AN ANALYSIS OF ATHLETIC EXPENDITURES IN NEW JERSEY SCHOOLS

BY

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ABSTRACT OF THE DISSERTATION

This study investigates school district athletic expenditures as a consequence of local taxpayer demand. A data set was created of all New Jersey school districts for a five year period, 2001-2005. The data included each school district's demographic and educational spending information. Income was not an important predictor of athletic spending. Abbott districts spent significantly ($p<.01$) less than non-Abbott districts spent per pupil on athletics. District factor group A had the lowest per pupil athletic expenditures of all the district factor groups. District factor groups GH, I, and J had the highest per pupil athletic expenditures, spending significantly ($p<.01$) more than district factor group A spent per pupil on athletics. Asians favored significant ($p<.01$) increases in total education spending but favored significant ($p<.05$) decreases in athletic spending. African Americans favored significant ($p<.01$) increases in total education spending but were negatively associated with athletic spending. Hispanics were negatively associated with total education spending and favored significant ($p<.01$) decreases in athletic spending. Elderly persons favored significant ($p<.01$) decreases in total education spending but were positively associated with athletic spending. Tax share was significantly ($p<.01$) related to less total education spending but was positively associated with increased athletic spending. The data suggest that school district athletic expenditures are a consequence of local taxpayer demand.

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To my mother, Carolyn- I could not have done this without your constant encouragement and support. You are always there. Thank you.

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CHAPTER 1 - INTRODUCTION

1.1 Introduction

Amidst a nationwide economic downturn, schools are finding ways to cut spending. A recent popular target for spending cuts in schools has been athletic programming (Garcia, 2009; Moskowitz, 2007; Schlabach, 2009).

As an example, the Stoneham School Committee in Massachusetts recently decided to eliminate all high school sports because a $3 million tax override failed by 237 local tax payer votes (Moskowitz, 2007). Those opposing the override believed taxes in Stoneham were already too high and refused to pay more taxes.

In another example, budget pressures in Chesterfield County, Virginia, may force the administration to cut athletics. Some suggest athletics will continue in Chesterfield County only if funding for athletics comes from outside sources such as donations, fees, and other fundraising efforts. In other words, whoever wants athletics to continue in Chesterfield County will have to pay for it (Slayton & Prestidge, 2010).

These examples suggest that athletic spending decisions reflect local taxpayer preferences. Therefore, it makes sense that educational administrators know the specific taxpayer preferences that best predict athletic expenditures before making athletic spending decisions.

1.2 Statement of the Problem

The problem is that school budget analysts and developers lack empirical data on athletic expenditures in school districts (Holland & Andre, 1987). Because of this lack of empirical data, decisions regarding athletic expenditures have been uninformed.

Therefore, the purpose of this study is to collect and analyze data as to better understand school district athletic expenditures as a consequence of local taxpayer demand. Specifically, this study will answer the following questions:

1. How much money is being spent on athletics across New Jersey school districts?
2. How does athletic expenditure compare a) per enrolled student, b) as a share of total expense, c) as a ratio to other non-core curricular expenses?
3. How does athletic expenditure vary across New Jersey school districts a) with respect to district factor group and b) with respect to grade configuration?
4. To what extent is athletic expenditure associated with traditional median voter model measurement of a) income, b) taste, c) tax price?

1.3 Significance of the Study

Schools across the United States are eliminating athletics because they lack the necessary resources to continue funding athletic programs. Decisions to eliminate athletics carry severe consequences in some communities (Garcia, 2009; Moskowitz, 2007) and are, therefore, important decisions which need to be better informed. Others agree. Miller, Melnick, Barnes, Farrell, and Sabo (2005) write, "The issues [athletics, gender, race, outcomes] raised are of particular importance today, as more school districts and communities face fiscally –imposed decisions about which extracurricular activities and programs to cut" (p. 10). This study provides empirical data to educational administrators who have the responsibility of making more informed decisions regarding athletic spending.

CHAPTER 2 – LITERATURE REVIEW

2.1 Introduction

This study links athletic expenditures to local taxpayer demands. Therefore, it is necessary to review the current literature on education demands. Furthermore, because local taxpayer demands typically steer education funding, it is also necessary to review the current literature on education resource allocation.

2.2 Education Demand Research: The Median Voter Model

A model often used in education demand research is the median voter model. The median voter model is constructed on the premise that a school district's communal demand for educational outcomes is a function of, among other variables, income, taste, and tax price (Duncombe & Yinger, 2000; Gramlich & Rubinfeld, 1982). Median voter functions can be expressed as:

$$\text{Education Demands} = f(\text{Income, Taste, Tax Price})$$

where income is the household's ability to pay for the demand, taste is the household's preferred educational demand, and tax price is what the household will be required to pay, in the form of taxation, for that educational demand. For example, the median voter model can be used as an instrument to predict local taxpayer response to the question: should increases in state aid be spent on new technology or should increases in state aid be spent on physical plant improvements (Duncombe & Yinger, 2000). An assumption made by the median voter model is that income, taste, and tax price do, indeed, influence household educational demand (Baker, Green, & Richards, 2008).

Previous research supports the use of the median voter model in education demand research. In 1993, Mintrom used empirical evidence from New Jersey to analyze school funding equalization efforts. Mintrom found that differences in school funding equalization efforts between wealthy and poor districts resulted largely from the behaviors of local parents and taxpayers. Because Mintrom found that educational spending differences resulted largely from taxpayer preferences, it can be inferred that educational spending may be more a matter of choice than a matter of accounting. The notion that educational spending is more a matter of choice than a matter of accounting was echoed in later research (Hoxby, 1996). If educational spending in general, athletic spending in particular, are matters of choice, it makes sense when investigating athletic spending in schools to use a model which is known to effectively measure taxpayer preferences. Others might agree. A number of education demand studies use median voter models to predict general public expenditures (Colburn & Horowitz, 2003; Duncombe & Yinger, 2000; Gramlich & Rubinfeld, 1982). However, there are no known studies which use median voter models to predict school district athletic expenditures. Because of this, this study uses a median voter model to investigate school district athletic expenditures as a consequence of local taxpayer demand, a function which can be expressed as:

$$\text{Athletic Expenditures} = f(\text{Income, Taste, Tax Price})$$

2.2.1 The Right Side of the Equation

Because there are no known studies which use the median voter model to predict athletic expenditures in schools, this researcher can not review, in depth, the demand side

of the equation. Therefore, the focus of this review must be on the right side of the equation, on the median voter model inputs of income, taste and tax price.

2.2.2 Median Voter Income

Median voter model research has shown income is an influence on education demands (Duncombe & Yinger, 2000; Gramlich & Rubinfeld, 1982). In one study, Gramlich and Rubinfeld (1982) used a variety of data to test the median voter hypothesis. Some of the data, taken at the macro level, were overall government spending behaviors from 83 counties in Michigan. Some of the data, taken at the micro level, were responses to a survey of 1,125 Michigan households regarding income expectations. Some of the data, also taken at the micro level, were responses to a survey of 858 Michigan voters regarding public spending levels. On a macro level, Gramlich and Rubinfeld found that residents of higher income communities perceive they receive lower levels of public spending and want more. On a micro level, Gramlich and Rubinfeld found that those who expect an increase in real income will want higher levels of public spending. When Gramlich and Rubinfeld asked the voters if they wanted a change in public spending, less than 30% of the respondents in all three areas surveyed [metropolitan Detroit (19.5%), non-metropolitan Detroit cities (18.6%), non-urban Michigan counties (28.5%)] wanted a change in public spending. In other words, in those three areas surveyed, 70% or more of the voters favored no change in public spending. These findings not only imply that income can be a predictor of public spending demand, but these findings also support the notion that people will live in areas where others demand, and local governments supply,

a level of public spending that most closely resembles their individual preferences (Tiebout, 1956).

In another study, Duncombe and Yinger (2000) attempt to design a school finance system which increases student performance in New York schools. In addition to median income, the authors used ratios of operating aid to median income and matching aid to median income as predictors of an index of educational outcomes. Duncombe and Yinger find that although increases in aid will help bring mostly New York City schools to a performance standard, increases in aid can detract from other districts because of the large number of children serviced by New York City schools. This supports previous suggestions that, in some cases, wealthier communities perceive aid received as a compliment to education funding whereas poorer communities perceive aid received as a substitute for education funding (Mintrom, 1993). Increases in aid to New York City schools, then, according to Duncombe and Yinger, may lead to increased inefficiency.

