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A Longitudinal Fiscal Neutrality Analysis Of The Minnesota K-12 Public School Funding Formula

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A LONGITUDINAL FISCAL NEUTRALITY ANALYSIS OF THE MINNESOTA K-12 PUBLIC SCHOOL FUNDING FORMULA

by

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Jeremy Larson
July 3, 2014

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ABSTRACT

"Efforts to improve our school system must start with equity" (Department of Education's Equity and Excellence Commission, 2012). This study is a statistical analysis of the 2003-2012 Minnesota K-12 pubic school general education (foundation) formula in regard to fiscal equality and wealth neutrality. The analysis utilizes a longitudinal approach to compare the findings of previous equity studies to current relatable data as it pertains to the State of Minnesota. A number of modifications have been imposed on the original Minnesota funding formula over the past decade. This study tests the equity level of a selected number of revenue sources and reviews previous studies to determine how equity has or has not been improved as a result of the modifications.

Fiscal neutrality is described as the wealth of the school district and should be a function of the wealth of the state as a whole, not of the wealth of the local school district. This study analyzed the fiscal neutrality of 333 public school districts in Minnesota in terms of variance, permissible variance, coefficient of variation, and Gini Coefficient. The analysis was based upon three research questions:

1. Based on an analysis of the 2003 to 2012 general education formula, what were the fiscal equality and wealth neutrality characteristics of Minnesota's school districts?
2. Based on an examination of like data elements from the four major Minnesota fiscal equality and wealth neutrality studies, what trends can be observed?

3. Based on the recommendations of previous studies, what legislative impact did they have?

The findings of the research show that overall the disbursements of revenue through the Minnesota funding formula do meet the standards of wealth neutrality. However, there are categories of the formula that remain inequitable and the reliance of local taxpayers on the referendum revenue source has increased over the years studied.

Key terms: fiscal equity, wealth neutrality, horizontal equity, vertical equity, public school funding

CHAPTER I

THE ISSUE OF EDUCATION FUNDING EQUITY

In 1938, North Dakota Governor William Lange addressed the perceived inequalities in public education funding by asking, "Why should the school children in the one-room school houses on the prairie not enjoy the same privilege of education as those that are more fortunate by living in the larger cities in the state?" (Robinson, 1996 p.64). Lange's question highlighted the funding inequalities that often result when property taxes are used as the main source of revenue. Although the statement was made over eighty years ago, the issue of funding equality is still prevalent across the United States.

Bob Wise, President of The Alliance for Excellent Education, believes equality to be a moral imperative. In 2012, Wise said, "It is a moral imperative to equitably provide all students with a quality education" (Alliance for Excellent Education, 2012, p.1). Wise further addressed the issue in a Huffington Post interview in 2013. He stated:

> Historically, inequality in education has been a moral issue, but the nation's moral failure to provide all children with an adequate and equal education did not incur a noticeable cost. That is no longer the case. Today, providing a quality, equitable education to all students is no longer solely a moral imperative; it's also an economic imperative (para.10).

As society continues to progress and change, obtaining a quality education will be a vital factor of a successful future, both as individuals and as a society. A recent report by McKinsey & Company estimated that bringing the lower performing states economy up to the national average between the years 1983 to 1998 would have added $425 billion to possibly $710 billion to the 2008 Gross Domestic Product (GDP) (Epstein, 2011).

Litigations regarding the adequacy and equity of educational funding have used the findings in Brown v. Board of Education (1954). Chief Justice Warren expressed in his dissent:

> Today, education is perhaps the most important function of state and local governments…It is the very foundation of good citizenship…It is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. Such an opportunity, where the state has undertaken to provide it, is a right, which must be made available to all on equal term (p. 7).

Since 1954, 45 of the 50 states in the United States of America have been faced with lawsuits challenging their funding formulas. Delaware, Hawaii, Mississippi, Nevada, and Utah are the only states that have not been confronted with a challenge (National Access Network, 2012). However, Nevada is currently facing growing opposition in regard to funding equality based in part on the state's consistently low level of funding for English-language learners. Several groups have appealed to the state's judicial branch to declare the educational funding policies inadequate and unconstitutional; thereby mandating the state to adopt equitable funding throughout Nevada (Doughman, 2013).

One could argue that inequitable funding was a precipitating factor in the September 2012 teachers' strike in Chicago. In regard to the conflict between the Chicago Teacher's Union and the Chicago Public School System, Miller (2012) wrote an article for *Bloomberg News Press* highlighting the inequalities in Illinois' funding formula. Miller pointed out that two-thirds of school finance came from local taxes and also noted the disparity between the community of New Trier and the city of Chicago. He found that New Trier had 7.5 times the property wealth per pupil than the city of Chicago. New Trier was also taxing its residents' property at roughly half of Chicago's rate vastly generated more money per pupil. Poorer districts that rely on state aid more than property taxes face greater budgetary impacts as a result of state cuts. Those inequities are not exclusive to Illinois.

Rebell, Odden, Rolle, and Guthrie (2012) examined the impact of school level funding cuts on school funding formulas for the journal *Educational Leadership* using the state of New York as an example. They found if the state cuts aid by 10% overall, a poor district that receives 75% of its money from state aid loses 7.5 percent of its total budget. Conversely, a wealthy district that gets 10% of its revenue from the state and 90% from local property taxes only lost 1% of its total budget due to a 10% state cut. Rebell et al.'s analysis is one of many examples of the inequities that occur when property valuations are used in funding public schools.

The Center on Budget Policy Priorities examined how the economic climate has affected k-12 public school funding across the country. Based upon inflation-adjusted revenue levels, the Center's analysis found that 37 states provided less funding per student in fiscal year 2012 than 2011. State funding in Minnesota decreased 7.7%, equal

to $727 less per student (Oliff & Leachman, 2011). Overall, 49 states reduced state appropriations for public elementary and secondary education for at least one fiscal year from 2009-2012 (Driscoll & Salmon, 2013).

The State of Minnesota has not been immune to litigation challenging the equality of its funding. Two major court cases, *Van Dusartz v. Hatfield* (1971) and *Skeen v. State of Minnesota* (1993) sought to prove the state's funding formula was unconstitutional and inequitable. The 1971 case resulted in the "Minnesota Miracle," which was designed to bring the state closer to full state funding of K-12 public education. In the *Skeen* case, the Minnesota Supreme Court found that although the state's funding formula was not necessarily equitable, it was nevertheless constitutional. Both cases and their effects on the state's funding formula are examined in Chapter II.

The disparities and inequalities within Minnesota school systems still exist today. For example, 65% of Minnesota districts in 1993 voted in favor of local referendums to raise educational funds. By 2011, that number had risen to 89.6% (Hawkins, 2011). Because a local referendum is based on property taxes, the wealth of a district can dramatically affect the amount of money raised. For instance, within the Minnetonka Public School System, a tax of $225 on a $100,000 property value brought in revenue of $1,860 per pupil unit. That same $225 tax; however, brought in only $997 per pupil unit in Fridley, MN (Schools for Equity in Education, 2012). This example illustrates the difficulty in equitably funding schools across the state when the wealth of the district is one of the determining factors.

In a face-to-face meeting with Tom Melcher, Minnesota Department of Education Finance Director (personal communication, September 21, 2010), this researcher

addressed the effect that the economic climate has on the Minnesota funding formula. Melcher stated that no real increase to the funding formula had taken place since the 2008-09 school year, which has resulted in a greater reliance on local referendum levies. In addition, there has been a reduction in school cash flow as the state moved from a 90-10 payment delay schedule to a 70-30 delay for fiscal year 2011. Melcher believes the weakness in the current funding formula is the lack of inflationary increases and the erosion of the equalization of tax levies in recent years.

The 70-30 delay involves the timing of the state's disbursement of funding revenues to school districts. In such a schedule, the state pays 70% of revenue during the current school year and the other 30% the following year. Minnesota transitioned to a 63-37 shift in revenue for fiscal year 2012, which resulted in many school districts having to borrow money to meet their budgetary needs. For example, the Moorhead Area School District borrowed $8.5 million during the 2011-12 school year (W. Kazmierczak Assistant Superintendent of Business Services Moorhead Area School District, personal communication, October 25, 2012).

The inequity in Minnesota's funding has been the subject of four dissertation studies: Carruth (1980), Wilson (1984), Jacobson (1986), and Vandal (1997). These authors all concluded that based on the state's fiscal equity and wealth neutrality, Minnesota's public school funding has displayed inequities. Vandal's study of the funding from the 1993-94 fiscal year is nearly twenty years old. Many reforms have taken place to the state's funding formula since that research was conducted. A detailed description of the 2011-12 Minnesota funding formula will be summarized in Chapter II, as well as a comparative analysis of the previous equity studies.

Figure 1 displays a small number of of the modifications that have occurred to Minnesota funding directly affecting the funding formula since the Vandal (1997) study.

Year	Modification
1997	• Teaching and experience allowance removed from the basic formula for fiscal year 1999.
1998	• Aid reduction for property tax shift eliminated, referendum shift continued. • Beginning in FY 2000, equalized portion of referendum revenue increased from $315/PU to $350/PU.
1998	• Districts required reserving an amount equal to 1% of basic revenue for staff development.
2000	• Two new components added to the general education revenue: Equity Revenue and Referendum Offset Adjustment.
2001	• Set-aside for staff development increased from 1% to 2%.
2001	• Beginning FY 2003, the general education levy was eliminated and replaced with state education aid. • Under the "$415 referendum transfer," $415 was added to the basic formula and the first $415 per pupil unit of referendum revenue was eliminated. • Districts with less than $415 of referendum revenue received a net revenue increase equal to the difference between $415 and the referendum allowance per pupil unit.
2002	• For FY 2003, the percentage of annual state aid paid during the current fiscal year was reduced from 90% to 83% (currently 63%) and the final payment made in the following fiscal year was increased from 10% to 17% (currently 37%).
2003	• Beginning 2005, school districts required to levy for a portion of operating capital, transition, and equity revenue.
2005	• Beginning in FY 2006, alternative teacher compensation (Q Comp) revenue added as a component of general education revenue. • Beginning FY 2007, referendum cap increased from 18.6% to 26% of the formula allowance; tier 1 referendum equalization increased to $600/PU in FY 2007 and to $700/PUI in FY 2008 and later. • Beginning in FY 2006, additional equity revenue provided for districts with referendum revenue/PU below 10% of the state average, and metro districts receive 25% increase in equity revenue. • Beginning in FY 2007, all districts below the regional 95th percentile of referendum revenue per pupil unit received an additional 446 per pupil unit in equity revenue; those above the 95th percentile received $23/PU.

Figure 1. Funding Formula Modifications Between 1997 and 2005.

The impact of these reforms on the equity of the funding formula remains the subject of speculation and dispute. In February of 2011, Minnesota Governor Dayton released his 7-Point Plan for Achieving Excellence for all Minnesota Students. Adequate education funding for the future was the number one priority (Dayton, 2011). Because of this priority, the Education Finance Working Group was formed to find a solution to meet this demand. The Education Finance Working Group membership consisted of superintendents, school board members, finance directors, parent advocates, Minnesota Department of Education employees, and state legislators. The working group, led by Dr. Brenda Cassellius, Commissioner of Education, recommended improving the adequacy, equity, and stability of pre k-12 education funding (The Education Finance Working Group, 2011).

Statement of the Problem

The purpose of this study was to evaluate the impact of policy change on fiscal equity and wealth neutrality in Minnesota between fiscal year 2003 and 2012. The study also compares previous equity studies to current statistical trends within the state. All public school districts in Minnesota are included in this analysis, which used the same measures of fiscal equality. Vandal as well used wealth neutrality in his 1997 dissertation study. The current study was based on three research questions:

1. Based on an analysis of the 2003 to 2012 general education formula, what were the fiscal equality and wealth neutrality characteristics of Minnesota's school districts?
2. Based on an examination of like data elements from the four major Minnesota fiscal equality and wealth neutrality studies, what trends can be observed?

3. Based on the recommendations of previous studies what legislative impact did they have?

Significance of the Study

Despite two court cases regarding the constitutionality of the Minnesota funding formula, the "Minnesota Miracle", and numerous reforms to the formula including the elimination of the general education levy, attention is still being focused on the way the state of Minnesota funds its public school systems.

Four dissertation studies have been completed about the equity of Minnesota's funding formula. The most recent study was completed by Greg Vandal (1997) before the state faced a period of prolonged and tenuous economic hardship. By studying the fiscal years of 2003 through 2012, this researcher was able to draw conclusions regarding the progress the state of Minnesota has made in terms of funding formula equity.

Delimitations

The study focused on revenue sources as they related to fiscal equality and wealth neutrality within the state of Minnesota. The following are delimitations of the study:

1. Only Minnesota's public school districts that were in operation during 2011-12 were included. The study focused on the inputs (revenue) the school districts received through the Minnesota funding formula. An analysis of how revenue sources for each public school district were budgeted and spent by local school districts in terms of outputs was not included. Consequently, building debt service and capital equipment improvements were not analyzed.
2. The analysis focused on the basic general education formula, referred to as the Weighted Adjusted Daily Membership (WADM), basic skills revenue,

sparsity revenue, equity revenue, transition revenue, and referendum revenue for fiscal years 2003 to 2012. The state's disbursement of funds to local school districts was studied; however, the system of taxation the state of Minnesota used to raise the revenue was not.

3. Fiscal equity and wealth neutrality as measures of distribution of resources was examined. Adequacy and efficiency as use of resources was not analyzed.

Definition of Terms and Acronyms

The terms used in this study are consistent with terms used in fiscal equity and public school funding. Similarities were discussed between the previous studies to compare the current study with the findings of Larson's results.

- Actual Pupil Units. The average daily membership counts, which have been weighted, that are multiplied by the state-established weighting factors. These factors have changed as the legislature has adjusted the school funding formula from year to year.
- ANTC (Adjusted Net Tax Capacity). The net tax capacity of a school district as adjusted by the sales ratio.
- ADM (Average Daily Membership). The sum for all pupils based on the number of days in the district's school year each pupil is enrolled divided by the number of days the school is in session.
- Basic General Education Revenue. The largest foundation program component, this consists of the combination of state aid and local levy (the General Education Formula Allowance) multiplied by the Pupil Units. The

result is the total amount of Basic General Education Revenue available to the school district.

- Basic Skills Revenue. A combination of compensatory, limited English proficiency (LEP), and LEP concentration revenues.
- Categorical Aid. Funds paid by the state to school districts and designated for specific purposes such as transportation, special education for children with disabilities, and vocational education.
- Equality of Educational Opportunity. The provision of equal access to at least minimally adequate school resources.
- Equalizing Factor. The maximum amount of adjusted net tax capacity (ANTC) per pupil unit a district may receive.
- Fiscal Disparity. A standard or criterion of equity, which implies that disparities in per pupil unit revenues or expenditures must be reduced or eliminated to achieve fairness and equal educational opportunity.
- Fiscal Year. The 12-month period between settlements of financial accounts. The fiscal year for Minnesota school districts runs from July 1 to June 30.
- Formula Allowance. The dollar amount per pupil unit used to calculate each district's basic general revenue of the formula.
- General Education Aid. Funds paid by the state to school districts as part of the general revenue program. General education aid has been traditionally referred to as foundation aid.
- Levy. A tax imposed on property. A levy certified in the late fall is collected in the calendar year beginning the following January.

- Local Effort. The amount of revenue provided by local taxation.
- Pupil Units. A weighted count of resident pupils in average daily membership used in the calculation of state aid and local tax levies.
- Referendum Revenue. A specific revenue increase over the general education formula allowance in which the voters of a school district in a special election have approved.
- Resident WADM (actual pupil units). For any school district, the average daily membership (ADM) of all students who were district residents, weighted according to current statute. In 2012, weighting was as follows in Minnesota: kindergarten at .612, grades 1-3 at 1.115, grades 4-6 at 1.06, and grades 7-12 at 1.3.
- Sales Ratio. A statistical measure prepared by the Minnesota Department of Revenue that measures the difference between the actual sales prices of property and the local tax assessor's market value on those properties.
- Supplemental Revenue. Combinations of levy and aid in the same ratio as the district's general education revenue. Supplemental revenue is guaranteed to be the same amount per pupil as was in place in a given district the previous year. Beginning in fiscal year 2003-04, this source was renamed "transition revenue" due to the elimination of the general education revenue.
- Tax Capacity Percentages. The statutory classification that applies to market value.
- Tax Capacity Rate. Each district's tax levy amount divided by the district's total tax capacity. Tax capacity replaces the term "mill levy."

- Total General Education Revenue. The sum of all revenue components from the state's funding formula.
- Total WADM. The weighted average daily membership of all district residents plus nonresidents who attend the district's schools.
- Wealth Neutrality. A standard or criterion of equity based on the concept that "the quality of public education may not be a function of wealth other than the wealth of the state as a whole" (Coons, Clune III, & Sugarman, 1970, p.2). Under wealth neutrality, it is allowable for the level of educational services provided by a school district to be a function of local willingness to tax as long as equal tax rates provide equal dollars.
- WADM (Weighted Average Daily Membership). The average daily membership, which has been weighted according to the statutory standards.

Conclusion

Chapter II follows with a literature review relating to the field of school finance equity, both on a state and national level. It includes a historical review of policies surrounding funding public schools and any corresponding legal implications regarding funding equity. Chapter III details the research methodology used to analyze the fiscal equity and wealth neutrality of the 2011-12 Minnesota funding formula. Chapter IV includes a detailed description of the findings of this study in terms of fiscal equity and wealth neutrality. Chapter V provides a summary, conclusion, and recommendations for action developed from the results of the study. It is expected that this study will add to the ongoing discussion regarding equitable disbursements of revenue in Minnesota and help inform future decisions regarding the funding of the state's public school districts.

Chapter II

REVIEW OF THE LITERATURE

Chapter II contains a summary of the literature relating to the financial equity of k-12 public school funding. The review includes research on the funding that school districts receive based on the funding formula structures and how the corresponding characteristics of the funding formula relate to financial equity.

This chapter is organized into three sections. The first section is a literature review of the different funding formula structures used to disperse revenues to local public school districts through state level funding formulas. A sub-section includes a review of different statistical equity measures that can be used to analyze the funding formula. The second section relates to forces that create inequity or equity on funding formulas. The section is further divided into three sub categories that have a direct impact on k-12 education funding: a national perspective of state level litigations on funding formulas, local control of education, and the ability of politics to modify/change the funding formula. Lastly, the third section contains a review of the research that directly relates to the state of Minnesota. The section begins with a review of some of the history of k-12 public school funding, followed by a study of the major lawsuits brought against the state based on public education funding. The final section concludes with a review of the 2011-12 funding formula characteristics.

