain to revenues, expenditures, average teacher salaries, and student achievement along with demographic characteristics. In addition, this study aims to discern if there is a correlation between per pupil expenditures (PPE) and average teacher salaries and between PPE and student achievement (API Base Scores and AYP Math Proficiency) in selected urban and suburban California schools and school districts.

Significance of the Study

This research study is significant because it provides a lens to see the disparities and inequities that exist in the public school system. It is possible to distinguish patterns in school finance and the distribution of educational resources that are characteristic of urban and suburban California schools in different school districts. Additionally, this study will assess if the Title I components of NCLB educational reform efforts were effective in improving the equitable distribution of school resources and student achievement.

The evaluation of education cost differentials across school districts has been an important topic in education finance research for decades (Fowler and Monk, 2001).

Interest in this topic has grown in recent years with the emergence of adequacy as the primary standard in school finance litigation in addition to the growth of state accountability systems that focus on student performance. Furthermore, the link between research and policy on this topic is not well developed. Existing state aid formulas usually contain ad hoc cost adjustments that are inadequate with regards to across-district cost differences estimated by scholars (Fowler Jr & Monk, 2001).

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Research Questions

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The research questions for this dissertation proposal are illuminated in Figure 1.

1. What is the relationship between per pupil expenditures (PPE) and average teacher salaries?

2. What is the relationship between per pupil expenditures (PPE) and student achievement?
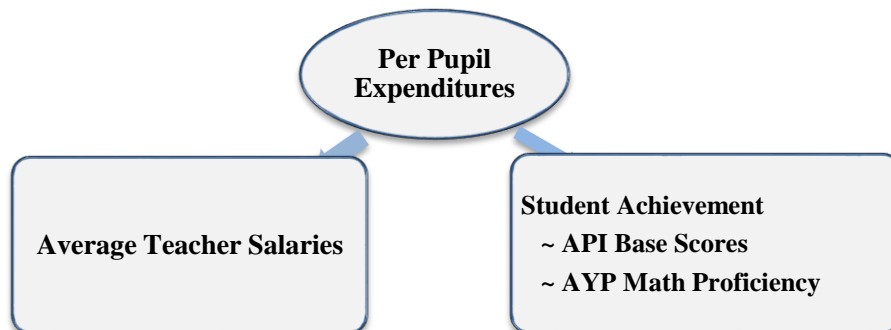
Figure 1.1 – Relationship between per pupil expenditures, average teacher salaries, and student achievement

Conceptual Framework

According to previous research, the costs to fund schools vary across districts and states (Imazeki, 2006a). "The cost of education is defined as the minimum amount of money that a school district must spend in order to achieve a given educational outcome" (Imazeki, 2006a). In economics, "cost refers to the minimum spending required to produce a given level of output. Applied to education, cost represents the minimum spending required to bring students in a district up to a given average performance level" (Duncombe & Yinger, 2008, p. 1). Cost is also associated with the characteristic of what must be given up in order to accomplish some result. In this context, cost "implies expending the minimum expenditure needed to obtain the item or service purchased" (Fowler and Monk, 2001, p. 12-13).

On the other hand, according to researchers Fowler Jr. and Monk (2001), "expenditures are not tied to results or outcomes and can exceed the minimum of what must be given up" (p. 13). An expenditure is "primarily an accounting concept and is intended to capture flows of resources, typically measured in monetary units" (Fowler and Monk, 2001, p. 14).

The theoretical framework for previous studies utilized *production function* and *cost function* models as the primary methodology to assess the relationship between the costs (inputs) and student performance outcomes (outputs). Production function statistical models aimed to determine significant relationships between spending measures or other school resource measures and student outcomes (Burtless, 1996). That is, the effect of

district spending on student performance outcomes (or achievement levels) was estimated.

In comparison, cost function models start with the actual student performance outcomes and analyze their relationships with district spending (Imazeki, 2007a). Cost function seeks to determine "the a) costs per pupil, b) desired educational outcome levels, c) given the student populations, and d) contextual factors such as differences in the prices of schooling inputs, economies of scale," (Baker, 2012, p. 21) and other factors. It focuses on how achievement levels determine spending, as opposed to how spending determines achievement (Costrell, Hanushek, & Loeb, 2008). Essentially, "the underlying premise of the cost function estimation is that correcting for price differences, the demands of different student bodies, and the efficiency of district spending will yield a clear relationship between achievement and the spending that is required to achieve each level of performance"(Costrell et al., 2008, p. 4) . This relationship allows identification of the spending that is needed to achieve any given level of student achievement.

In California, the cost function approach for K-12 education provides estimates for base costs and marginal costs (Burtless, 1996). Examples of base costs are per pupil costs with relatively low levels of student need, whereas marginal costs refer to additional costs associated with specific student characteristics (such as poverty, English Language Learners and special education). Cost function analysis is the only methodology that explicitly quantifies the relationship between outcomes (test scores and graduation rates) and costs (base and marginal) for districts with a variety of diverse student characteristics (Imazeki, 2006a) represented in California.

Elasticity analysis was also used in previous studies where an elasticity measured how a percentage change in one variable led to a percentage change in another variable. For example, "a 10% change in per-pupil spending led to an annual percentage change in student outcomes" (Washington State Institute for Public Policy, 2012, p. 4).

Hypotheses

My hypotheses for this study are as follows:

Research Question #1

- Null Hypothesis [H_o]: There is no relationship between PPE and average teacher salaries.

- Alternative Hypothesis [H_a]: There is a relationship between PPE and average teacher salaries.

Research Question #2

- Null Hypothesis [H_o]: There is no relationship between PPE and student achievement.

- Alternative Hypothesis [H_a]: There is a relationship between PPE and student achievement.

Thus, the equation for this model is:

$$Y = a + b\,X + \text{control variable}$$

- **Y is the dependent variable**
- **X is the independent variable**
- **a is a constant and the y-intersect**
- **b is the slope of the line and the regression coefficient**
  (Schneider, Hommel, & Blettner, 2010)

In this study, the dependent variable (Y) is per pupil expenditures (or expenditures/student). The independent variables (X) are teacher salaries and student achievement (API and AYP Math Proficiency). "In a regression context, the slope is the heart and soul of the equation because it tells you how much you can expect Y to change as X increases" (Rumsey, 2011, p. 1) . The slope of the line is equal to the change in Y divided by the change in X also known as the rise over the run. For example, if the slope is equal to 2/1, for every increase of 1 in X, the value of Y changes by 2. The slope of the line also represents the regression coefficient. In addition, the constant (a) is known as the y-intersect which represents the first point on the line where the slope begins. Based on this equation for a straight line, the expectation is to answer the research questions by using regression analysis in order to determine the correlation between variables. Furthermore, the limitations of the study are discussed in Chapter 3.

Key Terms and Definitions:

1. *Revenue:* The income of a government from all sources appropriate for the payment of the public expenses.
2. *Expenditures:* The act of expending public funds
3. *Per pupil spending:* The measure of all current operating expenditures for the school district's fiscal year divided by the number of children served.
4. *Social justice:* Justice exercised within a society, particularly as it is applied to and among the various classes of a society.

5. *Equity:* Educational equity is the study and achievement of fairness in education.

6. *Achievement Gap:* The U. S. Department of Education describes the achievement gap as the difference in academic performance between different ethnic groups. More specifically, in California, the achievement gap is defined as the disparity between the academic performance of White students and other ethnic groups. It is also inclusive of the disparities between English Language Learners (ELL) and native English speakers, socioeconomically disadvantaged and non-disadvantaged students, as well as students with disabilities in comparison to students without disabilities.

7. *High-needs students:* Students who are at risk of educational failure or in need of special assistance and support. For example, students who are living in poverty, attending high-minority schools and are far below grade level; who left school before receiving a regular high school diploma, are at risk of not graduating with a diploma on time, are homeless, in foster care, have been incarcerated, have disabilities, or are English learners.

Summary

A major objective of state school finance systems is to provide adequate resources for all public schools so students can have equal opportunity to achieve desired educational outcomes (Berne & Stiefel, 1984). However, there is an inequitable distribution of funds throughout the United States public school system across districts and among schools within the same school districts. This system is extremely complex

due to a multitude of regulations and funding formulas (Imazeki, 2013). For instance, categorical aid was mostly state-funded and was spent in accordance with the regulations of each program. This will be further discussed in Chapter 2.

In addition to disparities in revenues and expenditures, there are clearly differences in average teacher salaries, student characteristics and student achievement in Mathematics. For example, in 1990, the Los Angeles City School District was sued by students in predominantly minority schools because their schools were overcrowded, "less well funded than other schools, disproportionately staffed by inexperienced and unprepared teachers hired on emergency credentials. The unequal assignment of teachers created ongoing differentials in expenditures and access to educational resources" (Johnson & Kritsonis, 2006, p. 6). Teacher salaries were lower in high-poverty schools where student needs were greater. Additionally, teachers were faced with poorer working conditions coupled with fewer resources and larger class sizes. Also, there were a significant number of teachers who were not NCLB compliant with the required certification (or credential) and subject-matter competency in high-needs schools.

CHAPTER 2

LITERATURE REVIEW

In this section, I will provide a background on how school revenues are generated in California and examine the distribution of resources. I will also investigate per pupil expenditures and its relationship to average teacher salaries and student achievement (namely API Base Scores and AYP Math Proficiency). I will take particular note of disparities and inequities. This section will, further, examine how Title I – a component of NCLB - strives to level the playing field by equalizing funding.

Sources of Revenue

There are five primary sources of district operating funds for California as follows: federal, state, local property taxes, state lottery, and miscellaneous local. Figure 2.1 illustrates that the main source of funding for K-12 in California stems from the state. In 2011, 56% of funding came from state aid, 21% from local property taxes, 14% from federal, 8% from other local (and miscellaneous), and 1% from state lottery.

The state provides the majority of K–12 revenues

Source: California Department of Education (www.cde.ca.gov/fg/fr/eb/documents/allfundingsources.xls).
Notes: Figure excludes non–Proposition 98 state general fund contributions (for department operations, state special schools, debt service, and state contributions to teacher pensions) and local debt service. The share of funds coming from each source changes slightly each year. Over the past decade, the state's contribution has averaged 55%.
From: Just the Facts: Financing California's Public Schools, PPIC, 2011.

Figure 2.1 – Sources of Revenue

In addition to California receiving various sources of revenue, a 2011 Public Policy Institute of California (PPIC) report shows that the sources of funding vary across school districts (Weston, 2011b) as indicated in Figure 2. For example, Fresno Unified, Los Angeles Unified and San Bernardino City Unified showed a larger percent of state funds exceeding the state average. In comparison, Palo Alto Unified, Huntington Beach Union High, Sebastopol Union Elementary and San Francisco Unified showed a larger percent of property taxes exceeding the state average (Weston, 2011b).

Sources of funding vary across California's districts
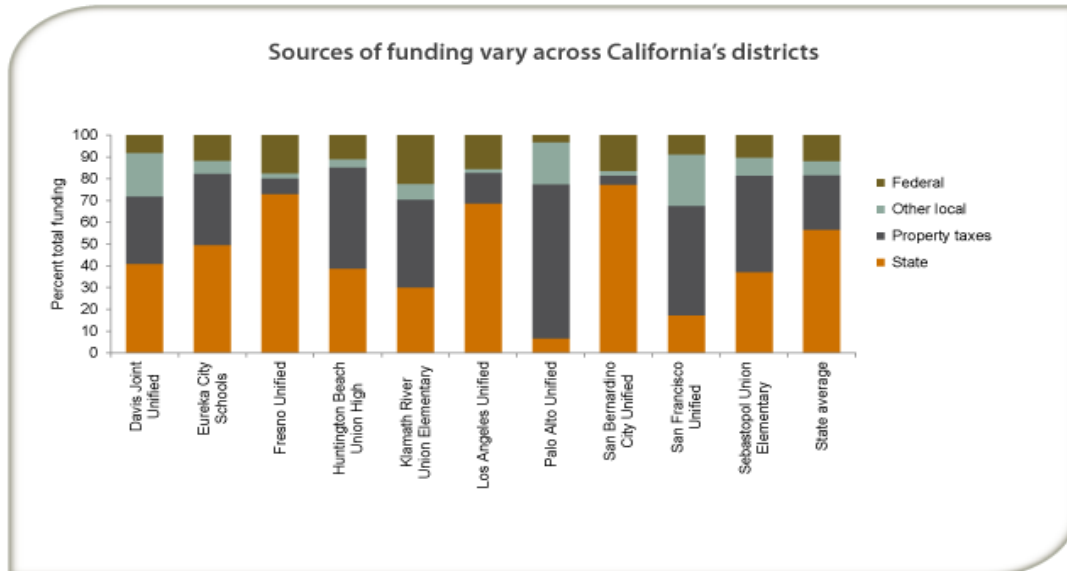
Source: Education Data Partnership, 2009–10 district financial reports (available at www.ed-data.k12.ca
.us/Pages/Home.aspx).
Note: These districts were selected to show variation in the proportion of funds from the four main sources
of funding across regions in the state.
From: Just the Facts: Financing California's Public Schools, PPIC, 2011.

Figure 2.2 – Sources of funding across school districts.

Property Taxes

Before 1971, school districts in California levied their own property tax (Weston, 2010a) with limited state and supplemental aid. Local property taxes were the primary source of revenue (Lang & Sonstelie, 2014). "A local district's ability to raise revenues often is a function of local taxable property wealth and sometimes of the incomes of local residents" (Baker & Cocooran, 2012, p. 3). Occasionally, a district with lower assessed property values might tax itself at a higher rate to acquire the revenue needed per pupil (Howell & Miller, 1997). Each district had an elected school board that determined how its revenue was spent.

However, two events changed California's school finance system and shifted "the burden of financing schools from districts to the state and limiting local districts' revenue-raising authority" (McGhee, Weston, & Krimm, 2013). The first event occurred in 1971 when the state Supreme Court declared in Serrano v. Priest that differences in school funding due to variances in wealth violated the state constitution. As a result of this ruling, revenue limits were created for each California school district with the intent of equalizing funding. A revenue limit is defined as a per pupil entitlement financed by property tax revenue and state aid (Weston, 2010a).

The second event followed in 1978, when voters passed Proposition 13, which created a statewide property tax rate set at 1 percent of assessed value and limited annual increases in assessed value" (Weston, 2012a, p. 1). which put a ceiling on property taxes and limited increases for each owner. This was critically important because Proposition 13 restricted the districts' ability to increase revenue and resulted in massive cuts for local districts (McGhee et al., 2013). The state replaced most of the lost revenue and assumed more responsibility for providing and determining the amount of revenue a school district receives. During 2009-2010, California had 963 public school districts (Lang & Sonstelie, 2014). These public schools were primarily funded by local, state, and federal governments, culminating in a product of shared taxation.

A typical California property tax bill consists of several taxes and charges including the 1 percent rate, voter–approved debt rates, parcel taxes, and Mello - Roos taxes (such as flexible revenue sources for local governments) as illustrated in Figure 2.3. The 1 percent rate (also known as the 1 percent general tax levy or countywide rate) is

the largest tax on the property tax bill and the only rate that applies uniformly across every locality. The taxes due from the 1 percent rate and voter–approved debt rates are based on a property's assessed value (Alamo & Whitaker, 2012).
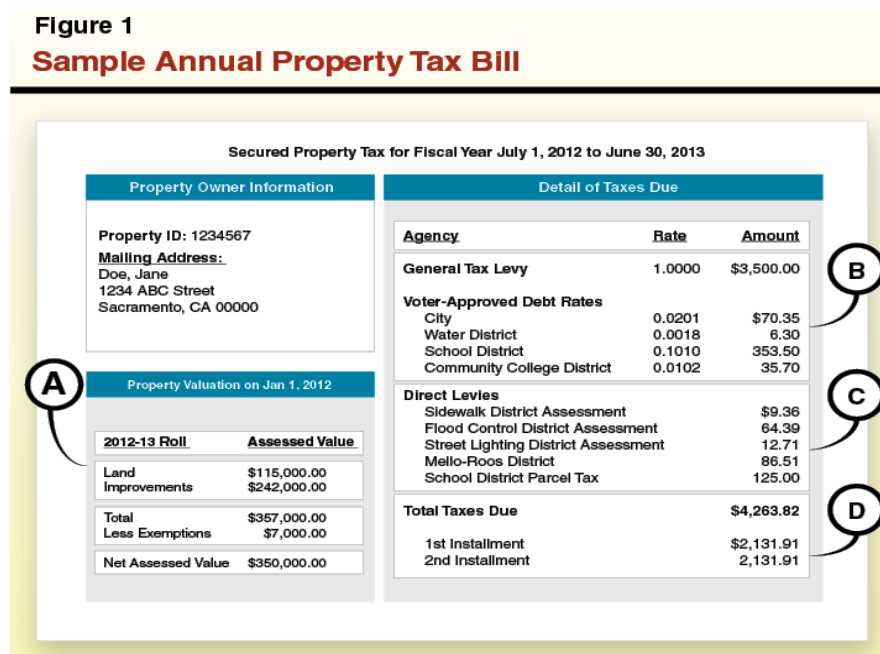
Figure 2.3 – Sample annual property tax bill
Source: Legislative Analyst's Office, November 2012

With a few exceptions, a property's assessed value typically is equal to its purchase price adjusted upward each year by 2 percent. According to the California Constitution, other taxes and charges may not be based on the property's value. Examples of taxed properties include "common types such as owner–occupied homes and commercial office space, as well as less common types like timeshares and boating docks" (Alamo & Whitaker, 2012, p. 1) .

Local property taxes produce varying amounts of revenue depending on the value of real estate assets. "For many California taxpayers, the property tax bill is one of the largest tax payments they make each year" (Alamo & Whitaker, 2012, p. 1). Thousands of California local governments such as K - 12 schools, community colleges, cities, counties, and special districts depend on this source of revenue from property tax bills because it represents the foundation of their budgets (Alamo & Whitaker, 2012) .

In California, disparities existed in the property taxes that residents paid in various counties. For example, during 2012, single family home residents in the following counties paid taxes above the national average of $2,828: Marin County paid the highest property tax ($8,434); Santa Clara County ($7,496); San Mateo County ($6,901); San Francisco County $5,776); and Alameda County ($5,024) (Wee, 2014). On the other hand, single family home residents in the following counties in California paid below the national average: Colusa County ($41,293); Sierra County ($1,285); Del Norte County ($1,186); Tehama County ($1,158); and Modoc County paid the lowest ($1,019) (Wee, 2014).

This is important because these fluctuations in property values and tax rates created large differences in per pupil funding across school districts (Weston, 2011b). For instance, counties received between 65 percent (Alpine) and 10 percent (Yolo) of the property taxes collected within the county lines. According to the Legislative Analyst Office (LAO), "although property taxes and charges play a major role in California finance, many elements of this financing system are complex and not well understood" (Alamo & Whitaker, 2012, p. 1).

Role of California State Government

State funding is mostly composed of state income taxes, sales tax, categorical funds that are restricted for special needs, and foundation funding. In California, the state government is responsible for collecting taxes from local governments and then returning revenues to school districts contingent upon various factors such as the number of students and the need for redistribution to poorer districts (Marlow, 2000). The bulk of revenue provided to schools is determined by the state legislature, which is responsible for weighing the needs of school districts against those of other state agencies and local governments (Rose et al., 2010). The state supplemented that revenue with basic aid that was distributed according to a simple formula. Formulas are discussed later on in this chapter.