Even though previous median voter model research gives strong support to the use of income as a predictor of education spending in general, there are no known median voter models of athletic expenditures, specifically. Therefore, there is a gap in the literature. A further discussion as to why this gap exists is warranted here.

Previous research on the relationship between athletic participation and achievement suggests students from low socioeconomic communities will have higher athletic participation rates as a means to increasing social capital (Eitle & Eitle, 2002). This research is grounded in psychology. Higher athletic participation rates lead to higher athletic expenditures because as more students participate in a wider array of extracurricular athletics, the cost of providing the services increases (Whithead, 2006).

Such discussions on school finance tend to be grounded in economics. So, in order to link athletics to spending, one has to bridge psychology research to economic research. This researcher is not yet prepared to take such a bold leap.

However, a baby step is in order. In New Jersey, one of the determinants of socioeconomic status (SES) is median income. As stated previously, students from low SES communities will have higher athletic participation rates and those increased athletic services will cost more money to provide. In other words, in New Jersey, it can be expected, based on previous research, that students from low median-income areas will have increased athletic spending. This somewhat contradicts previous median voter model research which supports the notion that residents having lower median-incomes desire less public spending (Gramlich & Rubinfeld, 1982). To better understand this relationship, income is used as an input in the median voter model of this research.

2.2.3 Median Voter Taste

Research has shown taste is an influence on education demand (Colburn & Horowitz, 2003; Ladd & Murray, 2001, Poterba, 1997). For instance, Colburn and Horowitz (2003) studied the effects of 17 different variables on educational spending in Virginia. Among the variables used in the study was the percentage of people who voted Democratic. Colburn and Horowitz found that, of all the variables, the percentage of people who voted Democratic had the largest effect. Because voting Democratic is a preference (to voting Republican or other), and preference can be interpreted as an expression of taste, one can infer that taste effects educational spending.

However, not all measurements of taste in median voter model research necessarily reflect choice, per se. Colburn and Horowitz (2003) also found that, among the variables used in their study, larger percentages of African Americans in a population reduce education spending. Therefore, though race is not a choice, meaning people do not choose to be black or white, race is a measurement of taste in median voter model research.

Furthermore, if race is viewed the same way as median-income was viewed previously, that is, as a bridge between psychology research and economic research, the Colburn and Horowitz finding that higher percentages of African Americans in a population reduce education spending seems to contradict previous research. Eitle and Eitle (2002) suggest blacks are more likely than whites to participate in athletics. As more blacks participate in athletics, blacks must also incur increased athletic costs. Similar to the possible contradiction in research regarding median income, though higher percentages of African Americans lead to decreased overall education spending (Colburn & Horowitz, 2003), higher percentages of African Americans may lead to increased athletic spending because of increased participation (Eitle & Eitle, 2002). To better understand race as a predictor of athletic spending in schools, race is used as a measure of taste in the median voter model of this research.

Another measure of taste that will be used in this study is the percentage of population that is over age 65. In a study using K-12 per pupil education expenditure data from the 48 continental United States, Poterba (1997) found that increases in elderly populations lead to significant reductions in education spending. Furthermore, Poterba found an even larger reduction in education spending when the elderly are from a

different racial group than the K-12 students. In other words, Poterba found that in addition to older people already wanting to spend less on public education, older people want to spend even less on public education where the children they would be supporting are of a different race than they, themselves, are. This finding was supported by Ladd and Murray (2001) who used county-level data to replicate Poterba's (1997) study.

Whereas median income and race were previously discussed as possible mitigating factors between economic research and psychology research, elder populations can not serve a similar purpose. People over age 65 do not play high school sports. Therefore, no research exists on elderly participation in high school athletics. Still, this researcher wants to test the effect, if any, of the elderly on athletic spending in schools. To better understand the effect, if any, of the elderly on athletic expenditures, the percentage of population over age 65 is used as a measure of taste in this study.

2.2.4 Median Voter Tax Price

Median voter model research has shown tax price influences education demand (Colburn & Horowitz, 2003; Duncombe & Yinger, 2000; Gramlich & Rubinfeld, 1982). To illustrate, this researcher gives three examples of how others arrive at tax price in median voter model research.

First, Gramlich and Rubinfeld (1982) used macro data at the county level and a median voter model to estimate public spending. In their study, Gramlich and Rubinfeld define tax price as "…the price to the consumer of a dollar of real expenditure per capita of public spending" (p. 539). The underlying assumption on which Gramlich and Rubinfeld based their definition of tax price was the popular economic belief that

community individual property values are assumed to equal the median residential value. Under this assumption, the community tax price is usually expressed as the ratio of residential value to total value, as if owners of nonresidential property did not vote in local elections.

Second, recall the study by Duncombe and Yinger (2000) on finance systems in New York schools. In that study, Duncombe and Yinger write:

> Following the literature (especially Ladd & Yinger, 1991), we define tax price, *TP*, as the tax share multiplied by the marginal expenditure for educational services. We measure the tax share with the ratio of median housing value to total property value per pupil. Marginal expenditure equals marginal cost divided by the efficiency index to reflect wasted spending (p. 368)

Lastly, in defining tax price for their readers, Colburn and Horowitz (2003) write:

> The first variable is the tax price, or marginal cost, of a dollar increase in educational spending. Because most local spending is financed by property taxes, the median value of housing is divided by the total value of all housing in the city/county. This is the tax share for the median family. Next, the resulting ratio is multiplied by the number of students as a dollar increase in spending is assumed to go to each student equally. Finally, this value is multiplied by the ratio of total property tax revenue from taxes on individual real property to total property tax revenue. This adjustment is made because the ability to raise property tax revenue from sources other than homes varies widely across the Commonwealth. (p. 800)

Two common elements emerge when reviewing these processes used by researchers to arrive at tax price in median voter model research on public spending demands; property values and tax rates.

Property values and tax rates have been at the crux of New Jersey's education funding issues (*Abbott v. Burke,* 1985*; Robinson v. Cahill,* 1973). This researcher will use a hypothetical example, using simple mathematics, to illustrate why this is. Suppose two New Jersey students, Student A and Student B, each require $1,000 of public education expenditure. Student A is from a poor community. Student B is from a

wealthy community. The property value of the home in which Student A lives is $100,000. The property value of the home in which Student B lives is $500,000. Public education revenue comes largely from taxation on property values. Therefore, in order for a school district to raise $1,000 of education revenue from Student A, the municipality must tax Student A at a rate of 1%. In order for a school district to raise $1,000 of education revenue from Student B, the municipality must tax Student B at a rate of .2%, or one-fifth the tax rate of Student A. In other words, in this hypothetical example, in order for the municipality to raise the same $1,000 of public education revenue from both students, the poor student must be taxed at a rate which is five times greater the rate at which the wealthy student is taxed.

But, had the tax rate been the same 1% for both Student A and Student B in this hypothetical, Student A would have $1,000 of public expenditure while Student B would have $5,000 of public expenditure. Student B, then, would have a greater ability to spend more money on education. This is called fiscal capacity (Baker, 2009; Duncombe & Yinger, 2009). Duncombe and Yinger (2009) applied theories of local government spending behaviors to explain why some school districts spend frivolously. Duncombe and Yinger found that fiscal capacity, or the ability to spend more, was one of the reasons why some school districts spend frivolously. In other words, some districts spend more on education simply because they can.

Because some schools have greater fiscal capacity, there exists the opportunity for those schools to purchase additional programming, such as arts or athletics. However, there also exists the possibility that lower fiscal capacity communities may have a similar

level of appreciation for the arts and athletics but eliminate these programs so they can target their resources to a more narrowly measured student outcomes.

Because of the relationship between tax prices and fiscal capacity, and the effect that relationship has on education spending, tax price is used as a predictor of athletic expenditure in this research.

2.3 Resource Allocation Research

This study examines the extent to which athletic spending can be predicted by the income, taste, and tax price of the median voter. That is the first step for educational administrators; to understand the demands of local taxpayers for athletic spending. The body of literature on education demand research was already discussed in this review. The second step for educational administrators is finding a way to pay for athletics, should they be demanded. Educational programs cost money. A greater demand for an educational program requires a greater amount of money to pay for that program. That money usually comes from two sources, increased revenues via increased taxation or a reallocation of resources from one program to another. The previous section touched on increasing revenues through taxation. This section outlines resource allocation research.