Funding Formula Structures

The structure of funding formulas can differ from state to state. Individual state legislatures are free to choose the funding structure they feel disperses the funds most equitably. In *San Antonio Independent School District v. Rodriguez* (1973), the United States Supreme Court ruled that education is not a fundamental right in the national constitution. This ruling did; however, say that it was the state's responsibility to choose the funding structure.

Jordan and Lyons (1992) argued there are four essential questions to be answered in regard to school finance: (a) what or who to fund, (b) what amount to fund, (c) where to get the money, and (d) how to share the funding among different levels of government. How a state chooses to answer these questions in large part determines the equity of funding across school districts.

One of the most difficult questions to answer is typically where to get the money. Historically, funding to local k-12 public school districts has been accomplished through four main structures: flat grants, foundation plans, equalizing plans, and full state funding. Each structure will be reviewed separately in detail.

Flat Grants

Flat grants are the earliest form of k-12 public school funding. In a flat grant, the state merely multiplies the average daily attendance (ADA) or average daily membership (ADM) by a fixed amount (Brimley & Garfield, 2005). The flat grant does not take into account any concerns regarding local ability to raise funds or the differences in educating students. Local public school districts receive the same amount of money per a designated characteristic. In Vandal's (1997) study, he noted that:

> Flat grants and payments violated many principles of equity and fiscal neutrality; that is, the wealth of the community shall not determine the education of a child. As such, rich districts received the same payment per unit of measure as poor districts (p.27).

Because flat grants do not consider any mitigating circumstances in regard to individual school districts, the payments often magnify already existing inequalities.

Foundation Program

A second structure that has been used in funding formulas is a foundation plan, which is the most widely used funding structure. Verstegen and Kneppel (2012) conducted a funding structure analysis in 2012 and found that 45 states use some form of a foundation program. The foundation plan originated in 1923 within the school finance theory of George D. Strayer and Robert M. Haig (as cited in Brimley & Garfield, 2005). Their research focused on the equitable distribution of funds between poor and rich school districts and the pair advocated for a minimum amount of funding concept. This concept had several fundamental standards:

1. Funding would be built around the "rich district" idea. Each district would levy the amount of local tax that was required to provide a minimum program; the state would then kick in the funding needed for the "poor district" to reach that minimum program level.
2. All foundation programs should guarantee equality of educational opportunities up to a specific point.
3. Uniform property assessment across the state is essential in all foundation programs.

4. The foundation program should be a minimum and not a maximum program. Local initiative and increase expenditures about the foundation program must be practicable in all districts within a state (Brimley & Garfield, 2005).

The last component of the Strayer-Haig foundation plan is the section that has received the most opposition. Because the plan leaves open the ability of districts to raise funds above and beyond the minimum level, it again opens the door for inequities. Foundation plans also do not take into account any equalization; therefore, wealthy districts could theoretically raise the funds needed to meet the foundation at a lower tax rate than a low property value district. Because of this shortcoming, some analysts have characterized the foundation plan as an "equalization myth" (Augenblick, Myers, & Anderson, 1997). Although the plan appears to have the potential to ensure equity across school districts, it inevitably results in the same inequality it was designed to remedy.

Full State Funding

A third funding structure and the least used is the full state funding (FSF) program. As the title suggests, in a full state funding program all funding comes from the state and no local tax revenue can be collected to support education. The only state in the country currently using the true form of FSF is Hawaii. This example; however, is accomplished because the entire state of Hawaii is one large school district.

The state of Washington created a self-described full state-funding plan in response to litigation brought against the state in 1978 (*Seattle School District No. 1 v State,* 1978). This litigation dealt directly with the inequities in the abilities for poor communities to raise funds in comparison to wealthy districts. At the time of the case, some wealthy districts had the ability to raise funds so that up to 24% of their budget

came from local taxes, compared to just 8% in a district with low property value. In Washington's plan; however, local school districts could supplement their budgets with local levies. Because the districts had the ability to raise local funds, the gap between districts actually grew as some property rich districts were able to raise enough funds so that up to thirty percent of their budget was from local taxes (Reynolds, 2006).

Many argue that full state funding is the most equitable plan because, in its truest form, the wealth of the local school district has no relationship to the amount of funding it receives. This goes hand in hand with fiscal neutrality. A study conducted in 2009 by Reynolds stated that the state has the obligation and sovereign duty to provide for public education through taxation. Reynolds stated:

> It is the state constitution's education clause; however, which explicitly puts the duty to provide education on the state and thus answers the question about taxing jurisdiction. Purportedly, local taxes for education must be considered as part of the state's implementation of its duty and should be evaluated as state taxes. No transfer of the state's sovereign power to its political subdivisions can change the fact that the revenue generated by those taxes is collected furtherance of the state's nondelegable constitutional duty (p.1848).

Thomas Kleven (2010) took the idea of full state funding a step further. He expressed a need for full federal funding:

> If states would shoulder the full cost of public education, that could redress the inequalities of the present reliance of local financing. Without federal financing; however, the inequalities among states will persist. So at a minimum federalizing public education seems necessary to address those educational inequalities, like

school financing, that are beyond state but are within federal control. Federalization might be better suited, as well, to address some of the matters within state control for reasons of efficiency or due to political factors that impede reforms more so at the state than at the federal level (p. 22).

Equalization

The fourth funding structure that has been used is the equalizing plan of which there are a couple of common types: district power equalizing (DPE) and percentage equalizing (PE). Equalization is meant to close the funding gap between property wealthy school districts and property poor districts. The theory of equalization has been linked to the work done by Cubberley (1906), which said, "All the children of the state are equally important and are entitled to the same advantage" (p.49).

DPE is the most notable equalizing plan and means that each local district mill levy should produce the same number of dollars of total school revenue per mill per weighted student in every district and the last mill to be levied should produce the same total funds as the first one (Brimley & Garfield, 2005). DPE has been linked to the work of Coons, Clune, and Sugarman (1970). In their book, *Private Wealth and Public Education*, Coons et al. defined DPE as:

> The concrete financing proposal may be stated thus: equal tax rates should provide equal spendable dollars. That is, the local unit would be empowered to fix the tax rate to be imposed upon a specific class of local wealth. For every level of local tax effort permitted by statute, the state would have fixed the number of dollars per task unit (probably per pupil) that the district would be empowered to spend. The state also guarantees that this number of dollars will be available to

the district. If the local levy raises less than the state set amount, the state makes up the difference from a fund generated by taxation of general state wealth (p.34).

Verstegen and Knoeppel (2012) explained that DPE systems support taxpayer equity, rather that inequity, by providing equal yields in the form of similar tax rates across the state. An example of a DPE plan would be as follows: If a state sets a levy dollar amount of $1,000 for a given levy tax rate and if the local school district raises only $600 through the set levy tax rate, the state would then offset the amount with $400 state dollars to reach the state set level. Likewise, if a district reaches or exceeds the minimum $1,000 through the set levy tax rate, they would receive no state equalizing funding. In some plans, if a local district raises above the minimum level, say $1,250, the amount over the state set level would then be taken and debited into the state's general fund. This fund would then be used to pay equalizing dollars to districts under the state set level. This is known as recapture or the "Robin Hood" plan.

Equity Measures

There have been some equity measures or theories discussed in regard to k-12 public school funding, regardless of the type of funding structure the state chooses to use. This sub-section will look at various parts of this discussion.

Since education provisions are included in each state's constitution, many feel that inequitable funding is a violation of the equal protection clause. Essentially, the argument can be expressed as, "equity in the context of school finance means the equal treatment of persons in equal circumstances . . . equity means that taxes should be equal regardless of one's taxing jurisdiction" (Jordan & Lyons, 1992, p.23). This concept relates directly to horizontal equity, which involves equal treatment for equal students.

This type of equity does not take the individual characteristics of the students, demographics, location, etc. into account, instead assuming all individuals are similar. Flat grants and foundation plans that pay on straight, per pupil ADA or ADM are examples of horizontal equity. This concept has often been called “the equal treatment of equals” in school finance literature (Toutkoushian & Michael, 2007).

On the other end of the spectrum is vertical equity, which takes individual characteristics into account for funding purposes. This type of equity involves the differential treatment of students or the unequal treatment of unequals. An example of vertical equity being incorporated into a funding formula would be weighted pupil units (WPU) or compensatory funding. In WPU, students are weighted differently based on the specific needs of each student. Schools are then funded based on the WPU, rather than flat per pupil units.

Since vertical equity centers on the concept of differential treatment of unequals, it has been associated with the adequacy movement. The Thomas Fordham Institute recommended that state policy makers move to a weight student funding plan, stating that such a plan allowed for greater equity and would simplify state funding formulas (Petrilli & Roza, 2011). In their article in *Educational Leadership*, Linda Darling-Hammond and Diane Friedlaender (2008) expressed the same opinion on funding through a WPU formula. They wrote that WPU funding reduces the number of small programs and rolls funds into core funding through the weighted student formulas so that schools have flexibility to align funding to their instructional missions. Jordan and Lyons (1992) found that “delivery of an adequate program does not assume equal per-pupil funding. In this case, the concept of vertical equity prevails, since unequal per-pupil funding is

needed to provide an adequate program" (p.25). In addition, King, Swanson, and Sweetland (2005) also tied the two together, describing adequacy as "the ideal state of vertical equity" (p.2).

Another vertical equity example is the Title I provision of the Elementary and Secondary Education Act. Title I provides additional funding to students attending high-poverty schools to achieve at the same academic level as their wealthier counterparts. The Center for American Progress defined the necessity of the Title I funding were meant to enhance educational opportunities for students at high poverty schools (Bireda, 2011). In 2011, 34 states had low income or compensatory funding that provided funding based on poverty levels (Verstegen, 2011).

The last equity measure reviewed is Proposition One, which states, "the quality of public education may not be a function of wealth other than the wealth of the state" (Coons et al., 1970, p.152). This concept is closely related to fiscal neutrality, which states a district's level of funding should be a function of the wealth of the state rather than the wealth of the district. In his book *Educational Finance: An Economic Approach*, Monk (1990) defined fiscal neutrality as: "the wealth of the state, as a whole, must be behind every student"; this definition was used in the Oklahoma lawsuit regarding fiscal equity (as cited in Hancock, 2001 p. 8). This definition is similar to a Rebell's (2010) definition, which stated, "the state has a constitutional obligation to equalize the value of the taxable wealth in each district, so that equal tax efforts will yield equal resources" (p.225). Another way to conceptualize fiscal neutrality is that the principle of equity exists perfectly when no relationship exists between equity objects and illegitimate characteristics (Houck & Eom, 2012).

If Proposition One and fiscal neutrality could be accomplished, wealth neutrality would exist. Wealth neutrality is a statistical measure used to analyze the degree to which state and/or local revenue is related to the property wealth of the local school district. The wealth-neutrality score shows the degree to which state and local revenues are related to the property wealth of districts. A negative score means that poorer districts receive more funding per weighted pupil unit than wealth districts. Conversely, a positive score indicates more funding for wealthy school districts. *Education Week* conducted a survey entitled *Quality Counts at 10*, which used the wealth-neutrality score to rate the equity of the state funding formula over the years 1997 to 2006. The researchers found that only ten states had a negative wealth-neutrality score (National Center for Educational Research, 2006). In another study conducted by Epstein (2001) using wealth neutrality equity measures, the state of Minnesota had a ranking of 16th for their wealth neutrality score.

Forces that Affect Equity

In the early 1860s, Thaddeus Stevens addressed the issue of equity before the United States House of Representatives. Stevens said:

> This law is often objected to because its benefits are shared by the children of profligate spendthrift equally with those of the most industrious and economical habits. It ought to be remembered that the benefit is bestowed not on the erring parents, but the innocent children. Carry out this objection and you punish children for the crimes or misfortunes of their parents. You virtually establish castles and grades founded on no merit of the particular generation, but on the

> demerits of their ancestors; an aristocracy of the most odious and insolent kind – the aristocracy of wealth and power (as cited in Coons et al., 1970, p.5).

Steven's statement illustrates the longevity of the battle for equality. It has effectively been going on since public schools were created.

The second section of this chapter focuses on three issues that directly impact the equity of the funding formula. It can be argued that these impacts have both increased the equity of state funding of k-12 public education in some situations and led to greater inequities in others. The first sub-section looks at past nation-wide litigation in regard to state funding. An examination of litigation involving Minnesota appears later in the chapter. The second sub-section focuses on the idea of local control, while the last section addresses the impact of politics on funding formulas.

Litigation

One of the major forces that have affected the equity of the funding formulas has been the use of litigation. According to the National Access Network (2012), cases involving the constitutionality of k-12 public school funding have occurred in 45 states across the country. Of those cases, 19 plaintiffs won their case at the Supreme Court level (Minorini & Sugarman, 1999). As of July 2012, 15 states are in the process of addressing litigation regarding their funding formulas (National Access Network, 2012).

As stated previously, five states have never been part of a lawsuit regarding school funding: Delaware, Hawaii, Mississippi, Nevada, and Utah. Larry Newton, School Finance Director for the State of Utah, believes that litigation has not occurred because the Utah constitution does not contain any language regarding adequacy, instead

discusses the concept in terms of a “reasonably equal school” and minimum school programs (personal communication, March 21, 2011).

The remaining states have all faced lawsuits, many states doing so several times. For example, Texas’ finance system has been challenged six times since 1984, most recently in 2005 (Wieder, 2012). Many of these cases have resulted in policy modifications that have had a major impact on public school funding.

One such case was *San Antonio Independent School District v. Rodriguez* in 1973, in which plaintiffs from some of the property poor districts across Texas sued the state claiming that the funding formula was unconstitutional because of the resulting disparities among districts. The Supreme Court rejected their argument stating that education was not a fundamental interest under the federal constitution. In his descent; however, Justice Thurgood Marshall specifically recommended that the plaintiffs address their concerns at the state level through a “review of state educational funding schemes under state constitution provisions” (*San Antonio Independent School District v. Rodriquez*, 1973). The Supreme Court’s decision had a major impact on future litigation, effectively opening the door to state level lawsuits regarding the funding of public schools.

A second major court case that helped create more equity in school funding occurred two years earlier in *Serrano v. Priest* (1971). In *Serrano v. Priest* (1971), the California Supreme Court ruled that education was a fundamental constitutional right and that the funding disparities between property wealthy and property poor districts generated by the state funding formula violated the equal protection clause. A continuation of the lawsuit was filed in 1976 with *Serrano vs. Priest II*. Once again, the

court sided with plaintiffs, stating “equality of educational opportunities requires that all school districts possess the ability in terms of revenue to provide students with substantially equal opportunities for learning” (*Serrano v. Priest,* 1976, p.6). Both of these cases established a precedent for future litigation involving funding equity.

Another case involving equal educational opportunity involved the state of Connecticut in *Horton v. Meskill* (1977), wherein the Connecticut Supreme Court found the funding of public schools in the state unconstitutional. The ruling stated that the state constitution required it “to provide a substantially equal educational opportunity” (National Access Network, 2010, para.1). Like the Serrano ruling, the court educational equity was determined to be a *right* of all state residents, not a luxury.

A 1997 New Hampshire lawsuit further addresses equal funding, this time directing its litigation on property taxes. In *Claremont School District v. Governor* (1977), the New Hampshire Supreme Court ruled in favor of the plaintiffs who argued against the state’s disparities in funding. The court concluded that because the duty to provide education is a state and not a local matter, any property tax levied for schools is a state tax and not a local tax. Furthermore, it was the state’s obligation to provide a minimum standard of education. The court’s ruling; however, left open the opportunity for local schools to rise above the minimum, stating that once the minimum standard is satisfied, local districts may levy property taxes to generate supplemental funding.

The New Hampshire ruling addressed the discrepancies of using property taxes as well and stated that the state had an obligation to a minimum standard of funding. By allowing school districts to raise funds above the minimum level; however, the court left the door open for future funding discrepancies.

This court ruling is one factor that began a litigation shift away from equity towards adequacy and fairness. The case of *Alabama Coalition for Equity v. Hunt* (1993) best describes this shift. The plaintiffs in this case filed suit challenging the state's education finance system on adequacy and equity grounds. Although spending levels were equal across all districts, Alabama students were performing at the bottom of the nation academically. The court ruled in favor of the plaintiffs on both the adequacy and equity claims based on the state constitution. In this example, although a funding system may be equitable, it may also be inadequate (Hanushek, 2006). Mason & Arsen (2010) explained the adequacy through their research through results: "If resources and results are both significantly lower, then the court will find the education in those districts is inadequate" (p. 32).

In a report in the *Cornell Law Review*, Gillespiet (2010, p.1004-1006) explained the advantages of moving to adequacy-based litigations. She found three advantages of an adequacy over equity lawsuit:

1. Adequacy is normally more appealing and consistent with widely held societal values.
2. Adequacy allows for continued local control of public education.
3. Adequacy directly focuses on the quality of education the state provides.

The shift toward adequacy litigation was further addressed in a policy brief written by Lefkowits (2004) for Mid-Continent Research for Education and Learning. Lefkowits stated that:

> These lawsuits tend to be more politically palatable than equity suits, which by their nature, result in a redistribution of resources from high-wealth to low-wealth

districts. Adequacy suits seek a higher level of funding for all students and thus avoid pitting districts against one another (p.5).

West & Peterson (2012) agreed with this claim. They stated the difficulty with moving to adequacy was rather simply asking for fiscal equity. Advocates for poor school districts argued that spending on education must be adequate to provide all students with an education guaranteed by their state's constitution. Having set aside the simple, readily justifiable standard of fiscal equity, plaintiffs now had to give specificity to educational adequacy, a much more ambiguous concept.

Not all; however, agreed that moving to adequacy was the right decision. Kauffman (2004) argued that unless you can have both equity and adequacy, equity is the better option. He said, "Absent this combination of both equity and adequacy, it is preferable that equity be given priority. If an equitable system is inadequately funded, all schools are equally vested in raising the level of support to an adequate level" (p.26).