According to researcher Weston (2012a), "the main driver of state revenues for California schools is Proposition 98, a 1988 initiative that set a minimum state spending level for K–12 school and community colleges that is approximately 40 percent of the state's general fund" (p. 2). The steep budget cuts, during the Great Recession, reduced Proposition 98 K–12 per pupil funding by nearly 15 percent from its 2007–08 peak. More reductions followed after adjusting for inflation. As a result of the slow recovery, this particular funding has remained relatively flat since 2008–09 (Weston, 2012a). School districts were able to respond to severe state funding cuts gradually by using reserve funds and more than $4 billion in federal stimulus funds that expired after 2010–11. Consequently, total spending per pupil in 2010–11 was about 5

percent below its 2008–09 peak. Surveys from the LAO revealed that districts have made additional cuts since then (Weston, 2012a).

The two primary objectives for current state school finance formulas (or aid distribution formulas) are to account for differences in equal educational opportunity across schools and districts, and account for the local school districts' ability to pay for those costs (Baker & Cocooran, 2012). Technically, state systems provide aid to offset differences in revenue at the local level. "Many states use multipliers or weights in their general aid formula in order to target more aid to children with greater needs. Other states use separate categorical allocations for specific programs, services, or student populations, while still others use a combination of weights and categorical funding" (Baker & Cocooran, 2012, p. 4). Weights and categorical funding are further discussed in this chapter.

Unrestricted Funds

School districts receive two types of funding: unrestricted and restricted funds. Unrestricted general purpose funds are used for any educational purpose. Examples of unrestricted funds are revenue limits, state lottery, parcel taxes and donations.

Revenue limits. In order to address disparities in school funding, California implemented *revenue limits* in 1973-74, which provided the largest share of general purpose funding for the 978 school districts in the state (Weston, 2010a). "Under California's school finance system, most general-purpose education funding is apportioned to school districts through a calculation called the revenue limit. Each school

district has a revenue limit funding amount per unit of average daily attendance (ADA)"
(California Department of Education, 2008, p. 1). The average daily attendance (or
ADA) "is the total number of days of student attendance divided by the total number of
days in the regular school year. A student attending every day would equal one unit of
ADA. The state uses a school district's ADA to determine its total general-purpose
(revenue limit) funding and some other type of funding" (EdSource, 2004, p. 3).

A school "district's total revenue limit is funded through a combination of local
property taxes and state General Fund aid" (California Department of Education, 2008, p.
1). Essentially, the State makes up the difference between property tax revenues and the
total revenue limit funding for each district (California Department of Education, 2008).
"The revenue limit is the funding base for expenditures that can be determined at the
local level. Revenue limits are the prime component of every school district's budget.
The dollar amounts per pupil vary between districts" (School Services of California, Inc.,
2011, p. 1).

Local agencies receive the dollar amounts authorized by their total revenue limit
income regardless of their local property tax wealth. The Educational Data Partnership
(2012) asserts that "the Legislature and governor almost always provide inflation (cost-
of-living) adjustments to revenue limits" (p. 1). The school board and local voters cannot
increase the revenue limit. If local property tax revenues increase within a district, the
increase is credited to the district's revenue limit. The state's contribution is then
decreased by the same amount (Educational Data Partnership, 2012). Consequently, the

revenue limit dollar amount varies when pupil attendance increases or decreases which

impacts the district budget (School Services of California, Inc., 2011).

In most years, the base revenue limit was calculated by adjusting the prior year's

base revenue limit for inflation or *cost of living adjustment* (Weston, 2010c). In 2005 -

2006, the average base revenue limit was $5,183 per average daily attendance (ADA). In

2006-07, schools received $35.1 billion as revenue limits, which accounted for more than

half (59.8%) of schools' revenues and more than nine out of ten (91.0%) of the

unrestricted dollars schools received statewide. During 2006-07, Palo Alto Unified

School District received 98% of its revenue limit funds from local property taxes and 2%

from the State General Purpose fund. In comparison, Alameda City Unified School

District received 34.4% in local property taxes and 65% from the State General Purpose

fund.

Revenue limits also paid for teacher salaries and benefits and other school

operational costs such as janitorial services, administration, desks, and electricity

(Weston, 2011a). High school districts had the highest base revenue limits per ADA,

compared to elementary and unified districts. For example, high school districts received

an average of nearly $1,000 per ADA more than elementary districts and over $780 per

ADA more than unified districts (Weston, 2010b). This was due to higher costs for high

school districts that provided specialized subjects, laboratory equipment, or career-

technical education.

However, all districts faced certain fixed costs such as a superintendent and

school board, but small districts lacked *economies of scale*, which resulted in higher

average costs per pupil than in large districts (Weston, 2010b). Economies of scale is the cost advantage that arises with increased output of a product. It "measures the relationship between average cost and output" (Andrews, Duncombe, & Yinger, 2002, p. 247). For a school, economies of scale are realized as long as one service experiences lower average total costs by enrolling more students (Tholkes & Sederberg, 1990, p. 11). Ideally, as student enrollment increases, operating costs and PPE decreases. In contrast, if student enrollment increases and operating costs increases, then it is known as *diseconomies of scale* suggesting there are inefficiencies within the organization (Heakel, 2015).

According to the California Department of Education (CDE), in 2006-07, unrestricted funds totaled $38.5 billion. Statewide, 89.7% of these funds paid for salaries and benefits; 8.0% paid for services and other operating expenditures such as electricity, heating, water, and insurance; and 2.3% paid for books and supplies (Kaplan, 2009). In 2009-10, unrestricted funding sources consisted of nearly 70 percent of total school district revenues in California which accounted for $5,700 per pupil (Weston, 2011a).

Parcel Taxes. California is the "only state that allows parcel taxes as a supplemental method of funding schools. The first parcel tax was assessed in 1983 and is the largest source of discretionary tax revenue available to school districts" (Chavez & Freedberg, 2013, p. 3). Parcel taxes are essential in funding small class sizes, music programs, and other related programs.

"The key purpose of parcel taxes is to support capital investments or to finance current operating expenditures" (Lang & Sonstelie, 2014, p. 7). Since the parcel tax

revenue does not count as local revenue for the state's revenue limits, schools can use this as a means to exceed revenue caps imposed by the state (Lang & Sonstelie, 2014). Essentially, they are able to circumvent the cap on property taxes imposed by California Proposition 13 in 1978. From 2004 to 2008, California school districts held 146 parcel tax elections. In 86 of those elections, nearly two thirds of voters supported the proposed tax.

According to a 2013 EdSource report, the California Department of Education SACS Unaudited Data Files showed that the number of California school districts with parcel taxes increased from 57 during 2003-04 to 108 during 2012-13 (Locally, 2013). Out of almost 1000 school districts, 222 districts (23%) held parcel tax elections and only 124 districts (13%) passed one parcel tax.

The amount of revenues generated using "parcel taxes represent a small portion of total revenues spent on K-12 education" (Locally, 2013, p. 9). In 2003-04, 57 districts with parcel taxes raised $137 million dollars. In comparison, during 2011-12, 93 districts with parcel taxes in raised a total of $343 million dollars. Even though 93 districts with parcel tax revenues in 2011-12 received a total of more than $5 billion from a combination of federal, state, and local sources, the parcel tax revenues only included 6% of total revenue in those districts (Locally, 2013).

Restricted Funds

On the other hand, restricted (or categorical) funds are earmarked for special programs and specific purposes such as special education, school lunches, and professional development **.** **"**Categorical aid is distributed by the state and federal governments according to the needs of the children in the district and the special programs for which the district qualifies" (EdSource, 2009, p. 2). The funding for these types of programs is "restricted," meaning that it may not be expended as determined by the local agency, but must be expended for the categories as determined by the State" (School Services of California, Inc., 2011, p. 2). "One major reason why federal and state categorical (restricted) programs were created [was] to cover (sometimes only partially) the gap between the base funding and the true cost of educating some groups of students and districts" (Weston, 2011, p. 8).

California has the greatest number of categorical programs in the United States (Imazeki, 2007b). Weston, Sonstelie, and Rose (2009) compiled over 60 state categorical revenues that existed in 2005–06. Most of the restricted funding in that particular study was intended for an array of specific programs, facilitating efforts for at-risk students such as English learners and special education, with the intent of improving performance outcomes. Restricted funding was also used for pupil transportation, class size reduction, school and library improvement, school safety and professional development for teachers. In addition, school districts received restricted funds from the federal government through Title I and the National School Lunch Program (Weston et al., 2009).

In 2006-07, restricted revenues in the amount of $20.1 billion were earmarked (or reserved) for specific purposes and accounted for 34.3% of schools' statewide revenues. Schools received about 50.5% of earmarked funds from the state, 25.4% from the federal government, and 24.1% from local sources. (Kaplan, 2009). In 2009-10, restricted funding comprised 30 percent of school district revenues which is nearly $2,600 per pupil (Weston, 2011a).

This is important because the data shows that variances in revenue sources, amounts of revenue and types of funding existed in the California public school finance system. Thus, funding mechanisms and legislation were created to address disparities and equalize per pupil funding in order to improve educational opportunities and student performance outcomes.

Elementary and Secondary Education Act, No Child Left Behind, and Title I

Funding

ESEA has been reauthorized seven times, most recently in January 2002 as the No Child Left Behind Act (NCLB). Although each reauthorization has brought changes to the program, its central goal of improving the educational opportunities for children from lower income families remains the same. In fact, NCLB is the largest program authorizing federal spending on supporting elementary and secondary education that focuses on improving the academic achievement of low-achieving students in schools with high concentrations of children from low-income families. NCLB is governed by statutory and regulatory requirements of Title I (Part A) of ESEA (U.S. Department of

Education, 2013). NCLB is a controversial law that places educators under increasing pressure to improve the academic achievement of all students. Teachers are required to be highly qualified while educating students in safe classrooms (Yell, 2010).

Within this framework, the purpose of Title I Part A amended by NCLB "was to level the educational playing field " (Liu, 2011, p. 1) by equalizing "educational opportunities and resources for disadvantaged children" (Aud, 2007, p. 1). Additionally, the intent was to improve academic achievement for students with special needs and bridge the gaps between those who are economically disadvantaged and advantaged. Title I was designed to help students served by the program achieve proficiency on challenging State academic achievement standards (U.S. Department of Education, 2014a).

"The largest share of federal revenues to local public school districts are Title I revenues, which are targeted on the basis of poverty" (Baker & Cocooran, 2012, p. 9). "From its inception, the primary goal of the Title I grant program has been to provide extra resources to help high poverty schools meet the greater challenges of educating disadvantaged students to reach the same high standards that are expected for all students (Stullich, 2011, p. 2). Supplemental funds were provided to local education agencies (LEAs) and schools with high numbers or high percentages of children from low-income families to help improve the education of disadvantaged K-12 students. According to the 1965 ESEA, local education agencies (LEAs) are defined as county offices of education, districts, and direct-funded charter schools (California Department of Education, 2015b).

Even though the California state finance system aims to ensure equal educational opportunity by providing a sufficient level of funding distributed to districts, the costs of

education vary based on geographic location, regional differences in teacher salaries, school district size, population density, and various student characteristics. Essentially, the level of funding should increase relative to the level of concentrated student poverty. Hence, state finance systems should provide more funding to districts serving larger shares of students in poverty (Baker et al., 2010a) in order to meet the demand for school efficacy.

Economists often evaluate systems as either *progressive*, *regressive,* or *flat*. A *progressive* finance system allocates more funding to districts with high levels of student poverty, whereas a *regressive* system allocates less funding to those districts, and a *flat* system allocates approximately the same amount of funding across districts with varying needs. "Student poverty – especially concentrated student poverty – is the most critical variable affecting funding levels" (Baker et al., 2010a, p. 7). The distribution of funding to account for student needs and the overall funding level in states are significant elements to fair school funding. "Without a sufficient base, even a progressively funded system will be unable to provide equitable educational opportunities" (Baker et al., 2010a, p. 1).

In addition, under the current system, different districts are funded at different rates which is a clear violation of horizontal equity (Rose et al., 2013). Horizontal equity exists when school districts that are similar to each other in relation to the cost of providing basic education (such as wealth, size, and socioeconomic status) have comparable levels of funding. This is also referred to as equal treatment of equals (Toutkoushian & Michael, 2007). On the other hand, vertical equity exists when "school

districts that have higher costs to educate student populations…receive more funding than their counterparts to compensate for this difference" (Toutkoushian & Michael, 2007, p.2). This is called the unequal treatment of unequals.

"Federal funds are currently allocated through four statutory formulas that are based primarily on census poverty estimates and the cost of education in each state" (U.S. Department of Education, 2014b, p. 1). The statutory formulas illustrated in Table 2.1 are used to distribute Title I funds to school districts as follows: (1) Basic Grant, (2) Concentration Grant, (3) Targeted Assistance Grant, and (4) Education Finance Incentive Grant funding formulas. Although school districts have some discretion in how they distribute Title I funds among schools within the district, the law requires them to prioritize the highest-poverty schools (Federal Education Budget Project, 2014a).

Table 2.1

Eligibility Criteria, Determining Factors, and Adjustment Procedures for
Title I-A Grant Allocations to LEAs

Formulas		Basic Grant	Concentration Grant	Targeted Grant	Education Finance Incentive Grant
Eligibility Criteria	Number of formula children	At least 10	More than 6,500	At least 10	At least 10
		and	or	and	and
	Percentage of formula children	More than 2%	More than 15%	At least 5%	At least 5%
Determining Factors	Child Count	Number of formula children	Number of formula children	Number and percentage of formula children	Number and percentage of formula children
	Cost of providing education	State per-pupil expenditure	State per-pupil expenditure	State per-pupil expenditure	State per-pupil expenditure

Table 2.1 (continued)

Formulas		Basic Grant	Concentration Grant	Targeted Grant	Education Finance Incentive Grant
	Fiscal effort	N/A	N/A	N/A	State per-pupil expenditure state per-capita personal income
	Financial equity	N/A	N/A	N/A	LEA per-pupil expenditure
Adjustment Procedures	Ratable reduction	Yes	Yes	Yes	Yes
	State minimum	Yes	Yes	Yes	Yes
	Hold-harmless	Yes	Yes	Yes	Yes

Basic Grant Formula

The *Basic Grant* formula allocates funding to school districts based on the concentration of poverty and the number of poor children in the communities they serve (Edwards & Perry, 2004) . "The purpose of the grant is to meet the educational needs of low-achieving students enrolled in the highest poverty schools" (U.S. Department of Education, 2014a). "Any school district with at least 10 poor children and 2 percent of its students in poverty receives funding through the Basic Grant formula". Nearly all school districts (including affluent school districts) receive some type of Title I funding through this formula. In fiscal year 2014, $6.4 billion (45% of all Title I funding) was distributed through the Basic Grant formula (Federal Education Budget Project, 2014a).

However, certain conditions are stipulated under the Basic Grant formula. Once school districts pass the threshold percentage of poor children required to receive funding, they receive the same amount of money per poor child regardless of how many

poor children they serve (Federal Education Budget Project, 2014a). In other words, a

school district with 25 percent of children in poverty gets the same amount of money per

poor child as a school district with 99 percent of children in poverty. This distribution

takes place despite the consensus among education stakeholders and policymakers that it

costs more to educate higher percentages of disadvantaged students (Jonathan Kaplan,

2013).

Concentration Grant Formula

The *Concentration Grant* formula also provides funding to schools based on the

number of poor children they serve. To receive money though the Concentration Grant

formula, school districts must have at least 15% of children in poverty, or 6,500 poor

children, whichever is less. Concentration Grant funds are provided on top of money a

school district receives through the Basic Grant formula. In fiscal year 2014, $1.4 billion,

or about 9% of Title I funding, was distributed through the Concentration Grant formula

(Federal Education Budget Project, 2014a). As with Basic Grant funding, Concentration

Grant funding is constant per poor child regardless of the number of poor students over

the minimum requirement.

Targeted Assistance Grant Formula

Unlike the Basic and Concentration Grant formulas, the *Targeted Assistance*

Grant (TAG) formula provides more money per child as a district's poverty rate

increases. Thus, higher-poverty school districts get more money per poor child than more

advantaged schools do. Some state school finance formulas use weightings to drive

different amounts of funding to districts based on a variety of different needs. A

"weighting" is an adjustment to per-pupil revenue or expenditure data designed to

address differences in needs and costs (Baker, Sciarra, & Farrie, 2010b). In a 2007 U.S.

Department of Education report, Sonnenberg and Provasnik state that it is important to

recognize that the targeted Title I formula weight illustrated in Table 2.2 are "not a

system whereby a local education agency (LEA) with 35,515 Title I-eligible children

multiplies each child by a weighting factor of 3.0. Only the number of Title I-eligible

children in the LEA above 35,514 (the threshold for the fifth category) can be weighted

(or multiplied) by 3.0" (Sonnenberg & Provasnik, 2007, p. 10).

Table 2.2

Targeted Title I Formula Poverty Weights With Equity Factor Less Than 0.10
Source: Elementary and Secondary Education Act

School Districts % Of Children in Poverty	Per Child Weight in Funding Formula
0-15.6	1
15.6-22.1	1.75
22.1-30.2	2.5
30.2-38.2	3.25
>38.2	4

Table 2.2 (continued)

School District's # Of Children in Poverty	Per Child Weight in Funding Formula
0-691	1
692-2,262	1.5
2,263-7,851	2
7,852-35,514	2.5
>35,515	3

Each additional child in poverty above 38% yields a district four times as much Title I funding as each poor child up to 16% of children in poverty. Each additional child in poverty beyond 35,515 yields a district three times as much Title I funding as its first 691 children in poverty. In fiscal year 2014, $3.3 billion, or 23 percent of federal Title I funding, was distributed through the TAG formula (Federal Education Budget Project, 2014a).

Education Finance Incentive Grant Formula

The intent of the *Education Finance Incentive Grant* (EFIG) formula is "to reward "good school finance states" that spend more state resources on public education and equitably distribute funds. High poverty school districts in "bad school finance states" that inequitably distribute state and local education funding are assigned extra weight which results in extra revenue for those students in certain categories. For example, "a poor student may be given an extra weight of 0.1 and this generates ten percent more revenue for that student, relative to the revenue allocated for a non-poor

student" (Imazeki, 2006b, p. 3). The formula takes into account *fiscal effort* (the

percentage of per capita income devoted to as well as how equitably the state school

finance system distributes state and local funding for education (Federal Education

Budget Project, 2014a). "Once a state's EFIG allocation is determined, funds are

allocated (using a weighted count formula that is similar to Targeted Grants) to local

education agencies (LEAs) in which the number of children from low-income families is

at least 10 and at least 5 percent of the LEA's school-age population. LEAs are a public

board of education or other legal public authority within a State whose administrative

role is to perform a service function for public elementary or secondary schools in a city,

county, township, school district, or other political subdivision. LEAs also include a

combination of school districts or counties that is recognized in a State as an

administrative agency for its public elementary or secondary schools (United States

Department of Education, 2016) . LEAs distribute the Title I funds they receive to

schools with the highest percentages of children from low-income families "(U.S.

Department of Education, 2014b, p. 1).

Within states, funding is distributed to school districts in a manner similar to the

TAG formula, except that in "bad school finance states" (such as California) weights are

increased to account for marginal costs. In fiscal year 2014, $3.3 billion, or 23% of

federal Title I funding (U.S. Department of Education, 2013), will be distributed through

the EFIG formula (Federal Education Budget Project, 2014a).