There is a vast body of literature on education resource allocation. Though it is vast, much of the literature on education resource allocation supports one of three positions. The end goal of each position on resource allocation is to increase student outcomes.

The first position is that state legislatures should require schools to spend 65% of every education dollar in the classroom (Taylor, Grosskopf & Hayes, 2007). A core

belief of those who support this position is that instead of simply adding new resources into the classroom, money should be reallocated from other areas of the budget to the classroom.

The second position is that schools should allocate resources to schools on a weighted student basis (Miles & Roza, 2006; Roza, Guin, Gross & Deburgomaster, 2007). Allocating resources this way attempts to erase within district disparities. In other words, allocating resources on a weighted student basis attempts to ensure children of a particular group (i.e. children in poverty) in one school (school A) receive comparable funding as children of the same group (i.e. children in poverty) in another school (school B) in the same district.

The third position is that resource allocation should follow a prescribed, evidenced-based, one-size-fits-all model (Odden, 2007). For instance, Odden claims student performance can be doubled using a funding formula based on previous research on schools shown to have doubled student performance.

Others, however, are skeptical of these resource allocation positions. For example, Monk and Hussain (2000) use data from 645 New York school districts to study the effects of school district characteristics on staffing resource allocations. Monk and Hussain found that school districts "vary substantially" (p. 21) in how they allocate staffing resources across educational programs. Monk and Hussain caution others against applying "iron laws" (p. 24) of resource allocation, such as the 65% solution, because such substantial variations in resource allocation decisions made at the micro level may be related to characteristics such as poverty, size, and wealth; things which a district can not control.

In another example, Baker and Elmer (2009) evaluate two school finance reforms. One of the finance reforms evaluated was weighted student funding. Baker and Elmer argue that previous research on weighted student funding fails on two levels. First, Baker and Elmer argue that previous weighted student funding research fails to find the underlying causes of the disparities. Second, Baker and Elmer argue that weighted student funding research fails to explore whether weighted student funding would, indeed, provide greater equity among student groups across schools than other resource allocation strategies would provide.

Lastly, Hannaway, McKay, and Nabib (2002) used six years of nationally representative data of over 11,000 school districts to study school response (as measured by resource allocation trends) to school finance reforms. In particular, the researchers focused on resource allocations to instruction, instructional support, district administration, and school administration in four high reform states. The researchers found that schools did not spend more heavily on instruction even though "technical demands" (p. 60) of education at the time called for increased student performance. The authors suggest a reason for this may be that school districts were confronted with other expenditure demands, such as increased special education costs (resulting from increased special education reform mandates) and increased employee benefit costs. For instance, during the time period studied by Hannaway, McKay, and Nabib, employee benefits increased nationally, on average, by 21.4 percent. Therefore, it is possible that increased costs in other, non-core, programs divert resources away from the core curriculum. In this light, efforts to use one-size-fits-all strategies when allocating resources may be inconsiderate.

These criticisms of positions on resource allocation provide strong support to this study. Remember, this study examines the extent to which athletic expenditures in New Jersey are a function of taxpayer demand. It makes sense, then, not to apply such strict rules of resource allocation practices because taxpayer demands may differ from district to district. For instance, it may be the case that residents in a certain school district prefer increased athletic performance to increased educational outcomes. An example of this is when Meier et al. (2004) studied the impact of per-pupil athletic expenditures on a variety of student outcomes, including student attendance and performance on standardized tests. Data was analyzed for 1,924 school districts in Texas. Meier et al. found that higher per-pupil expenditures lead to lower standardized test scores, and decreased college aspiration (as measured by the percentage of students taking the tests). In other words, where school districts spend more on athletics, academic performance is lower.

But, Meier et al. (2004) offer this limitation, "Our findings here cover only a single state, a state with a fanatical devotion to high school athletics" (p. 805). Because Meier et al. describe athletic demands as being "fanatical", a fair assumption might be that people in Texas care more about athletics than they care about student performance on standardized test scores. Furthermore, it might be the case that the people of Texas view athletic participation as the best way of gaining access into a college education (Braddock, 1981; Spady, 1970). Meier et al. make it clear that educational administrators deciding to cut or to keep athletics would be remiss if they made any decision without considering the local demand for athletics.

Unlike the study conducted by Meier et al. (2004), this study does not attempt to link New Jersey athletic expenditures to student outcomes. Therefore, much of the literature relating resource allocation practices to student outcomes is not pertinent to this study. Rather, what is pertinent to this study, is research on the determinants of resource allocation practices, especially as they pertain to New Jersey schools.

2.3.1 Legislation and Litigation: A Determinant of Resource Allocations in Schools

A major determinant of New Jersey school resource allocation has been legislation. In 1973, the United States Supreme Court ruled that education is not a constitutionally protected right (*San Antonio v Rodriguez,* 1973). As part of this ruling, the Court recognized both the right to local control of public schools and the right to unequal school expenditures. In effect, this ruling placed the responsibility of future school funding litigation on state legislators.

Soon after the *San Antonio v. Rodriguez* (1973) decision, plaintiffs in New Jersey argued before the state Supreme Court (*Robinson v Cahill*, 1973) that the New Jersey school funding system was unconstitutional because it failed to provide a "thorough and efficient" education as mandated by the New Jersey State Constitution (1947). The plaintiffs based their argument on the fact that the heavy reliance on local property taxes to fund education resulted in substantial differences in per pupil expenditures in New Jersey school districts. The Court agreed with the plaintiffs and mandated the Legislature to enact a more equalized school funding system.

Almost twenty years and two major legislative efforts (Public School Education Act of 1975, Quality Education Act of 1990) later, the New Jersey Supreme Court, again,

found the state school financing system unconstitutional (*Abbott v. Burke*, 1990). This time, however, the focus of impropriety was on the state's poorest school districts. The Court mandated that the state guarantee a level of education funding for poor urban districts that is equivalent to the level of education funding in affluent suburban districts. The Court classified 28 such poor urban districts. These districts became known as Abbott districts because the first named plaintiff in the class action lawsuit is named Abbott. Abbott districts educate approximately one-half of the state's minority and poor children, enroll one-fifth of New Jersey's students and have less than one-tenth of the state's property wealth (Goertz & Weiss, 2007).

Around the same time as the Abbott decision was rendered, researchers across America were trying to understand the effects of school reforms in states where reforms were taking place. In New Jersey, Firestone, Goertz, Nagle, and Smelkinson (1994) examined how schools spent new funds generated by education reforms. Firestone et al. found that poor, urban New Jersey school districts spent increases in state aid, generated by the Quality Education Act of 1990, on three things; capital improvements, regular academic programs, and social support programs.

It is not unusual for school districts to spend new money received through school reforms on things other than instruction. Picus (1994) reported on the impact of school finance reforms in four Texas school districts, using comprehensive case study analysis. The four districts were labeled as high wealth and high enrollment, high wealth and medium enrollment, low wealth and high enrollment, and low wealth and medium enrollment. What was "interesting" (p. 403) to Picus was how few of the new funds received through school funding reforms were used on the core academic program,

regardless of the district characteristics or labels. Instead, according to Picus, new funding was spent on things such as physical plant improvements and teacher salaries.

Some evidence suggests there is good reason why new funds received via school funding reforms are not spent on the core academic program. Recall the Hannaway, McKay, and Nabib (2002) study mentioned previously as a criticism of the one-size-fits-all model of resource allocation. In that study, employee benefits increased nationally, on average, by 21.4 percent. In another instance, Baker (2003) found that specific student populations also help determine resource allocations. For example, Baker found that increases in limited English proficient populations led to increased allocations to instruction and instruction-related staff.

But, other evidence from New Jersey is not so supportive of the idea that changes in resource allocations result from increased program costs. In fact, Mintrom (1993) suggests resource allocations may be entirely within a district's control. Mintrom examined per-pupil funding variations in 452 New Jersey school districts to test whether or not New Jersey school funding reforms were working. Mintrom took data at six different points in time over two decades, from 1970-1990. From this data, Mintrom developed three ratios to test the impact of school finance reform. One of the ratios developed was the average per-pupil funding in the districts containing the five percent of students who receive the highest per-pupil funding divided by the average per-pupil funding in the districts containing the five percent of students who receive the lowest per-pupil funding. The test showed that during the 1976-1977 time period, the highest spending districts spent over 100 percent more per-pupil than the lowest spending districts spent per-pupil. The test also revealed that this ratio had dropped to 80 percent

by 1979-1980. Initially, it seemed as though reforms were working. Others in the scholarly community believed New Jersey was erasing the education funding disparity between poor and wealthy New Jersey school districts (Goertz, 1994).