A recent decision by the Colorado Supreme Court may have further diminished the adequacy claim. In the case of *State of Colorado v. Labato* (2013), the court found in favor of the state funding formula stating that schools may be underfunded, but the state's system for parceling out revenues did not violate the constitution. In the ruling, Justice Nancy Rice stated:

> While the trial court's detailed findings of fact demonstrates that the current public school financing system might not be ideal policy, this Court's task is not to determine whether a better financing system could be devised, but rather to determine whether the system passes constitutional muster (*State v. Lobato*, 2013, para.13).

Springer, Liu & Guthrie (2008), analyzed the question of whether an adequacy lawsuit or an equity lawsuit will bring greater funding and resources. Their research analyzed the resource distribution from the state funding formula after an adequacy and/or equity lawsuit. They concluded, "contrary to school finance theory, resource distribution patterns following court-mandated equity and adequacy reforms are not statistically different" (p. 61-62). The adequacy versus equity debate was also researched by Erin Buzuvis (1998) who concluded that the best reform efforts must strive for both adequacy and equity: "The experiences of these two states (New Hampshire and Vermont) suggest that regardless of the catalyst for reform, education reform can and should include elements of both equity and adequacy" (p. 92).

Local Control

It has long been a fundamental provision of our democracy that control stay with the people opposed to the federal government. This ideology includes the control of education. Historically, the fundamental policies of education have been created by the state and local educational agencies. This ideology; however, can lead to increased inequities. Rebell (2010) explained the equity problem associated with local control:

> Rooted in traditional patterns of local control of schooling in America, most state systems require much of the funding for public schools to be obtained from local property taxes, a method that inherently disadvantaged students who attend schools in areas that had low property wealth (p.221).

This concept was further discussed in a report commissioned by the Education Law Center via Baker, Sciarra, and Farrie, *Is School Funding Fair* (2010). The report stated, "Public education in the United States is highly centralized, provided through

separate systems by the fifty states" (p.2). This decentralization can be argued to have a negative impact on the equity of public school funding due to the fact that some local communities can vote down individual issues and approve others. The issue of decentralization is not new. In his book 1943 book, *American Schools: A Critical Study of our School System*, Morrison (as cited in King, Swanson, & Sweetland, 2005) described school districts as "a little republic at every crossroads," stating that the fact the American education system uses extreme decentralization is both its strength and its weakness.

In regard to funding, local control is centered around the ability of a school district to pass a levy on local property taxes to raise revenues for educational purposes. Many times, this levy is a supplemental fund in addition to the state level funding the district receives. Jordan and Lyons (1992) explained local choice as follows:

> The goal of local choice assumes that the local taxpayers and the school board should have the authority to establish the budget and set the tax levy for operating the schools. This tradition of local choice has resulted in a wide disparity in per-pupil expenditures among states and among districts within states (p.25).

This has created a battle between equity and local choice. Reynolds (2006) defined the battle in the *Uniformity of Taxation and the Preservation of Local Control in School Finance Reform*. She said:

> As long as local taxing and funding provide a significant portion of school revenues, some districts can tax themselves at the rate necessary to provide their children, and only their children, with a school system that is public in nature but private in its level of luxury (p.1884).

Giles (2012) agreed with Reynolds' (2006) opinion on the privatization of public education, She stated that well-funded schools are in the position to tap into their affluent parents and the surrounding community to finance the "extras" that parents may value and believe will make a significant difference in their children's education lives. Giles argued that the privatization of public schools effectively institutionalizes inequity in the school systems.

The argument of local control and voter approval may best be described in a study conducted by Educational Testing Services (ETS) (Hart & Teeter, 2004). ETS analyzed public opinion on various school funding issues, including the prospect of increasing school funding by raising taxes in order to ensure equitable and stable schools. Fifty percent of respondents stated they would agree with an increase, while 45% indicated they would be opposed to the increase, even if that meant no additional funding for schools. It is a common predicament that many school districts face: people want adequate and stable school systems, but many do not want the funding coming out of their pockets.

Court cases have also centered on local control. In the Ohio Supreme Court Case *DeRolph vs. State* (2002), the opinion expressed the following concern of local control:

> However, it is futile to lay the entire blame for inadequacies of the present system on the taxpayers and the local boards of education. Although some districts have the luxury of deciding where to allocate extra dollars, many others have the burden of deciding which educational programs to cut or what financial institution to contact to obtain yet another emergency loan. Our state constitution makes the

state responsible for educating our youth. Thus, the state should not shirk its obligation by espousing clichés about local control (p. 11).

Political Affects

In the political environment, state legislatures have had the difficult task of balancing competing demands from local school districts with those of state level agencies. In a statistical analysis conducted by Metzler (2003), the phrase "Inequitable Equilibrium" was coined. In the study, Metzler looked at the relationship between changes in school finance systems and the degree to which they achieved greater equity. Based on his findings, Metzler hypothesized that "in many states, the distribution of education resources is primarily a function of the distribution of political power in the state" (p.5). It can be very difficult, if not impossible, to separate school finance systems with the political entities that surround it.

An examination of the Minnesota Republican Party (2012) and the Minnesota Democratic Party (2012) platforms detail this tenuous relationship. The Republican Party for example, holds firm parental choice. They believe in a more competitive accountable public school system, which would supply school vouchers for parents to use for any school they choose. In regard to school funding, they view the current Minnesota funding formula too complicated and recommend simplifying the formula by eliminating all funding categories as well as eliminating all payments disbursed to school districts based on students that receive free or reduced funding. Another belief is that elimination of the U.S. Department of Education, placing all authority with the local school boards.

In contrast, the Democratic Party agrees that the practice of differing state funding should be opposed. They support federal and state government fully funding all programs that are mandated to local school districts. Another belief is providing early childhood education for every child in Minnesota, by contrast the Republican Party is firmly against the establishment of universal pre-school programs. Teacher rights, is also an area that the parties are at opposites ends of the spectrum. Democrats support the protection of professional rights and collective bargaining for educators, where the Republicans support pay based on performance and limiting educators right to strike. These opposing philosophical differences can be a pawn during a legislative session when reviewing k-12 public school funding.

The state of Kansas is another example of a system with inequitable equilibrium. Kansas permits the 16 districts with the most expensive residential properties to levy a special local tax to raise additional revenue on the basis that it costs more to hire teachers in neighborhoods with high priced houses (Baker & Cororan, 2012).

The idea of political power has appeared in court cases as well. In *Campaign for Fiscal Equality v. State* (2001), the plaintiffs claimed that the State of New York had violated its constitutional mandate to support of a system of free common schools, wherein all the children of the state may be educated, by establishing an education financing system that failed to afford New York City's public schoolchildren the opportunity guaranteed by the Constitution. The court ruled that over many years, the state had consistently violated the Education Article of the Constitution, stating:

> The evidence at trial demonstrated that the formulas do not operate neutrally to allocate school funds—at least with respect to annual increases in State aid.

> Rather the formulas are manipulated to conform to budget agreements reached by the Governor, the Speaker of the State Assembly, and the Senate Majority Leader (p. 9-10).

This case demonstrates the innate inability to separate political interests from school finance issues.

One state has taken action to try to minimize political involvement in school finance. Arizona's Proposition 105, also known as the Voter Protection Act, was passed in 1998 and includes a provision that forbids lawmakers from repealing or changing the intent of approved ballot measures without majority approval from the legislature (Fischer, 2013). The amendment that appears in Section 1, Article IV, Part 1, Section 1, 6(b) reads as follows: "The Legislature shall not have the power to repeal a referendum measure decided by a majority of the votes cast thereon or to repeal a referendum measure decided by a majority of the votes cast thereon" (para.7). Although a positive step, the amendment didn't prevent Arizona's legislature from modifying the state's funding formula, in particular the student count process. In 2010, the legislature voted to move from an average daily membership to an average daily attendance.

In the *Journal of Education Finance*, Ely & Fermanich (2013) commented on this switch in student count, saying:

> Politically, policymakers electing to adopt a high incentive count method may face accusations of cutting funding for education because averaged counts and counts based on attendance will inevitably be lower than a discrete count taken early in the school year or counts using enrollment (p.366).

Ultimately, modifications to the funding formula often result in increased inequity, especially when the motivation for change is based on political concerns and not issues of equity.

Arizona is not the only state whose funding formula has been scrutinized. In a study of the Massachusetts education funding system, Fahy (2011) looked at how funding formula modification affected the equity of the formula. She concluded that systems that include district characterizations such as community wealth and regional school systems are more likely to result in inequities. Roza (2010) further addressed the issue in her book *Educational Economics: Where Do School Funds Go*? Roza referenced a quote from a member of the Learning Assistance Program in the state of Washington to illustrate the issues regarding allocating additional funds to poor students:

> We had what we thought was the perfect formula. We ran all the numbers showing how much each district would get. We had it all in a clean report with all the information on how and why we designed the formula. Problem was, when we brought the report back to the larger state legislature, each and every representative started out by thumbing through the report. They went right past the per pupil allocations. Then, they stopped when they got to the sums that their district would get. That's when it all fell apart (p.1017).

This example illustrates the difficulties that can arise when politics and educational policy becomes intertwined. Despite the best of intentions, individual needs often trump those of the whole and make equity difficult to achieve.

Another concern that has risen from the politics of the funding formulas is the concept of municipal overburden which has been defined as "the relationship between

municipalities' education funding and the fiscal stress generated by their heavy expenditures on both educational and non-education services" (Knickman & Reschovsky, 1981 p.353). The overburden is likely to increase as states are asked to spend more of their budget on educational related expenses. For the 2009 fiscal year, states averaged 23.3% of their entire budget on k-12 education (LaPlante, 2012). As the federal government continues to face financial challenges, public education funding is likely to be an area where cuts are made. Consequently, states will be forced to contribute a higher percentage of their overall budget to education, resulting in additional municipal overburden.

The idea of municipal overburden has been used in a number of state finance challenges. For example, a three-judge panel ruled in 2013 that the Kansas Legislature had failed to live up to its constitutional duty to adequately fund public schools and ordered an increase of more than $500 million. The attorneys for the state argued that the cuts were necessary to provide all the state services required by law. The Kansas Center for Economic Growth said lower school funding would hurt the state's economic recovery. "Good schools and an educated workforce foster economic growth and we are shooting ourselves in the foot by reducing our investment in our schools and students," said Annie McKay, the group's executive director (as cited in Hancock, 2013, para.11). The case is currently awaiting an appeal with the Kansas Supreme Court.

A 2011 review of state finances conducted by the National Governor's Association found that as a result of the national recession, eighteen states made cuts to k-12 funding, totaling $1.8 billion (Education Week, 2011). Many of these cuts were likely the result of states attempting to minimize municipal overburden. The impact of

municipal overburdens; however, is not without its distracters. A study conducted by Brazer & McCarty (1986) found that the municipal overburden hypothesis was not a valid or reasonable basis upon which to claim the need for special assistance.

History of Minnesota Finance

In 1858, the Minnesota Constitution made it the duty of the state to ensure it would have a thorough and efficient system of public schools. In Article 13, Section 1, it states:

> The stability of a republican form of government depending mainly upon the intelligence of the people, it is the duty of the legislature to establish a general and uniform system of public schools. The legislature shall make such provisions by taxation and otherwise as will secure a thorough and efficient systems of public schools throughout the state.

The final section of this chapter includes a review of the history of k-12 public school funding in Minnesota. The review focuses on specific regulations that directly impact the funding formula, either by creating more equity or by resulting in greater inequities. Much of the timeline was taken from the Minnesota Department of Education's website (Melcher, 2011).

The property tax levy law was passed in 1887. This initial levy was to be allocated to schools in proportion to the number of pupils in attendance, much like ADA now. Schools that had students in attendance at least forty days with a qualified teacher were eligible for funds. The property tax levy continued to be the bulk of revenue for public schools for the next 25 plus years.

In 1915, the state executed their first attempt at equalization in the form of supplemental aid. School districts that had a maintenance levy that exceeded 20 mills were eligible for aid equal to one third of the amount raised about the 20-mill rate. This supplemental aid was capped at a total of $1,800 for a graded (elementary) school and $2,500 for a high school.

The initial equalization was amended in 1921 with the addition of a second tier of support. School districts would still receive one-third of the amount raised between 20 and 32 mills, but districts with mills that exceeded 32 would also receive one-half of the sum raised through the levy with supplemental aid. Districts that raised $100 per pupil; however, would be excluded from supplemental aid. The maximum aid level also changed to $200 per elementary teacher and $250 per high school and special education teacher. This was the first finance law that differentiated between property poor and property wealthy districts by not allowing supplemental aid for the districts that could raise the funds through their local property taxes.

The supplemental aid program remained unchanged until modified in 1935. Now the program guaranteed that a school district making a regular maintenance level of 30 mills would receive $60 per elementary pupil and $100 per high school pupil in regard to ADA. Two years earlier, the state had enacted a statewide income tax. This was the first tax that would go to the schools directly that was not a property tax. Under the new tax, school districts would receive $10 per resident child between the ages of 8 and 16 that lived within their boundaries.

In 1947, the legislature added a flat grant structure to the funding formula in the form of basic aid. For the first time, the basic aid was distributed to school districts

through a weighted pupil membership (WPM) program as follows: kindergarten = 0.25, elementary = 1.0, and secondary = 1.5. This can be viewed as the first attempt at horizontal equity in regard to public school funding.

The next big change came as a result of a 1955 study of the school finance system by the Bureau of Field Studies at the University of Minnesota. In regard to the current finance system, the study found that the state was providing 41.7% of the funding to local school districts with the remaining 58.3% coming from the school districts themselves. Based on their findings, the study recommended the following changes:

1. Adopt a foundation-type program through the following formula:
   Aid = the greater of ($215 x weighted ADA) – (0.012 x equalized valuation) or $92 per pupil unit.
2. The foundation program of education should be defined (ie: minimum services to pupils that should be offered by all schools).
3. There should be a study of pupil weights.
4. Increase the state share of state and local school funding to 50%.
5. Establish a state loan fund for school construction.
6. Provide state aid to equalize debt service levies that exceed a certain minimum tax rate.
7. Continue to use equalized property values for state aid computations

(Melcher, 2011, para.5).

As a result of the study, the state legislature enacted a foundation program in 1957, which began in fiscal year 1958. The formula allowance was set at $240 per pupil unit which was based on ADA and weighted as kindergarten = 0.5, elementary = 1.0, and

secondary = 1.5. In addition, the basic levy was set at 16.5 mills times the adjusted assessed valuation.

The various changes to the funding formula did not; however, change the disparities in local levies that related to property taxes. For instance, the city of Anoka was forced to levy a tax of $581 on a $20,000 home in order to spend $536 per pupil unit. Conversely, the city of Golden Valley only had to levy $369 on a similar home to spend $837 per pupil unit (Melcher, 2011). The discrepancy led to the first major court case against the State of Minnesota and its funding of public schools.

On October 12, 1971, parents from the White Bear School District filed a complaint that charged the current funding system with denying their children substantially equal educational opportunities and forcing residents to pay higher tax rates for the same or lesser expenditure levels than those in wealthy districts. The case was similar in nature to 1971 California *Serrano v. Priest* case. The plaintiffs in the Minnesota case dismissed their claim; however, after the "Minnesota Miracle" Omnibus bill was enacted. The district court found that "a system of public school financing which makes spending per pupil a function of the school district's wealth violates the equal protection guarantee of the 14th Amendment to the Constitution of the United States (*Van Dusartz v. Hatfield*, 1971).

The Minnesota Miracle was seen by many as the answer to funding inequities. The main components of the bill were:

1. The total state share of school operating revenues was increased from 45% to 65%. State taxes increased by 23%, largely through income and state taxes. This reduced property taxes by 15-20%.

2. The foundation formula allowance increased from $404 to $750 for FY 1973.
3. Uniform statewide levy limits were created for the first time. The basic tax rates were raised from 20 mills to 30 mills. Limits could still be exceeded if approved by voters in a referendum.
4. Pupil units changed from average daily attendance (ADA) to average daily membership (ADM). Secondary weighting decreased from 1.5 to 1.4.
5. A hold-harmless provision was created to ensure that districts with declining enrollment would not receive less state aid for FY 1973 than they did in FY 1972 or 1971.

The changes in the Minnesota Miracle bill shifted a majority of the funding onto the state rather than the local school districts. For the next 15 years, there were no other major modifications to the finance structure. In 1987, the foundation revenue plan was changed to general education revenue and some categorical aids were created. In addition, supplemental revenue was created to ensure that all districts received at least a $40 per pupil unit increase in FY 1989 compared to FY 1988.

Another change introduced in 1988 was the mandatory open enrollment program that would begin in FY 1990 for school districts with enrollments greater than 1,000 students and in FY 1991 for all other districts. This was the first time students could attend any school district rather than being confined to the district they resided in. This change was important for two reasons. First, the district of the resident would not get the general education funding for the students that attended neighboring districts as the funding would follow the student to the district of attendance. Second, parents could now send their child to a district with high property wealth while continuing to live in a

district with low property taxes. The potential ramifications of open enrollment were addressed in a report conducted by Knowles and Knowles in 2005:

> Under open enrollment, a homeowner with a preference for higher than average spending on public education may nonetheless vote against a local operating referendum, since the opportunity to send their child to a high spending school outside the district exits (p.5).

The year 1991 was another year that saw significant modifications to the funding formula when the legislature enacted a Referendum Equalization Program to be implemented in FY 1993. This equalizing program mandated that referendum revenue be equal to 10% of the formula allowance equalized at 50% of the equalizing factor. The problem with this program was that the referendum levy was tied directly to the local operating levy of the school district. If the local school district did not have or was not able to get voter approval for a levy, that district did not receive any equalizing revenue.

In that same year, a debt service plan that would have provided 100% equalization of debt levy exceeding a 12% tax rate was vetoed by the Governor's office. The debt service levy became part of a bigger equity issue the following year when the Minnesota Supreme Court heard the case of *Skeen v. State of Minnesota*. The plaintiffs in this case filed suit against the state challenging the constitutionality of the referendum and debt services levies that are based upon local property taxes and the training, experience, and supplemental revenues that are fully equalized state aid components of the general education program (*Skeen v. State of Minnesota,* 1993). The Wright County District Court found that the referendum levy, supplemental revenue, and debt services revenue violated the education clause and equal protection guarantees of the Minnesota State

Constitution. That ruling was overturned; however, when the Minnesota Supreme Court ruled education in Minnesota was a fundamental right and the current system of education finance satisfied that right. In the court's opinion, "All plaintiff school districts are provided with an adequate level of education which meets or exceeds the state's basic educational requirements and . . . are given sufficient funding to meet their basic needs" (Larson, 1993, para. 20). This ruling shifted the idea of equitable funding towards adequate funding by effectively saying that it is the state's responsibility to ensure a minimum level of funding. Local districts; however, were permitted to exceed this minimum level.