The EFIG formula strives to encourage states to ensure equitable funding. Thus,

"the EFIG formula provides funding to school districts based on four variables: (1)

weighted low-income student population, (2) per-pupil expenditure, (3) effort, which

measures the State's effort in providing funding for education per pupil compared to its

relative wealth as measured by the state's per capita income and (4) equity, which

measures the degree to which education expenditures vary among school districts within

the state" (Federal Education Budget Project, 2014c, p. 1). The formula employed is:

EFIG Funding = (# Poor Children) (PPE) (Effort) [1.3 - Equity Factor].

School finance inequity is defined as "the degree to which per-pupil spending

varies across districts within a state relative to the state's average per-pupil expenditure"

(Federal Education Budget Project, 2012b, p. 1). The U.S. Department of Education

calculated school finance inequity for each state in accordance with the EFIG formula

and assigned each state an "equity factor" in order to determine educational equity.

The "equity factor" is defined, in federal law by Title I (Part A) of NCLB, as a

standardized measure used to determine how evenly (or unevenly) funding is distributed

across school districts in a state (Federal Education Budget Project, 2014b). In other

words, "this number represents a measure of variation in per-pupil expenditures across a

state". (S. L. Aud, 2007). Hence, "the more equitable the distribution of education

funding across districts is in a state, the lower the equity factor"(Federal Education

Budget Project, 2012b). According to Dr. Susan L. Aud, a researcher and professional

lecturer at John Hopkins University, this is an extremely complex process that many

program administrators and the general public have difficulty understanding (S. L. Aud,

2007).

Federal Title I funding has increased by $5.6 billion, or 61%, since 2001. All of the new Title I funding with amounts above the fiscal year 2001 level was distributed through the TAG and EFIG formulas. These two formulas most closely focus funding on the disadvantaged students specified in Title I. Funding for the Basic Grant formula, the least targeted of all Title I's formulas, declined each year between 2001 and 2009, which contributed to the shift in funding to the TAG and EFIG programs (U.S. Department of Education, 2013).

Figure 2.4 shows an example of the shifts in fiscal year 2002 where the percentages for basic funding decreased from 69% to 45% in 2014, and concentrated funding decreased in fiscal year 2002 from 13% to 9% in 2014. On the other hand, the percentages increased for targeted funding in fiscal year 2002 from 10% to 23% in fiscal year 2014, and incentive funding increased in fiscal year 2002 from 8% to 23% in fiscal year 2014 (U.S. Department of Education, 2013).
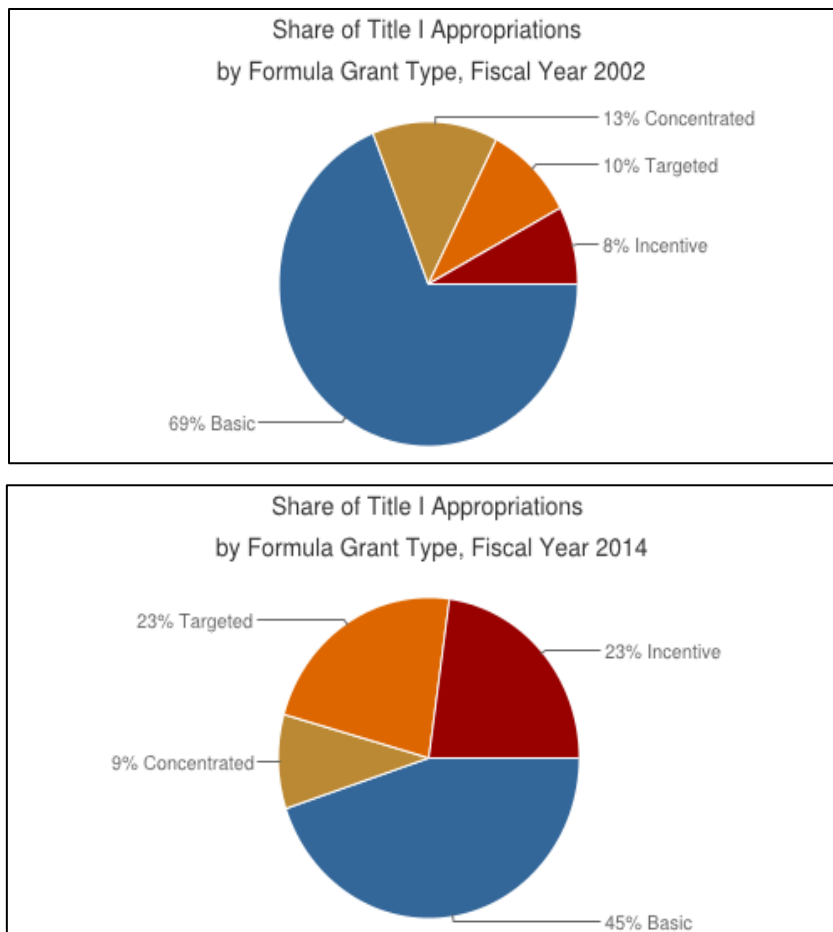
Figure 2.4 – Formula grant types
Source: U.S. Department of Education Budget Tables

All of the four different grant formulas previously mentioned have adjustment

procedures such as "hold harmless" provisions in the Title I-A formulas to protect LEAs

from sudden decreases in funding. Many state formulas include "hold harmless

provisions" allowing modifications to funding formulas, that limit revenue reductions, so

districts are protected from harm due to funding formula changes. This procedure is

frequently used to protect districts from revenue declines when there is a decrease in

enrollments. For example, additional funding and/or alternatives for foundation grants are

provided to prevent resource drains. This is significant because the literature reiterates the complexities and disparities in the public school finance system particularly revolving around the distribution of resources.

Targeted Assistance Programs and Schoolwide Programs

The two primary types of assistance provided by Title I are *Targeted Assistance Programs* and *Schoolwide Programs*. Targeted Assistance Programs provide services to eligible children who are identified by schools as the most at risk of failing to meet the state's academic content standards, supplemental services typically provided by nonfederal sources in the absence of Title I (Part A) funds, and support for effective research-based teaching methods in addition to instructional strategies that strengthen the core curriculum (U.S. Department of Education, 2013).

The primary objectives include providing instruction by highly qualified teachers, extended learning opportunities for students, an accelerated high-quality curriculum, and strategies for increased parental involvement. Forty percent or more of the students must be low-income in order for schools to receive Targeted Assistance. Funds can be used for targeted services, needs assessment, extended day activities, professional development, data specialist, coaches, supplemental instructional services, early identification of at-risk students, reorganization of class schedules for additional teacher planning time, overhaul of school discipline, and additional teachers to serve Title I students (U.S. Department of Education, 2013).

In comparison, *Schoolwide Programs* are more flexible and designed to enhance the entire educational program. "A School-wide Program is a comprehensive reform strategy designed to upgrade the entire educational program in a Title I school; its primary goal is to ensure that all students, particularly those who are low-achieving, demonstrate proficient and advanced levels of achievement on State academic achievement standards" (California Department of Education, 2014b, p. 1). A formal and comprehensive plan must be developed for each school outlining how both school and Title I resources will be used to meet the identified needs. Additionally, the school-wide plan must align with budget expenditures.

Furthermore, according to the California Department of Education (California Department of Education, 2014e), a Title I school may operate as a School-wide Program only if a minimum of 40 percent of the students in the school are from low-income families and live in the attendance area served by the school. School-wide Programs should promote improved instruction for all students especially the low-achieving. Title I School-wide funds are used to provide professional development for all staff to support all students. Additionally, districts must illustrate that the comprehensive level of educational services is higher with Title I funds than it would be without this federal money. All content teachers and paraprofessionals, including special education staff, must be highly qualified (California Department of Education, 2014e).

This is significant because previous research shows there are different types of federal funding resources determined by concentrated poverty under the ESEA. The distribution of resources is based on complex grant formulas with varying criteria. The

overall intent is to equalize funding and provide educational opportunities in order to improve achievement, particularly for those who are underserved.

Major Flaws in School Finance

The consensus in both the policy and research communities is that California's system is in dire need of reform (Weston, 2010b). Given its complicated history, it is not surprising that California's school finance system is widely criticized for three major flaws: it is *inadequate, inequitable,* and *overly complex* (Weston, 2012a). First, critics assert that California's school finance system is *inadequate* because it does not enable all students to meet the state's academic performance standards. Weston (2012a) states that "one way to measure adequacy is to look at per pupil spending. When we compare California's per pupil funding level to the national average, it is clear that the state has been spending less for decades" (p. 3). Although the national average per pupil spending peaked during 2007-08, California was spending nearly $750 less.

Additional concerns exist at the district level where "the receipt of a lump sum Title I-A grant shields officials from even knowing that four separate formulas exist" (Miller, 2009, p. 4) and policymakers might not have a clear understanding of the formulas. Furthermore, the waning time between the collection of data that drives "the formulas and current allocations makes connecting precise local funding needs to Title I-A grants virtually impossible" (Miller, 2009, p. 4).

It is *inequitable* because there are different levels of funding and expenditures for various states, districts, and schools within districts. "This inequitable funding is a

function of the highly decentralized system of governance that began when local

communities created public schools more than 200 years ago. These schools were

typically supported by local property taxes—which produced widely varying amounts of

revenue from one community" depending on real estate assets.

In addition, due to the large diverse student population, there are broad ranges of

inequities in relation to race, socioeconomic status (SES), and zip code. Since the

property tax bases of school districts are so different, the funding system produces large

variations among districts in revenue per pupil. These variations contribute to the

economic disparities, pockets of wealth, and differences in district tax bases and

geographic locations (Sonstelie, Brunner, & Ardon, 2000). California's school finance

system is also *overly complex* because the sources of revenue and expenditure vary, along

with the political climate, convoluted funding laws and tiers in each geographic location.

This is significant because the major flaws previously mentioned in California's

school finance system highlight the variations that exist in relation to revenue streams,

PPE, and student performance outcomes. I will examine these in more detail later on

when discussing why disparities in per pupil spending exist and the relationship between

PPE and student achievement.

Per Pupil Expenditures

There are disparities in K-12 per pupil expenditures in California school districts

and schools within the same district. As previously mentioned, a key component for

measuring adequacy in California's school finance system is to examine per pupil expenditures (or spending). PPE is the measure of all current operating expenditures for the school district's fiscal year divided by the number of children served based on the average daily attendance (ADA). "Per pupil expenditure is a commonly used measure of the aggregate level of financial resources available in public school districts" (Baker, 2012, p. 21).

The cost or current expense of education includes certificated salaries, classified salaries, employee benefits (excluding state payments to retirement), books and supplies, equipment and replacement, as well as services and indirect costs (California Department of Education, 2015c). The funds for this expense come from the General Fund. In this research study, PPEs are the combined total of average teacher salaries and benefits, classroom materials, supplies and equipment, and expenditures for utilities, maintenance, and operations of facilities.

The economic recession hit California's K-12 districts particularly hard. According to James Poterba, President and Chief Executive Officer (CEO) of the National Bureau of Economic Research (NBER), the U.S. recession began in December 2007 and ended in June 2009 (National Bureau of Economic Research, 2014) for over a 19-month time period. The NBER asserts that a recession is a period of diminishing activity where there is significant decline in economic activity spreading across the economy and can last from a few months to over a year (National Bureau of Economic Research, 2010).

Prior to the recession, California PPE (or spending) was $10,687 (inflation-adjusted), which ranked 25th in the nation. According to an EdSource report (Fensterwald, 2013), "local districts and state government in California spent $8,308 per student, $3,428 – about 30 percent – below the U.S. adjusted average of $11,735" (p. 1) in 2011-12.

Furthermore, several of the nation's real estate markets were challenged with weak conditions. Hence, many school districts were unable to raise more money from the property tax without raising rates. According to researchers Leachman and Mai (2014), "localities collected 2.1 percent less in property tax revenue in the 12-month period ending in March 2013 than in the previous year, after adjusting for inflation" (p. 2). Additionally, the expiration of most federal aid at the end of the 2011 fiscal year was a key reason why state education funding dropped so sharply, in the 2012 fiscal year, and remained suspended at such low levels.

Overall, from 2011-2012, disparities in California's PPE stemmed from a combination of various factors such as a sharp decrease in state funding and real estate property taxes, the Recession, and expiration of federal aid. States used emergency fiscal relief from the federal government which included both education aid and other types of state fiscal relief to cover a substantial share of their deficiencies during the 2011 fiscal year (Oliff, Mai, & Leachman, 2012). After the 2011 fiscal year, the federal government largely allowed this aid to expire, even though states continued to face very large shortfalls in 2012 and beyond" (Oliff et al., 2012b, p. 8).

PPE and Average Teacher Salaries

There are substantial disparities in teacher salaries in California school districts. Spending on teachers' salaries accounts for just over half of total spending per pupil. Individual teacher salaries are determined by two key components: the salary schedules that districts adopt and the experience level of the teacher. Typically, the salary schedules are negotiated in accordance with bargaining units (or unions).

The typical salary schedule is based on a bachelor's degree plus the number of academic semester units earned beyond that degree. For one particular school district, the salary schedule is arranged in columns for 30, 45, 60, and 75 units beyond a bachelor's degree. The rows indicate step increases for each year of service teachers work in that particular district (Rose & Sengupta, 2007).

However, when teachers transfer to certain districts, they can forfeit some of their years of experience on the salary schedule. Some union and district collective bargaining agreements regulate the maximum number of years that can be transferred. For example, a teacher with twelve years of experience in one district is only allowed to transfer a. maximum of ten years to another district (Hayward Education Association, 2013) on that particular salary schedule.

On the other hand, a different district will allow that same teacher to transfer more than ten years of experience based on union bargaining agreements. Yet, regardless of the number of years of experience they are allowed to transfer from one district to another, teachers still continue to earn credit for the actual number of years of service they have worked towards retirement. Additionally, some districts also provide stipends for

completing master's and doctoral degrees (Rose & Sengupta, 2007) on the salary

schedule. Furthermore, some salaries in various districts include payment for health

insurance benefits, whereas some salaries in other particular districts exclude health

insurance benefits and teachers have optional payment plans. Table 2.3 depicts a typical

salary schedule for a California school district.

Table 2.3

West Contra Costa Unified School District Salary Schedule 2013-14

STEP	RANGE A BA		RANGE B BA + 15 SEM. UNITS		Cred. Plus RANGE 1 BA + 30 or BA + 15 With MA		Cred. Plus RANGE 2 BA + 45 or BA + 30 With MA		Cred. Plus RANGE 3 BA + 60 or BA + 45 With MA	
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily
1	37,572.00	204.20	37,845.71	205.68	40,995.90	222.80	41,251.43	224.19	41,505.95	225.58
2	37,845.71	205.68	38,118.41	207.17	41,251.43	224.19	41,505.95	225.58	42,917.93	233.25
3	38,118.41	207.17	38,393.13	208.66	41,505.95	225.58	42,880.56	233.05	44,782.39	243.38
4	38,393.13	208.66	38,666.84	210.15	42,647.25	231.78	44,645.03	242.64	46,701.39	253.81
5	38,666.84	210.15	39,295.06	213.56	44,234.97	240.41	46,393.34	252.14	48,579.99	264.02
6			40,595.94	220.63	45,793.40	248.88	48,135.59	261.61	50,427.28	274.06
7			42,011.96	228.33	47,349.81	257.34	49,844.51	270.89	52,292.75	284.20
9			44,627.86	242.54	50,647.46	275.26	53,351.23	289.95	56,123.68	305.02
10			45,878.24	249.34	52,223.06	283.82	55,081.36	299.36	57,903.30	314.69
11					53,831.99	292.57	56,757.96	308.47	59,801.09	325.01
12					55,406.58	301.12	58,501.22	317.94	61,633.23	334.96
13					57,028.64	309.94	60,197.01	327.16	66,147.93	359.50
14					57,028.64	309.94	60,197.01	327.16	66,147.93	359.50
15					57,028.64	309.94	60,197.01	327.16	66,147.93	359.50
16					57,028.64	309.94	60,197.01	327.16	66,147.93	359.50
17					57,743.72	313.82	60,911.08	331.04	66,862.00	363.38
18					57,743.72	313.82	60,911.08	331.04	66,862.00	363.38
19					58,892.09	320.07	62,057.43	337.27	68,016.43	369.65
20					58,892.09	320.07	62,057.43	337.27	68,016.43	369.65
21					58,892.09	320.07	62,057.43	337.27	68,016.43	369.65

Table 2.3 (continued)

STEP	RANGE A BA	RANGE B BA + 15 SEM. UNITS	Cred. Plus RANGE 1 BA + 30 or BA + 15 With MA		Cred. Plus RANGE 2 BA + 45 or BA + 30 With MA		Cred. Plus RANGE 3 BA + 60 or BA + 45 With MA	
22			60,458.60	328.58	63,622.93	345.78	69,581.93	378.16
23			60,458.60	328.58	63,622.93	345.78	69,581.93	378.16
24			62,844.22	341.54	66,137.83	359.44	72,332.16	393.11
25			62,844.22	341.54	66,137.83	359.44	72,332.16	393.11
26			64,961.18	353.05	68,254.79	370.95	74,449.12	404.61
27			64,961.18	353.05	68,254.79	370.95	74,449.12	404.61
28			68,134.60	370.30	71,428.21	388.20	77,622.54	421.86

There are several reasons for teacher salary differences across districts in California. Teacher salaries in California vary by district size, urbanization, and geographic region (Hertert, 2002). During 2002, with respects to district size, Districts with an enrollment of more than 50,000 students paid the highest starting average salary at $35,693. In comparison, those districts with an enrollment of less than 5,000 students paid the lowest average salaries at $32,523 (Hertert, 2002).

Teachers in urban districts earn less than teachers in suburban districts. Districts in the state's largest cities paid higher starting salaries to new teachers at $35,192, whereas veteran teachers were offered higher maximum salaries at $69,589. Districts in the least populated cities received lower starting and maximum salaries at $31,838 and $57,340 respectively (Hertert, 2002).

Furthermore, by geographic region, school districts in Los Angeles County offered the highest average salaries for both new and veteran teachers at $31,033 and $53,344 respectively in 2002. On the other hand, districts in the farthest north counties of

California offered the lowest average salaries for new and veteran teachers at $31,033 and $53,344 respectively (Hertert, 2002).