However, Mintrom noted, at that rate of change, it would take 15 years to obtain full equalization. Mintrom also found that by 1989-1990, the per-pupil ratio was back to over 100 percent, higher than any of the previous years. From this, Mintrom suggests local-level participants such as parents of school children and other local taxpayers can "undermine" (p. 856) equalization efforts over time by acting in ways which tend to restore relative differences in per-pupil funding levels.

Others might agree. Brent, Roellke, and Monk (1997) studied human resource allocations in New York school districts. Brent, Roellke, and Monk found that smaller and poorer districts allocated no resources to advanced programming in any of the content areas studied. However, the smaller and poorer districts did allocate resources to regular and remedial programming in four of the five content areas studied. Conversely, smaller and wealthier districts allocated resources to advanced programming in four of the five content areas studied and allocated no resources to remedial programming in two of the content areas. Furthermore, recall the Monk and Hussain (2000) study mentioned previously as a criticism of the 65% percent model of resource allocation. Monk and Hussain found that, among other things, increases in property wealth relate to increases in allocation of staffing resources to advanced math and science programs. These findings support the notion that local taxpayers act in ways to maintain education funding disparities. If this is indeed the case, then school reforms and subsequent resource allocations will have little effect, if any, on bridging the education funding gap between

poor and wealthy school districts in New Jersey. Furthermore, if school reforms matter less than taxpayer preferences matter to resource allocations, educational administrators must learn the local taxpayer demand for athletics before deciding to cut or to keep athletics in schools.

CHAPTER 3 – METHODS

This section will explain this research methodology used in this dissertation. Recall, this dissertation research answers four questions. The methods used to answer each of the four questions vary. However, though the methods vary, each method used to answer a research question relied on the same data and used the same sample. Therefore, this section will include a general overview of the data. More detailed information regarding the methods used to answer each of the four questions follows.

3.1 The Data

A data set was created of all New Jersey school districts for a five year period, 2001-2005. The data included each school district's demographic and educational spending information.

3.2 Research Question 1

Recall, Q1 asks: *How much money is being spent on athletics across New Jersey school districts?* To answer this question, the researcher created a variable named **tot_sportsspending**. That variable can be defined as the total amount of money a school district spends on athletic programming. How the researcher arrived at the variable **tot_sportsspending** follows.

This study uses a median voter model to predict athletic expenditures in New Jersey schools. Therefore, it is important for this researcher to define the scope of athletics. The New Jersey Department of Education (2003) defines School-Sponsored Athletics as "…usually provid[ing] interscholastic competition and frequently

receive[ing] some financing through gate receipts or fees" (p. 26). This researcher feels that in defining School-Sponsored Athletics as such, the State of New Jersey adequately captures the essence of what this researcher wanted as a proxy for athletics in this study. Therefore, the scope of athletics in this study is the Comprehensive Annual Financial Report (CAFR) budget category named School-Sponsored Athletics.

The CAFR relies heavily on a coding structure. Each code consists of four dimensions, with each dimension serving a specific purpose in the code. These dimensions are Funds, Programs, Functions, and Objects.

School Sponsored Athletics is a budget category comprised of four subcategories. The subcategories, and their respective codes, are listed below:

Salaries:	15 – 402 – 100 – 100
Other Purchased Services:	15 – 402 – 100 – 500
Travel:	15 – 402 – 100 – 580
Supplies and materials:	15 – 402 – 100 – 600

All four subcategories have the same fund code (15), the same program code (402), and the same function code (100). However, the subcategories each have a different object code. An explanation of each dimension follows.

A fund is a fiscal entity. Therefore, the fund code indicates the fiscal entity under which recorded entries are made. Regarding School Sponsored Athletics, fund code 15 generally refers to a type of governmental fund. Governmental funds are typically the funds used to finance school district functions. Fund code 15 specifically relates to the School-based Budget fund. The School-based Budget fund accounts for school-level revenues and school-level expenditures for those schools required to prepare school-based budgets. Districts with schools preparing school-based budgets must record all revenues and expenditures for each school separately in fund code 15.

Programs are services designed to accomplish objectives. Program codes relate to specific educational programs. The first digit of a program code refers to a broad category. The second and third digits reflect the sequence in which each program appears in the broad category. In this instance, program 402 specifically refers to School-Sponsored Athletics. The broad category referred to by the first digit of 4 is Other Instructional Programs – Elementary/Secondary. This broad category includes learning experiences for students in preschool and grades K-12 that are outside Regular Programs Elementary/Secondary (program code 100), Special Programs (program code 200), Vocational Programs (program code 300), Nonpublic School Programs (program code 500), and Adult/Continuing Education Programs (program code 600). Because School-Sponsored Athletics is the second listed subcategory under program code 400, it has the program code of 402.

Functions describe the activity for which a service is acquired. Function code 100 specifically refers to Instruction and includes activities involving any interaction between teachers and students. Because of the magnitude of the expenditures, function codes serve a grouping need rather than an organizational need.

Objects are used to describe services obtained resulting from specific expenditures. The only difference among the four subcategories is the object code. Object code 100 refers to Personnel Services – Salaries and is a reflection of the amount paid to both permanent and temporary employees. Object code 500 refers to Other Purchased Services and includes amounts paid for services rendered by organizations or personnel not on the payroll of the district. Object code 580 refers to Travel and includes expenditures for transportation, meals, hotel, registration fees, and other expenses

associated with staff travel for the district. Object code 600 refers to Supplies and Materials and includes amounts paid for expendable material items that are consumed or worn out by use.

The four subcategories were added together to arrive at the variable **tot_sportsspending.** A data set was created of all New Jersey school districts for the years 2001, 2002, 2003, 2004, 2005.

The researcher then commanded the statistical software program known as Stata to provide the summary statistics for **tot_sportsspending**, tabled by year and district factor group. The output resulting from this command will gives the researcher the total amount of money spent on athletics in New Jersey school districts, grouped by district factor group, from years 2001-2005. That output will be discussed further in Chapter 4.

3.3 Research Question 2A

Recall, Q2A asks: *How does athletic expenditure compare per enrolled student?* To answer this question, the researcher created a variable named **totspend_perpupil**. That variable can be defined as the amount of money a school district spends on each student with regards to athletic programming. How the researcher arrived at the variable **totspend_perpupil** follows.

A detailed explanation of the methods used to find, and the variable used to represent, total athletic expenditures in New Jersey school districts was given in section 3.2.

The New Jersey Department of Education (2009) defines *student enrollment* as "…the October 15 count as reported on the department's annual Fall Survey collected

from each school. The enrollment is reported by grade level for regular and charter schools. For Special Services School Districts and special education schools, the enrollment is reported by class description. For vocational schools, the enrollment is reported by grade level with the addition of shared-time and full-time" (p. 2). Student enrollments are reported in what is known as the New Jersey School Report Card.

A data set was created of all New Jersey school districts for the years 2002-2005. Student enrollments and athletic expenditures were part of that data set. Therefore, dividing total athletic expenditures by student enrollments yields total athletic expenditures per enrolled student. However, there is a caveat. In order to compare data, either both figures must be at the district level or both figures must be at the school level. Because athletic expenditures are given at the district level via the CAFR and student enrollments are given at the school level via the school report card, something had to be done to allow for comparison of the data. So, this researcher totaled the school level student enrollments to arrive at a district level student enrollment. The result is represented by the variable **res_enroll**.

This researcher then divided total athletic expenditures, or **tot_sportsspending**, by district level student enrollments, or **res_enroll**, to arrive at per pupil athletic expenditures in New Jersey school districts, represented by the variable **totspend_perpupil**.

The researcher then commanded the statistical software program known as Stata to provide the summary statistics for **totspend_perpupil**, tabled by year and district factor group. The output resulting from this command gives the researcher per pupil

athletic expenditures in New Jersey school districts, grouped by district factor group, from years 2002-2005. That output will be discussed further in Chapter 4.

3.4 Research Question 2B

Recall, Q2B asks: *How does athletic expenditure compare as a share of total expense?* To answer this question, the researcher created a variable named **tot_sportsspendshare**. That variable can be defined as the percentage of a school district's total expenditure that is spent on athletics. How the researcher arrived at the variable **tot_sportsspendshare** follows.

A detailed explanation of the methods used to find, and the variable used to represent, total athletic expenditures in New Jersey school districts was given in section 3.2.