Another major change to the finance structure occurred in 2001 when the legislature passed a law eliminating the general education levy beginning FY 2003 and replacing it with state aid. The general education levy was the district power equalizing (DPE) portion of the funding formula. Under the new law, all school districts were to have a flat general levy at a tax rate of 0.3241%. The state would then pay the difference between the amount collected from the local levy and the general education allowance. Under this law, the state would finance the entire cost of replacing the general education levy.

Supplemental revenue was also eliminated under the new law; although, it could be converted to referendum revenue by board action. A $415 referendum transfer was added to the basic formula and the first $415 of per pupil referendum revenue was eliminated. Districts with less than a $415 per pupil referendum received funding equal to the difference between their new revenue from the referendum levy and the $415 roll-in amount.

The goal of the roll-in was to reduce the local share of public school funding and transfer it to the state. The change increased the state formula foundation payment from $4,068 in FY 2002 to $4,601 in FY 2003 with an increase of 13.1% (Thorson & Anderson, 2008). This increase; however, did not benefit local school districts as they merely received a tax break from their local referendum levies, not additional funding. Between the $415 roll-in and the elimination of the general education levy, the state had a 40% increase in their educational share, an increase of $4.33 billion in FY 2002 to $6.09 billion in 2003. Again, this increase benefited taxpayers, not local school districts.

The formula allowance that was increased to $4,061 because of the roll-in was immediately frozen at that level for the next few years as the state dealt with the country's economic recession. The foundation level increased from $4,061 in FY 2005 to $5,124 in FY 2009. The level remained at the figure; however, until FY 2012 when it rose to $5,173 (Crowe, 2011).

The legislature modified the original equalization levy structure as well. After the initial roll-in, the state equalized referendum levies at the $126 level. Within two years, that amount was raised to $405 and by FY 2009, it was set at $700 (Thorson & Anderson, 2008). This modification gave local school districts a greater incentive to pass referendums and to increase the percent of education revenue from property taxpayers. For FY 2012, the breakdown of revenue for education purposes was 77.2% from the state and 22.8% from property taxes (Crowe, 2011).

Almost immediately following the 2001 changes to the Minnesota finance structure, the state changed the percentage of annual state aid payments during the fiscal year from a 90-10% shift to an 83-17% shift beginning FY 2003. This schedule meant

that a local district would receive 83% of their state payment that fiscal school year and 17% the following year. That shift has increased to a 60-40% shift for FY 2012. This holding back of 40% of the revenue school districts need to cover operational costs has forced many school districts to borrow money to meet their regular yearly expenditures.

The 2011-12 financing of k-12 public schools in Minnesota occurred through a combination of state collected and locally collected property taxes. Revenue is received in three major categories as described in the Financing Education in Minnesota 2011-12 report:

1. State Education Finance Appropriations
    a. General Education Aid: The largest share of state appropriations, intended to provide the basic (adequate) support for the education program.
    b. Categorical Aid: Generally used to meet costs that vary significantly between districts (i.e., special education) or promote certain types of programs (i.e., career and technical aid, adult basic education aid, etc.)
2. State Paid Property Taxes: Property tax credits reduce the amount of property taxes paid. To make up for this reduction, the state pays the difference between what was levied in property taxes and what is actually received by school districts and other taxing districts (district power equalization or DPE).
3. Property Tax Levies: Made with voter approval or at the discretion of the local school board. The largest share of property tax levies made by school districts is from voter-approved levies: the excess operating referendum and debt services levies.

The percentage of revenue from state and local sources for FY 2012 is 77.2% from the state and 22.8% from local property taxes (Crowe, 2011). A more detailed description of the various general education revenue sources can be found in Chapter III.

Past Minnesota Fiscal Equity Research Studies

The following individuals researched Minnesota's funding of K-12 education: Gayden F Carruth (1980), Thomas Francis Wilson (1984), Thomas Philip Jacobson (1986), and Gregory Vandal (1997). The ensuing section is a brief review of each study's methodology and findings as well as a comparison of their individual recommendations.

Carruth (1980)

Carruth (1980) conducted the first study which analyzed the *projected* effects of changes in Minnesota's funding program as of 1979 and was based upon fiscal equity. Eight revenue sources were examined: basic maintenance levy, discretionary levy, excess maintenance levy, minimum aid, referendum levy, replacement allowance, sparsity aid, and taconite reserve account. The researcher had five research questions along with a corresponding null-hypothesis for each that were proven or unproven based on the analysis of the funding formula. Carruth's research was based upon the following:

1. To determine projected statewide trends toward equitable distribution of selected maintenance revenues per pupil unit among Minnesota school districts for FY 1980-83. The null-hypothesis was that no trends toward improvement in equitable distribution would be observable.
2. To identify the projected effect of each selected maintenance revenue upon equitable distribution per pupil unit among Minnesota school districts for FY 1980-83. The null-hypothesis studied was that selected maintenance revenues

affect improvement in equitable distribution among Minnesota school districts in the following ways: all eight revenue sources that were individually studied would have no effect on equitable revenue distribution between FY 1980-83.

3. To determine the projected effects of district geographic location upon equitable distribution of selected maintenance revenues per pupil unit among Minnesota school districts for FY 1980-83. The null-hypothesis stated district geographic location would have no effect on equitable distribution between FY 1980-83.
4. To determine the projected effects of district size upon equitable distribution of selected maintenance revenues per pupil unit among Minnesota school districts for FY 1980-83. The null-hypothesis was that school district size would have no effect on equitable distribution between FY 1980-83.
5. To determine projected effect of enrollment change upon equitable distribution of selected maintenance revenues per pupil unit among Minnesota school districts for FY 1980-83. The final null-hypothesis was that enrollment change would have no effect of equitable distribution between FY 1980-83 (p.128).

Through the analysis of the eight revenue sources Carruth (1980) found that in regard to the first null-hypothesis, the statistical measures indicated that all revenue sources showed a decrease in perfect equity. The null-hypothesis was therefore not rejected, but proven. The researcher concluded that for FY 1980-83 there was not an observable trend toward improvement in equitable distribution. In addition, there appeared to be no reduction in overall disparity of the total selected maintenance

revenues. The revenue availability for the total selected maintenance revenues appeared to be moving progressively toward less fiscal neutrality by 1983 and no apparent progress toward leveling up to the median revenue occurred during the years studied.

Carruth's (1980) second finding showed mixed results. Regarding the analysis of the basic maintenance revenue source, the findings rejected the null-hypothesis for FY 1980 and 1981. The null-hypothesis was not rejected; however, for FY 1982 and 1983. In regards to the discretionary revenue, the findings rejected the null-hypothesis; although, there was improvement found in equity distribution for FY 1981 and 1982. Carruth's analysis determined the least equitable revenue source was basic maintenance and minimum aid. The revenue with the greatest variance was the excess maintenance. The study found taconite revenue to be the least equalizing revenue and the revenue source least fiscally neutral was the referendum revenue based on local property taxes.

The third, fourth, and fifth null-hypotheses in regard to district geographic location, school district size, and enrollment changes were rejected for all revenue sources. The findings suggested that geographic location and district size did appear to have an effect on the equitable revenue distribution. In regard to enrollment changes, there appeared to be a reduction in overall revenue disparity among districts that experienced an enrollment growth. By FY 1983, declining enrollment districts appeared to be less fiscally neutral than districts that had seen growth in enrollment.

Wilson (1984)

The next fiscal equity study conducted on the Minnesota funding formula was completed in 1984 by Thomas Francis Wilson. The purpose of this study was to develop an alternative model for reforming the Minnesota School Foundation Program for

funding public elementary and secondary schools. The model was based on total foundation revenues for FY 1979-80, 1980-81, and 1981-82. The revenue sources that were analyzed were the same as in the Carruth (1980) study. Wilson (1984) proposed the following research objectives:

1. Develop an alternative model for reforming the Minnesota School Foundation Program for funding public elementary and secondary schools.
2. Analyze the actual program, the alternative program, and each of two alternative model modifications to test for the equitable distribution of revenues provided by each.
3. Compare the actual program to the alternative model and Carruth's findings as well as compare the alternative model to each of its modifications to determine which offered the greater fiscal equity and wealth neutrality for financing Minnesota's public schools (p.114).

The following null-hypotheses were tested in regard to the actual foundation program and the alternative model. Also listed are the findings for each null-hypothesis.

1. There will be no observable differences in fiscal disparity between the Carruth (1980) predictions and the actual foundation revenues for FY 1980-82. The findings rejected this null-hypothesis, as the actual foundation revenue was more disparate than Carruth's predictions.
2. There will be no observable differences in wealth neutrality between the Carruth (1980) predictions and the actual foundation revenues for FY 1980-82. Null-Hypothesis 2 was also rejected, as there was more dependency on local wealth than predicted by Carruth.

3. Trends toward the reduction of fiscal disparity in the various actual foundation revenues will not be observable for the FY 1980-82. The findings showed a decline in fiscal disparity, so the null-hypothesis was not rejected.
4. Trends toward a more neutral wealth distribution of revenues for actual foundation revenues will not be observable for FY 1980 through 1982. The findings showed a decline between 1980 and 1982 in regard to wealth neutrality; therefore, the null-hypothesis was not rejected.
5. Trends toward the reduction of fiscal disparity in the alternative foundation revenue will not be observable for FY 1980 through 1982. Null-Hypothesis 5 was rejected as the findings either showed perfect equity or a steady progress toward improved equity.
6. Trends toward a more wealth neutral distribution of revenue for the alternative foundation revenues will not be observable for FY 1980 through 1982. The findings indicated an improvement in the wealth neutrality of each revenue source. The null-hypothesis was therefore rejected.
7. There will be no observable differences in fiscal disparity between the actual foundation revenue model and the alternative foundation revenue model for FY 1980 through 1982. Null-Hypothesis 7 was rejected as there was a reduction in fiscal disparity in the alternative method Wilson analyzed.
8. There will be no observable differences in wealth neutrality between the actual foundation model and the alternative foundation model for FY 1980 through 1982. The findings showed that the Gini Coefficient was lower in the

alternative model and that it was decreasing over the years analyzed. The null-hypothesis was rejected.

9. There will be no observable differences in fiscal disparity between the alternative foundation model and modifications IA and IB of the alternative model for FY 1982. Null-hypothesis nine was rejected.
10. There will be no observable differences in wealth neutrality between the alternative foundation revenue model and modifications IA and IB in FY 1982. Null-hypothesis ten was also rejected.

Based upon the statistical analysis, Wilson determined that the actual foundation revenue was more disparate in equity and less wealth neutral than the predictions given in the Carruth (1980) study. Overall, there was deterioration in fiscal equity for FY 1980 through 1982. In addition, the alternative foundation model showed less wealth dependence and appeared to be more equitable in the disbursements of the revenue sources analyzed than the actual foundation program.

Jacobson (1986)

The purpose of the third equity study was to assess the 1983-84 foundation formula versus the 1984-85 five-tier discretionary formula with regard to fiscal equity and wealth neutrality. The five-tier plan replaced the grandfather, replacement, discretionary, and low fund balance components of the foundation aid program. The tiered program contained a basic foundation aid component, a cost differential component, and three tiers of equalized levy authority. Jacobson (1986) proposed the following research questions and null-hypothesis:

1. Were there fiscal equity and wealth neutrality differences between the 1983-84 foundation formula and the 1984-85 five-tier discretionary formula? His expected outcome was that on a statewide basis, there would be no observable effect upon fiscal equity or wealth neutrality between the 1983-84 foundation formula and the 1984-85 five-tier discretionary formula.
2. What effect does the training and experience factor have on fiscal equity and wealth neutrality in the five-tier discretionary formula? Null-Hypothesis 2 again stated that the research would show no observable effect upon fiscal equity or wealth neutrality as a result of the training and experience index.
3. What is the effect of the sparsity factor on fiscal equity and wealth neutrality in the five-tier discretionary formula? Null-Hypothesis 3 was that on a statewide basis, no observable effect upon fiscal equity or wealth neutrality would be found in regards to the sparsity factor.
4. Is there a relationship between geographic location and fiscal disparities? The 4th null-hypothesis was that there would be no observable relationship between geographic location and fiscal disparities.
5. Is there any relationship between the size of the school district in terms of enrollment and fiscal disparity? The last null-hypothesis was that there would be no observable effect between school district size in terms of enrollment and fiscal disparities (p.64).

Through the research and analysis of the foundation programs, all null-hypothesis were rejected; however, there appeared to be improvements in regard to geographic location and school district enrollment. Based on the study, Jacobson (1986) concluded

that on a statewide basis, the five-tier discretionary improved the fiscal equity as well as the wealth neutrality. The training and experience index did not improve either fiscal equity or wealth neutrality. The sparsity index also did not improve fiscal equity or wealth neutrality and was the most disparate component of the foundation program. Overall, there seemed to be a "leveling up" for all district size ranges in the study.

Vandal (1997)

Vandal (1997) conducted the fourth and final equity study. The purpose of the study was to assess the 1993-94 general education (funding) formula with regard to fiscal equity and wealth neutrality. The selected revenue sources analyzed were: basic revenue, compensatory education revenue, sparsity revenue, training and experience revenue, supplemental revenue, referendum revenue, and total general education program revenue. There were four research questions:

1. What were the fiscal equity and wealth neutrality characteristics of Minnesota's school districts based on an analysis of the 1983-84 general education formula?
2. What trends can be observed for Minnesota's school districts from an examination of like data elements from the four major studies of fiscal equity and wealth neutrality in Minnesota?
3. What trends can be observed for regions of the state from an examination of like data elements from the four major studies of fiscal equity and wealth neutrality in Minnesota?

4. What trends can be observed for school districts of similar size from an examination of like data elements from the four major studies of fiscal equity and wealth neutrality in Minnesota (Vandal, 1997, p.4)?

Based on his research, Vandal (1997) had 16 null-hypothesis. They are listed below along with the corresponding findings:

1. On a statewide basis, an equitable distribution of the training and experience (T & E) allowance will not be observable. This null-hypothesis was rejected as the T & E allowance was observed to be distributed equitably.
2. On a statewide basis, an equitable distribution of the sparsity allowance will not be observable. This null-hypothesis was not rejected as the allowance was lacking in wealth neutrality.
3. On a statewide basis, an equitable distribution of the compensatory allowance will not be observable. The null-hypothesis not rejected.
4. On a statewide basis, an equitable distribution of the supplemental allowance will not be observable. The null-hypothesis was not rejected.
5. On a statewide basis in 1994, there will be no observable effect on equitable revenue distribution per pupil unit of the excess levy referendum. Again, this null-hypothesis was not rejected due to the fact that the excess levy was dependent on local voter approval.
6. On a statewide basis, an equitable distribution of the combined general education program categories of the general education formula will not be observable for 1994. This null-hypothesis was rejected as the overall general formula was progressing to equitable distribution.

7. On a statewide basis, there will be no observable relationship between geographic local fiscal disparities, using the ECSU regions. The null-hypothesis was rejected.
8. On a statewide basis, there will be no observable effect between school district size in terms of enrollment and fiscal disparities. The null-hypothesis was rejected.
9. On a statewide basis, trends toward improvement in the equitable distribution of the training and experience allowance will not be observable between the Jacobson (1986) study and the current study. The findings showed that there was a trend toward more equity; therefore, the null-hypothesis was rejected.
10. On a statewide basis, trends toward improvement in the equitable distribution of the sparsity allowance will not be observable between the Carruth (1980) study and the current study. The findings in regard to sparsity showed that the trend was progressing away from equity and the null-hypothesis was not rejected.
11. On a statewide basis, trends toward improvement in the equitable distribution of the compensatory allowance will not be observable between the Wilson (1984) study and the current study. The null-hypothesis was not rejected.
12. On a statewide basis, trends toward improvement in equitable distribution of the supplemental allowance will not be observable between the Wilson (1984) study and the current study. The null-hypothesis was not rejected.
13. On a statewide basis, there will be no observable effect on the equitable revenue distribution per pupil unit of the excess levy referendum between the

Carruth (1980) study and the current study. The findings showed that since the Carruth study there was a trend toward greater equity; therefore, the null-hypothesis was rejected.

14. On a statewide basis, trends toward improvement in the equitable distribution of the total general education program categories presented in each study will not be observable between the Carruth (1980) study and the current study. There was an improvement in equity between the Carruth to the Jacobson (1986) study; however, there was lesser equity between the current study and the Carruth study. The null-hypothesis was not rejected.
15. On a statewide basis, there will be no observable relationship between geographic location and fiscal disparities between the Carruth (1980) study and the current study. The null-hypothesis was rejected.
16. On a statewide basis, there will be no observable effect between school district sizes as measured by enrollment criteria between the Carruth (1980) and the current study. The findings showed the fiscal disparities were comparable from the Carruth to the Vandal (1997) study and the null-hypothesis rejected.

Based on the findings of the research, Vandal (1997) came a variety of conclusions. First, the implementation of the training and experience allowance marked an improvement in equity from the Jacobson (1986) study through 1994. The sparsity index became less equitable over time; however, the results were discounted as it was only given to a small number of school districts. The compensatory allowance could also be discounted based on the same criteria of the sparsity allowance. The supplemental

allowance was not an equalizer in the Minnesota funding formula. The same was true of the excess levy because of the restrictions placed upon it. Declining enrollment did not appear to adversely impact the results of the cross-study analysis. Finally, significant disparities existed across the regions of the state and the conditions had gotten worse over the course of the studies.

Table 1 created by Larson, illustrates the recommendations of the past four fiscal equity studies.