In 2003-2004, districts in Santa Clara County and Orange County offered the highest average compensation in California exceeding $70,000 for a teacher with 10 years of experience and 60 units of education beyond a bachelor's degree. In contrast, Yolo County and the North Coast counties offered a lower average compensation of $55,000 per year for teachers at the same position in the salary schedule (Rose & Sengupta, 2007)

The average mean salary, illustrated in Figure 2.5, was $62,305 with a range of salaries from $52,031 to $89,587 in three different counties (Adamson & Darling-Hammond, 2011a). The lower salaries are in higher-needs areas; higher salaries are concentrated in low-needs areas. Figure 6 shows that in the San Francisco Bay Area (including San Francisco city and Alameda and San Mateo counties - the two closest, most populous counties within easy commuting range of San Francisco by both car and public transportation) - average teacher salaries range from about $55,000 in Oakland (Alameda County), which serves a majority of low-income students of color, to about "$90,000 in wealthy, predominantly White Portola Valley (San Mateo County), home of many Silicon Valley venture capitalists" (Adamson & Darling-Hammond, 2011a, p. 16).
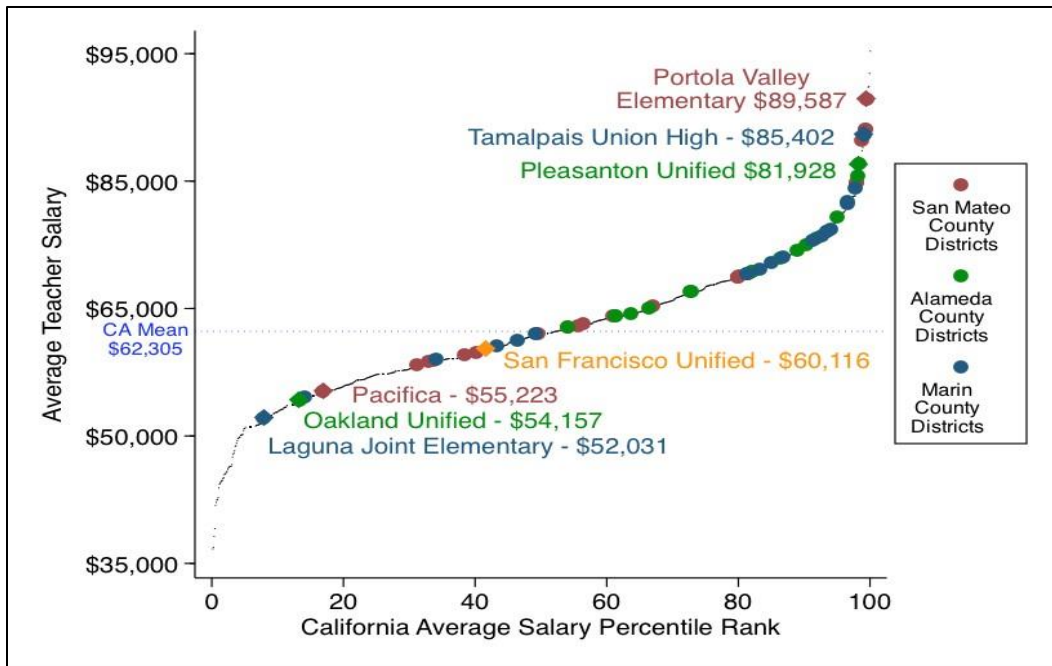
Figure 2.5 - San Francisco Bay Area Labor Market Distribution,
Average Teacher Salaries by District
Source: Stanford Center for Opportunity Policy in Education, December 2011;
California Department of Education Partnership 2008-09.

Equally important, Rose & Sengupta (2007) stated that most districts offer

teachers a sizeable benefits package that includes an assortment of health and welfare

benefits as well as contributions to the state teacher's retirement system (STRS). Districts

may determine health and welfare benefits that can increase or decrease the differences in

salaries. Benefit packages vary from employer to employer (Hertert, 2002). For the

2000–01 school year, all of the districts in California (except two) paid part or all of the

health insurance and retirement plan costs for their employees. Districts paid an average

of "$5,755 per full-time equivalent (FTE) employee for health benefits, totaling $1.7

billion or 91% of the total cost of these plans. Teachers paid the remaining 9%" (Hertert,

2002, p. 9). "All districts contribute 8.25 percent of the teacher's earnings to STRS

(Rose & Sengupta, 2007, p. 19)" which varies across the state in proportion to salaries.

Salaries also vary based on a district's fiscal condition due to high or low

revenues. When veteran teachers choose to relocate to low-need schools in richer,

wealthier neighborhoods that are predominantly White, they bring higher salaries to those

schools. New teachers who tend to begin their careers in high-need schools, serving many

students of color and poor students, earn comparatively lower salaries due to their fewer

years of experience (Spatig-Amerikaner, 2012). Furthermore, salary schedules might also

reflect the local supply of teachers. In districts with teacher shortages, higher salaries are

offered to attract and retain teachers (Rose & Sengupta, 2007).

Average teacher salaries can be misleading since teachers are generally paid

according to a uniform salary schedule established at the district level. Teachers with the

same level of education or degree and years of experience are paid the same salary

(Hertert, 2002). For instance, all teachers with a master's degree and 20 years of

experience earn the same amount. Yet, two different districts can have the same salary

schedules on a uniform salary schedule and have very different average salaries for

teachers. "For example, if District A has a disproportionately higher number of new

teachers than District B, the average salary paid by District A will be lower than that paid

by District B, all other factors being equal"(Hertert, 2002, p. 8) . Even though Districts A

and B have the same salary schedule, they appear to offer different salaries for teachers

because of average salaries. Education consultant, Hertert (2002), states that "the

difference is not what they pay, but whom they employ" (p. 8). However, researchers

Rose and Sengupta (2007) emphasize that "salary schedules are not a function of a teacher's effectiveness" (p. 27). Under the single-salary schedule in California, teachers with the same experience and training receive the same pay and step increases whether they are effective or not (Rose & Sengupta, 2007). .

This is significant because teacher salaries make up a large share of public education expenditures, so funding cuts inevitably restrict districts' ability to expand teaching staffs. This impacts class sizes, school programs, and instructional services such as summer school (Leachman & Mai, 2014). Given that salaries and benefits compose such a large proportion of district budgets, California's low PPE means that there are fewer teachers, counselors, aides, and administrators in California compared to other states. California students were hit harder by the Great Recession than the average student in the rest of the country. Since 2007–08, inflation-adjusted average spending per pupil in the rest of the country has declined about 4 percent, compared to 12 percent in California. California's average public school teacher salary has also declined, where the averages in other states have risen (NEA National Education Association, 2012).

PPE and Student Achievement in Mathematics

California's student population is unique with the most diversity in the nation. The California Department of Education 2011-12 enrollment data in Figure 2.6 shows that 6,220,993 million public school students are among the most diverse in the nation: 52.03% are Hispanic/Latino, 26.1% are White, 9.17% are Asian, and 6.53% are African American/Black (California Department of Education, 2012).
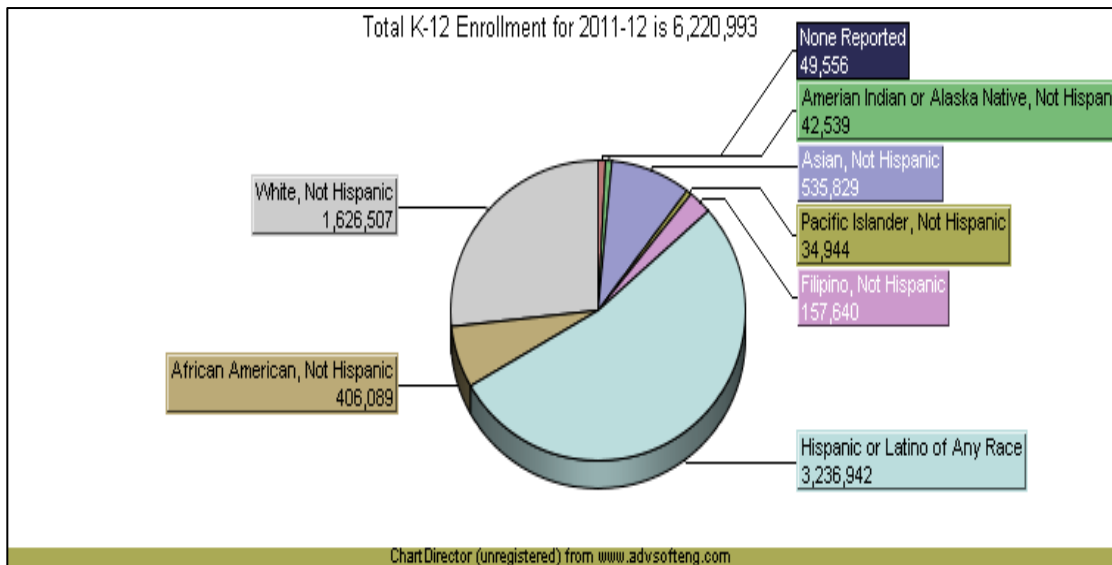
Figure 2.6 -Students enrolled in California K-12 public schools
Source: California Department of Education (2012)

Student Demographics

For several years, the Office of Management and Budget (OMB) was responsible for collecting and presenting data on student racial and ethnic backgrounds. "The OMB is responsible for the standards that govern the categories used to collect and present federal data on race and ethnicity" (S. Aud, Fox, & KewalRamani, 2010, p. 1). In October 1997, OMB revised the guidelines on racial/ethnic categories used by the federal government (S. Aud et al., 2010) and combined them, as follows: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; Hispanic; and White, not of Hispanic origin (U.S. Department of Education, 1996). Thereafter, the racial/ethnic categories remained the same with a few modifications. Effective January 1, 2003, Black was also referred to as African American or Black and the Native Hawaiian or Other

Pacific Islander (original peoples of Hawaii, Guam, Samoa, or other Pacific Islands) category was separated from the much larger Asian or Other Pacific Islander category (National Center for Education Statistics, 1996). The ethnicity categories changed to Hispanic (commonly used in eastern U.S.) or Latino (commonly used in western U.S.) and not Hispanic or Latino. OMB did not add a multi-racial category but they allowed individuals to self-identify with two or more races (National Center for Education Statistics, 1996).

In California, "There has been a significant shift in demographics where White students no longer make up the majority of eighth-grade public school student populations" (National Center for Education Statistics, 2013, p. 4). From 1990-2011, in California, the White student population decreased from 49% to 26%. In contrast, the Hispanic/Latino student population increased in California from 30% to 52%. (National Center for Education Statistics, 2013).

In 2010-11, a majority of California's students (53.0 percent) were eligible for free or reduced-price lunches which is a common measure that is used to compare the number of economically disadvantaged students among states. More than 3.3 million California students in 2010-11 came from households with incomes at or below the free and reduced-price lunch eligibility limit, which is 185 percent of the federal poverty line. This eligibility "limit in 2010-11 was $33,874 for a single parent with two children" (California Budget Project, 2013, p. 2).

California has more ELLs than any other state and its percentage of low-income students ranks in the top quarter (National Education Association, 2010) . Also, many of

California's students have special needs: 54% are eligible for free or reduced-price meals, 23% are ELLs, and 11% receive special education services. These particular students costs more to educate (Johnathan Kaplan, 2013). This means that the state needs to spend more than others to allow all students to reach state and national academic standards. "Yet, even though California has more financial resources per capita than the rest of the U.S., the state spends far less of its total personal income on K-12 schools" (Johnathan Kaplan, 2013, p. 1).

Student demographic information is important because child population trends help project potential needs for education and related services. "Understanding the demographic composition of the child population provides important insight into the needs of children today and can guide investments that will best support American youth in the future" (Lucille Packard Foundation for Children's Health, 2016, p. 1).

Mathematics Achievement

The California Department of Education (2015a) asserts the following:

Mathematics impacts everyday life, future careers, and good citizenship. A solid foundation in mathematics prepares students for future occupations in fields such as business, medicine, science, engineering, and technology. Mathematical modeling is a tool for solving everyday problems, making informed decisions, improving life skills (e.g., logical thinking, reasoning, and problem solving), planning, designing, predicting, and developing financial literacy. Knowledge and understanding of high school mathematics correlates to access to college,

graduation from college, and earnings in the top quartile of income from employment (p. 1) .

Within this framework, the guiding principles for implementing the mathematics curriculum are learning, teaching, technology, equity and assessment. More specifically, the guiding principles emphasize the need for the exploration of mathematical ideas with curiosity and depth of understanding; clearly defined content standards with a coherent sequence; the use of technology as a strategic tool; access to a high-quality college preparatory mathematics education; and math assessments that inform instruction and learning (California Department of Education, 2015a). Thus, the California mathematics framework for public schools "addresses how all students in California public schools can best meet those standards" (California Department of Education, 2015a, p. 8).

Researchers, Williams, Haertel, & Kirst (2011) proclaimed that, "Since 1997, California's mathematics content standards and testing and accountability policies have encouraged more widespread participation in Algebra I in grade 8" (p. vii). In California, more eighth grade middle school students participated in Algebra I which was typically reserved for high school standards, particularly, in other parts of the United States. For instance, in 2009, 54% of 8th graders and 6% of 7th graders in California took the Algebra I California Standards Tests (CSTs).

The CSTs are one of the four components for the Standardized Testing and Reporting (STAR) Program that measure performance of students undergoing primary and secondary education in California. These criterion-referenced exams measure the

achievement of California content standards (Educational Data Partnership, 2014) to show how well students are performing.

The CDE data showed that from 2003 to 2009, the percentage of students who scored Proficient or Advanced on the Algebra I CSTs increased from 39% to 44%, while the percentage of students who scored Basic decreased from 28% to 24%, and those students who scored Below Basic or Far Below Basic also decreased from 33% to 32% respectively (as cited in Williams et al., 2011). In contrast, over half of 8th graders who took the Algebra I CST scored below Proficient. The CST performance outcome results also revealed that "more economically disadvantaged 8th graders scored Below Basic or Far Below Basic in 2009" (Williams et al., 2011, p. vii) on the Algebra I CST. Furthermore, data from the research team of EdSource, Stanford University, and the American Institutes for Research in 2009 showed that substantial variations existed in student performance outcomes among schools with similar student populations (Williams et al., 2011).

Academic Performance Index (API)

"NCLB explicitly requires that all states develop accountability systems based on assessment tests" (Imazeki, 2006b, p. 8). Student achievement is measured primarily by the Academic Performance Index (API) and Adequate Yearly Progress (AYP). "The API is a single number, ranging from a low of 200 to a high of 1000, which reflects a school's and a student group's performance level based on the results of statewide assessments

such as the CST or STAR. The API target for all schools to meet is 800 which is a requirement under state law" (California Department of Education, 2014a, p.1).

The API is calculated by converting a student's performance on statewide assessments across multiple content areas into points on the API scale. Then the points are averaged across all students and all tests. API reports are provided for schools (or LEAs) in order to meet federal requirements under the ESEA (California Department of Education, 2014a). In other words, the API requires student group accountability to address the achievement gaps that exist between traditionally higher-scoring and lower-scoring student groups. The API does not track individual student progress across years. Instead, it is a cross-sectional look at student achievement, and ranks schools by these achievement measures. Its purpose is to measure the academic performance and improvement of schools (California Department of Education, 2014a).

The API does not track individual student progress across years. API targets vary for each school and student group. The assessment results from one year are compared to the results from the previous year in order to measure improvement (California Department of Education, 2014a). Schools that fall below API scores of 800 are required to meet annual growth targets until that goal is achieved.

Adequate Yearly Progress (AYP)

Since 2003, the API has also been used to evaluate districts for Adequate Yearly Progress (AYP). As a provision of the NCLB requirements, AYP was used to determine whether or not schools and school districts were raising student achievement in reading

and mathematics (Riddle & Kober, 2011). The California Department of Education (2014b) asserted that "students in the state as a whole must make AYP in several areas, based primarily on student performance, participation" (p. 1), API and another indicator.

Each year the percent of students in each subgroup must score proficient - or advanced - on standardized tests in English/Language Arts (ELA) and Mathematics. The student subgroups listed in the California Department of Education database are Black or African American, American Indian or Alaska Native, Asian, Filipino, Hispanic or Latino, Native Hawaiian or Pacific Islander, White, two or more races, socio-economically disadvantaged, English learner, and students with disabilities (California Department of Education, 2014b). These particular subgroups must meet or exceed yearly State targeted percentages known as annual measurable objectives (AMOs). As a performance measure, "not only must the overall student population in a school or district meet every AMO, but each major racial, ethnic, and demographic student group in the school or district must also meet these targets" (Riddle & Kober, 2011, p. 5) in order to make AYP.

Thus, the AMOs play a critical role in the NCLB accountability system because they are used as a measure to determine whether schools and districts have made AYP. The AMOs must increase "periodically on a trajectory that leads to the ultimate goal of 100% of students reaching proficiency by the end of school year" (Riddle & Kober, 2011, p. 5). For instance, Table 2.4 illustrates the testing cycle AMO targets for English/Language Arts and Mathematics in elementary, middle, and high schools in

addition to the elementary, high school and unified districts (California Department of

Education, 2014b).

Table 2.4

AMO Targets for Testing Cycle 2012-13

Elementary schools, middle schools, and elementary districts.	89.2% English/language arts	89.5% Math
High schools and high school districts (grades 9-12 or 7-12)	88.9% English/language arts	88.7% Math
Unified districts	89.0% English/language arts	89.1% Math

The data reveals that the targeted percentages were similar for both ELA and

Mathematics at all grade levels. According to the CDE (2014d), "These targets began to

increase rapidly in 2007-08 and will continue to increase yearly by about 11 percentage

points until they reach 100% in 2013-14" (p. 1).

Along with student performance (or achievement level), there was a requirement

for participation. The percent of students in each subgroup that took the standardized tests

had to meet or exceed 95%. Furthermore, an additional indicator for AYP included

improving their high school graduation rates. Equally important, school districts that

received Title I funds were mandated to administer "these state tests annually to students

in grades 3-8 and in one high school grade chosen by the state (usually grade 10 or 11)"

(Riddle & Kober, 2011, p. 5).

The AYP system operates on a two-year cycle that gives a "base" score for the first year and a "growth" score in the second year. For instance, the *Base API*, which is generally released in the spring, comes from the previous spring's test scores. The relevant *Growth API* is released in October of the year the Base API is released (California Department of Education, 2014c).

In 2012, the percentage of all schools making AYP targets dropped significantly, from 35% in 2011 to 26% in 2012. "Among elementary schools, 27% made AYP in 2012, compared with 36% in 2011. Among middle schools, 17% (vs. 18% in 2011) made AYP in 2012. And among high schools, 27% made AYP in 2012 (down from 42% in 2011)" (California Department of Education, 2014d, p. 1).

According to the CDE (2013a), "Schools that receive Title I funds will be identified for [Program Improvement] PI if they do not meet AYP criteria for two consecutive years in the same subject area or for two consecutive years on the same indicator" (p. 67). For accountability purposes, PI schools have three options to improve their status while trying to meet AYP criteria. The first option is *advancing* in PI status, where a school begins the school year in PI and does not meet all AYP criteria and advances to the next year of PI. This particular school is required to continue the same interventions initiated during Year 1 in Year 2 as well. The second option is *maintaining* PI status, where a school that begins the school year in PI and meets all AYP criteria for that school year will maintain the same PI status for the next school year. This particular school must continue the same interventions initiated during Year 1.

The third option is *exiting* PI status that happens only if that particular school makes AYP for two consecutive years. Thus, "a school that has exited PI will not be subject to Title I corrective actions or other ESEA sanctions in the school year following PI exit. For example, if a school that was in PI status during the 2012–13 school year met all of the 2012 and 2013 criteria, then that particular school is allowed to exit PI at the end of the 2012–13 academic year (California Department of Education, 2013a). Furthermore, this specific school is not susceptible to Title I corrective action or other ESEA sanctions during the 2013–14 academic year.

Does Money Really Matter for Improving Student Performance?

"Despite decades of research and public policy debates on the topic, it is still unclear whether educational spending influences students' achievement" (Condron & Roscigno, 2003, p. 18). Researchers have not reached consensus on the existence of a strong link between school expenditures and student performance (Hanushek, 1994, 1996). One of the earliest studies of this type was the Equality of Educational Opportunity Report, commonly referred to as the Coleman Report (Coleman et al. 1966). This study found little association between inputs and outputs for a nationally representative sample of students and school.

Hanushek, a leader in the development of economic analysis of educational issues at the Hoover Institution at Stanford University, argued that money didn't matter and there wasn't a strong relationship between school expenditures and student learning outcomes (Hanushek, 1996b). Out of 65 aggregate per-pupil expenditure relationships,

for example, he found 13 to be positive and significant, 3 negative and significant, and 49 to be non-significant in order to reach that conclusion.