Total Expenditures is a line item on the Budgetary Comparison Schedule presented as part of the CAFR. However, there is a caveat. Abbott districts, discussed in section 2.3.1, report total expenditures at the school level, not at the district level. Therefore, to encompass both the Abbott district total expenditures and non-Abbott district total expenditures in the data set, this researcher simply added total expenditures reported at the district level, **tcurspend_afr7580**, to the total expenditures reported at the school level by the Abbott districts, **sch_tcurrent7580**. The result was total expenditures of a school district, represented by the variable **total_7580**.

This researcher then divided total athletic expenditures, or **tot_sportsspending**, by school district total expenditures, or **total_7580**, to arrive at athletic expenditures as a

share of total expenditures in New Jersey school districts, represented by the variable **tot_sportsspendshare**.

The researcher then commanded the statistical software program known as Stata to provide the summary statistics for **tot_sportsspendshare**, tabled by year and district factor group. The output resulting from this command gives the researcher athletic expenditures as a share of total expenditures in New Jersey school districts, grouped by district factor group, from years 2002-2005. That output will be discussed further in Chapter 4.

3.5 Research Question 2C

Recall, Q2C asks: *How does athletic expenditure compare as a ratio to other non-core curricular expenses?* To answer this question, the researcher created a variable named **tot_ratio**. That variable can be defined as the ratio of athletic expenditures as a share of total expenditures to other non-core curricular expenditures as a share of total expenditures, in New Jersey school districts. How the researcher arrived at the variable **tot_ratio** follows.

A detailed explanation of the methods used to find, and the variable used to represent, athletic expenditures as a share of total expenditures in New Jersey school districts, or **tot_sportsspendshare**, was given in section 3.4.

Non-core curricular expenditures are best represented in the CAFR by the program School-Sponsored Co-curricular and Extra-curricular Activities. School-Sponsored Co-curricular and Extra-curricular Activities are activities designed to provide students with experiences as motivation, enjoyment, and improvement of skills and

includes activities such as band, choir, chorus, clubs, honor societies, speech, and student governments (New Jersey Department of Education, 2003).

Accounting for non-core curricular expenditures is similar to accounting for athletic expenditures. The main difference in how the two are accounted for is a difference in the program code. One might recall that the first digit in the program code refers to the broad category Other Instructional Programs – Elementary/Secondary and the second and third digits refer to the sequential ordering within the broader category of Other Instructional Programs – Elementary/Secondary. Because School-Sponsored Co-curricular and Extra-curricular Activities are listed first under the broad category, and before School Sponsored Athletics (which uses program code 402), they have the program code 401.

Again, Abbott districts report expenditures at the school level, not at the district level. Therefore, to encompass both, the Abbott district and non-Abbott district, non-core curricular, non-athletic, expenditures in the data set, this researcher simply added non-core curricular, non-athletic expenditures reported at the district level, **dist_extracurricspend**, to the non-core curricular, non-athletic expenditures reported at the school level by the Abbott districts, **sch_extraspend**. The result was total non-core curricular, non-athletic expenditures of a school district, represented by the variable **tot_noncorespend**.

Because this research question calls for the comparison of athletic expenditures to other non-core curricular expenditures, the researcher must find a common denominator, for easy comparison of the data. That common denominator is the expression of expenditures as a share of total expenditures.

The expression of athletic expenditures as a share of total expenditures in New Jersey school districts is represented by the variable **tot_sportsspendshare**, as outlined in section 3.4.

To find the percentage of a school district's total expenditure that is spent on non-core curricular, non-athletic programming, the researcher must divide the non-core curricular, non-athletic expenditures by the total expenditures of a school district. Recall, total non-core curricular, non-athletic expenditures of a school district are represented by the variable **tot_noncorespend**. Also recall, the total expenditures of a school district are represented by the variable **total_7580**. Therefore, dividing total non-core curricular, non-athletic expenditures of a school district, or **tot_noncorespend**, by the total expenditures of a school district, or **total_7580**, yields total non-core curricular, non-athletic expenditures as a share of total expenditures, represented by the variable, **tot_noncorespendshare**. The researcher now has a common denominator that can be used to compare athletic expenditures with other none-core curricular expenditures.

To find the ratio of athletic expenditures to other non-core curricular expenditures, this researcher divided athletic expenditures as a share of total expenditures, or **tot_sportsspendshare**, by other non-core curricular expenditures as a share of total expenditures, or **tot_noncorespendshare**. The results are represented by the variable **tot_ratio**.

The researcher then commanded the statistical software program known as Stata to provide the summary statistics for **tot_ratio**, tabled by year and district factor group. The output resulting from this command gives the researcher the ratio of athletic expenditures as a share of total expenditures to other non-core curricular expenditures as

a share of total expenditures, in New Jersey school districts, grouped by district factor group, from years 2002-2005. That output will be discussed further in Chapter 4.

3.6 Research Question 3

Recall, Q3 asks: *How does athletic expenditure vary across New Jersey school districts with respect to district factor group and grade configuration?*

A variation among differences can often be analyzed through the use of a statistic known as ANOVA. ANOVA is an acronym for Analysis of Variance. Typically, an ANOVA model can be expressed in terms of a linear regression. Therefore, in this study, to analyze athletic spending differences among New Jersey school districts by district factor group and grade configuration, New Jersey per pupil athletic expenditures (dependent variable) can be modeled as a linear function of the district factor group, year, and operating type.

The following variables were used in the model. The variable name is given first, followed by the definition of the variable.

tot_sportsspendpp	Per pupil athletic expenditures in New Jersey school districts.
_Iabbott_1	A dummy variable included in the model to test for differences in the nature of schools and school districts not captured by the other variables.
_Idfg_2	District Factor Group B
_Idfg_3	District Factor Group CD
_Idfg_4	District Factor Group DE
_Idfg_5	District Factor Group FG
_Idfg_6	District Factor Group GH

_Idfg_7	District Factor Group I
_Idfg_8	District Factor Group J
_Iyear_2002	Year 2002
_Iyear_2003	Year 2003
_Iyear_2004	Year 2004
_Iyear_2005	Year 2005
_Ioptype_2	The districts servicing grades 9-12.
_Ioptype_3	The districts servicing grades K-12.
_Ioptype_4	The districts servicing grades K-6.
_Ioptype_5	The district servicing grades K-8.

3.6.1 Research Question 3

The model is an ANOVA expressed as a regression. Total per pupil athletic expenditures is the dependent variable and is regressed against an Abbott district dummy test variable, the district factor group classification, the year in which the athletic expenditure occurred, and the school district grade configuration, or operating type. This model seeks to explain the variation in spending differences among New Jersey school districts, by district factor group and grade configuration. Data for years 2002-2005 were applied to the model.

3.7 Research Question 4

Recall, Q4 asks: *To what extent is athletic expenditure associated with traditional median voter model measurement of (a) income, (b) taste and (c) tax price?*

Again, the median voter model of education demand model is typically measured in terms of the price that local voters are willing to pay for the level or quality of education they desire. Therefore, in this study, New Jersey athletic expenditures (dependent variable) can be modeled as a linear function of the median voter's income, taste, and tax price (independent variables), among other variables. The model, then, is a linear regression.

I used data to proxy the variables that are part of a median voter model voter framework. New Jersey athletic expenditures are functions of the capacity of that household to pay for athletics (income), the preference of households to provide athletic programming in schools (taste), and the cost, to the households in a school district, of providing athletic programming in schools (tax price). (Duncome & Yinger, 2000).