Table 1. Recommendations of Previous Fiscal Equity Studies

RESEARCHER	RECOMMENDATIONS FOR THE FOUNDATION PROGRAM	RECOMMENDATIONS FOR FURTHER STUDY
Carruth (1980)	1. Equalize the referendum levy in the same manners as the discretionary levy.	1. Effects of the minimum aid should be studied in terms of equal yield for equal effort.
	2. Address the inequities resulting from the excess maintenance revenue. Eligibility for supplemental funding should be based on district need rather than what a district was spending in 1971.	2. Study the effects to determine how including the sparsity aid in the replacement allowance impacts revenue for the level of equity.
	3. Perfect equity should occur with the basic maintenance revenue. Careful monitoring of basic maintenance distribution should occur in order to assure a situation as close to perfect equity as possible.	3. A study of selected maintenance revenue for each ECSU region should be completed.
	4. The discretionary level (which is only utilized based on local choice) should be retained in the foundation program and enhanced and augmented to the extent of financial feasibility.	4. Additional study should focus on districts of 300 and under in size.
	5. Sparsity aid should NOT be included within the aid program, but should be justified as categorical aid.	5. Further study of districts size 3,001 to 10,000 in size. This range had a trend toward less fiscal neutrality.
	6. Study the equity consequences of the taconite reserve account.	6. Further study of the decreasing fiscal neutrality for declining enrollment districts as well as the overall disparity of revenues.
		7. Repeat the study using WADM rather than total pupil units.
		8. Repeat the statewide analysis excluding Minneapolis, St. Paul, and Duluth school districts.
		9. Conduct a study to analyze the gains or losses in equity for school districts by legislative district to assess the possible relationship of legislative influence upon school finance policy.
		10. Study the degree to which revenue availability affects the expenditures of instruction in Minnesota.
		11. As a corollary to studying the relationship between revenue availability and expenditures for instruction, the degree to which expenditures may affect students' achievement in Minnesota should be studied.

Table 1. cont.

RESEARCHER	RECOMMENDATIONS FOR THE FOUNDATION PROGRAM	RECOMMENDATIONS FOR FURTHER STUDY
		12. In addition to equity, the assessment of adequacy and efficiency that is essential for a comprehensive evaluation of the impact of finance reform should be studied.
Wilson (1984)	1. Minnesota should develop a foundation program that eliminates any revenue which is not fully equalized and which are not equally available to every school district, specifically the AFDC, replacement, and grandfather revenues.	1. A more exhaustive study of regional cost differences should be conducted to determine whether a regional adjustment factor for cost of living or cost of education would be warranted.
	2. A new program for funding Minnesota schools should be developed that establishes a minimum funding level and revenue from that level should be fully equalized. It should include some kind of tier system, also fully available, which would replace the rate of equalization as spending levels increase.	2. A study of the concept of municipal overburden should be conducted to determine the validity of the concept and the potential for the inclusion of some kind of municipal overburden factor in the Minnesota foundation revenue model.
	3. Any foundation revenue model should include at least 1 level (the highest level) that would be fully available, but totally unequalized as a means of transferring the burden of exceptional spending decisions to the local taxpayers.	3. A modern study of the optimum school district size for educational and economic efficiency for Minnesota school districts should be conducted. If the study finds that small school districts or large school districts are found to be inefficient, then a plan for consolidation or break up of school districts should be developed and implemented.
	4. Any increase in appropriations for the newly developed foundation revenue model should be applied to the lowest level of the model, which would be fully available and fully equalized.	4. An in-depth study of politics of school finance in Minnesota should be conducted. Political forces, which have resulted in fiscally disparate and wealth dependent revenues, should be neutralized.
	5. Great care should be taken that no foundation revenue model components are enacted into legislation that would provide state aid in a format that would be fiscally disparate or wealth dependent.	5. Fiscal disparity and wealth neutrality tests should be applied to the new state foundation revenue model and the model be monitored for fiscal disparity and wealth neutrality on a yearly basis.
	6. A periodic review of the fiscal disparity and wealth neutrality measures should be conducted and a means of providing an early identification of and remediation of any state aids that were not totally fiscally equitable.	
Jacobson (1986)	1. The five-tier formula should be fully implemented as soon as possible.	1. Regional cost differences reflected to the fiscal disparities between the ECSU regions need to be analyzed.

Table 1. cont.

RESEARCHER	RECOMMENDATIONS FOR THE FOUNDATION PROGRAM	RECOMMENDATIONS FOR FURTHER STUDY
	2. The sparsity factor should be closely examined.	2. Adequacy of funding and efficient use of revenue needs to be studied. In addition to fiscal equity and wealth neutrality, adequacy of funding and efficient use of those funds needs to be considered when planning finance reforms.
	3. Consideration should be given to the inequalities between the nine ECSU regions. Factors should be introduced into the five-tier formula to equalize the inequalities between the regions.	3. The effects that excess levy referendums have upon fiscal equity and wealth neutrality need to be analyzed.
	4. The distribution of revenue with regard to school district size should be examined. A factor to equalize revenue between the eight district size ranges should be included in the five-tier formula.	4. The use of AFDC to count to reconcile municipal overburden needs to be reviewed for validity.
		5. A study of the revenues available and expenditures for instruction and their relationship to student achievement should be conducted.
		6. The politics of finance reform and effects the political process has on fiscal equity and wealth neutrality need to be studied in-depth.
		7. The five-tier discretionary formula should be analyzed over a period of time and changes in fiscal equity and wealth neutrality should be monitored.
Vandal (1997)	1. The training and experience allowance founded in the general education formula should be continued to be expanded.	1. A promising endeavor for a future researcher would be to run the data from the four studies herein through a constant statistical package to compare the results.
	2. The supplemental allowance should be sunsetted over a period of no more than five years.	2. Any researcher who chooses to study the equity of the funding formula in a given state must include the excess levy, should it exist, in the analysis.
	3. The rules governing the excess levy need to be rewritten. The levy should be available only for the operation of exceptional (non-basic-programming. The levy should be phased out over a period of five years. In its place, the state should "buy up" existing levies with increases in the foundation formula.	3. It is recommended that future researchers examine the impact of the relatively stagnant general education formula from the 1980s to the present in Minnesota on the increased use of the excess levy.
	4. It is recommended that the compensatory allowance of the general education formula be expanded to include factors beyond the AFDC count of a district.	4. This research focused on the equity of Minnesota's funding formula. While observations were made about the adequacy of that formula, this was not the focus of the study. Still, adequacy and equity are inherently linked. Concurrent to this analysis should be an assessment of the extent to which that recourse is being distributed in an equitable fashion.

Table 1. cont.

RESEARCHER	RECOMMENDATIONS FOR THE FOUNDATION PROGRAM	RECOMMENDATIONS FOR FURTHER STUDY
	5. Assuming the results of the Jacobson study are valid, the tiered program appeared to be the best performer of the four programs studied. It is recommended that policymakers outside of the political arena devise, test, and implement an entirely new system of funding education in Minnesota. Persistent legislative tinkering with the foundation program has lessened its equity.	5. Several policy considerations are offered as recommendations: • Those who seek to affect policy changes, which must be enacted by the state legislature, need to find a place for their uses on the legislative agenda. • Coalition building appears to be an effective strategy to enact policy change. • The strategy utilized by the ASFSD, which appeared to have the greatest opportunity for success, was that of the constitutional challenge. • It appears that in order to gain a place on the agenda, advocates for policy change must first gain the attention of agenda setters.
	6. If the existing general education formula in Minnesota is left largely intact, it should be enhanced through the addition of an equalized discretionary allowance.	

Adequacy

A common concept among all recommendations was adequacy and the execution of a future study based upon an adequate funding structure. There have been two different adequacy cost-out studies conducted in the past 10 years. A cost-out study is described as "a study that determines the amount of money actually needed to make available all of the educational services required to provide every child an opportunity to meet the applicable state education standards" (National Access Network, 2006, para.1). There are three primary adequacy methodologies: professional judgment, expert judgment (evidence-based), and successful school districts.

According to the National Access Network (2006), the professional judgment approach is defined as taking teams of professionals (teachers, administrators, school officials, etc.) and asking them to define an educational program that would meet stated proficiency goals and to identify the specific resources that would be necessary for its success. The expert judgment or evidence-based approach is similar in nature to professional judgment; however, in the expert judgment approach, the teams are replaced with educational policy experts. This approach takes current research and creates the programs that are needed to meet the standards. Finally, the successful school districts approach identifies those school districts that are currently meeting state standards and uses their average expenditures as a fair estimate of the actual cost of an adequate education.

Of the three approaches, none have been used consistently more frequently than the others. The biggest issue with the various approaches is that findings can vary significantly from one approach to another. In a study conducted by Taylor (2005), the

successful schools approach had a per pupil range of $5,124 while the professional judgment approach resulted in $7,504 per pupil, a difference of 46%. Taylor's study illustrates the difficulty that can arise in trying to reconcile varying results from two different approaches.

The first cost-out study for the State of Minnesota was completed in 2004 when Governor Pawlenty created a 19-member task force to examine the state's funding formula and recommend possible improvements. The task force hired consultants from Management Analysis and Planning, Inc (MAP). The professional judgment approach was chosen as the medium of analysis. MAP brought together three panels over a three-day period to determine an adequate funding level for schools. Each team created their ideal school and expenditures that would be needed to meet the state's educational standards. Despite the fact that each panel used the same approach, they came up with varying results in regards to per pupil payments: $7,941.84, $8,335.35, and $9,150.84 (Management Analysis and Planning, Inc., 2004).

The task force took the recommendations and findings presented in the study and submitted their report to the Governor. *Investing in our Future* (2004 Task Force, 2004) detailed a six-point plan for a 21st century school funding system:

1. Minnesota's 21st century educational funding formula should be a rationally determined, learning-linked, student-orientated, and cost-based instructional services allocation.
2. Minnesota's education must be enhanced even further by linking education funding to school and student performance.

3. A district's instructional services allocation, regardless of revenue source, should be considered by the state as a local discretion, appropriately regulated, block grant.
4. School districts should continue to have state equalized revenue-raising authority to support locally preferred education activities, services, and innovations through voter-approved referendums.
5. Minnesota should promote innovation in education as a means of maximizing financial resources to school districts.
6. Minnesota education funding should be conceived as a five-tier system: instructional services, local district revenues, innovative programs, categorical programs, and facilities and debt service (2004 Task Force, 2004, para.2).

Ultimately, no follow up occurred in regard to the study's recommendations. Mary Cecconi, State Director for the Parents United Network urged the 2005 Legislative Session to continue studying the report, but the study remained unutilized (Cecconi, 2004).

The next adequacy study was completed in 2006 by Augenblick, Palaich, and Associates, Inc. (Silverstein, Rose, & Myers, 2006) at the request of P.S. Minnesota, a coalition of statewide education organizations, parents, and public school supporters dedicated to meeting the academic challenges facing today's students. The coalition operates on three beliefs:

1. It's time to fund public schools in a way that honors Minnesota's constitutional commitment to educate all students.

2. It's time to fund public schools in a way that allows districts to meet state and federal standards as well as community expectations.
3. It's time to fund public schools in a way that rationally accounts for the real costs of meeting the needs of individual students and individual districts (P.S. Minnesota, 2013, para.4).

Silverstein et al. (2006) used both the professional judgment approach and the successful schools approach. Using the first approach, the researchers concluded that a per pupil payment of $5,938 was needed to meet state standards. Using the latter approach, a per pupil payment of $5,359 was calculated (Silverstein et al., 2006). For comparison purposes, the actual per pupil payment in 2004-05 was $4,601 per pupil. Implementing the study's recommendations would have been an increase in state funding of $1.79 billion and $1.05 billion respectfully (Samberg, 2007). One perceived flaw with this study is that it did not take into account the local operating revenues, which were additional funds outside of the state funding system.

The issue of equitable school funding has been debated for well over a century. Some modifications to the funding formula have resulted in increased equity, while some have not. Several studies have been completed on the matter, including four dissertation studies. The last study; however, was completed over 15 years ago. Several adjustments to Minnesota's funding formula have taken place since Vandal's study in 1997. This study incorporates these funding changes and will therefore be a clearer picture of the current state of public school funding in Minnesota. The exact research design is thoroughly discussed in the following chapter.

Chapter III

THE RESEARCH DESIGN

The purpose of this study was to evaluate the impact of policy change on fiscal equity and wealth neutrality in Minnesota between fiscal year 2003 and 2012. The study was based on three research questions:

1. Based on an analysis of the trend data from fiscal years 2003 to 2012 general education formula, what were the fiscal equality and wealth neutrality characteristics of Minnesota's school districts?
2. Based on an examination of like data elements from the four major Minnesota fiscal equality and wealth neutrality studies, what trends can be observed?
3. Based on the recommendations of previous studies, what legislative impact did they have?

The purpose of this chapter is to detail the research design that was used to analyze the fiscal equity and wealth neutrality of the Minnesota Public School funding formula. This chapter identifies both the population of study and the data included in the analysis. In addition, the conceptual framework for evaluating the equity of the formula is explained, as well the fiscal equity measures and the wealth neutrality measures. Finally, the research hypothesis is likewise explained.

The Population

The survey population for this study included 333 Public Operating Elementary and Secondary Independent Districts (type 1 classification) as derived from the Minnesota Department of Education (Minnesota Department of Education, 2012). Three public school districts were not included: Prinsburg and Franconia were eliminated as the school districts are Non-Operating Common School Districts (type 2 classification) and Pine Point was eliminated as it has no recorded property wealth. This was consistent with prior dissertation studies. The number of districts in the Vandal (1997) study totaled 392; however, this number is not consistent with the current study as there have been consolidations in k-12 public school districts across the state since that time.

The Data

The statistical measures used in this study were consistent with that of Vandal (1997) for comparison purposes. Two data sources were utilized: demographic data and revenue data. The demographic data consisted of the name of each school district, the school district number, and the weighted average daily membership (WADM) for the 2011-12 school year. All demographic data was obtained from the Minnesota Department of Education (MDE) website. The revenue data includes basic general education revenue per (WADM), basic skills revenue, referendum revenue, and total general revenue. All revenue sources were gathered from 2003-2012 data listed on the MDA website.

The focus of this study was fiscal equality and wealth neutrality. In order to remain consistent with previous studies, the revenue data was encoded using a common statistical treatment (Vandal, 1997). For data analysis purposes, the scheme R(X,Y) is used where X denotes the revenue source, so that:

Table 2. R(X) Data Analysis Scheme

1	General basic revenue per WADM
2-3	Basic skills: compensatory and limited English proficiency (LEP) revenue
4	Training and experience revenue
5	Sparsity revenue
6	Equity revenue
7	Transition revenue
8	Referendum revenue
9	Total general education revenue

And Y denotes the fiscal year of the data used in the analysis, so that:

0 = the fiscal year ending June 30, 2003

The coding system produced the following variables:

Variable Code	Variable Name
R(1,0)	2002-03 general basic revenue per WADM
R(2,0)	2002-03 compensatory revenue
R(3,0)	2002-03 LEP revenue
R(4,0)	2002-03 training and experience revenue
R(5,0)	2002-03 sparsity revenue
R(6,0)	2002-03 equity revenue
R(7,0)	2002-03 transition revenue
R(8,0)	2002-03 referendum revenue
R(9,0)	2002-03 total general education revenue

Research Methodology

There have been four previous equity studies conducted on the Minnesota funding formula: Carruth (1980), Wilson (1984), Jacobson (1986), and Vandal (1997). To

maintain consistency and provide longitudinal data, this research parallels those studies in research design.

This study used the recommendations of Berne & Stiefel (1984) for the basis of the statistical devices used to analyze the Minnesota funding formula. Berna & Stiefel (1984) established the rationale for the use of the variance, permissible variance, coefficient of variation, and Gini Coefficient in the study of school equity.

The dependent variable for the research was fiscal equality. True fiscal equality requires that equal revenues be available for each specific source of revenue and that these revenues not be a function of the school district wealth, but rather a function of the wealth of the state as a whole (wealth neutrality).

Fiscal Equity Measures

Three different measures of fiscal equity were used to analyze the equity of the Minnesota funding formula. The statistical tools used were the variance, permissible variance, and coefficient of variation. The statistical measures were consistent with the Vandal (1997) study. The measures are described as follows:

Variance: The variance is the average of the squared deviations of each per-pupil object from the mean per-pupil object; the smaller the variance, the smaller the variation in the distribution of a given variable (revenue). The variance was used to analyze the degree to which there is dispersion around the mean; the smaller the variance, the greater the equity of the particular variable (revenue). The formula for computing the variance was as follows:

$$\sum_{i=1}^{N} Pi(Xp - Xi)^2 / \sum_{i=1}^{N} Pi$$

Where Pi = the number of pupils in district i

N = the number of districts
Xi = the average revenues per pupil in district i
Xp = the mean revenues per pupil for all pupils

Permissible Variance: The permissible variance is the ratio of the actual sum of per-pupil objects for pupils below the median to the sum of the per-pupil objects that would exist if each pupil below the median were at the median per-pupil object. In other words, "permissible variance shows to what extent the funding formula succeed in 'leveling up' the bottom half to the middle (Baker, 2013, p.9). The permissible variance is also known as the McLoone index and is computed as follows:

$\sum_{i=1}^{J} P, Xi$ /Mp$\sum_{i=1}^{J} Pi$ where districts i through J are below Mp

Where Pi = the number of pupils in district i
N = the number of districts
Xi = the average revenues per pupil in district i
Mp = the median revenues per pupil for all pupils

The permissible variance is expressed as a decimal with a value between zero and one. The closer the decimal approaches one, the closer the object is to equity. The number can also be used to determine the revenue needed to bring the weighted pupil units up to the median level.

Coefficient of Variation: The coefficient of variation is the square root of the variance of per-pupil objects divided by the mean per-pupil objects. The coefficient of variation is typically between zero and one. Similar to the variance, a smaller coefficient of variation indicates a smaller distribution between the objects, thus showing greater equity. The coefficient of variation is used to show the overall disparity in revenues across school districts and is computed as follows:

$\sqrt{VAR}$ / Xp

Where VAR = variance and Xp = the mean revenues per pupil for all pupils

Wealth Neutrality Measures

The measure of wealth neutrality that was used is the Gini Coefficient, also known as the Gini Index. This tool examines the dispersion of two different variables. In this case the distribution of per pupil revenues and the wealth measure of per pupil property valuations. The process begins by ranking all school districts from the lowest to the highest based on the per pupil property wealth. This value is shown by the adjusted net tax capacity (ANTC).

Once the districts have been ranked, the Gini Coefficient involves the calculation of a cumulative percentage distribution of per pupil funding, which again ranks from the poorest to the richest districts. Results are shown as values from zero to one with a value of one showing absolute equity. The Gini Coefficient is calculated with the formula:

$$\sum_{i=1}^{N} \quad \sum_{j=1}^{N} PiPj|Xi - Xj| \; / \; (2(\sum_{i=1}^{N} Pi)^2 \mathrm{Xp})$$

Where Pi = the number of pupils in district i
N = the number of districts
Xi = the average revenues per pupil in district i
Xp = the mean revenues per pupil for all pupils

Figure 2, originally created by Carruth (1980) represents a visual road map of both the fiscal equity and wealth neutrality measures (Vandal, 1997). The figure shows the importance of how the statistical measures findings can be directly traced back to social issue that have been used in regard to fiscal equity in legal cases against state's funding of k-12 public education.