In contrast, Hedges (1996) claimed that money does matter. Hedges, Laine, and Greenwald (1996)) reanalyzed most of the same studies, and drew the opposite conclusion of Hanushek. They found positive coefficients for per-pupil expenditures, teacher experience, teacher salary, administrative inputs, and facilities, and mixed results for class size, and concluded that resources affect achievement. "The analysis found that a broad range of resources were positively related to student outcomes, with effect sizes large enough to suggest that moderate increases in spending may be associated with significant increases in achievement" (Greenwald et al., 1996, p. 362). Hanushek (1996b)) continued the debate, countering the meta-analysis of Hedges, Laine, and Greenwald with an updated sample of 377 studies and again concluded that there was no significant relationship between resources and achievement (Wenglinsky, 1997). This ongoing debate underscored the lack of consensus on whether or not money really matters.

On the other hand, Wenglinsky (1997) suggested the results were mixed and posed problems for resolution. A 1992 NAEP database linked to the U.S. Common Core of Data and the School District Data Book including 7,217 12th grade mathematics students showed that spending on instruction and capital expenditures were related to differences in achievement between socioeconomic groups. Lower spending levels were associated with greater achievement gaps within schools (Wenglinsky, 1998). Moreover, Wenglinsky "shifted from the question of whether money matters to how money may

promote achievement through the purchase of specific resources" (Condron & Roscigno, 2003, p. 19). Researchers Loeb and Page (2000) suggested "that the quality of education can be improved by raising teacher salaries" (p. 407) because salaries impact the quality of the teaching workforce and influences student outcomes (Loeb & Page, 2000). Yet, Imazeki (2007b) declared that "the primary function of school finance formulas has not generally been the improvement of student performance directly but rather, the equalization of dollars or tax effort" (p. 5).

In more recent studies, Baker (2016) asserts that money matters. "On average, aggregate measures of per-pupil spending are positively associated with improved or higher student outcomes" (Baker, 2016, p. 1). The size of this effect is larger in some studies than in others, and, in some cases, additional funding appears to matter more for some students than for others. Clearly, there are other factors that may affect the influence of funding on student performance outcomes, such as how that money is spent in order to yield benefits. However, the data reveals that in direct tests of the relationship between financial resources and student outcomes, money does matter (Baker, 2016).

In addition, schooling resources that cost money such as smaller class sizes, additional supports, early childhood programs and more competitive teacher compensation are positively associated with student outcomes (Baker, 2016). The impact varies depending on student population and other contextual variables. Overall, the things that cost money benefit students, and there is scarce evidence that there are more cost-effective alternatives. Rutgers University Professor, Baker stated that "while money alone may not be the answer, more equitable and adequate allocation of financial inputs to

schooling provide a necessary underlying condition for improving the equity and adequacy of outcomes" (Baker, 2016, p. i).

Cost differentials. The evaluation of education cost differentials across school districts has been an important topic in education finance research for decades (Fowler and Monk, 2001). A differential cost is the difference between the costs of two or more alternatives and it is also known as a marginal (or variable) cost that varies with the output, or revenue, of a company. Examples of marginal costs are labor and material costs, in addition to an estimated portion of fixed costs such as administration overheads and selling expenses. "Differential cost analysis looks at all of the potential benefits gained, and costs involved" (Aparicio, n.d., p. 1).

In recent years, there has been a growing interest in educational cost differentials "with the emergence of adequacy as the primary standard in school finance litigation and the growth of state accountability systems that focus on student performance" (Fowler Jr & Monk, 2001, p. 1). Each of these developments emphasized the fact that some California school districts must spend more than others to obtain the same performance. During 2010–11, funding declined to 2003–04 levels. Several members of the education community claimed "that restoring funding to an adequate level in core programs for all students should occur before directing additional funds to disadvantaged students" (Rose & Weston, 2013, p. 29), Researchers, Rose and Weston declared that it was significantly important to understand that sufficient evidence did not exist in order to determine the amount of funding required to "enable any student to meet the state's standards, let alone

how much additional funding [was] necessary for disadvantaged students" (Rose &

Weston, 2013, p. 29).

Two previous research projects were conducted using statistical analyses to

address the issue of adequate funding (Imazeki, 2006b; Duncombe & Yinger, 2008,

2011). Data was used from all California school districts and the current relationship

between spending and test scores was described. Imazeki (2006b) used 2004–05 data and

concluded that districts with no disadvantaged students may require $5,832 per pupil

($6,726 adjusted for inflation through 2011) and that students who qualified for the

subsidized lunch program may require an additional 30 percent. Also, Spanish speaking

ELLs may require an additional 8 percent, whereas non-Spanish speaking ELLs may

require 24 percent more. Hence, Imazeki (2006b) concluded that 90 percent of districts

would need resources ranging from $6,678 to $11,011 per pupil ($7,702–$12,700 in

2011), implying that some districts would receive 65 percent more funding than others.

Duncombe and Yinger (2008) reached similar conclusions with respect to the

additional funding for disadvantaged students. They suggested that disadvantaged

students who were eligible for the free or reduced lunch program may need 23 percent

more funding, and those with limited English proficiency may need 32 percent more. For

medium size districts, they projected that closing the API gap between the 10 percent of

districts with the highest proportion of poor students and the 10 percent with the lowest

proportion would require an additional $1,600 per pupil ($1,873 adjusted for inflation)

above what the poorest districts were currently receiving. They estimated that the current

spending difference between these poor and more affluent districts was only $321 per

pupil ($376 adjusted for inflation). This amount was much less than the gap found in total revenue between certain districts (Duncombe & Yinger, 2008). In this particular research project, Imazeki (2006b) indicated this difference may stem from the fact that the district did not weight their regressions by enrollment and the researchers did.

It is important to note that the suggested weights for disadvantaged students were determined from a particular base funding level. If the base were increased, then the additional weight would decrease with the assumption that all students would achieve the state's academic goals, especially if the state would spend at the suggested levels (Imazeki, 2006b; Duncombe & Yinger, 2008, 2011).

However, many criticized the approaches used in these studies as fundamentally flawed (see Hanushek, 2006, and Costrell et al., 2008). Costrell et al. (2008) concluded that even after controlling for an array of variables (such as labor market prices, student and school characteristics, resources and related factors), a lot of variations existed across districts in student performance outcomes which presented a fundamental difficulty. This is important because it illustrated that student achievement gaps still persisted at some level despite controlling for multiple variations, even in districts with the same expenditures, when applying cost function approaches. Also, there was a hint of uncertainty about how much money was actually needed to level the playing field in order to close the achievement gap. Furthermore, the previous research reiterated the lack of consensus revolving around the strong linkage between school expenditures and student performance.

Achievement Gap

"The U.S. Department of Education describes the achievement gap as the difference in academic performance between different ethnic groups" (Southwest Educational Development Laboratory, 2011, p. 1). More specifically, in California, the achievement gap is defined as the disparity between the academic performance of White students and students of other ethnic groups (Southwest Educational Development Laboratory, 2011) . It is also inclusive of the disparities between ELLs and native English speakers and between socioeconomically disadvantaged and non-disadvantaged students.

Algebra I test scores, retrieved from CDE, show similar patterns - for middle and high schoolers in different subject tests - such as slow growth in academic achievement and persistent gaps between races and economic groups (Trust-West, 2006). As illustrated in Table 2.5, "Achievement gaps in these subject tests are staggering. White students are three times more likely, and Asian students are five times more likely to be proficient in Algebra than their African American peers" (Trust-West, 2006, p. 5).

Table 2.5

Algebra I CST Results by Ethnicity
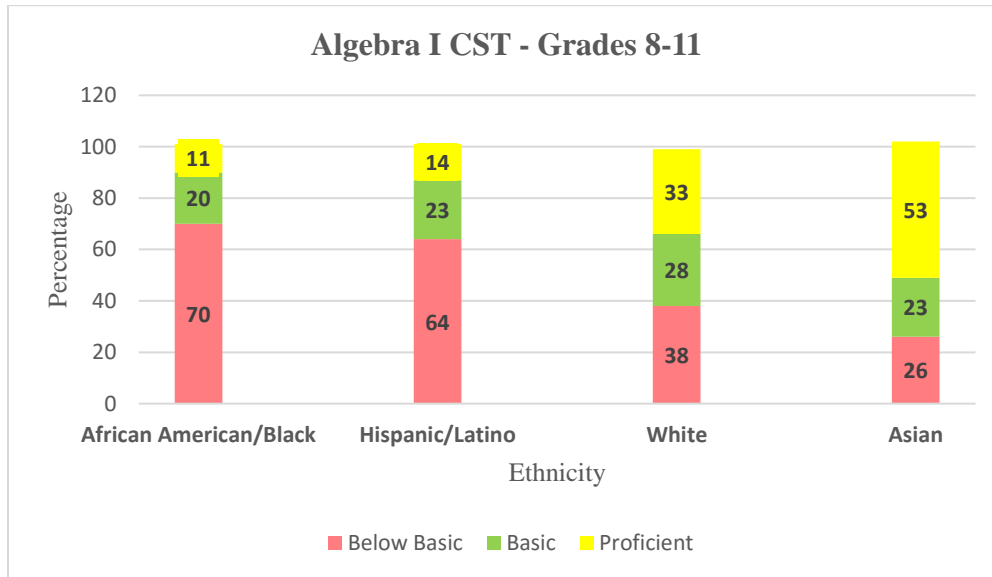
Education Trust-West, a national policy organization, discloses that although

achievement gaps between racial/ethnic groups in Algebra I became narrower, it is

partially due to the lowering performance of White students in 2006 (Trust-West, 2006).

The 2007 NAEP data also suggests that the average non-poor White student is

about three and a half years ahead in learning compared to the average poor African

American/Black student (Auguste et al., 2009). "In 2007, mathematics scores for both

African American/Black and White public school students in grades 4 and 8

nationwide…were higher than in any previous assessment, going back to 1990"

(Vanneman, Hamilton, Anderson, & Rahman, 2009, p. iii). However, overall, White

students had higher scores than African American/Black students on all assessments.

Although the nationwide achievement gaps in 2007 were narrower than in previous

assessments for both grades 4 and 8 in mathematics, White students had average scores at least 26 points higher than African American/Black students on a 0-500 scale (Vanneman et al., 2009).

As illustrated in Table 2.6, California uses five performance levels to report student achievement on the CSTs (California Department of Education, 2012). The CDE (California Department of Education, n.d.) states that performance levels establish the points at which students have demonstrated sufficient knowledge and skills to determine whether or not students are performing at a certain achievement level.

Table 2.6

Algebra I Performance Levels for California Standardized Tests

Performance Level	Type of Performance	Explanation	Scale Score
1. Advanced	Superior performance	Students demonstrate a comprehensive and complex understanding of the knowledge and skills measured by this assessment, at this grade, in this content area.	428-600
2. Proficient	Solid performance	Students demonstrate a competent and adequate understanding of the knowledge and skills measured by this assessment, at this grade, in this content area.	350-427
3. Basic	Limited performance	Students demonstrate a partial and rudimentary understanding of the knowledge and skills measured by this assessment, at this grade, in this content area.	300-349
4. Below Basic	Serious lack of performance	Students demonstrate little or a flawed understanding of the knowledge and skills measured by this assessment, at this grade, in this content area.	253-299
5. Far Below Basic	Serious lack of performance	Students demonstrate little or a flawed understanding of the knowledge and skills measured by this assessment, at this grade, in this content area.	150-252

The scale scores for each grade and subject area range between 150 (low) to 600 (high).

Scale scores are used to equate the CSTs from year to year and to determine the

performance levels (California Department of Education, 2012).

In 2009, 54% of Asian and Pacific Islander eighth grade students had a combined

score at or above Proficient, which was higher than the percentages for White (44%),

American Indian/Alaska Native (18%), Hispanic/Latino (17%), and African

American/Black (12%) eighth graders. African American/Black and Hispanic/Latino

"students on average [were] roughly two to three years of learning behind White students

of the same age" (Auguste, Hancock, & Laboissiere, 2009, p. 9). This racial gap existed

for student achievement in spite of test score measures. For example, the average NAEP

scores for math and reading across the fourth and eighth grades showed that 48% of

African Americans/Blacks and 43% of Hispanic/Latinos were "Below Basic," compared

to only 17% of Whites. August et al. (2009) asserted that "a more pronounced racial

achievement gap existed in most large urban school districts" (p. 10).

In terms of the national average, between 1992 and 2009, the percentage of eighth

graders scoring Proficient or above on the NAEP math test increased 13 percentage

points, from 21 % to 34 % (as illustrated in Figure 2.7*).*
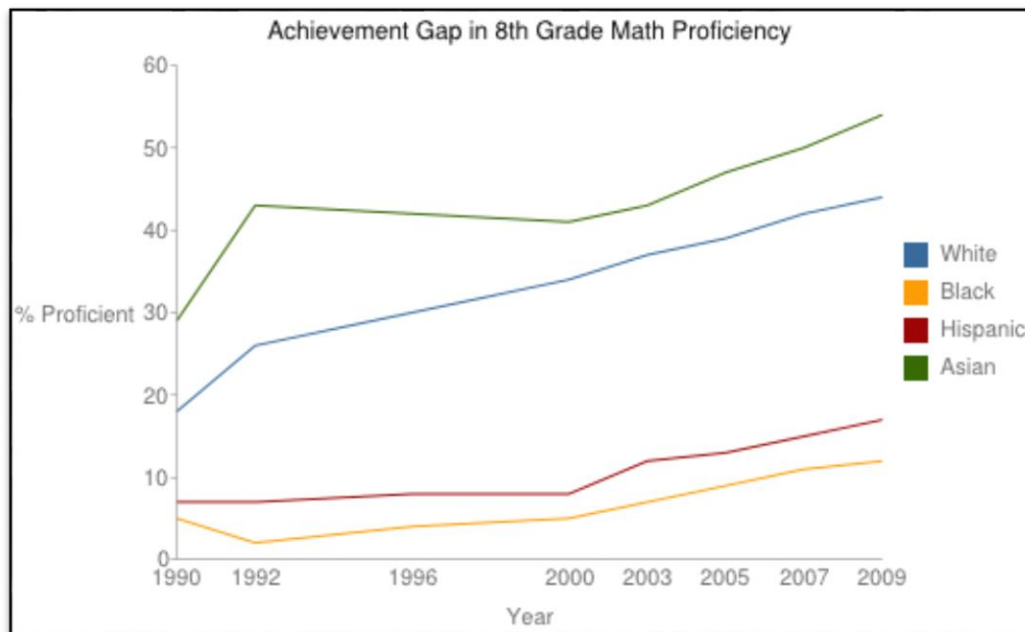
Figure 2.7 – Eighth grade math achievement gap
Source: Federal Education Budget Project, New America Foundation,
March 2012

Although all students saw gains in math proficiency over that time period, eighth grade

White students saw the greatest increases. The percent of White eighth grade students

scoring Proficient or above in math increased from 26 % in 1992 to 44 % in 2009,

whereas African American/Black student proficiency rates increased from 2 % to 12 %,

and Hispanic/Latino students saw an increase in math proficiency from 7 % to 17 %. As a

result, the math achievement gap between White and African American/Black eighth

grade students increased from 24 % in 1992 to 32 % in 2009. The gap between eighth

grade Hispanic/Latino students and White student math achievement grew from 19 % in

1992 to 37 % in 2009 (Federal Education Budget Project, 2012a).

During 2013, in California, further data revealed similar trends where White students exceeded the median scale score. As before, there were racial disparities in performance outcomes. An alarming 34% of African Americans/Blacks scored Below Basic (BB) and 12% scored Far Below Basic (FBB); 29% of Hispanics/Latinos scored BB and 11% FBB. On the other hand, 16% of White students scored BB and 5% scored FBB (California Department of Education, 2013b). Many students in California repeated Algebra I, instead of advancing and taking higher level Mathematics tests (Heckman, 2013).

This is important because it demonstrates that considerable variations exist in student Mathematics performance outcomes in counties, across school districts, and schools within the same district in the same state. Even though there were some significant gains, these wide academic achievement gaps continue to exist for particular racial/ethnic subgroups as outlined in NCLB, Title I, API and APY criteria. Thus, the California public school finance system is still inadequate since all students are not meeting the desired performance outcomes as it pertains to content standards.

Summary

The major sources of revenue for school districts are state, local, and federal. Revenue is generated mostly from the general fund (at the state level) and property taxes (at the local level). Title I federal funds are obtained based on a set of criteria intended to supplement (and not supplant) existing funds. Funding disparities exist across districts, in schools within the same districts, and in the same state. In California, per pupil

expenditures vary across school districts (Rose et al., 2013). "Current funding for schools is inequitably distributed, not deliberately tied to student demographics, largely state controlled, and lacking appropriate accountability measures" (California Department of Finance, n.d., p. 1).

Moreover, high-needs schools composed largely of African American/Black and Hispanic/Latino low-income students receive fewer resources compared to their White counterparts with low-needs and higher incomes. "High-need schools are specifically defined to include those that are urban, rural, high minority, high student poverty, and low performing" (Jones, Alexander, Rudo, Pan, & Vaden-Kiernan, 2006, p. 10) with students who are failing, at risk of educational failure or in need of special assistance and support (United States Department of Education, 2016). The students at these particular schools "may face multiple difficulties such as drug and alcohol use, low reading skills, learning disabilities, disciplinary problems and personality conflicts with teachers" (Little, 2013, p. 1).

According to the Center for American Progress Report, Spatig-Amerikaner (2012) analyzed U.S. Department of Education data that showed U.S. schools spent $334 more on every White student than on every non-White student. The schools that were predominantly White (90%) spent $733 more per student than the mostly non-White (90%) schools. Major urban school systems often pay teachers much less than neighboring affluent suburbs. Often, there are poorer teaching conditions with larger class sizes and fewer instructional supports (The Equity and Excellence Commission, 2013). Also, teachers and students have less access to books, computers, and other

curriculum and instructional materials. "Their schools have less, yet their students need more" (The Equity and Excellence Commission, 2013, p. 21).

There are disparities in average teacher salaries across states and between districts in the same state. Teachers in low-income schools are paid less where students have the greatest need. On the other hand, teachers in high-income schools are paid more. As previously mentioned, teacher salaries are the largest expenditure category for most school districts. However, inexperienced teachers with lower pay are overrepresented in Title I schools where there are high concentrations of low-income students. Additionally, there are concentrations "of more experienced and highly credentialed teachers (along with their corresponding high salaries) in" (Education Trust - West, 2005, p. 1) schools that have a predominantly White student population and are more affluent.

Title I, Part A of the ESEA required a LEA to meet three fiscal requirements related to the expenditure of regular State and local funds. The three fiscal requirements were to "maintain fiscal effort with State and local funds; provide services in its Title I schools with State and local funds that were at least comparable to services provided in its non-Title I schools; and use Part A funds to supplement, not supplant regular non-Federal funds" (Department of Education, 2008, p. 9). The purpose of these requirements was to ensure funds were made available to provide additional services along with existing services by a LEA for participating children and level the playing field.

Along with the combined inequitable distribution of resources, there is a persistent academic achievement gap between African American/Black, Hispanic/Latino, and White students. Auguste et al. (2009) claim that within the United States, White

students generally perform better on standardized tests than African American/Black students. At the same time, rich students generally perform better than poor students, and students with similar backgrounds perform differently across school systems and classrooms. Students who have a greater need receive fewer and less experienced teachers, fewer educational programs, and less up-to-date facilities than those who are more advantaged, possibly resulting in a poorer quality of education.