To proxy the median voter model of education demand, the following variables were used in this study. The variable name is given first, followed by the definition of the variable. In parenthesis is the data source of the variable. The natural logs are used with many of the variables so that the estimated coefficients can be interpreted as elasticities.

ln_sportspend_pp	The natural log of per pupil athletic expenditures. The ln_sportspend_pp variable served as the dependent variable for the model.
x_perspend	The four year average percentage of membership on an Individual Education Plan (IEP). This variable served as a proxy in the demand model for special education spending. This author believes the greater the amount of special education spending, the less schools and school districts will have resources to spend on athletics.
ln_density	The natural log of population per square mile. This variable served as a proxy in the demand model for the demographics that a school district would have for supporting athletic spending. This author believes that the higher the density, the lower the athletic

	spending.
ln_enroll	The natural log of enrollment. This variable served as a proxy in the demand model for the enrollment of schools and school districts that would support athletic spending. This author believes the higher the enrollment, the greater the athletic participation and subsequently, the higher the athletic spending.
ln_enroll2	The natural log of enrollment squared.
perasian	The percentage of Membership that is of Asian/Pacific Island ethnicity. This author believes that the greater the percentage of membership that is of Asian/Pacific Island ethnicity, the lesser the athletic spending.
perblack	The percentage of Membership that is of African American ethnicity. This author believes that the greater the percentage of membership that is of African American ethnicity, the greater the athletic spending.
perhisp	The percentage of Membership that is of Hispanic ethnicity. This author believes that the greater the percentage of membership that is of Hispanic ethnicity, the greater the athletic spending.
abbott	A dummy variable included in the model to test for differences in the nature of schools and school districts not captured by the other variables. This author believes Abbott districts have higher athletic spending levels than non-Abbott districts.
ln_incomeperenr	The natural log of aggregate income per enrolled student. This variable served as a proxy in the demand model for the income level that a school district's constituency would have for supporting higher athletic spending. This author believes that the greater the income, or wealth, of a district, the greater the athletic spending.
ln_taxshare	The natural log of ratio of median housing unit value to equalized value per enrolled student. This variable served as a proxy in the demand model for the tax share that a school district's constituency would have for supporting higher athletic spending. This author believes that the higher the tax share, the higher the athletic spending.
ln_eqvlperenr	The natural log of equalized value per enrolled student. This variable served as proxy in the demand model for the tax share per pupil that a school district's constituency would have for supporting higher athletic spending. This author believes, the

	higher the equalized value per enrolled student, the higher the athletic spending.
perpop_over65	The percentage of population over age 65. This variable served as a proxy in the demand model for the percentage of elderly people a school district would have to support higher athletic spending. This author believes that the higher the percentage of population over age 65, the lower the athletic spending.
_Ioptype_2	The districts servicing grades 9-12.
-Ioptype_3	The districts servicing grades K-12.
_Ioptype_4	The districts servicing grades K-6.
_Ioptype_5	The district servicing grades K-8.

3.7.1 Athletic Spending Demand Model

The regression is an educational spending demand model. The natural log of per pupil athletic expenditures is the dependent variable and is regressed against the four year average percentage of membership on an Individual Education Plan, the natural log of population per square mile, the natural log of enrollment, the natural log of enrollment squared, the percentage of a school district's population that is of Asian/Pacific Island ethnicity, the percentage of a school district's population that is of African American ethnicity, the percentage of a school district's population that is of Hispanic ethnicity, an Abbott district dummy test variable, the natural log of aggregate income per enrolled student, the natural log of the ratio of median housing unit value to equalized value per enrolled student, the natural log of equalized value per enrolled student, the percentage of population over age 65, school districts servicing grades 9-12, school districts servicing grades K-12, school districts servicing grades K-6, and school districts servicing grades K-8. The model follows the literature on the median voter model for education demand,

in that the demand of the median voter's preference for education quality, as measured in this specification by ln_sportspend_pp, is a function of the income (ln_incomeperenr), taste (perasian, perblack, perhisp, perpop_over65), and tax price (ln_taxshare). In the case of New Jersey, this model seeks to explain the extent to which athletic expenditures are associated with income, taste, and tax price. Data for years 2002-2005 were applied to the model. The functional form of the regression model is given below.

$$ln(sportspend\_pp_i) = \beta_0 + \beta_1 x\_persped_i + \beta_2 ln(density)_i + \beta_3 ln(enroll)_i + \beta_4 ln(enroll2)_i + \beta_5 perasian_i + \beta_6 perblack_i + \beta_7 perhisp_i + \beta_8 abbott_i + \beta_9 ln(incomeperenr)_i + \beta_{10} ln(taxshare)_i + \beta_{11} ln(eqvlperenr)_i + \beta_{12} perpop\_over65_i + \beta_{13}\_Ioptype\_2 + \beta_{14}\_Ioptype\_3 + \beta_{15}\_Ioptype\_4 + \beta_{16}\_Ioptype\_5 + \varepsilon_i$$

where:

- $ln(sportspend\_pp_i)$ = The natural log of per pupil athletic expenditures for school district *i*
- $x\_persped_i$ = The four year average percentage of the population on an IEP for school district *i*
- $ln(density)_i$ = The natural log of population per square mile for school district *i*
- $ln(enroll)_i$ = The natural log of enrollment for school district *i*
- $ln(enroll2)_i$ = The natural log of enrollment squared for school district *i*
- $perasian_i$ = The percentage of population that is of Asian/Pacific Island ethnicity for school district *i*
- $perblack_i$ = The percentage of population that is of African American ethnicity for school district *i*
- $perhisp_i$ = The percentage of population that is of Hipanic ethnicity for school district *i*
- abbott = Dummy variable for school district *i*
- $ln(incomeperenr)_i$ = The natural log of aggregate income per enrolled student for school district *i*
- $ln(taxshare)_i$ = The natural log of the ratio of the median housing unit value to the equalized value per enrolled student for school district *i*
- $ln(eqvlperenr)_i$ = The natural log of equalized value per enrolled student for school district *i*
- $perpop\_over65_i$ = The percentage of the population over age 65 for school district *i*
- _Ioptype_2 = The districts servicing grades 9-12.
- -Ioptype_3 = The districts servicing grades K-12.

- _Ioptype_4 = The districts servicing grades K-6.
- _Ioptype_5 = The district servicing grades K-8.

The last variable, ε_i, is a random disturbance term added to the model to capture all other immeasurable or unknown factors that impact athletic expenditures in New Jersey school districts. These factors would impact athletic expenditures differently and would also differ by school. There are four assumptions about the random disturbance variable:

1. The disturbance is normally distributed
2. The disturbance has a zero mean
3. The disturbance for test i (athletic expenditures) has a constant variance across schools called homoskedasticity, an assumption that can be tested.
4. The disturbance is uncorrelated among school districts.

An additional model run was made for total expenditures (ln_expend_pp), regressed against the same variables. This allowed the researcher to compare differences between the extent to which athletic spending was associated with income, taste, and tax price and the extent to which total spending was associated with income, taste, and tax price. That output will be discussed in Chapter 4.

CHAPTER 4 – RESULTS

4.1 Research Question 1

Question 1 is the first question I address. Recall, question 1 asked:

How much money is being spent on athletics across New Jersey school districts?

To address question 1, I examined the output when I tabled the summary statistics, by district factor group and year, for total athletic expenditures, weighted for enrollment. That output is given in Table 1.

For each respective year, district factor group "A" had the highest average total athletic expenditure among all district factor groups. Over the five year period, district factor group "A" never had average total athletic expenditures fall below $900,000. In three of the five years studied (2003-2005), district factor group "A" had average total athletic expenditures of more than $1 million.

District factor group "B" followed, having greater average total athletic expenditures than did district factor groups "CD", "DE", "FG", "I", and "J", for each respective year in the five year period (2001-2005). In only one year (2003), did one district factor group (GH) have a higher average total athletic expenditure than did district factor group "B". Over the five year period (2001-2005), district factor group "B" never had average total athletic expenditures fall below $800,000. In one of the years studied (2005), district factor group "B" had average total athletic expenditures of more than $1 million.

Table 1

Means, Standard Deviations, Frequencies, and Number of Observations of New Jersey School District Total Athletic Expenditures by District Factor Group and Year

		Year				
DFG		2001	2002	2003	2004	2005
A						
	Mean	996482.23	911728.75	1274479	1108258.5	1178719.9
	SD	900798.27	788088.75	1332477.3	1005881.5	1240703.6
	Freq.	240549	242955.5	245232.5	246741.5	244791
	N	39	39	39	39	39
B						
	Mean	833225.62	820565.23	876058.82	967809.2	1055892.2
	SD	937146.88	914203.64	955260.24	1146796.5	1319558.3
	Freq.	148025.5	149253.5	150538	151129.5	149239.5
	N	68	68	68	68	68
CD						
	Mean	373023.68	379207.87	422712.43	451014.96	474947.44
	SD	278346.77	270279.32	301187.59	304706.46	327845.52
	Freq.	122501.5	124943.5	126041	127278.5	127353.5
	N	67	67	67	67	67
DE						
	Mean	735679.91	735899.28	824156.21	820759.54	885125.27
	SD	725195.71	727364.3	828455.35	824064.11	1022260.9
	Freq.	172168.5	175089	177769	179493.5	180201
	N	83	83	83	83	83
FG						
	Mean	458917.04	461851.1	489531.57	492076.87	500158.13
	SD	343491.65	347192.44	349800.02	349724.74	352561.77
	Freq.	162883	165238.5	167777	168700.5	169055.5
	N	89	89	89	89	89
GH						
	Mean	780527.41	814354.6	893156.11	943693.8	980896.7
	SD	658701.78	693690.1	778072.22	882244.73	919815.03
	Freq.	186271	190446	194053.5	197653	199627.5
	N	77	77	77	77	77
I						
	Mean	431157.32	441099.28	511042.57	510590.07	512369.14
	SD	359231.5	362150.91	418413.54	419109.03	432648.91
	Freq.	214709.5	221232	226801	231182.5	234960.5
	N	103	103	103	103	103
J						
	Mean	567769.76	599293.46	638732.46	702714.49	704164.54
	SD	412805.06	437326.82	428316.55	516102.13	477435.81
	Freq.	45828	47534.5	49094.5	50484.5	51513.5
	N	25	25	25	25	25

On the other end of the spending continuum, district factor group "CD" had the lowest average total athletic expenditure, in each respective year (2001-2005), among all district factor groups.