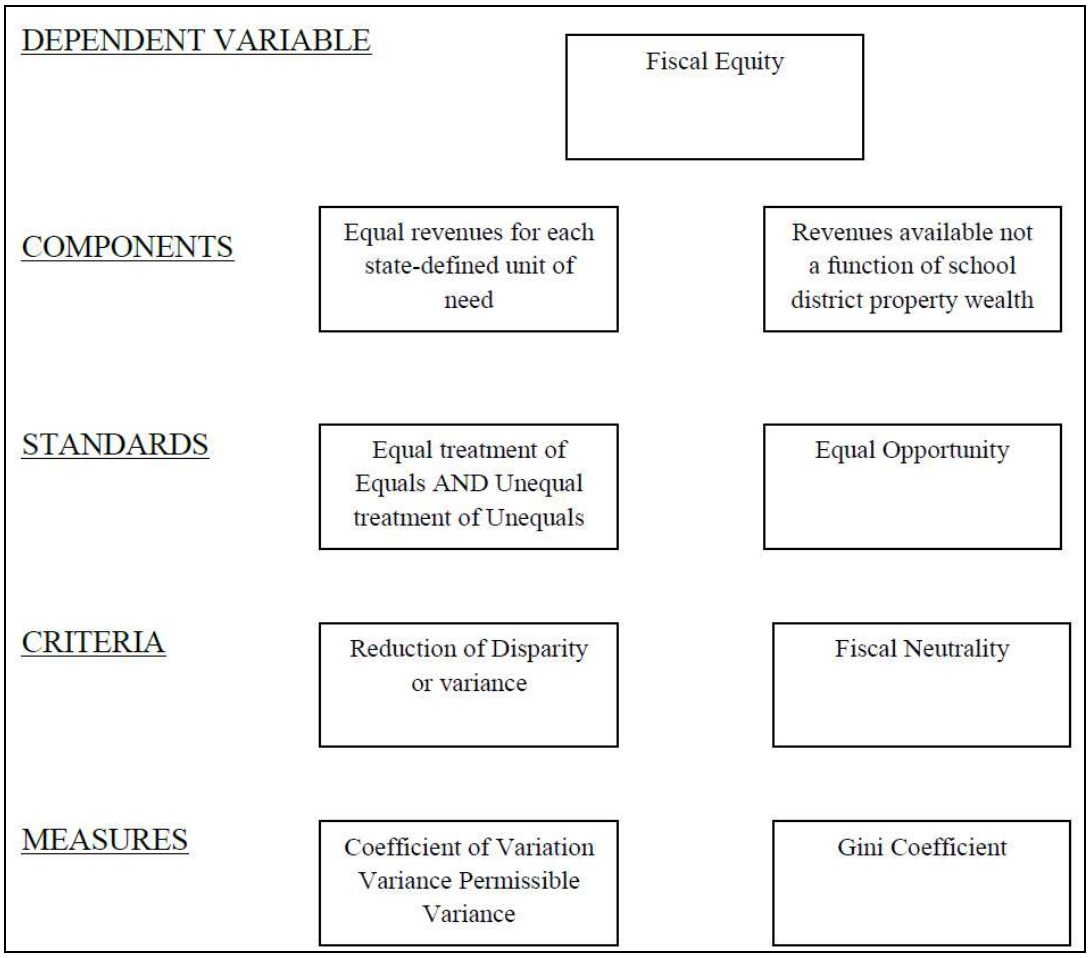

Figure 2. Framework for Equity Evaluation.

Research Hypotheses and Procedures

For a comparative analysis with previous equity studies, several null hypotheses were tested:

1. On a statewide basis, an equitable distribution on the basic general formula revenue will be observed during 2003 to 2012 showing fiscal equity.
2. On a statewide basis, an equitable distribution of the basic skills (compensatory and LEP) revenue will not be observed during 2003 to 2012.
3. On a statewide basis, an equitable distribution of the training and experience revenue will not be observed during 2003 to 2012.

4. On a statewide basis, an equitable distribution of the sparsity revenue will not be observed during 2003 to 2012.
5. On a statewide basis, an equitable distribution of the equity revenue will not be observed during 2003 to 2012.
6. On a statewide basis, an equitable distribution of the transition revenue will not be observed during 2003 to 2012.
7. On a statewide basis, an equitable distribution on the referendum revenue will not be observed during 2003 to 2012.
8. On a statewide basis, the wealth neutrality of the total general revenue distribution will not be observable in 2003 to 2012.

Summary

The research will be conducted with statistical measures based on fiscal equity and wealth neutrality. Only the public schools that were identified through the Minnesota Department of Education, as type 1 schools will be analyzed based on the hypothesis explained above. The research conducted on the fiscal years from 2003 to 2012 will detail the current inequity of the 2011-2012 funding formula. Chapter four will provide the findings of the research, followed by recommendations from the researcher in chapter five.

Chapter IV

RESEARCH FINDINGS

The purpose of this study was to evaluate the impact of policy change on fiscal equity and wealth neutrality in Minnesota between fiscal year 2003 and 2012. The survey population includes 333 Public Operating Elementary and Secondary Independent Districts (type 1 classification) as derived from the Minnesota Department of Education (Minnesota Department of Education, 2012). The measures of fiscal equity and wealth neutrality were the same used by Vandal in 1997. This study was based on three research questions:

1. Based on an analysis of the 2003 to 2012 general education formula, what were the fiscal equality and wealth neutrality characteristics of Minnesota's school districts?
2. Based on an examination of like data elements from the four major Minnesota fiscal equality and wealth neutrality studies, what trends can be observed?
3. Based on the recommendations of previous studies, what legislative impact did they have?

Three different measures of fiscal equity were used to analyze the equity of the Minnesota funding formula: variance, permissible variance, and coefficient of variation. The measures are described as follows:

Variance: The average of the squared deviation of each per-pupil object from the mean per-pupil object; the smaller the variance, the smaller the variation in the distribution of a given variable (revenue). The variance is used to analyze the degree to which there is dispersion around the mean; the smaller the variance, the greater the equity of the particular variable (revenue).

Permissible Variance (McLoone Index): The ratio of the actual sum of per-pupil objects for pupils below the median to the sum of the per-pupil objects that would exist if each pupil below the median were at the median per-pupil object. The closer the decimal approaches one, the closer the object is to equity. The number can also be used to determine the revenue needed to bring the weighted pupil units up to the medial level.

Coefficient of Variation: The square root of the variance of per-pupil objects divided by the mean per-pupil objects. The coefficient of variation is typically between zero and one. As with the variance, the smaller the coefficient of variation, the smaller distribution between objects showing greater equity. This tool is used to show the overall disparities in revenues across school districts. The sections below detail the researcher's findings in regards to Null-Hypotheses 1 through 7.

Null-Hypothesis Results

Null-Hypothesis 1: On a statewide basis, an equitable distribution of the basic general formula revenue will be observed between 2003 and 2012 showing fiscal equity.

Results: Table 3 represents the statistical findings in regard to Null-Hypothesis 1:

Table 3. Fiscal Equity Analysis of the Basic General Revenue.

	Basic/ADM Variance	Basic Permissible Variance	Basic Coefficient of Variation
R(1,0)	8640.350	0.9932	0.0172
R(1,1)	4077.685	0.9930	0.0118
R(1,2)	3535.559	0.9949	0.0110
R(1,3)	4249.709	0.9925	0.0116
R(1,4)	3694.800	0.9925	0.0104
R(1,6)	3726.501	0.9915	0.0102
R(1,7)	4247.780	0.9921	0.0109
R(1,8)	3842.041	0.9918	0.0104
R(1,9)	4446.438	0.9907	0.0111

The basic general revenue establishes the minimum level of funding for school districts. It is the most equitable revenue sources as it approaches perfect equity in regard to both the permissible variance and the coefficient of variation. This result is expected as the basic general revenue is a flat foundation payment given to all school districts based on their WADM. For the 2011-12 school year, the foundation payment was $5,224/WADM.

Based on the results above, an equitable distribution was observed; therefore, Null-Hypothesis 1 was accepted.

Null-Hypothesis 2: On a statewide basis, an equitable distribution of the basic skills (compensatory and LEP) revenue will not be observed between 2003 and 2012.

The basic skills revenue in the Minnesota funding formula is broken into two sub-categories: compensatory and LEP. Compensatory revenue is disbursed based on a school district's number of students that are eligible for free or reduced lunches. LEP revenue is

based on a school district's limited English proficiency students. Districts can receive LEP funding for the first five years a particular LEP student is enrolled. All school districts receive some basic skills revenue.

Results: Table 4 represents the compensatory statistical findings.

Table 4. Fiscal Equity Analysis of the Compensatory Revenue.

	Compensatory Variance	Compensatory Permissible Variance	Compensatory Coefficient of Variation
R(2,0)	196443.453	0.4016	1.5389
R(2,1)	161382.703	0.3805	1.4448
R(2,2)	169621.721	0.3943	1.3547
R(2,3)	186812.741	0.4184	1.2749
R(2,4)	202815.660	0.4493	1.2757
R(2,5)	201247.749	0.4403	1.1836
R(2,6)	201885.923	0.4542	1.1403
R(2,7)	191150.820	0.4671	1.0902
R(2,8)	218278.841	0.4921	0.9961
R(2,9)	211753.560	0.4997	0.9277

The statistical findings for Null-Hypothesis 2 show that the compensatory revenue is not equitable. In order to reach perfect equity, the permissible variance should approach 1.0. The compensatory revenue was below 0.5 consistently over the 10-year period. The coefficient of variation also indicated an inequitable distribution of funds. The permissible variance; however, was improving over that timeline as was the coefficient of variation. Permissible variation achieves perfect equity as it approaches 1.0. The findings from the analysis of compensatory revenue show a gradual increase, but a distance away from approaching true equity.

Based on the statistical results in terms of the inequitable distribution of funds, Null-Hypothesis 2 was accepted.

The second sub-category of basic skills is the LEP revenue source. Table 5 represents the research findings for this sub-category.

Table 5. Fiscal Equity Analysis of the LEP Revenue.

	LEP Variance	LEP Permissible Variance	LEP Coefficient of Variation
R(3,0)	7154.679	0.4777	3.3834
R(3,1)	3363.206	0.4614	2.6360
R(3,2)	3301.323	0.4877	2.2982
R(3,3)	3384.655	0.4586	2.4240
R(3,4)	3481.739	0.4758	2.5654
R(3,5)	3466.783	0.4857	2.4533
R(3,6)	3465.008	0.4555	2.6756
R(3,7)	3200.011	0.4499	2.5713
R(3,8)	3000.673	0.4600	2.3816
R(3,9)	3192.916	0.4654	2.3544

The findings for LEP were similar in nature to the compensatory revenue. The permissible variance varied between a high of 0.4877 in 2005 to a low of 0.4555 in 2009. It failed to rise above the 0.5 level, leading to a finding of inequitable distribution on a statewide scale. As previously indicated, in order to reach perfect equity, the permissible variance should approach 1.0. The coefficient of variation had a range of 3.3834 in 2003 to 2.2982 in 2005. These values show a wide variance in revenue disbursement statewide. LEP revenue is disbursed to school districts based on the number of students with limited English proficiency.

Once again, these statistical findings lead to an inequitable disbursement of funding; therefore, Null-Hypothesis 2 was again accepted.

Null-Hypothesis 3: On a statewide basis, an equitable distribution of the training and experience revenue will not be observed between 2003 and 2012.

Training and experience revenue (T & E) was the third revenue source analyzed. T & E was disbursed to school districts based on the experience and education of individual faculty members. The T & E revenue was repealed and data is not available for the 2011-12 school year. This will be statistically represented with "NA" in Table 6.

Results: Table 6 represents the findings in regard to training and experience revenue.

Table 6. Fiscal Equity Analysis of the T & E Revenue.

	T & E Variance	T & E Permissible Variance	T & E Coefficient of Variation
R(4,0)	791.857	0.2235	0.9379
R(4,1)	695.123	0.2445	1.0546
R(4,2)	538.137	0.1050	1.2209
R(4,3)	358.951	-	1.3532
R(4,4)	207.566	-	1.6007
R(4,5)	95.834	-	1.9579
R(4,6)	54.045	-	2.4505
R(4,7)	25.882	-	2.5437
R(4,8)	14.661	-	3.8290
R(4,9)			

- = could not be collected due to median = 0

Because not all school districts received T & E funding between fiscal years 2006 and 2011, the permissible variance could not be computed as the median level equaled

revenue of 0. For fiscal years 2003 to 2005, the permissible variance results displayed an inequitable distribution in terms of T & E revenue. The coefficient of variation results also displayed an inequitable distribution. From 2003 to 2011, the range of distribution widened until it was repealed by the state legislature in fiscal year 2012.

Based on the statistical results detailed above, Null-Hypothesis 3 was accepted.

Null-Hypothesis 4: On a statewide basis, an equitable distribution of the sparsity revenue will not be observed between 2003 and 2012.

Sparsity revenue provides funding for small and isolated school districts. The revenue formula takes into account the school's enrollment, distance to the nearest district, and geographic area. Schools with small enrollments in larger geographic districts tend to receive the largest portion of sparsity revenue.

Results: Table 7 displays the fiscal equity findings in terms of sparsity revenue.

Table 7. Fiscal Equity Analysis of the Sparsity Revenue.

	Sparsity Variance	Sparsity Permissible Variance	Sparsity Coefficient of Variation
R(5,0)	27740.065	-	1.5421
R(5,1)	28707.961	-	1.4862
R(5,2)	30383.851	-	1.4647
R(5,3)	34741.472	-	1.4228
R(5,4)	39209.266	-	1.3944
R(5,5)	42993.298	-	1.3731
R(5,6)	46715.905	-	1.3424
R(5,7)	47776.642	-	1.3327
R(5,8)	49224.809	-	1.3285
R(5,9)	52754.334	-	1.3050

- = could not be collected due to median = 0

Like the T & E revenue, not all school districts receive sparsity funding. In fiscal year 2012, only 98 school districts received sparsity revenue; a figure that represents less than 30% of all school districts. Because of this, the median revenue was zero between 2003 and 2012. As a result, permissible variance could not be computed.

The results of the coefficient of variation ranged from a high of 1.5421 in 2003 to a low of 1.3050 in 2012. Perfect equity would be achieved at a coefficient of variation of zero. The findings detailed above show an inequitable disbursement of the sparsity revenue on a statewide basis. The number was decreasing each year; however, which indicates an improvement in overall equity.

Based on the results described above, Null-Hypothesis 4 was accepted.

Null-Hypothesis 5: On a statewide basis, an equitable distribution of the equity revenue will not be observed between 2003 and 2012.

Equity revenue is intended to reduce the per pupil disparities between all school districts. Equity revenue has three sub-categories: regular (which all school districts receive), low-referendum (which is an equalizing component based on the school district's excess levy referendum), and a supplemental component for districts with referendum amounts below 10% of the state average. In order for a school district to receive the low-referendum and supplemental components, the school district must have a voter approved excess levy referendum in their district. This is important because if a school district does not have voter approval for a referendum levy, they do not qualify for the equity revenue regardless of what their local property tax rate may be.

Results: Table 8 details the equity results in terms of equity revenue.

Table 8. Fiscal Equity Analysis of the Equity Revenue.

	Equity Variance	Equity Permissible Variance	Equity Coefficient of Variation
R(6,0)	1.263	0.4613	0.0261
R(6,1)	580.924	0.5402	0.5605
R(6,2)	940.992	0.5591	0.5288
R(6,3)	1234.922	0.6353	0.4880
R(6,4)	1414.186	0.7548	0.3008
R(6,5)	1236.045	0.7837	0.2812
R(6,6)	1323.907	0.7542	0.2910
R(6,7)	1375.106	0.7541	0.2990
R(6,8)	1217.209	0.7522	0.2859
R(6,9)	1169.080	0.7363	0.2825

The statistical findings for equity revenue show an increase in fiscal equity from 2003 to 2012. The permissible variance in 2003 was 0.4613, but that figure rose to 0.7363 in 2012. Perfect equity occurs at a permissible variance of 1.0. Although the findings in this case did not represent equity, progress is indicated by the statistical improvement over the 10-year period.

The coefficient of variation also displayed an increase in equitable distribution over the duration of the time period. The finding of 0.0261 in 2003 could have been the result of the general levy-roll in that year of $415 into the basic general funding. Overall, the coefficient was making progress and moving toward perfect equity at 0.0.

Because of these findings, Null-Hypothesis 5 was not accepted.

Null-Hypothesis 6: On a statewide basis, an equitable distribution of the transition revenue will not be observed between 2003 and 2012:

Transition revenue was created due to funding formula modifications as the result of a 2003 amendment by the Minnesota legislature. The revenue ensures that districts receive funding that equals the amount the district would have received prior to the amendment. The first year school districts were eligible for transition revenue was the 2004 fiscal year. Not all school districts receive transition revenue. In fiscal year 2012, two hundred school districts received the funding.

Results: Table 9 details the equity results in regard to transition revenue analysis.

Table 9. Fiscal Equity Analysis of the Transition Revenue.

	Transition Variance	Transition Permissible Variance	Transition Coefficient of Variation
R(7,0)			
R(7,1)	5236.613	0.1602	4.0202
R(7,2)	5169.120	0.1653	3.9942
R(7,3)	4949.250	0.2555	3.7026
R(7,4)	4818.811	0.1795	4.0833
R(7,5)	4795.264	0.1851	3.8471
R(7,6)	4675.824	0.1810	3.7988
R(7,7)	4573.778	0.17964	3.7572
R(7,8)	4534.322	0.17893	3.7409
R(7,9)	4478.132	0.17988	3.7177

The statistical findings for transition revenue show an inequitable distribution. The permissible variance had a high of 0.2555 in 2006, but dropped to a score of 0.17988 in 2012. The coefficient of variation had scores ranging from a high of 4.08 in 2007 and a low of 3.7177 in 2012. The ideal equity value for the coefficient of variation is zero. The values detailed above show a wide range of disbursement across the state.

As a result of these findings, Null-Hypothesis 6 was accepted.

Null-Hypothesis 7: On a statewide basis, an equitable distribution of the referendum revenue will not be observed between 2003 and 2012.