The relationship between spending and student performance is a highly contested debate among researchers and in public policy forums. "It is also a point of interest among parents and taxpayers, educators (teachers and school administrators), school boards, and government" (Jefferson, 2005, p.111). Hence, this study aims to ascertain whether or not the inputs of NCLB reform efforts were effective in obtaining the desired outputs. Was there a more equitable distribution of resources when it came to per pupil spending? Did the achievement gap narrow as a result of these reform efforts?

CHAPTER 3

METHODOLOGY

Purpose of the Study

The purpose of this study is to examine how schools are financed and the distribution of funding in K-12 public school systems prior to the implementation of LCFF. Within this context, my intent is to examine the disparities that exist in schools and school districts in relation to average teacher salaries and student achievement coupled with demographic characteristics. Additionally, this study aims to discern if there is a correlation between PPE and average teacher salaries, and between PPE and student achievement which is inclusive of API Base Scores and AYP Math Proficiency. In other words, how does PPE influence average teacher salaries and student achievement, if indeed it does?

In terms of money, many debates about public school finance systems revolve around, whether or not differences in: aggregate school funding are related to differences in measured outcomes; school resources such as higher salaries and instructional materials that cost money matter; access to specific schooling programs or resources matter; school finance reforms are effective; and the level of funding or more equitable redistribution of money is significant (Baker, 2016). As a result of these components, will all student test scores improve significantly? Some school finance reform advocates claim that if you narrow the per-capita expenditure gap across districts, then the achievement gap will also narrow between richer and poorer students in that particular

state (Card & Payne, 2002) . Thus, this study aims to discern if there is any alignment with per pupil expenditures, average teacher salaries, and student achievement.

Research Method

For the purposes of this research study, I am using a quantitative methodological approach. Quantitative methods are the systematic empirical investigation of social phenomena utilizing statistical, mathematical, or computational techniques in order to develop and employ mathematical models, theories, and/or hypotheses pertaining to phenomena. "Quantitative research is a means for testing objective theories by examining the relationship among variables" (Creswell, 2009, p. 4). In addition, the use of measurement and observation along with the test of theories are utilized to employ strategies of inquiry such as experiments and surveys. Data is collected on predetermined instruments that yield statistical facts (Creswell, 2013).

In this study, I analyze statistical data such as average teacher salaries, health benefits, revenue, expenditures, API and AYP Math student test score results from selected schools. This data is generated from the California Department of Education database system and assessed on the IBM Statistical Package for Social Sciences (SPSS) 22 and Excel software. A hypothesis is formed to determine if there is a relationship between the independent (X) and dependent variables (Y). In addition, an equation was formulated for this model to aid in yielding statistical facts. The statistical model used for this study is regression analysis.

The rationale for using quantitative methods in this exploratory research study is to determine if a correlation exists between the independent (X) and dependent variables (Y) without manipulating them. Creswell (2002) defined correlation as a statistical test to establish patterns for two variables. As previously mentioned, the independent (or predictor) variable is PPE for both research questions #1 and #2. The dependent (or criterion) variables are average teacher salaries for research question #1 and student achievement (API Base Score and Math AYP Proficiency) for research question #2.

Research Questions

The primary research questions for this dissertation proposal are

1. What is the relationship between per pupil expenditures (PPE) and average teacher salaries?

2. What is the relationship between per pupil expenditures (PPE) and student achievement?

Hypotheses

My hypotheses for this study are:

Research Question #1

- Null Hypothesis [H_o]: There is no relationship between PPE and average teacher salaries.

- Alternative Hypothesis [H_a]: There is a relationship between PPE and average teacher salaries.

Research Question #2

- Null Hypothesis [H_o]: There is no relationship between PPE and student achievement.

- Alternative Hypothesis [H_a]: There is a relationship between PPE and student achievement.

Thus, the equation for this model is:

Y = a + b X + control variable

- **Y is the dependent variable**
- **X is the independent variable**
- **a is a constant and the y-intersect**
- **b is the slope of the line and the regression coefficient**
  (Schneider et al., 2010)

Variables

In this study, the independent variable (X or predictor variable) is per pupil expenditures (or expenditures/student). The independent variable is the input used to predict an outcome. The dependent variables (Y or criterion variables) are average teacher salaries and student achievement (see Table 3.1). The dependent variables represent the outcomes and measure the change of the input.

"In a regression context, the slope is the heart and soul of the equation because it tells you how much you can expect *Y* to change as *X* increases" (Rumsey, 2011, p. 1) . The slope is equal to the change in Y divided by the change in X also known as the rise over the run. For example, if the slope is equal to 3/1, for every increase of 1 in X, the value of Y changes by 3. The slope can be positive (+3) or negative (-3). The constant

(a), also known as the y-intercept, represents the first point on the line where the slope

begins. Based on this equation of a straight line, the expectation is to answer the research

questions by using regression analysis to determine if there is a correlation between

variables.

Table 3.1

Independent and Dependent Variables

Research Question	Independent Variable (X)	Dependent Variable (Y)
#1	per pupil expenditures (PPE)	average teacher salaries
#2	per pupil expenditures (PPE)	student achievement ▪ API Base Scores ▪ AYP Math Proficiency

Population and Sample

A random student sample population of approximately 16,141 middle school

students was utilized from four different California school districts. The school districts

sampled were West Contra Costa Unified School District (WCCUSD), Elk Grove

Unified School District (EGUSD), Los Angeles Unified School District (LAUSD), and

Oakland Unified School District (OUSD) in Contra Costa, Sacramento, Los Angeles and

Alameda Counties respectively. Five schools in urban and suburban areas were selected

from each school district (except LAUSD - six schools were selected) for a total of 21

schools. I selected school districts and schools showing a stratified proportion of a

student population that reflected racial/ethnic diversity. The random convenience sample

was obtained from the California Department of Education Ed-Data and Data Quest database system.

I also examined a random teacher convenience sample of 937 teachers from the same schools (and school districts) as the student population sample for average teacher salaries and NCLB compliance. The sample was also obtained from the California Department of Education database system.

Time Frame

I examined data for school year 2011-12 to determine the influence of PPE on average teacher salaries and student achievement. I chose this time frame because the data reflects the public school finance system before the transition to the new Local Control Funding Formula in 2013. Likewise, the data provides a snapshot of student performance outcomes before the transition to the more recent Smarter Balanced Assessment System and Common Core State Standards.

Instrumentation and Materials

The California Department of Education database system (Ed-Data and Data Quest) provided information on Standardized Testing Assessment Results (STAR). I acquired information on the API Base Scores and AYP Math Proficiency. I also collected information on teacher salaries and NCLB compliance. I used the compilation of this data and statistics collected from California schools to identify trends and measure performance (California Department of Education, 2014f).

The California Longitudinal Pupil Achievement Data System (CALPADS) was created in 2009 to enable California to meet federal requirements delineated in NCLB, which had increased accountability for student achievement. Since its inception, CALPADS has enabled the migration of numerous methods of aggregate data collection, creating a central and cohesive system that maintains quality student-level data, as well as providing an instrument that tracks individual student enrollment history and achievement data to deliver reliable longitudinal information (California Department of Education, 2014f).

CALPADS is the foundation of California's K-12 education data system, comprising student demographics, program participation, grade level, enrollment, course enrollment and completion, discipline, and statewide assessment data. Primarily, the longitudinal data system in CALPADS enables the facilitation of program evaluation and the assessment of student achievement over time, as well as the efficient creation of reports to meet state and federal reporting requirements. LEAs have immediate access to information on new students, allowing them to place students appropriately and to determine any necessary assessments (California Department of Education, 2014f).

I used SPSS 22 to conduct regression analysis of the collected data. Regression analysis is defined later on in the Chapter 4 data analysis section. The process for using SPSS 22 was to begin by defining a set of variables, and then entering data for the variables to create a number of cases. Each case was defined as a set of values assigned to the collection of variables where every case has a value for each variable. In addition,

variables have types where each variable is defined as containing a specific kind of number.

Experimental Procedure

The statistical model for this research study is regression analysis, as shown in Table 3.2.

Table 3.2

Statistical Models and Relationships for Research Questions

RESEARCH QUESTION(S)	MODEL	RELATIONSHIP	EMPHASIS
RQ #1	▪ Regression analysis	▪ PPE and Average Teacher Salaries	Estimate effect of spending (PPE) on outcomes
RQ #2	▪ Regression analysis	▪ PPE and Student Achievement ➢ API Base Scores ➢ AYP Math Proficiency	Analyzes relationship of outcomes with spending (PPE)

The following section states the research question coupled with the relationships and statistical model that were utilized, as follows:

▪ **Research Question #1: What is the relationship between per pupil expenditures and average teacher salaries?**

An examination was conducted to assess the relationship between PPE and average teacher salaries in various urban and suburban schools. The aim was to discern what happens to average teacher salaries when PPE increase or decrease. Regression analysis was used to analyze current data during the 2011-12 timeframe. Health benefits were not

included in this particular regression analysis but were shown in a different comparative analysis.

- **Research Question #2: What is the relationship between per pupil expenditures and student achievement?**

This component aimed to discern if per pupil expenditures were correlated to student achievement as it pertains to API Base Scores and AYP Math Proficiency. Regression analysis was used to determine the correlation between the two variables.

Data Analysis

Regression analysis predicts or makes an estimate of outcomes. Regression analysis is a statistical tool for the investigation of relationships between variables to examine the influence of one variable upon another. Examples of relationships between variables include the effect of a price increase upon demand, or the effect of changes in the money supply upon the inflation rate (Stock and Watson, 2003). Specifically, in this dissertation, linear regression is used since there is only one independent variable (X) to explain or predict the outcome of Y. The relationship in linear regression is typically in the form of a straight line that best estimates all the individual data points in a scatter plot. The linear regression model describes the dependent variable with a straight line that is defined by the equation $Y = a + bX$, where a is the y-intersect of the line, and b is its slope. The slope b of the regression line is called the regression coefficient" (Schneider, Hommel, & Blettner, 2010, p. 2).

At the start of any regression study, a hypothesis is formulated about the relationship between the variables. Regression analysis acknowledges that factors (such as omitted aggregated components), other than PPE, influence teacher salaries and student achievement.

Limitations of the Study

There are several limitations to this 2011-12 dissertation study. Although there are limitations, the benefits of this research study are that it will provide a snapshot of the many variations that existed in selected California schools and school districts. Several variations existed in the sources and amounts of revenues, expenditures, resources, average teacher salaries and corresponding health benefits, academic achievement, student demographics, as well as relevant policies and legislation for improvements in equitable inputs and outputs. These differences also reiterate the extreme complexity of the school finance system which makes this examination a challenging task.

In California, there are multiple sets of criteria for revenues and expenditures based on a menu of student demographic characteristics such as race and SES in different schools and across districts. Other limitations are the differences in average teacher salaries and health benefits packages in schools and across districts. The average teacher salary scale is based on education and years of experience. The step increase that represents years of experience may not accurately capture the total number of years; when teachers transfer to other school districts, some union and district collective

bargaining agreements impose limits on the actual number of years that are credited. Additionally, salary averaging does not depict the real costs of educational expenditures.

Furthermore, employer paid health benefits vary dramatically as a part of teacher salary packages which skews the data for average teacher salaries. There are various health benefit packages that teachers can buy into (or opt out of) such as single-plan, two-party plan, and family plan, with varying dollar amounts for coverage.

There are also limitations regarding student achievement data examined in this research study during 2011-12. California has a vast diverse student population from different locations with different ethnicities, SES, languages, and abilities within schools. It is not known how external factors might impact internal school factors. Also, more experienced teachers might have been assigned to classes composed of higher achieving students as a privilege of seniority or lower achieving students as compensatory strategy.

Additionally, the quantitative data ignores the quality of teaching and effectiveness along with the political climate and bargaining units that permeate the dynamics of the educational school system. Teaching practices vary from district to district and classroom to classroom, impacting student achievement. This creates problems when inferring the relation between characteristics of teachers and student achievement because the causal direction of the relationship is unclear.

Equally important, student API Base Scores and AYP Math Proficiency growth targets during 2011-2012 vary by subgroup and may be uniquely different based on both the individual school and school district which pose a challenging task to sort, align and assess these efforts. Time constraints limit the scope of this study.

Threats to Validity

Validity is the process of collecting and analyzing evidence to support inferences (or interpretations) from tests of statistical hypotheses that "lead to general inferences about characteristics of a population" (Harwell, 2011, p. 149). In the area of scientific research design and experimentation, validity refers to whether a study is able to scientifically measure or answer the questions it is intended to measure or answer (Matthews-Lopez, 2016). Examples of evidence may "include scores from written or performance-based tests, results from statistical analyses, such as correlation studies or factor analyses… and a clear understanding of the population of examinees" (Matthews-Lopez, 2016, p. 1).

Threats to validity in correlational research might occur due to diverse subject characteristics of the population sample such as race, gender and SES. Additionally, the location is different for different subjects, testing, and personal experiences of test takers. Also, data collector characteristics such as different gender, age or ethnicity of the data collector may affect specific responses. Yet, non-experimental designs that are correlational lack internal validity when it can be shown that the independent variable, as manipulated, produces a change in the dependent variable, as measured and therefore can make no inference of causation (Wright & Lake, n.d.).

Procedure

The procedure I used to conduct the analysis for the research study was as follows:

1. Identify school districts on CDE database system.

2. Identify Title I and non-Title I middle schools in selected school districts.

3. Collect demographic data on student sample population using the CDE database
    system.

4. Collect and compare data on PPE in each school district on CDE database system.

5. Collect data from CDE database system on middle school API Base Scores.

6. Collect data from CDE database system on middle school AYP Math Proficiency.

7. Disaggregate data based on subgroups and related demographics (race/ethnicity)
    using Excel.

8. Collect and compare data on teachers who are NCLB compliant in selected
    schools from CDE database system on Excel and SPSS 22.

9. Collect and compare average teacher salary information on SPSS 22.

10. Use regression analysis computations on SPSS 22 to determine relationships
    between variables stated in research questions.

11. Use a statistician to provide strategies for retrieving and organizing data from
    Excel database systems; set up and format data on SPSS 22 for regression
    analysis computations.

Ethical Issues

It was important to protect the anonymity of the participants (population sample). The California Department of Education does not reveal student names. Data was secured on computer hardware requiring password information known only to me. Furthermore, an accurate account of the data was made to prevent misrepresentation of the data and related information. Data will be available for five years after the completion of this dissertation.

CHAPTER 4

FINDINGS AND DATA ANALYSIS

This section examines the results of statistical data for the independent (PPE) and dependent variables (average teacher salaries and student achievement). The intent is to determine if there is a positive or negative correlation between the variables. Emphasis is on examining if there are disparities in revenues, expenditures, API Base Scores and AYP Math Proficiency in the 21 population sample during 2011-12.

Overall, the student population sample in this study showed that Elk Grove Unified School District (EGUSD) had a more racially balanced population in comparison with the other district. According to the data illustrated in Table 4.1, the mean for the Hispanic student population was 25,185; for the African American/Black population was 23,449; for the Caucasian/White population was 4,238; and for the Asian population was 2,349.

Table 4.1

Student Demographics by Race/Ethnicity

	WCCUSD	EGUSD	LAUSD	OUSD
■ Hispanic/Latino	1,534	1,561	2,820	733
■ Asian	305	1,459	241	417
■ African American/Black	636	1,103	1,576	1,470
■ White	255	762	847	422
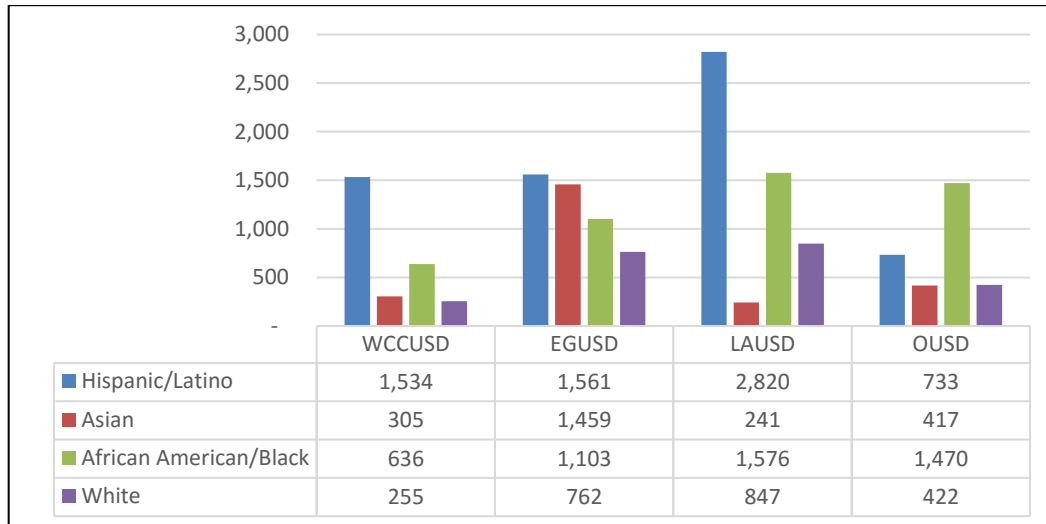
Teacher Population Sample

A random sample of 937 teachers was examined for teacher salaries. This teacher population sample illustrated in Table 4.2 represents the number of teachers who were assigned to the same schools, in the same school districts, as the student population sample. For this research study, WCCUSD had the smallest number of teachers (169); OUSD (176); EGUSD (260); and LAUSD (332) had the largest number. This random sample does not represent overall district total numbers.

Table 4.2

Number of Teachers and % NCLB Compliant

	WCCUSD	EGUSD	LAUSD	OUSD
# Teachers	169	260	332	176
% NCLB Compliant	99.23%	94.95%	96.26%	85.54%
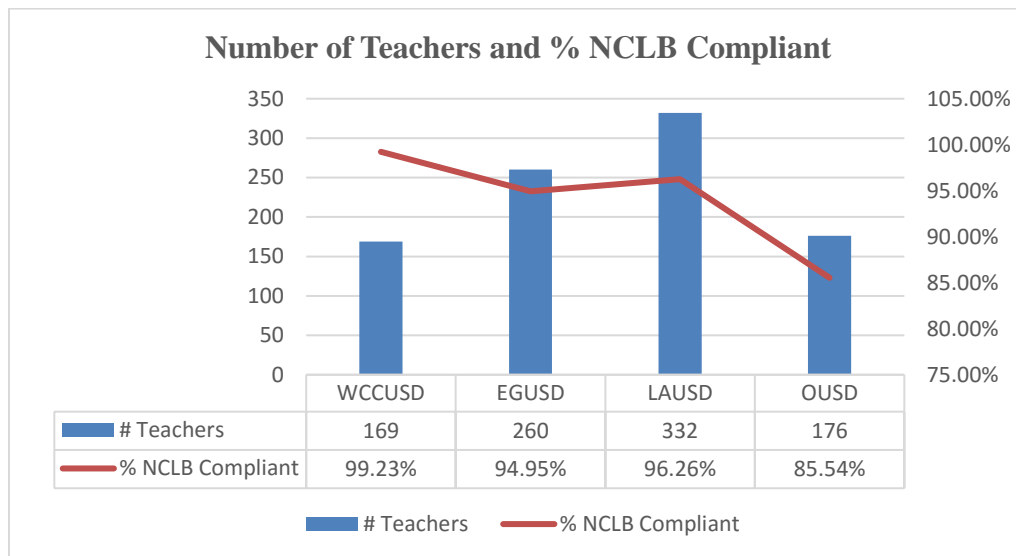
Out of the total number of teachers in the sample, 99.23% were NCLB compliant in WCCUSD; 94.95% in EGUSD; 96.26% in LAUSD, and 85.54% in OUSD. As previously mentioned in Chapter 2, a teacher must be fully credentialed in their subject content matter in order to satisfy NCLB's mandate for being "highly qualified.