4.2 Research Question 2

Question 2 is the second question I address. Recall, question 2 asked:

How does athletic expenditure compare a) per enrolled student, b) as a share of total expense, c) as a ratio to other non-core curricular expenses?

4.2.1 Question 2a

To address question 2a, I examined the output when I tabled the summary statistics, by district factor group and year, for per pupil athletic expenditures, weighted for enrollment. That output is given in Table 2.

District factor group "A" had the lowest average per pupil athletic expenditure in each respective year (2002-2005). The only other district factor group to have average per pupil athletic expenditures below $100 (after rounding to the nearest whole dollar amount) was district factor group "CD" ($96 in 2002).

On the other hand, district factor groups "GH", "I", and "J" had the highest average per pupil athletic expenditure over the four year period (2002-2005). In fact, in each respective year, district factor groups "GH", "I", and "J" had average per pupil athletic expenditure that more than doubled the average per pupil athletic expenditure of district factor group "A".

Table 2

Means, Standard Deviations, Frequencies, and Number of Observations of New Jersey School District Per Pupil Athletic Expenditures (in Actual Dollars) by District Factor Group and Year

		Year			
DFG		2002	2003	2004	2005
A					
	Mean	58	69	65	67
	SD	39	38	40	42
	Freq.	242640	245233	246742	244791
	N	38	39	39	39
B					
	Mean	100	109	111	114
	SD	75	82	82	81
	Freq.	144137	145306	145698	144014
	N	67	67	67	67
CD					
	Mean	96	106	114	118
	SD	76	84	87	92
	Freq.	124464	126041	127279	127354
	N	66	67	67	67
DE					
	Mean	124	132	135	139
	SD	93	93	99	101
	Freq.	175089	177769	179494	180201
	N	83	83	83	83
FG					
	Mean	116	123	124	127
	SD	88	89	90	92
	Freq.	165239	167777	168701	169056
	N	89	89	89	89
GH					
	Mean	151	162	166	168
	SD	126	136	140	139
	Freq.	190397	194017	197604	199578
	N	76	76	76	76
I					
	Mean	129	142	144	144
	SD	135	144	153	154
	Freq.	221232	226801	231183	234961
	N	103	103	103	103
J					
	Mean	146	154	159	158
	SD	87	94	87	83
	Freq.	47535	49095	50485	51514
	N	25	25	25	25

4.2.2 Question 2b

To address question 2b, I examined the output when I tabled the summary statistics, by district factor group and year, for athletic expenditures as a share of total expenditures, weighted for enrollment. That output is given in Table 3.

On average, athletic expenditures of district factor group "A" represented roughly one-half of one percent of the total budget in each respective year (2002-2005).

Conversely, on average, athletic expenditures of all other district factor groups never represented less than one percent of the total budget in any of the four years (2002-2005). Furthermore, in each respective year, the percentage of the total budget spent on athletics, on average, in district factor groups "CD", "DE", "FG", "GH", "I", and "J" was more than double the percentage of the total budget spent on athletics in district factor group "A". In fact, in each respective year, the percentage of the total budget spent on athletics, on average, in district factor groups "DE", "GH", and "J" was more than two and a half times the percentage of the total budget spent on athletics, on average, in district factor group "A". In 2005, the percentage of the total budget spent on athletics in district factor group "GH" spent on athletics was three times the percentage of the total budget district factor group "A" spent on athletics.

Table 3

Means, Standard Deviations, Frequencies, and Number of Observations of Athletic Expenditures as a Share of Total Budget Expenditures by District Factor Group and Year

		Year			
DFG		2002	2003	2004	2005
A					
	Mean	0.50%	0.56%	0.53%	0.52%
	SD	0.004	0.003	0.003	0.004
	Freq.	242640	245233	246742	244791
	N	38	39	39	39
B					
	Mean	0.99%	1.04%	1.04%	1.09%
	SD	0.008	0.009	0.009	0.008
	Freq.	144137	145306	145698	144014
	N	67	67	67	67
CD					
	Mean	1.08%	1.16%	1.18%	1.23%
	SD	0.008	0.008	0.008	0.009
	Freq.	124464	122789	124040	127354
	N	66	66	66	67
DE					
	Mean	1.40%	1.44%	1.47%	1.51%
	SD	0.010	0.009	0.010	0.010
	Freq.	175089	177769	179494	180201
	N	83	83	83	83
FG					
	Mean	1.26%	1.31%	1.30%	1.30%
	SD	0.009	0.009	0.009	0.009
	Freq.	165239	167777	166235	169056
	N	89	89	88	89
GH					
	Mean	1.50%	1.56%	1.58%	1.57%
	SD	0.011	0.012	0.013	0.012
	Freq.	190397	194017	197604	199578
	N	76	76	76	76
I					
	Mean	1.23%	1.32%	1.31%	1.30%
	SD	0.011	0.012	0.012	0.012
	Freq.	221232	226801	229308	232936
	N	103	103	102	102
J					
	Mean	1.43%	1.46%	1.50%	1.49%
	SD	0.007	0.008	0.007	0.007
	Freq.	47535	49095	50485	51514
	N	25	25	25	25

4.2.3 Question 2c

To address question 2c, I examined the output when I tabled the summary statistics, by district factor group and year, for athletic expenditures as a ratio to other non-core curricular expenditures, weighted for enrollment. That output is given in Table 4. To interpret the output in Table 4, it is important to recall the methods used to answer question 2c. Those methods are given in section 3.5 of this study.

Again, the ratios in Table 4 represent the ratio of athletic expenditures as a share of total budget expenditures to the ratio of other non-core curricular expenditures as a share of total budget expenditures, expressed as:

$$\frac{\text{Athletic Expenditures/Total Expenditures}}{\text{Other Non-Core Curricular Expenditures/Total Expenditures}}$$

For instance, in can be interpreted that in 2004, in "DE" districts, the percentage of the total budget that was spent on athletics was 3.14 times greater than the percentage of the total budget that was spent on all other non-core curricular activities. Furthermore, as previously mentioned in section 3.5 of this study, other non-core curricular activities include activities such as band, choir, chorus, clubs, honor societies, speech, student government, and some athletics. Non-core curricular athletic activities are commonly known as intramural activities. Intramural athletic activities differ from school-sponsored athletic activities because unlike school-sponsored athletics, which are inter-scholastic and generate revenue, intramural athletics are intra-scholastic and do not generate revenue.