Referendum revenue is an equalized revenue source based on a school district's local referendum levy. The first $700 per pupil of a district's referendum levy is equalized at $476,000 per pupil of referendum market value. Any amount over $700 is equalized at $270,000 per pupil of referendum capped at $1,576.35 per pupil for fiscal year 2012. A school district only received referendum funding if it passes a voter approved referendum levy. 301 school districts had a local referendum levy during fiscal year 2012.

Results: Table 10 details the statistical findings in terms of referendum levy.

Table 10. Fiscal Equity Analysis of the Referendum Revenue.

	Referendum Variance	Referendum Permissible Variance	Referendum Coefficient of Variation
R(8,0)	133365.756	0.2550	1.1202
R(8,1)	176871.871	0.2725	1.0232
R(8,2)	166773.337	0.3713	0.7945
R(8,3)	158206.235	0.4513	0.6718
R(8,4)	186135.061	0.5283	0.6353
R(8,5)	205501.427	0.4798	0.6192
R(8,6)	258286.581	0.5032	0.6221
R(8,7)	326058.820	0.5583	0.6773
R(8,8)	323812.327	0.5471	0.6437
R(8,9)	321282.874	0.5601	0.6270

The findings for both the permissible variance and the coefficient of variation show an increase in equity over the fiscal years 2003 to 2012. Perfect equity occurs at 1.0

for permissible variance and 0.0 for coefficient of variance as specified in the statistical definitions. As indicated above, although neither statistical measure is close to perfect equity, both are improving. Figure 3 shows a linear regression of the permissible variance.

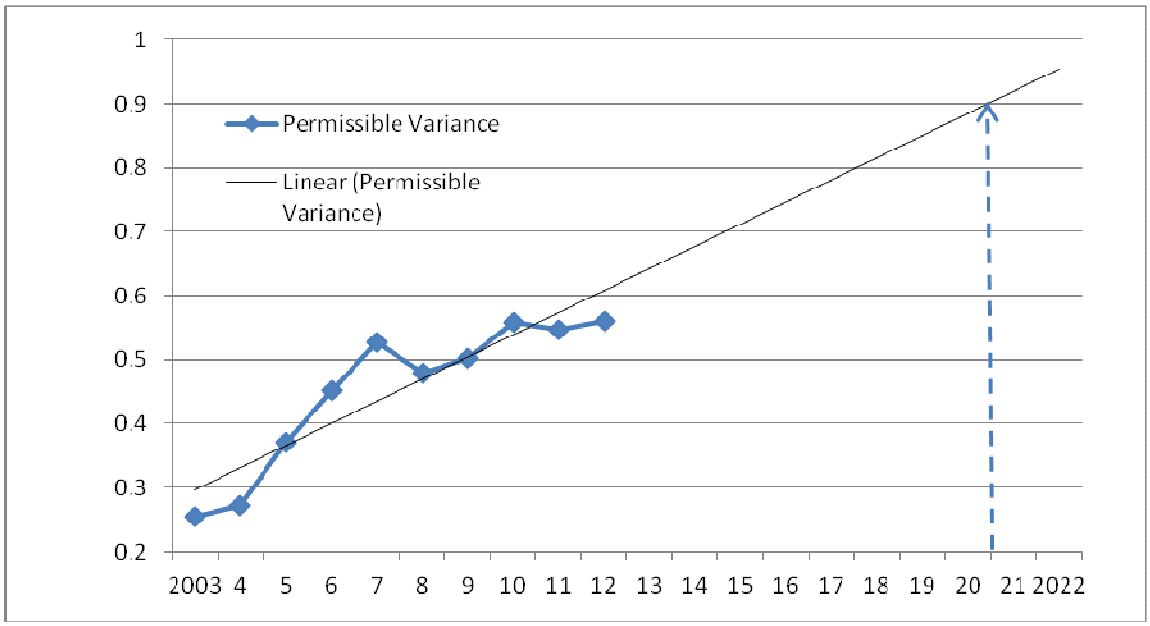

Figure 3. Permissible Variance Regression.

The figure indicates that if the permissible variance keeps increasing at the 2003-2012 rate, it will reach a score of 0.9 in fiscal year 2020, contingent upon no future modifications to the formula.

Based on these findings, null-hypothesis is accepted; although, referendum revenue is showing improvement.

Null-Hypothesis 8: On a statewide basis, the wealth neutrality of the total general revenue distribution will not be observable between 2003 and 2012.

The measure for wealth neutrality that was used is the Gini Coefficient, also known as the Gini Index. This tool examines the dispersion of two different variables, in this case the distribution of per pupil revenues and the distribution of wealth measure of per pupil property valuations.

Results: Results of the analysis are shown in Figure 3 as values from zero to one. A value of zero indicates perfect equity.

Table 11. Wealth Neutrality Analysis of the Total General Revenue.

	Gini Coefficient
R(8,0)	0.01624
R(8,1)	0.00980
R(8,2)	0.00607
R(8,3)	0.00577
R(8,4)	0.00622
R(8,5)	0.00579
R(8,6)	0.00529
R(8,7)	0.00670
R(8,8)	0.00578
R(8,9)	0.00550

Over the 10-year period, the Gini Coefficient indicated a progression towards equity. Fiscal year 2003 had an index score of 0.01624, while 2012 improved to 0.00550. The trend data indicates index scores that were decreasing over time and approaching zero; therefore, the wealth neutrality of the total general revenue distribution was observed.

Because of this data, Null-Hypothesis 8 was not accepted.

Summary of Findings

1. Null-Hypothesis 1 was *accepted* as an equitable distribution of the basic general formula revenue was observed.
2. Null-Hypothesis 2 was *accepted* as an equitable distribution of the basic skills revenue was not observed.
3. Null-Hypothesis 3 was *accepted* as an equitable distribution of training and experience revenue was not observed.
4. Null-Hypothesis 4 was *accepted* as an equitable distribution of the sparsity revenue was not observed.
5. Null-Hypothesis 5 was *not accepted* as an equitable distribution of the equity revenue was observed.
6. Null-Hypothesis 6 was *accepted* as an equitable distribution of the transition revenue was not observed.
7. Null-Hypothesis 7 was *accepted* as an equitable distribution of the referendum revenue was not observed.
8. Null-Hypothesis 8 was *not accepted* as the wealth neutrality of the total general revenue distribution was not observed.

Based on these findings, the basic general formula revenue and the equity revenue were the only sources that indicated equitable distribution. In addition, the total general revenue distribution did indicate wealth neutrality. Of the revenue sources studied, the training and experience revenue proved to be the most inequitable funding source, but it was repealed beginning with the 2012 fiscal year.

The final chapter details the recommendations that are being presented as a result of this data.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

Chapter IV detailed the findings of the fiscal equity and wealth neutrality statistical analysis. The fiscal equity of several revenue sources was analyzed using the statistical tools of variance, permissible variance, and coefficient of variation. The wealth neutrality of the total general education funding was analyzed using the Gini Coefficient.

Chapter V consists of four sections; a summary of the findings from the research conducted and conclusions that can be drawn on those findings, a historical review of the Minnesota Fiscal Equity like statistical findings from the four previous equity studies completed on the Minnesota funding formula, an analysis of the previous studies' recommendations and how they compare to the 2011-12 Minnesota funding formula, and this researcher's recommendations based on the trend data, historically comparative data, and previous equity study recommendations.

Summary of Findings

Basic General Formula Revenue

The most equitable revenue source was the basic revenue, which was expected as the basic revenue is a foundation payment. Each school gets the same amount of funding per WADM. This would be an example of a horizontal equity payment that does not take the individual characteristics of the students, demographics, location, etc. into account. For the 2011-12 school year, the foundation payment was $5,224 per student. The

question remains whether or not the current foundation level is an adequate amount in order to meet the accountability standards that are placed upon school districts.

Basic Skills Revenue

The basic skills revenue is broken into two sub-categories for disbursement: compensatory, which is based on the school's number of students that qualify for free or reduced lunches and limited English proficiency (LEP), which is dependent upon the number of LEP students in a school's district. Both of these sub-categories fall under the standards of vertical equity as additional funding is given to offset the extra costs associated with educating these sub-groups.

The statistical analysis showed both the basic skills components are distributed inequitably on a statewide basis, but they have shown a gradual progress over the years analyzed as well. However, these categorical revenue sources are specifically designed to help alleviate the additional pressures involved with some sub-groups. Looking at these revenue sources individually does not take into account the true purpose they serve in the overall Minnesota funding formula which is to provide vertical equity to the sub groups where additional support is needed to meet their educational needs.

Training and Experience Revenue (T & E)

The T & E revenue was found to be the most inequitable funding source analyzed. The legislature repealed the T & E revenue beginning in fiscal year 2012 due to legislative manipulation of the revenue category. The original intent was to offer assistance to the metro school districts as it cost more to pay teachers with greater years of experience and costs of living.

Sparsity Revenue

Sparsity revenue was found to be an inequitable funding source on a statewide basis; however, the purpose of the sparsity category is to help isolated school districts that may be facing declining enrollment, a situation, which leads to a decline in basic education funding. Declining enrollment; however, does not necessarily lead to declining costs. For example, a district experiencing declining enrollment might not see a decline in transportation costs as many of these districts have large geographical areas. The inclusion of sparsity revenue in the funding formula can be classified as an attempt at vertical equity and should be kept in the funding structure.

Equity Revenue

Equity revenue is a three-tier system. The first tier can be categorized as foundation type revenue as every school district receives a portion of the equity payment. The following tier is an equalized revenue source based on local districts taxing ability to raise a set level amount. The local district's equity index is compared to the 95^{th} percentile index, with the difference equalized at a rate of the difference times a set dollar amount. Lastly, the third tier is a supplementary payment made specifically to school districts whose referendum amount is below 10% of the state average referendum amount. From 2008 to 2012, equity revenue had a permissible value index between 0.7837 and 0.7363. The coefficient of variation trend data also showed a statistical decrease, from a 0.5605 in 2004 to a 0.2825 in 2012.

These results lead to a finding that the equity revenue source is working as an equitable distribution on a statewide scale as the data is approaching an equitable distribution in both statistical measurements respectfully. In fact, the equity revenue

category of the Minnesota funding formula allocated the funds more equitable than any other revenue source excluding the basic general revenue category. The intent of this particular category is to provide supplemental resources to school districts where their tax base may be considered property poor; however, this revenue source is tied directly to the ability of a local school district to pass a levy referendum.

Transition Revenue

This revenue source was created due to funding formula modifications as the result of a 2003 amendment by the Minnesota legislature. This source is a good example of "inequitable equilibrium" that was discussed in Chapter II. In regard to transition revenue, the permissible variance had a high of 0.2555 in 2005, but dropped to a score of 0.17988 in 2012. The coefficient of variation had scores ranging from a high of 4.0833 in 2007 and a low of 3.7177 in 2012. The statistical findings for transition revenue show an inequitable distribution.

Referendum Revenue

Referendum revenue is an equalized revenue source based on a school district's local referendum levy. A school district only receives referendum funding if it passes a voter approved referendum levy. Overall, the referendum levy was found to be inequitable; although, both the permissible variance and the coefficient of variation were making progress during the fiscal years that were studied. However, the linear regression model showed that in regard to permissible variance, a scale index of 0.9 would not be achieved until after the year 2020, providing there is no future legislative modifications to the referendum component. A main concern with referendum revenue is that it is dependent on local voters passing a referendum levy. If the local voters do not pass the

levy, those school districts are not eligible; however, 90% of school districts had an operating local referendum levy in 2012.

Wealth Neutrality

In regard to the wealth neutrality of the total general education revenue statewide, the results were very positive. A Gini Coefficient index approaching zero is desirable for perfect equity. The Gini index over the past eight years had a mean score of 0.00589. This finding suggests that overall the Minnesota funding formula is distributing the funds equitably throughout the state. This is important as again the definition of wealth neutrality states "the quality of public education may not be a function of wealth other than the wealth of the state as a whole" (Coons, Clune III, & Sugarman, 1970, p.2).

Historical Review of Minnesota Fiscal Equity Studies

Previously, four equity studies have been conducted on the Minnesota funding of k-12 public schools. Carruth completed the first study based on projections made during the 1980 fiscal year, Wilson analyzed fiscal year 1985, Jacobson based his study on fiscal year 1985, and Vandal focused on fiscal year 1994. This section will review the statistical findings of like data elements over that time period, including findings that are representative of the 1980s, 1990s, and 2012.

Basic General Formula Revenue

None of the previous researchers analyzed the basic funding revenue source. This researcher chose to include it in order to provide an example of what a revenue source that is approaching perfect equity would look like.

Sparsity Revenue

The first common revenue source analyzed was the sparsity index. Table 12 represents the findings from all four researchers.

Table 12. Historical Comparison of the Equitable Distribution of the Sparsity Revenue.

Researcher	Variance	Permissible Variance	Coefficient of Variation
Carruth			
Wilson	3182.000		0.6100
Jacobson	750.745	-0.0110	2.6800
Vandal	2351.730	-	7.76687
Larson	52754.334	-	1.3050

- = Permissible variance could not be calculated as the state had a median = 0

Overall, the results are statistically similar in regard to the disbursement of sparsity revenue. The variance over the years has increased drastically as the amount of revenue has increased. The coefficient of variation has also increased, which is a sign that the sparsity revenue inequity may be improving. Again, only approximately one-third of the 333 public school districts in Minnesota receive sparsity revenue and the intent of the sparsity revenue is to provide support to the smaller districts in a sense of a form of vertical equity.

Training and Experience Revenue

The research conducted by Carruth (1980) and Wilson (1985) did not include any training and experience funding. Table 13 represents the historical trends of the training and experience revenue for the remaining three studies.

Table 13. Historical Comparison of the Equitable Distribution of the Training and Experience Revenue.

Researcher	Variance	Permissible Variance	Coefficient of Variance
Carruth			
Wilson			
Jacobson	1820.516	0.5988	0.6000
Vandal	715.559	0.8200	0.4030
Larson	14.661	-	3.8291

-: Permissible variance could not be collected as the state had a median = 0
Note: Larson data is based upon fiscal year 2011

The training and experience revenue statistics from this research showed an increase in equity from the Jacobson (1986) and Vandal (1997) studies. In fact, the Vandal study recommended the continuation and the expansion of the revenue source as his data found it to be fiscally equitable. Based on legislative modifications to the revenue formula that have occurred over time, the training and experience revenue became increasingly inequitable and the category was repealed by the state legislature completely beginning in fiscal year 2012. The impact of the training and experience revenue from legislative manipulation over the years is an example of the inequitable equilibrium that Meltzer (2003) discussed.

Compensatory Revenue

Another like revenue sources that was analyzed historically was the compensatory revenue, which is calculated separately based on a school district's free and reduced lunch count. It is included in the basic skills revenue along with the LEP sub-category. For comparative purposes, only the compensatory component is included in Table 14.

Table 14. Historical Comparison of the Equitable Distribution of the Compensatory Revenue.

Researcher	Variance	Permissible Variance	Coefficient of Variation
Carruth Wilson Jacobson	3528.000	0.6465	1.3700
Vandal	34274.760	0.4731	1.7419
Larson	211753.560	0.4998	0.9278

Historically, the statistical analysis of the compensatory revenue had similar findings. As the demographics have changed over time, the variance has increased. The permissible variance between Vandal (1997) and Larson (2014) were statistically equal. The coefficient of variation was also in a similar range across the Wilson (1985), Vandal, and Larson studies. This has been an attempt at vertical equity and is a needed revenue source to fund specific sub-groups that historically cost more to educate than other sub-groups.

Total Combined Revenue

The final like data element that was analyzed for comparison purposes was the total combined revenue. Table 15 represents the results of wealth neutrality based on the Gini Coefficient.

Table 15. Historical Comparison of Wealth Neutrality Measures.

Researcher	Gini Coefficient
Carruth	0.0170
Wilson	0.0440
Jacobson	0.0200
Vandal	-0.0889
Larson	0.0055

Analysis of Research Recommendations from Previous Minnesota Equity Studies

This section addressed recommendations that were proposed by each of the four previous researchers and determine if they are still applicable with the 2011-12 Minnesota funding formula and the findings of this study.

Carruth (1980)

The Carruth (1980) study had two recommendations that can still be considered valid today. In regard to basic revenue, Carruth recommended continued, careful monitoring of the basic revenue to ensure a situation as close to perfect equity as possible. The analysis of fiscal years 2003-2012 done by this researcher validated that recommendation. In regard to sparsity revenue, Carruth recommended repealing the category altogether. Although this study found the revenue source to still be statistically inequitable, it is a needed component of the overall funding structure in Minnesota. Schools with declining enrollment and large geographical areas rely on that funding. When looking at the state funding level as a whole, the sparsity revenue did not have a large impact on the overall fiscal equity.

Carruth (1980) also had recommendations for future study that connected to the 2011-12 funding formula, one of which was to study the decreasing fiscal neutrality tied to declining enrollment. Transition revenue and small schools revenue in the 2011-12 funding formula both have components that tie to declining enrollment. Carruth also recommended future adequacy studies. Two such studies were conducted in Minnesota, but none of the findings from those adequacy studies were implemented.

Wilson (1984)

Wilson's (1984) recommendations were not sustained as those of Carruth (1980). Wilson recommended repealing all revenue sources that were not available to all schools. Based on the current funding formula, that would include small schools, sparsity, compensatory, and LEP. Wilson also recommended a study on the adequacy of Minnesota funding.

Jacobson (1986)

Jacobson's (1986) study centered on the five-tier system, which is currently not in existence, leaving a majority of his recommendations not applicable. He also had recommendations regarding optimum school size and available revenues, both of which tie into an adequacy funding study.

Vandal (1997)

Vandal's (1997) major recommendation was the continuation and expansion of the training and experience revenue. That revenue source was shown to be increasingly inequitable and was repealed beginning in fiscal year 2012. Vandal also recommended phasing out any excess levy by 2000. This has not happened and this researcher identified there is currently more of a dependence on local levy referendums. The statistical

findings of this research validated Vandal's concerns. Like the previous three researchers, Vandal also recommended conducting an adequacy study.

Recommendations

Through a statistical analysis of the trend data and a historical look at equity over the past thirty years, this researcher is proposing several recommendations to the Minnesota Legislature as well as recommendations for future research studies. They are presented in no particular order of importance.