Results of Data Collection and Research Questions

Research Question #1: What is the relationship between per pupil expenditures and average teacher salaries?

Revenues and expenditures. This section features the independent variable (PPE or expenditures per ADA) that was used in the equation. Table 4.3 shows comparisons between the amount of revenues and expenditures that were available to improve student achievement. EGUSD had the lowest amount of revenues ($8,033) and revenues

($7,672). In comparison, OUSD had the highest amount of revenues ($11,563) and expenditures ($11,120).

Table 4.3

Comparison of California School District Revenues and Expenditures

Revenues and Expenditures

	WCCUSD	EGUSD	LAUSD	OUSD
■ Revenues per ADA	9,692	8,033	10,738	11,563
■ Expenditures per ADA	9,521	7,672	10,586	11,120

■ Revenues per ADA   ■ Expenditures per ADA
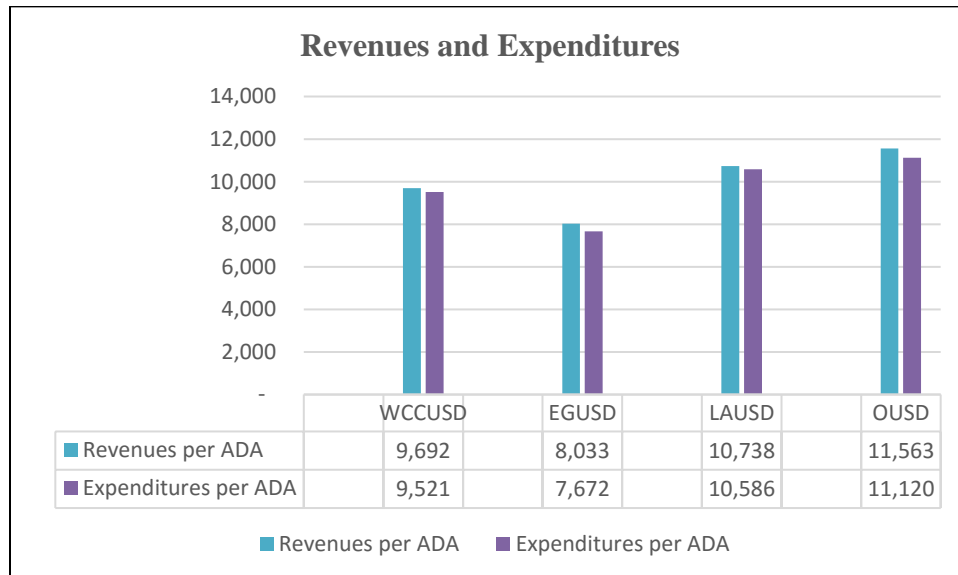
In this study, per pupil expenditures are defined as the cost or current expense of education. As previously mentioned, the current expense of education includes certificated salaries, classified salaries, employee benefits (excluding state payments to retirement), books and supplies, equipment and replacement, and services and indirect costs (California Department of Education, 2015c).

Average Teacher salaries. The amount of expenditures for certificated average teacher salaries in addition to health and welfare benefits varied per school district as shown in Table 4.4.

Table 4.4

General Fund Expenditures for Certificated Average Teacher Salaries and Health and Welfare Benefits (2011-12)

Source: California Department of Education, School Fiscal Services Division: SACS Unaudited Actual Data.

District	Obj. Codes	General Fund: Expenditure	Unrestricted	Restricted	Total	%	ADA
WCCUSD	1100	Certificated Average Teacher Salaries	$57,218,342	$28,520,171	$85,738,513	85%	$3,112
	3401	Health &Welfare Benefits	$9,767,627	$5,184,705	$14,952,332	15%	$543
		Total	**$66,985,969**	**$33,704,876**	**$100,690,845**	**100%**	**$3,655**
EGUSD	1100	Certificated Average Teacher Salaries	$155,834,214	$35,656,432	$191,490,646	83%	$3,266
	3401	Health &Welfare Benefits	$30,697,152	$7,761,308	$38,458,461	17%	$656
		Total	**$186,531,366**	**$43,417,740**	**$229,949,107**	**100%**	**$3,922**
LAUSD	1100	Certificated Average Teacher Salaries	$1,432,141,688	$654,038,139	$2,086,179,828	85%	$3,810
	3401	Health &Welfare Benefits	$242,695,930	$120,491,583	$363,187,513	15%	$663
		Total	**$1,674,837,618**	**$774,529,722**	**$2,449,367,341**	**100%**	**$4,473**
OUSD	1100	Certificated Average Teacher Salaries	$84,140,550	$36,348,572	$120,489,122	81%	$3,363
	3401	Health &Welfare Benefits	$19,993,298	$8,519,399	$28,512,697	19%	$796
		Total	**$104,133,848**	**$44,867,971**	**$149,001,819**	**100%**	**$4,159**

The expenditures for certificated average teacher salaries ranged from 81% to 85% and the expenditures for health and welfare benefits ranged from 15% to 19%. WCCUSD had the lowest amount of expenditures for combined certificated teacher salaries and health and welfare benefits ($100,690,845) where salaries accounted for 85% ($85,738,513) and benefits were 15% ($14,952,332). In comparison, LAUSD had the highest combined amount of expenditures ($2,449,367,341) where salaries accounted for 85% ($2,086,179,828) and benefits were 15% ($363,187,513).

Only three of the four school districts (WCCUSD, EGUSD, and OUSD) contributed to their employees' single and two-party health benefit plans. However, all of the school districts in this study contributed to the family plan. WCCUSD had the largest amount for the single plan package and the second lowest average teacher salary. In comparison, OUSD had the largest two-party and family plans but had the lowest average teacher salary. On the other hand, LAUSD showed no employee contribution to the single and two-party plans as illustrated in Table 4.5.

Table 4.5

Average Teacher Salary and Health Benefits Plan

	WCCUSD	EGUSD	LAUSD	OUSD
Family Plan	$15,924	$17,639	$14,335	$23,423
Two-Party Plan	$12,564	$12,466	$0	$16,187
Single Plan	$8,379	$6,233	$0	$8,239
AvgTeachSalary	$55,097	$63,447	$66,851	$54,669

■ AvgTeachSalary   ■ Single Plan   ■ Two-Party Plan   ■ Family Plan
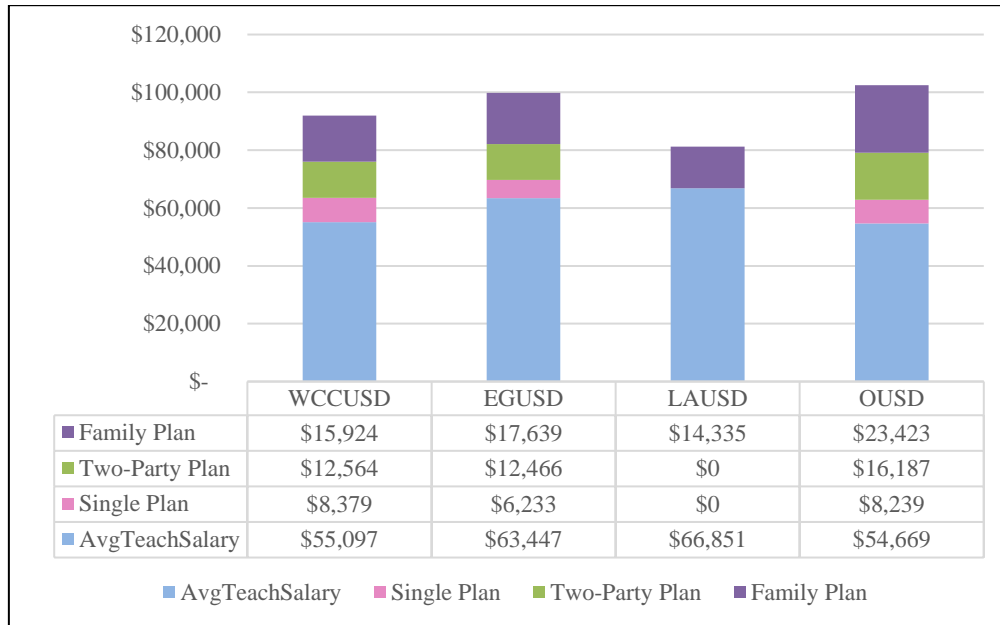
However, if the single plan benefit was added to the average teacher salary for WCCUSD, EGUSD, and OUSD, the actual benefits present a higher value for average teacher salaries. As an example, WCCUSD would show $63,476, EGUSD $69,680, and OUSD $62,908. In contrast, using the single plan averages (about $7,617) for the previous three school districts, the overall salary amount for LAUSD would have a lesser value for average teacher salaries of approximately $59,234, since teachers have to pay for their own single plan coverage. "Most of the benefits offered to teachers are negotiated by the union and district governing board. Usually the largest part of a benefit package is for health insurance. Other items could include dental, vision and life insurance" (Education Data Partnership, 2014, p.1). The average teacher salaries reported on California school district's teacher salary schedules, and used for this study, do not

take into account years of experience, health and welfare benefits, or any other benefits
that may be negotiated between school districts and bargaining units.

Table 4.6 shows a copy from the regression analysis SPSS program that was used
to analyze data. The mean average teacher salary for all school entities was 60341.476
and the standard deviation was 5481.2060. The equation for this component was:

Y = a – b * X, or

Teacher Salary = 69291.490 - .916 (PPE)

The dependent variable (Y) was average teacher salary and the independent variable (X)
was PPE. The constant (or Y intercept which is also the predicted value of Y) is
represented by the letter a, and the slope is represented by b. The equation shows that the
slope (or regression coefficient) for PPE is - .916.

Table 4.6

RQ#1: PPE and Average Teacher Salaries Regression Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
AvgTeach_Salary	60341.476	5481.2060	21
PPE	9765.762	1330.8885	21

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	69291.490	9074.924		7.635	.000	50297.455	88285.524
PPE	-.916	.921	-.223	-.995	.332	-2.844	1.012

The test of significance of the regression slope is a key assessment of hypothesis regression analysis that tells us whether the slope is statistically different from 0 (American University, 2010). A statistically significant finding (usually a difference) is a result (or relationship) that's not attributed to random chance (Sauro, 2014) and you are certain that a difference or relationship exists (StatPac, Inc., 2014). "When a statistic is significant, it simply means that you are very sure that the statistic is reliable" (StatPac, Inc., 2014, p. 1). Another key point is that, "A confidence interval around a difference that does not cross zero also indicates statistical significance. The likelihood of obtaining statistically significant results increases as our sample size increases" (Sauro, 2014, p. 1).

In addition, the p-value (probability value) is a critical component of linear regression analysis because it tests the null hypothesis to determine if the coefficient is equal to zero. A low p-value (Sig.) where p is less than 0.05 ($p < 0.05$) means you can reject the null hypothesis because it is false. If the predictor (independent variable or X) is zero, then the predicted criterion (dependent variable or Y) will significantly differ from zero. Also, changes in the predictor's value are correlated to changes in the criterion (or response) variable (Frost, 2013) making it statistically significant.

On the other hand, a larger p-value where p is greater than 0.05 ($p > 0.05$) indicates that changes in the predictor value are not associated with changes in the response making it statistically insignificant (Frost, 2013). Thus, the coefficient for PPE (-.916) is not significantly different from 0 because its p-value (.332) is much larger than 0.05 (UCLA: Statistical Consulting Group, 2016). Also, the 95% confidence interval (which is related to the p-value) includes 0; therefore, it is not statistically significant.

Hence, the null hypothesis is accepted (or true) which means there is no difference. In other words, the results of the data demonstrate there is no statistically discernible relationship between PPE and average teacher salaries.

Research Question #2: What is the relationship between per pupil expenditures and student achievement (API Base Scores and AYP Math Proficient)?

API scores. Under NCLB, API was used to evaluate school districts for AYP in Mathematics. Student test results were matched to the AMOs based on proficiency levels. Hence, districts that received Title I funds were accountable for student achievement coupled with subgroup performance and participation data (California Department of Education, 2014a).

According to the data from the sample, the highest mean API base score was for EGUSD at 786. LAUSD had the second highest at 762, OUSD was third at 723, and WCCUSD was fourth at 697 (see Table 4.7).

Table 4.7

Mean API Base Scores

The mean API for all school entities was 743.143 and the standard deviation was 63.8461. The equation for this component was:

Y = a – b * X, or

API = 862.958 - .012 (PPE)

The dependent variable was API and the independent variable was PPE. A copy of the results, from the SPSS program illustrated in Table 4.8, shows the p-value (Sig.) at .263 was greater than .05. Also, the 95% confidence interval (which is related to the p-value) includes 0 and was not statistically significant.
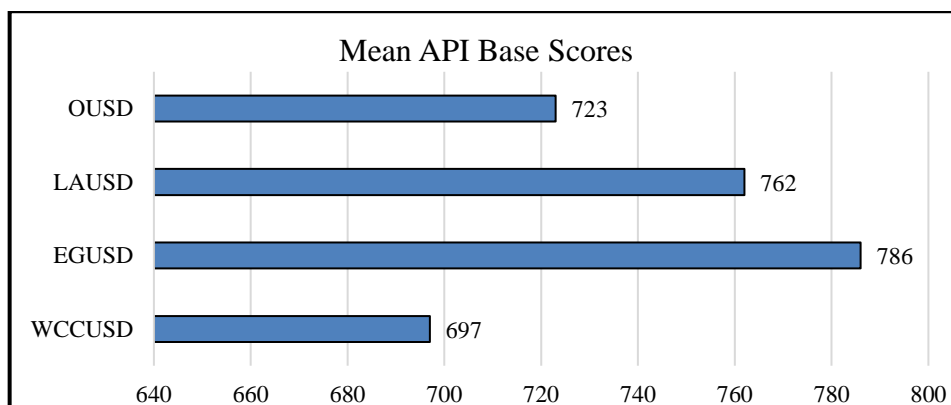
Table 4.8

PPE and API Regression Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
API	743.143	63.8461	21
PPE	9765.762	1330.8885	21

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1 (Constant)	862.958	104.819		8.233	.000	643.569	1082.347
PPE	-.012	.011	-.256	-1.153	.263	-.035	.010

This means, the results of the data indicated there was no statistically discernable relationship between PPE and the API. In a previous study specifically pertaining to aggregate per-pupil spending measures, Greenwald, Hedges and Laine (1996) discovered

that most of the analyses "that did not find a statistically discernible relationship between spending and outcomes still found a positive association" (p. 368).

AYP Math Proficient Scores. The data from the sample shows that EGUSD had the highest mean for AYP Math Proficiency at 49, LAUSD had the second highest at 41, OUSD was third at 35, and WCCUSD was fourth at 27 (see Table 4.9).

Table 4.9

Mean AYP Math Proficiency
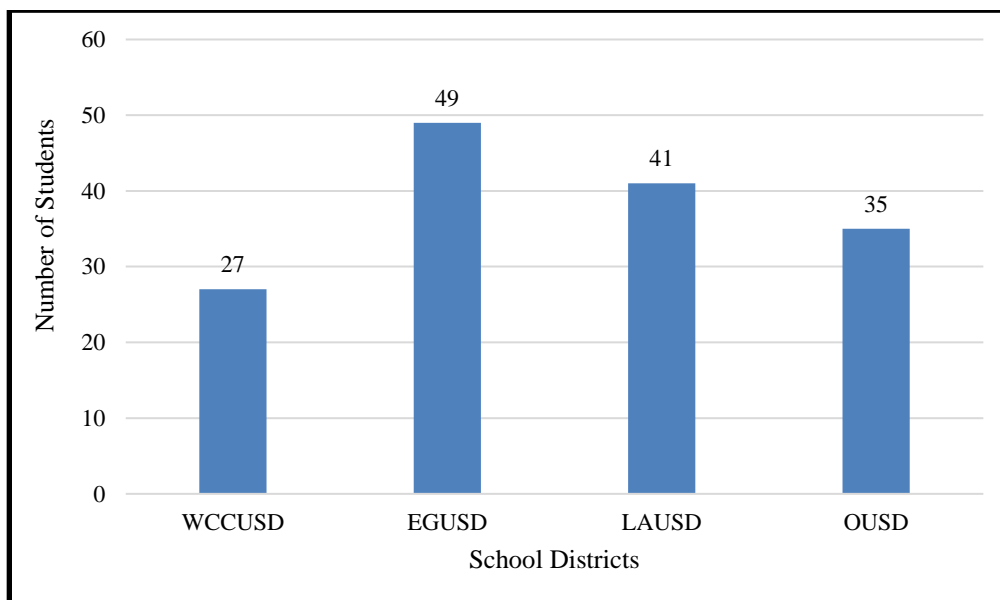
The mean for AYP (Math Proficiency) for all school entities in this research study was 38.171 and the standard deviation was 14.3481. The equation for this component was:

Y = a – b * X, or

AYP = 68.475 - .003 (PPE)

The dependent variable was AYP and the independent variable was PPE. A copy of the

results from the SPSS program shows that the p-value (Sig.) at .206 was greater than .05

and was not significantly different from 0 (see Table 4.10). Also, the 95% confidence

interval includes 0 and is not statistically significant. Hence, the null hypothesis is

accepted which indicates there is no statistical discernable relationship between the AYP

and PPE.

Table 4.10

PPE and AYP Math Proficient Regression Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
Math_Prof	38.171	14.3481	21
PPE	9765.762	1330.8885	21

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1 (Constant)	68.475	23.335		2.934	.009	19.634	117.316
PPE	-.003	.002	-.288	-1.310	.206	-.008	.002

AYP percentages were disaggregated by race/ethnicity to show the Math

Proficiency for each subgroup, including those who were socioeconomically

disadvantaged. This comparative statistical data was analyzed on Excel and used for this

component (see Table 4.11). Regression analysis was not used for this component.

Table 4.11

AYP Math Proficiency by Race/Ethnicity

	Schoolwide	AfAm/Black	Asian	Hisp/Latino	White	SES
■ OUSD	40.18	27.16	55.6	39.18	57.54	33.78
■ LAUSD	37.92	27.25	42.82	36.13	48.52	33.82
■ EGUSD	46.94	28.28	62.9	38.9	52.6	42.2
■ WCCUSD	26.56	11.38	35.48	23.74	26.82	21.96
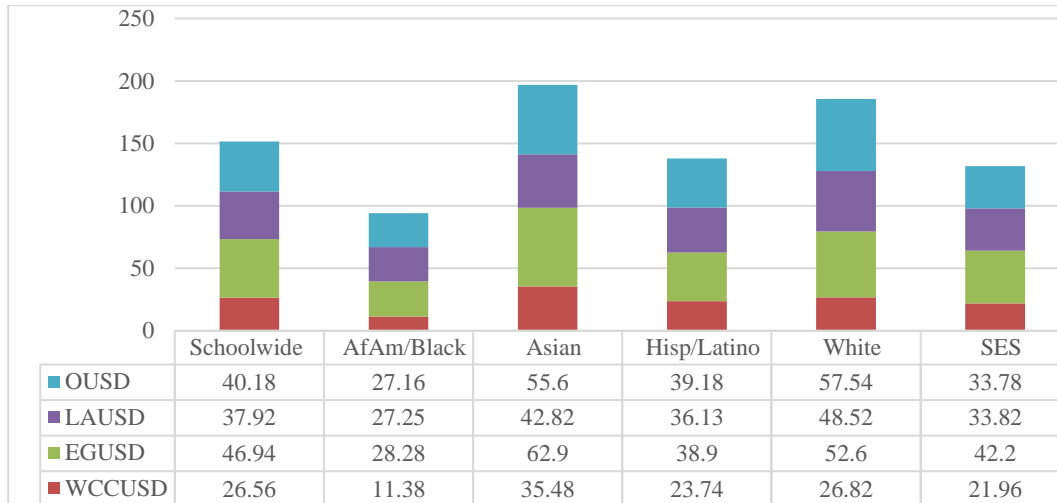
The subgroups in this study who scored above the school-wide average AYP

Math Proficiency in all four school districts were White and Asian students. The

subgroups who scored below the school-wide average were Hispanic/Latino and African

American/Black. Also, those students who were classified as socioeconomically

disadvantaged scored below the school-wide average for each school district. Out of all

the subgroups, African American/Black students scored the lowest in all four school

districts. The data indicates that an academic achievement gap existed between the

different subgroups in this sample.