Recommendations to Minnesota Legislature

1. Because 90% of Minnesota school districts now have local referendum levies, the state should reinstate the statewide general education levy and roll that amount into the basic revenue, repealing the referendum levy. School districts should be allowed to raise local funds to expand their programs, but levies should not be needed to meet minimum standards. Beginning FY 2014, the state re-implemented a small general education levy called *Student Achievement Levy* (Crowe, 2011). This was based off districts ANTC and was set a rate of 0.35%, a far distance from the amount in 2001 (32.38%) before the roll in. Also beginning in fiscal year 2014, the legislature provided school board authority to have referendum levels up to $300 per pupil without going to the voters (Crowe, 2011). For school districts with a referendum, the district could allocate a portion of the referendum as *location equity* based on the student population of the district. For the seven county metro school districts, they could allocate $424 of the referendum as location equity; districts with student populations of greater than 2,000 students could allocate

$212 as location equity. Schools with a student population of less than 1,000 were getting funding through small schools revenue. This created what was known as the "donut hole" as districts with student populations greater than 1,000 and less than 2,000 did not receive any support in their referendum. To offset the "donut hole" concern, beginning in fiscal year 2016 the Legislature gave authority to all school districts to allocate $424 as location equity, which was, renamed *Local Option Referendum*. This gave the school district authority to have a referendum up to $724 per pupil and not need voter approval. Essentially, this took away local control, which I believe is a step toward true equity. School districts do have the ability to request from voter's approval to go above and beyond the $724 per pupil level.

2. Overall, the 2011-12 Minnesota Funding formula was found to be wealth neutral based on the distribution of revenue sources. The equity measure needs to be continually monitored to ensure the state continued on its current path and as Jeffrey Metzler discussed the "Inequitable Equilibrium" of the legislature is not having a negative impact of the fiscal equity. Less attention can be paid to the individual categories of the formula as long as the state is meeting equitable distribution standards as a whole.
3. Minnesota Legislature needs to stop the practice of holding funds from Minnesota schools. This practice puts local schools in the position of needing to borrow money in order to meet the minimum standards set forth by the state. However, the state needs to ensure their general fund balances are replenished and the reserve balance is restored to ensure the practice of

holding funds from school districts does not occur again. For fiscal year 2014 the state did transition back to the 90-10 structure and has paid back all of the revenue it held back to school districts. This payback and transition back to the 90-10 funding structure is a direct relation to the state's economic improvement.

4. Minnesota needs to look at the politics of the Minnesota funding formula to ensure all future amendments to the funding formula will continue to meet the fiscal equity standards. This political gamesmanship and tampering of the funding formula fixes some issues, but causes future losers as well. The "donut hole" was an example of this political manipulation.

Recommendations for Future Studies

1. The basic revenue is nearing perfect equity, as measured by the basic general formula revenue. A future study should be conducted regarding whether per pupil foundation amount meets the minimum standard needed to reach growing accountability standards in Minnesota. Equity has been achieved, but the need to research whether the funding levels are at an adequate level to meet the growing demands has yet to be studied.
2. The only way to reach true equity is through a full state-funding plan. Minnesota's funding structure is currently a mix of foundation aid and equalization. The concern is the loss of local control, but this practice is what can cause inequity. The referendum revenue is an example of this as districts with voter approval have much greater revenue to provide an education than those districts where the voters do not approve a referendum. Again, the

board authority of approving $724 per pupil limits the local control; however, there will still be school districts that have the ability to approve referendums much higher than the $724 level. The variance should be improved with this legislative change; however, there will still be a gap in per pupil revenue. Future study on moving toward full state funding should be conducted.

3. An updated adequacy cost-out study should be conducted on the funding of Minnesota k-12 public schools to determine the minimum standard. This would allow the Legislature to determine what action needs to be taken to meet this standard. The distribution of revenue overall shows fiscal equity; however, you can have an equitable system but not an adequate system leaving the local school districts again to rely on the taxpayers to pass a referendum higher than the amount the school board has the authority to approve leading to inequity across school districts.

REFERENCES

2004 Task Force-Office of the Governor. (2004). *Investing in our future.* St. Paul, MN: Governor's Office.

Alliance For Excellent Education. (2012). *Inseparable imperatives: Equity in education and the future of the American economy.* Retrieved from www.all4ed.org

Arizona Constitution, Section1.Article IV, Part1, Section1, 6(b).

Augenblick, J. G., Myers, J. L., & Anderson, A. B. (1997). Equity and adequacy in school funding. *The Future of Children Financing Schools*, 63-78.

Baker, B. D. (2013). *Friday ratings madness: Quality counts, students first & funding formula* [Web log post]. Retrieved from http://schoolfinance101.wordpress.com/2013/01/11/friday-ratings-madness-quality-counts-students-first-funding-fairness/

Baker, B. D., Cororan, S. P. (2012). *The stealth inequalities of school funding.* Washington, DC: Center for American Progress.

Baker, B. D., Sciarra, D. G., & Farrie, D. (2010). *Is school funding fair? A national report card.* Newark: Education Law Center.

Berne, R., & Stiefel, L. (1984). *The measurement of equity in school finance.* Baltimore: The John Hopkins University Press.

Bireda, S. (2011). *Funding education equitably*. Washington, DC: Center for American Progress.

Brazer, H. E., & McCarty, T. A. (1986). Municipal overburden: An emperical analysis. *Economics of Education Review*, 353-361.

Brimley, J. V., & Garfield, R. R. (2005). *Financing education in a climate of change.* Boston: Pearson Education, Inc.

Brown v. Board of Education, 347 U.S 483, 493 (United States Supreme Court May 17, 1954).

Buzuvis, E. E. (1998). *"A" for effort: Evalutating recent state education reform in response to judidal demands for equity and adequacy*. Ithaca: Cornell Law School

Campaign For Fiscal Equity v. State, 187 Misc.2d 1, 83, 719 N.Y.S.2d 475 (NY Supreme Court 2001).

Carruth, G. F. (1980). *Minnesota's foundation program: projected effects of the distribution of selected maintenance revenues for fiscal equity, for fiscal years 1980-1983.* Minneapolis, MN: University of Minnesota.

Cecconi, M. (2004). *Analysis of the school funding task force report, investing in our future.* St. Paul, MN: Parents United Network.

Claremont School District vs. Governor, 703 A.2d 1353 (NH Supreme Court 1997).

Coons, J. E., Clune III, W. H., & Sugarman, S. D. (1970). *Private wealth and public education.* Cambridge: The Belknap Press of Harvard University Press.

Crowe, G. (2011). *Financing education in Minnesota 2011-12.* St. Paul, MN: Minnesota House of Representatives Fiscal Analysis Department.

Cubberley, E. P. (1906). *Schoool funds and their apportionment.* New York: Teachers College, Collumbia University.

Darling-Hammond, L., & Friedlaender, D. (2008). Creating Excellent and Equitable Schools. *Educational Leadership,* 14-21.

Dayton, G. M. (2011). *7-point plan.* Retrieved from www.education.state.mn.us/MDE/Welcome/OfficeCom/BetterSchBetterMN/

DeRolph v. State, 97 Ohio St. 3d 434, 2002-Ohio-6750. (Ohio Supreme Court December 11, 2002).

Doughman, A. (2013, May 1). Education advocates threaten lawsuit over funding public schools. *Las Vegas Sun.* Retrieved from http://www.lasvegassun.com/news/2013/may/01/education-advocates-threaten-lawsuit-over-public-s/

Driscolll, L. G., & Salmon, R. G. (2013). Challenges confronting public elementary and secondary education in the Commonwealth of Virginia. *Journal of Educational Finance*, 230-254.

Education Week. (2011). *School finance*. Langhorne, PA: Author.

Ely, T. L., & Fermanich, M. L. (2013). Learning to count: School finance formula count methods and attendance-related student outomes. *Journal of Education Finance,* 343-369.

Epstein, D. (2001). *Measuring inequity in school funding.* Washington, D. C.: Center for American Progress.

Epsten, D. (2011). *Investing in education powers in U.S. competitiveness.* Retrieved from www.americanprogress.org/issues/education/report/2011/09/06/10376/investing-in-education-powers-u-scompetitiveness/

Fahy, C. (2011). Education funding in Massachusetts: The effects of aid modifications on vertical and horizontal equity. *Journal of Education Finance*, 217-243.

Fischer, H. (2013, April 16). Arizona school funding debate back in court. *East Valley Tribune*. Retrieved from http://www.eastvalleytribune.com/arizona/politics/article_07153ed8-a6ce-11e2-84ff-001a4bcf887a.html

Giles, N. G. (2012). *SchoolBook.* Retrieved from www.wnyc.org/blogs/schoolbook/2012/jun/14/a-parent-warns-focus-on-fund-raising-lets-government-off-the-hook/#

Gillespiet, L. N. (2010). The fourth wave of educational finance litigation: Pursuing a federal right to an adequate education. *Cornell Law Review*, 989-1020.

Greenwood, R. (2012). *Educational adequacy in Arkansas: Funding.* Fayetteville: Office for Education Policy University of Arkansas.

Guthrie, J.W., Liu, K., & Springer, M. G. (2008). *The impact of school finance litigation on resource distribution: A comparison of court-mandated equity and adequacy reforms.* Nashville: Vanderbilt University.

Hancock, K. (2001). *Funding Oklahoma common schools with a Texas tax plan: A cautionary note.* Oklahoma: Northeastern State University.

Hancock, P. (2013). *Report says schools underfunded $657 million in FY 2015. LJWorld*. Retrieved from www.LJWorld.com

Hanushek, E. A. (2006). Introduction: Good intentions captured—School funding adequacy and the courts. In *Courting Failure: How School Finance Lawsuits Exploit Judges' Good Intentions and Harm Children* (pp. xiii-xxxii). Stanford: Education Next Books.

Hart, P. D., & Teeter, R. M. (2004). *Equity and adequacy: Americans speak on public school funding.* San Fransico: Educational Testing Service.

Hawkins, B. (2011). *Minnesota's school-finance inequities have multiple causes.* Retrieved from www.minnpost.com

Horton v. Meskill, 376 A.2d 359 (CT Supreme Court 1977).

Houck, E. A., & Eom, M. (2012). Resource and output equity as a mechanism for assessing educational opportunity in Korean middle school education. *Journal of Education Finance*, 18-51.

Jacobson, T. P. (1986). *Minnesota's foundation program: A comparisoni of revenue equity between Minnesota's 1983/84 foundation program and Minnesota's 1984/85 five tier foundation program.* Minneapolis, MN: University of Minnesota.

Jordan, K. F., & Lyons, T. S. (1992). *Financing public education in an era of change.* Bloomington, IN: Phi Delta Kappa Educational Foundation.

Kauffman, A. H. (2004). *Equity and adequacy concepts as considered in school finance court cases.* San Antonio: Intercultural Development Research Association.

King, R. A., Swanson, A. D., & Sweetland, S. R. (2005). Desinging finance structures to satisfy equity and adequacy goals. *Education Policy Analyis Archives*, 1-28.

Kleven, T. (2010). *Federizing public education.* Selected Works.

Knickman, J. R., & Reschovsky, A. J. (1981). *Municipal overburden: Its measurement and role in school finance reform.* Washington, DC: National Institute of Education.

Knowles, G., & Knowles, E. (2005). *Equity issues in the State of Minnesota School finance.* Milwaukee, WI: University of Wisconsin, La Crosse.

LaPlante, J. M. (2012). Measuring the adequacy and equity of learning opportunities: How and why per pupil expenditures may mislead. *Association for Education Finance and Policy Annual National Conference.* Boston: Association for Eduction Finance and Policy.

Larson, L. (1993). *Skeen v. State of Minnesota, The school finance lawsuit.* Minneapolis, MN: Research Department Minnesota House of Representatives.

Lefkowits, L. (2004). *School finance: From equity to adequacy.* Aurora, CO: Mid-continent Research for Education and Learning.

Management Analysis and Planning, Inc. (2004). *A preliminary study to determine adequate education funding in Minnesota.* Davis, CA: Author.

Mason, M. L., & Arsen, D. (2010). *The role of state courts in securing school facility adequacy and equity.* East Lansing: Education Policy Center at Michigan State University.

Melcher, T. (2005). *Finance history.* Roseville, MN: Minnesota Department of Education.

Melcher, T. (2011, April). *School finance.* Retrieved from Minnesota Department of Education: http://education.state.mn.us/mdeprod/idclg?ldcService=Get_File&dDocName=005211&RevisionSelectionMethod=latestReleased&Rendition=primary

Metzler, J. (2003). Inequitable equilibrium: School finance in the United States. *Indiana Law Review*, 1-48.

Miller, M. (2012, September 2). *U.S. needs strike over inequities in public schools*. Retrieved from www.bloomberg.com/news/2012-09-20/u-s-needs-strike-over-inequities-in-public-schools.html

Minnesota Constitution, Article 13, Section 1.

Minnesota Department of Education. (2012). *Data reports and analytics*. Retrieved from http://education.state.mn.us/MDEAnalytics/Data.jsp

Minnesota DFL. (2012). Minnesota dfl action agenda. Retrieved from www.dfl.org

Minorini, P. A., & Sugarman, S. D. (1999). School finance litigation in the name of educational equity: Its evolution, impact, and future. In H. Ladd, R. Chalk, & J. Hansen (Eds.), *Equity and adequacy in education finance: Issues and perspectives* (pp. 34-71). Washington, DC: National Academy Press.

MN GOP. (2012). Republican party of Minnesota – 2012 standing platform. Retrieved from www.mngop.com

National Access Network. (2006). *School funding*. Retrieved from www.schoolfunding.info/resource_center/costingoutprimer.php3#ejprimer

National Access Network. (2010). *Litigation*. Retrieved from www.schoolfunding.info

National Access Network. (2010). *Litigations challenging constitutionality of K-12 funding in the 50 states.* Retrieved from www.schoolfunding.info/litigation/New_Charts/06_2010_lit_chall_constituionality.pdf

National Access Network. (2012). *Litigations challenging constitutionality of k-12 funding in the 50 states.* Retrieved from www.schoolfunding.info/wp-content/uploads/2011/07/Litigations-Challenging-Constitutionality-of-K-12-funding7.pdf

National Center For Educational Research. (2006). *Quality counts at 10: A decade of standards-based education.* Bethesda, MD: Author.

Oliff, P., & Leachman, M. (2011). *New school year brings steep cuts in state funding for schools.* Washington, DC: Center on Budget and Policy Priorities.

Petrilli, M. J., & Roza, M. (2011). *Stretching the school dollar: A brief for state policymakers.* Stanford: Thomas Fordham Institute.

P.S. Minnesota. (2013). *Parents united for public schools*. Retrieved from www.parentsunited.org/school-funding/

Rebell, M. A. (2010). Achieving high educational standards for all conference. In T. Ready, C. Edley, Jr., & C. E. Snow (Eds.) *Achieving high educational standard for all* (pp. 218-267). New York: National Research Council.

Rebell, M. A., Odden, A., Rolle, A., & Guthrie, J. W. (2012). Four takes on tough times. *Educational Leadership,* 11-18.

Reynolds, L. (2006). *Uniformity of taxation and the preservation of local control in school finance reform* (pp. 1835-1895). Presented at Annual Education Law Conference. Portland, Maine: University of Illinois College of Law.

Reynolds, L. (2009). Full state funding of education as a state constitutional imperative. *Hastings Law Journal*, 749-796.

Robinson, E. (1996). *History of ND.* Lincoln: University of Nebraska Press.

Roza, M. (2010). *Educational economics: Where do school funds go?* Washington, DC: The Urban Institute Press.

Samberg, M. (2007). *ACCESS.* Retrieved from www.schoolfunding.info/states/mn/costingout_mn06.php3

San Antonio Independent School District v. Rodriguez, 411 U.S. 1, 93 S.Ct. 1278 (The Supreme Court 1973).

Schools for Equity in Education. (2012). *Local taxpayer cost for district's operating referendum*. Retrieved from www.schoolsforequity.org

Seattle Sch. Dist. No. 1 v. State, 585 P. 2d 71 (State Supreme Court 1978).

Serrano v. Priest, 487 P.2d 1241 (CA Supreme Court 1971).

Serrano v. Priest, 557 P.2d 929 (CA Supreme Court 1976).

Silverstein, J., Rose, D., & Myers, J. (2006). *Estimating the cost of an adequate education in Minnesota.* Denver: Augenblick, Palaich and Associates, Inc.

Skeen v. State of Minnesota, 505 N.W. 2d 299 (Minnesota Supreme Court 1993).

Springer, Liu & Guthrie (2008).

State v. Lobato, 12SA25 (Colorado Supreme Court May 28, 2013).

Taylor, L. L. (2005). *Measuring educational adequacy in public schools.* College Station, TX: The Bush School of Government and Public Service.

The Education Finance Working Group. (2011). *Funding education for the future.* Roseville, MN: Minnesota Department of Education.

Thorson, G. R., & Anderson, J. L. (2008). The Minnesota miracle abandoned? Changes in Minnesota school funding 2001-2007. *Rural Minnesota Journal*, 27-43.

Toutkoushian, R. K., & Michael, R. S. (2007). An alternative approach to measuring horizontal and vertical equity in school funding. *Journal of Education Finance*, 395-421.

U.S. Department of Education's Equity and Excellence Commission. (2012). *How to make school funding fair.* Washington: U.S. Department of Education.

Vandal, G. A. (1997). *Education finance equity in Minnesota: A post-skeen "analysis."* Minneapolis, MN: University of Minnesota.

Van Dusartz v. Hatfield, 334 F. Supp. 870 (Minnesota District Court D. Third Division October 12, 1971).

Verstegen, D. A. (2011, July 30). Public education finance systems in the United States and funding policies for populations with special educational needs. *Education Policy analysis archives,* pp. 1-30.

Verstegen, D. A., & Knoeppel, R. C. (2012). From statehouse to schoolhouse: Education finance apportionmnet systems in the United States. *Journal of Education Finance*, 145-166.

Wieder, B. (2012). *State school funds on trial, again.* Retrieved from www.pewstates.org/projects/stateline/headlines/state-school-funds-on-trial-again85899438178#

Wilson, T. F. (1984). *The Minnesota foundation maintenance program: A model for improving the equity for financing Minnesota's public schools.* Minneapolis, MN: University of Minnesota.

Wise, B. (2013, April 29). *Providing all students with a quality education is a moral—and economic—necessity*. Retrieved from www.huffingtonpost.com/bob-wise/providing-all-students-wi_b_3147321.html