Comparison of Individual Schools for the API and AYP Math Results

This section shows a comparison of how individual schools performed on the API

and AYP Math components. As previously mentioned in Chapter 3, a random sample

population of 21 urban and suburban schools, with approximately 16,141 middle school students, are utilized from four different California school districts: WCCUSD, EGUSD, LAUSD, and OUSD. Their API base scores and AYP Math Proficient scores are compared to their particular school district. Also, the data highlights the number of Title I and non-Title schools in those school districts. For those schools that are non-Title I, I will make a comparative analysis with Title I schools to determine if there are any differences in student performance outcomes.

For the West Contra Costa Unified School District, the district API was 715 for all five schools in this sample. As illustrated in Table 4.12, 3 out of 5 schools were Title I during 2011-12 for the sample population in WCCUSD. All of the Title I schools scored below the District API except Crespi Junior High School with an API of 719 (+4). Helms Middle School scored 671 (-44), and Pinole Middle scored 692 (-23). Out of the non-Title I schools, Hercules Middle scored above the District API at 748 (+33), whereas Manzanita scored below the District API at 657 (-58). All of the schools scored below the District AYP Math Proficiency level, which was 46.6%.

Table 4.12

West Contra Costa Unified School District (API and AYP Math Results)

District Name	School Name	Title I	API Base Scores	Difference in API	AYP Math Proficient
WCCUSD	**District**		**715**		**46.6**
WCCUSD	Crespi Junior High	Yes	719	4	26.2
WCCUSD	Helms Middle	Yes	671	-44	26.5
WCCUSD	Hercules Middle	No	748	33	37.1

Table 4.12 (continued)

District Name	School Name	Title I	API Base Scores	Difference in API	AYP Math Proficient
WCCUSD	Pinole Middle	Yes	692	-23	29.1
WCCUSD	Manzanita Middle	No	657	-58	13.9

For EGUSD in Sacramento County, the District API was 810 for all five schools. In the sample population for EGUSD, none of the schools were Title I during 2011-12. Nonetheless, I will still examine their student achievement data in comparison to Title I schools. All of the schools in this sample scored below the District API except Toby Johnson Middle School with an API of 879 (+69). T. R. Smedberg came close with an API of 807 (-3). Samuel Jackman Middle scored the lowest at 727 (-81); James Rutter Middle scored 729 (-81); and Edward Harris Middle at 788 (-22) as illuminated in Table 4.13. All of the schools scored below the District AYP Math Proficiency, which was 62.9%, except Toby Johnson Middle.

Table 4.13

Elk Grove Unified School District (API and AYP Math Results)

District Name	School Name	Title I	API Base Scores	Difference in API	AYP Math Proficient
EGUSD	District		810		62.9
EGUSD	Edward Harris, Jr. Middle	No	788	-22	57.7
EGUSD	James Rutter Middle	No	729	-81	35.1
EGUSD	Samuel Jackman Middle	No	727	-83	35

Table 4.13 (continued)

District Name	School Name	Title I	API Base Scores	Difference in API	AYP Math Proficient
EGUSD	T. R. Smedberg Middle	No	807	-3	50.3
EGUSD	Toby Johnson Middle	No	879	69	68.5

The District API was 746 for all six schools in Los Angeles Unified School

District located in Los Angeles County. In the sample population for LAUSD, all of the

schools were Title I during 2011-12 except Walter Reed Middle. Out of the 6 middle

schools represented, 3 middle schools scored above the District API and 3 schools scored

below the District API. The API base scores above the District API were at Walter Reed

Middle, which scored 844 (+98); Oroville Wright, which scored 775 (+29); and

Alexander Fleming, which scored 763 (+17)On the other hand, Daniel Webster had the

lowest API at 726 (-20); Audubon at 729 (-17); and Andrew Carnegie at 737 (-9). All of

the schools scored below the district AYP & Math Proficiency at 53.5% except Walter

Reed Middle as shown in Table 4.14.

Table 4.14

Los Angeles Unified School District (API and AYP Math Results)

District Name	School Name	Title I	API Base Scores	Difference in API	AYP Math Proficient
LAUSD	**District**		**746**		**53.5**
LAUSD	Alexander Fleming Middle	Yes	763	17	38

Table 4.14 (continued)

District Name	School Name	Title I	API Base Scores	Difference in API	AYP Math Proficient
LAUSD	Andrew Carnegie Middle	Yes	737	-9	40
LAUSD	Audubon Middle	Yes	729	-17	36.7
LAUSD	Daniel Webster Middle	Yes	726	-20	35.1
LAUSD	Orville Wright Middle	Yes	775	29	40.6
LAUSD	Walter Reed Middle	No	844	98	58.4

The District API was 728 for all five schools in Oakland Unified School District located in Alameda County. In the sample population for OUSD, all of the schools were Title I during 2011-12 except Montera Middle. Out of the 5 middle schools represented, 2 middle schools scored above the District API (one Title I school and one non-Title I school). In addition, 3 schools (all Title I) scored below the District API as shown in Table 4.15.

Table 4.15

Oakland Unified School District (API and AYP Math Results)

District Name	School Name	Title 1	API Base Scores	Difference in API	AYP Math Proficient
OUSD	**District**		**728**		**51.9**
OUSD	Bret Harte Middle	Yes	671	-57	22.7
OUSD	Claremont Middle	Yes	679	-49	25.8

Table 4.15 (continued)

District Name	School Name	Title 1	API Base Scores	Difference in API	AYP Math Proficient
OUSD	Edna Brewer Middle	Yes	812	84	57.8
OUSD	Frick Middle	Yes	643	-85	18.6
OUSD	Montera Middle	No	810	82	48.5

The highest API base score was for Edna Brewer at 812 (+84) followed by Montera at 810 (+82). The API scores below the District API belonged to Claremont at 679 (-49); Bret Harte at 671 (-59); and Frick at 643 (-85). All of the schools scored below the District AYP (51.9%) Math % Proficiency except Edna Brewer with a higher percentage (57.8 %).

In summary, a comparative analysis was conducted to examine how individual schools, in this sample, performed on the API and AYP compared to their District average scores. Additionally, a snapshot was provided to show how Title I schools performed in comparison to non-Title I schools. This is relevant because the analysis illustrates whether or not all schools are meeting the desired student performance outcomes for all students, particularly those racial/ethnic subgroups specified in NCLB (previously illustrated in Table 4.11). This examination might suggest that an academic achievement gap still persists in various schools and school districts within California.

Out of the 21 total sample school population, 38% were above the District API and 62% were below the District API. More specifically, 19% of the Title I and 19% of

non-Title I schools were above the District API. In comparison, 57% of Title I schools were below the District API and 5% of the non-Title I schools were below the District API.

Furthermore, 33% of Title I schools were above the AYP Math Proficiency in comparison to 67% of non-Title I schools. 61 % of Title I schools were below the Math AYP Proficiency compared to 39% of non-Title 1 schools . Basically, the results of the data indicated that more Title I schools were low-performing in comparison to non-Title I schools for both the API and AYP. Out of the 21 sample schools in this study, 57% were Title I and 43% were non-Title I. The majority of the Title I schools in this sample were in LAUSD. In contrast, the majority of the non-Title I schools in this sample were in EGUSD (see Table 4.16).

This comparative analysis is relevant because it illuminates the broad disparities that exist in API Base Scores and APY Math Proficiency for individual schools within the same school districts, across districts and in the same state. A large percentage of Title I schools in this sample did not meet the targeted performance goals for all students, particularly those subgroups specified in NCLB. The non-Title I schools show better results in terms of student performance outcomes. As previously mentioned in Chapter 1, NCLB requires both high poverty (Title I) and low poverty (non-Title I) school districts - that receive federal NCLB Title I funds - to use its state and local funds to deliver comparable services in order to raise achievement (test scores) and close the achievement gap. Although there are no clear trends, the results of this examination, might suggest an achievement gap exists despite educational reform efforts.

Table 4.16

Summary of Data for API and AYP Math Proficiency

		WCCUSD	EGUSD	LAUSD	OUSD	TOTAL	%
Title I		3	0	5	4	12	57%
Non-Title I		2	5	1	1	9	43%
TOTAL						21	100%
API RESULTS							
Above District API							
	Title I	1	0	2	1	4	19%
	Non-Title I	1	1	1	1	4	19%
Subtotal						8	38%
Below District API							
	Title I	2	4	3	3	12	57%
	Non-Title I	1	0	0	0	1	5%
Subtotal						13	62%
TOTAL		5	5	6	5	21	100%
AYP MATH RESULTS							
Above District AYP Proficiency							
	Title I	0	0	0	1	1	5%
	Non-Title I	0	1	1	0	2	10%
Subtotal						3	15%
Below District AYP Proficiency							
	Title I	3	0	5	3	11	52%
	Non-Title I	2	4	0	1	7	33%
Subtotal						18	85%
TOTAL		5	5	6	5	21	100%

Summary

In this chapter, I discussed the data I used to conduct my research. This data included the actual revenues and expenditures, demographic characteristics, average teacher salaries and health benefit plans, NCLB compliance percentages, and student achievement based on API and AYP Math scores for Title I and non-Title I schools in a randomly selected sample from four unified school districts.

I also analyzed this data using regression analyses to determine if there was a correlation between the independent variable (per pupil expenditure) and dependent variables (average teacher salaries and student achievement) highlighted in the research questions. Furthermore, I disaggregated some components of the collected data with respect to race to determine if specific subgroups were making academic gains in Math achievement.

When looking at the performance outcomes for API Base Scores and AYP Math Proficiency, along with the disparities in teacher salaries at the selected schools, my overarching question is: does money really matter? The results of the regression analysis for each research question did not demonstrate any statistically significant (or discernible) relationships between PPE and average teacher salaries and PPE on student achievement in Math. Furthermore, it appears that there is not a clear trend of higher or lower scores by schools with Title I funds as compared to district averages or to schools without Title I funds.

      I will discuss the results of this statistical analysis further in the next chapter, with additional comments regarding the insights from the study and possible future policy implications.

CHAPTER 5

DISCUSSION/RECOMMENDATIONS/SUMMARY

Discussion

In this chapter, I will review the results of my research and analysis, and make suggestions for future policy and practices based on this information.

Quite simply, the regression analyses I conducted resulted in a null hypothesis found for all research questions: the amount of expenditures (input) did not demonstrate a statistically significant relationship with student achievement or teacher salaries (outcomes). In other words, just because a district expends more dollars per pupil does not necessarily mean that teachers will obtain higher salaries. Additionally, and perhaps most important, I found that a statistically significant relationship does not exist between per pupil expenditures and student achievement, as measured by API Base Scores and AYP Mathematics Proficiency. However, this study analyzes data using a small sample population. The results of the data in all areas might change given a larger sample population. As previously mentioned in Chapter 4, the likelihood of statistical significance increases with sample size.

This study does add to previous research illuminating the disparities – sometimes, cavernous disparities – that exist among and within school districts in revenues, expenditures, teacher salaries, student achievement, and demographic characteristics. The evidence from the data analysis showed there were disparities in all of the variables examined in this study.

In Table 5.1, below, I rank the school districts in the sample population based on the variables used in the research study along with the district enrollment data in order to get a clearer picture of how the selected schools (and school districts) compared to one another. One is the highest rank and four is the lowest rank.

Table 5.1

Comparative Scorecard

Rank by School District	Enrollment	AYP	API	Salaries	Expenditures	Avg_Score
LAUSD	1	2	2	1	2	1.6
EGUSD	2	1	1	2	4	2
OUSD	3	3	3	4	1	2.8
WCCUSD	4	4	4	3	3	3.6

1 = highest   4 = lowest

In this sample, LAUSD ranked the highest overall score and WCCUSD had the lowest rank. LAUSD had the highest enrollment and WCCUSD had the lowest enrollment. EGUSD had the highest AYP and API, whereas WCCUSD had the lowest AYP and API. LAUSD has the highest average teacher salaries compared to OUSD with the lowest average teacher salaries. OUSD had the highest expenditures and EGUSD had the lowest expenditures.

The data also showed that the health benefit plans provided to the employees could either raise or lower the overall average teacher salary. Even though LAUSD had the highest average teacher salary, it did not offer coverage for the single and two-party plans, making the overall package the lowest for employees who chose those particular health benefit options. In contrast, OUSD and WCCUSD had the lowest salaries with the

most expensive employer-paid health benefits package at the single plan and two-party plan levels. While health benefits were not reflected in the average teacher salaries for the regression analysis, Table 4.5 in the previous chapter provided comparative data to demonstrate how the health benefits amounts could increase or decrease the average teacher salary value.

In the comparative analysis, the data summary shown in Table 4.16 from the previous chapter illustrated that the majority of Title I schools in this study were not achieving the desired performance outcomes as specified under NCLB. For instance, all students did not meet the required state law API of 800; all students did not meet Proficiency in Mathematics. Neither Title I nor non-Title I schools reliably met, or did not meet, the desired performance outcomes for all students. Based on the sample population, African American/Black and Hispanic/Latino students in all school districts were consistently performing at a lower level on API and Math AYP compared to White and Asian students.

Furthermore, in California, there are multiple sets of criteria for revenues and expenditures based on a menu of student demographic characteristics such as race and SES in different schools and across districts that are very complex and difficult to comprehend. California has one of the largest diverse multicultural student population with varying abilities within schools. Also, it is not known how external factors might impact internal school factors and the learning environment.

Also, the quantitative data ignores teacher quality and effectiveness, and working conditions that can impact student achievement. It is unclear how the political climate and bargaining units infiltrate the dynamics of the educational school system. Moreover, the disparities in average teacher salaries and varying health benefits packages in schools and across districts make it difficult to give an accurate account of the actual cost of educational expenditures which skews the data.

Recommendations

The data from the statistical analyses provided key information (and evidence) that determined the following recommendations:

Continue to Examine and Refine California School Finance

School revenues are derived from federal, state, and local governments mostly through taxes. Some are unrestricted (general funds) and others are restricted (categorical funds) for a targeted population. The evidence showed there are disparities in the sources and amounts of revenue across school districts in California. The recent Local Control Funding Formula in California is one attempt to level the playing field and increase funding for those marginalized students who need the most support and services. However, critical review of the implementation of the new funding formula will be imperative, as well as continued efforts to determine other financing formulas and resources aimed at our most disadvantaged students.

Examine the Distribution of Funding in K-12 Public Schools.

Expenditures are unevenly distributed throughout schools and school districts based on student enrollment, size and type of district, socioeconomic status and other related criteria attached to the source of revenue. The evidence showed there were disparities in the distribution of expenditures in schools and school districts.

Conduct Additional Studies

The insights gained from this research study emphasize the need for more quantitative research studies to determine future policy and practices that will improve inputs to produce more desired outcomes. A mixed methods (both quantitative and qualitative) approach might address some concerns and provide a closer, more personal, lens. Due to the complexity of the educational financial system, it is essential to find alignment and simplify the process so relationships between variables are more easily clarified for future studies.

Key Questions

In addition to the recommendations described above, there are three key questions used to consider for future policy and practices, as follows:

- **Are per pupil expenditures equitable for schools and school districts?**

The current answer is no, based on the evidence used from revenues, expenditures, and average teacher salaries. There were disparities on all accounts. Those who advocate for a strong public education system must demand adequate funding for all

students, and targeted funding for those students who experience additional obstacles of poverty, racism, disabilities, and language barriers.

- **Did all students reach Proficiency in Math as a result of the revenue and distribution of expenditures?**

The answer is no, based on the evidence used from the API Base Scores and AYP Math Proficiency. This study adds to prior research findings that increased funding does not necessarily result in increased student achievement. Focused efforts must continue in order to determine the essential elements that result in significant student achievement gains to close the achievement gap.

- **Was Title I under NCLB successful in achieving its goal?**

All students did not meet the desired performance outcomes for API and AYP in Title I schools. Why do poor children of color, or those who speak another language, continue to achieve below White children, even after several years of intensive intervention supported through Title I funding? Additional examination of Title I schools demonstrating significant success should be pursued to shed light on how targeted funds are best used to support students.

Conclusion

California has a complex financial system that often mirrors the educational process. There are various disparities in revenue streams and the distribution of expenditures that are restricted and unrestricted. School revenues are derived from

federal, state, and local governments with varying sets of criteria for schools and school districts.

Additionally, California educates racially and ethnically diverse students with varying abilities and needs, who hope to benefit from the programs and services that these sources of revenue might provide. Schools in the same district are assigned different API base scores and growth targets to demonstrate academic progress while students with varying levels of abilities, in the same classrooms, are required to pass the same standardized test.

The finance and educational system become even more convoluted when teacher salaries, health benefit plans, and NCLB compliance are factored in along with the maze of grants, categorical programs, legal mandates, curricula, delivery of instruction, and politics. All of these factors can possibly influence student outcomes, and this complexity makes accurate analyses that foster real change and adequate progress more difficult.

In addition, the salaries of the teaching profession, with respect to other labor market opportunities, are a considerable factor. Hess (2004) states that reformers acknowledge that "teacher compensation is a critical element in hiring the teachers we need and steering them into the schools where they are needed most" (p. 1) . "Higher teacher salaries are positively associated with student outcomes"(Baker, 2016, p. iv). However, a decrease in school resources can constrain salaries and diminish the quality of the labor supply (Baker, 2016).

"The academic achievement gap between poor and non-poor students is well-known. Low-income children consistently fall behind their peers in test scores,

graduation rates, college enrollment, and other measures of academic success" (Carey, 2002, p. 1). What is clear is that all students (and significant subgroups) are not achieving at the desired academic levels in spite of NCLB educational reform efforts. This is a social justice concern. "A significant body of research suggests that targeting additional resources to districts serving low-income children can narrow the academic achievement gap between poor and non-poor students" (Carey, 2002, p. 1).

The intent of the school financial system under NCLB is to equalize educational opportunities for all students. Yet, despite reform efforts, the school finance and educational systems have not significantly resolved closing the achievement gap after spending billions of dollars for a long duration of time. They have not been able to achieve the desired outcomes for all students in spite of an influx of resources. "The available evidence suggests that appropriate combinations of more adequate funding with more accountability for its use may be most promising" (Baker, 2016, p. v).

In closing, United States Secretary of Education Arne Duncan said,

All children are entitled to a high-quality education regardless of their race, zip code or family income. It is critically important that we provide teachers and principals the support they need to help students reach their full potential. Despite the excellent work and deep commitment of our nation's teachers and principals, systemic inequities exist that shortchange students in high-poverty, high-minority schools across our country. We have to do better (U.S. Department of Education, 2014b, p.1).

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