From 2002-2005, all district factor groups had at last two times the athletic expenditures as they had other non-core-curricular expenditures. In all years, district

Table 4

Means, Standard Deviations, Frequencies, and Number of Observations of Athletic Expenditures as a Ratio to Other Non-Core-Curricular Expenditures (in Actual Dollars) by District Factor Group and Year

		Year			
DFG		2002	2003	2004	2005
A					
	Mean	9.30	3.12	2.58	3.66
	SD	24.75	2.39	1.63	3.82
	Freq.	241839	244637	225811	244228
	N	35	37	36	37
B					
	Mean	2.67	2.77	2.67	2.98
	SD	1.79	1.78	1.53	1.71
	Freq.	138194	139383	142900	138184
	N	63	63	64	63
CD					
	Mean	2.83	2.90	2.87	2.81
	SD	2.05	1.79	1.83	1.73
	Freq.	122482	123698	126084	126363
	N	62	62	62	63
DE					
	Mean	3.15	3.15	3.14	3.08
	SD	2.68	1.98	2.03	2.05
	Freq.	169444	171389	172577	172464
	N	78	77	75	75
FG					
	Mean	2.58	2.49	2.43	2.55
	SD	2.01	1.57	1.59	1.76
	Freq.	162155	165214	166333	165982
	N	80	81	82	81
GH					
	Mean	2.46	2.46	2.47	2.58
	SD	1.18	1.17	1.15	1.09
	Freq.	187017	190350	194022	195913
	N	73	72	73	73
I					
	Mean	2.37	3.03	2.58	2.29
	SD	2.76	11.85	4.98	1.68
	Freq.	218698	224133	223066	232083
	N	99	99	99	99
J					
	Mean	2.21	2.27	2.21	2.18
	SD	0.90	0.97	0.84	0.83
	Freq.	46922	49095	50485	51514
	N	24	25	25	25

factor group “J” had the lowest ratio. This means that of all district factor groups, “J” districts spent the greatest percentage of their total budget on other non-core curricular activities, when compared to the percentage of their total budget spent on athletics. Conversely, in all years, either district factor group “A” or district factor group “DE” had the highest ratio. In either instance, the ratio was greater than 3. This means that district factor groups “A” and “DE” spent more than three times the percentage of their total budget on athletics than they spent on all other non-core curricular activities.

4.3 Research Question 3

Question 3 is the third question I address. Recall, question 3 asked:

How does athletic expenditure vary across New Jersey school districts with respect to district factor group and grade configuration ?

To address question 3, I examined the output when I ran the regression model outlined in section 3.6.1. That output is given in Table 5.

On average, in the same district factor group and year, Abbott districts spent significantly less than non-Abbott districts on athletics. District factor groups GH, I, and J spent significantly more than A districts spent on athletics. 9-12 districts spent significantly more than 7-12 districts spent on athletics. K-12, K-6, and K-8 districts spent significantly less than 7-12 districts spent on athletics.

Table 5

Variations in Per Pupil Athletic Expenditure Differences in New Jersey School Districts

	Coef.	Std. Err.	P> l t l
Constant	311.554	10.906	***
Abbotts	-48.466	7.816	***
DFG			
A	Comparison	Group	
B	11.391	7.252	
CD	9.322	7.636	
DE	8.694	7.498	
FG	18.497	7.391	**
GH	38.294	7.606	***
I	42.309	7.311	***
J	44.162	9.324	***
Year			
2002	Comparison	Group	
2003	7.888	4.016	**
2004	9.459	4.016	**
2005	9.577	4.016	**
Operating Type			
7-12	Comparison	Group	
9-12	108.556	10.338	***
K-12	-172.976	8.696	***
K-6	-338.531	9.364	***
K-8	-311.012	8.651	***
R^2	0.755		
Adjusted R^2	0.753		
F-statistic	446.250		***

***p<.01, **p<.05, *p<.10

4.4 Research Question 4

Question 4 is the fourth question I address. Recall, question 4 asked:

To what extent is athletic expenditure associated with traditional median voter model measurement of (a) income, (b) taste and (c) tax price?

To address question 4, I examined the output when I ran the regression model outlined in sections 3.7 and 3.7.1. That output is given in Table 6.

Table 6

Predictors of Per Pupil Athletic Expenditures in New Jersey School Districts

	Per Pupil Athletic Expenditures N=1475			Total Expenditures N=1761		
	Coef.	Std. Err.	P>|z|	Coef.	Std. Err.	P>|z|
Income						
Median Income	-0.065	0.100		-0.009	0.013	
Abbott	0.038	0.141		0.380	0.024	***
Taste						
Rel. % Asian	-0.871	0.435	**	0.159	0.070	**
Rel. % Black	-0.141	0.232		0.155	0.037	***
Rel. % Hispanic	-1.095	0.241	***	-0.006	0.038	
Rel. % 65+	0.781	0.686		-0.833	0.110	***
9-12	0.517	0.397		0.093	0.061	
K-12	-0.768	0.190	***	-0.041	0.032	
K-6	-3.704	0.421	***	-0.243	0.043	***
K-8	-2.381	0.192	***	-0.164	0.032	***
Special Education	-0.700	0.864		0.465	0.124	***
Density	0.104	0.031	***	-0.013	0.005	***
Enrollment	0.539	0.284	*	-0.098	0.043	**
Enrollment 2	-0.042	0.019	**	0.005	0.003	
Tax Price						
Tax Share	0.120	0.119		-0.098	0.018	***
Other						
Constant	-1.285	1.561		7.819	0.236	***

***p<.01, **p<.05, *p<.10

Table 7

Partial and Semi-partial Correlation Coefficients of Per Pupil Athletic Expenditures in New Jersey Schools

Variable	Partial Corr.	Semipartial Corr.	Partial Corr.^2	Semipartial Corr.^2	Significance Value
Special Education	-0.018	-0.009	0.000	0.000	0.500
Density	0.107	0.057	0.011	0.003	0.000
Enrollment	0.056	0.030	0.003	0.001	0.033
Enrollment 2	-0.096	-0.052	0.009	0.003	0.000
Rel. % Asian	-0.127	-0.069	0.016	0.005	0.000
Rel. % Black	-0.025	-0.014	0.001	0.000	0.335
Rel. % Hispanic	-0.180	-0.098	0.032	0.010	0.000
Abbott	0.011	0.006	0.000	0.000	0.668
Median Income	-0.018	-0.010	0.000	0.000	0.494
Tax Share	0.071	0.038	0.005	0.001	0.007
Rel. % 65+	0.032	0.017	0.001	0.000	0.218
9-12	0.067	0.036	0.005	0.001	0.011
K-12	-0.154	-0.083	0.024	0.007	0.000
K-6	-0.402	-0.235	0.162	0.055	0.000
K-8	-0.592	-0.393	0.350	0.154	0.000

Non-Abbotts and Operating Type 7-12 omitted

The findings suggest that income is not an important predictor for either per pupil athletic expenditures or total expenditures, though increased income does tend to lower both athletic and total spending. The fact that increased incomes tend to lower athletic expenditures is in-line with previous research which suggests higher income communities spend more on advanced educational programming (Brent, Roellke, and Monk, 1997).

There were several measures of taste. Though higher concentrations of special education students in a district are associated with increased total expenditure, higher concentrations of special education students in a district also leads to decreased athletic expenditure. This makes sense, as it is may be more difficult for handicapped students to

participate in mainstream athletics and it will cost more, in terms of instruction and instructional support, to educated students with greater needs (Baker, 2003; Hannaway, McKay, & Nabib, 2002). Higher percentages of Asians are positively associated with total expenditures and negatively associated with athletic expenditures. Higher percentages of Blacks, though positively associated with total expenditures, lead to less athletic spending. This somewhat contradicts previous research which suggests higher numbers of blacks will participate in sports (Eitle & Eitle, 2002) and thus, may incur increased athletic costs. Higher percentages of Hispanics are associated with less athletic spending. Higher percentages of people over age 65 are associated with decreases in total expenditure. This is expected, based on previous research which suggests higher concentrations of elderly people in a community will lower education expenditures (Poterba, 1997). But, higher percentages of people over age 65 lead to increases in athletic spending.

Even though higher tax shares are negatively associated with total spending, higher tax shares lead to increased athletic expenditure. This is not surprising, as people who have greater fiscal capacity will want less of their total education taxes spent on others outside of their district (Mintrom, 1993) and thus, will want less total education expenditure. But, people who have greater fiscal capacity may want to spend more on things such as athletics because they can (Duncombe & Yinger, 2009).

School characteristics also effect spending behaviors. Though higher densities are negatively associated with total spending, higher densities are positively associated with athletic spending. Abbott districts are positively associated with total spending but are not associated with athletic spending. K-12, K-6, and K-8 districts are negatively

associated with athletic spending. 9-12 districts have no association with either athletic, or total, expenditures.

CHAPTER 5 - DISCUSSION

The findings of this study support previous research efforts which suggest that people have different reasons for spending on education (Monk & Hussain, 2000) and that education spending may be more a matter of choice than a matter of accounting (Hoxby, 1996).

A result of Abbott litigation in New Jersey was that the state must guarantee a level of education funding for poor and urban school districts (or a combination of both) that is equivalent to the level of education funding in affluent suburban school districts (*Abbott v. Burke*, 1990). Therefore, one can infer that A districts (poor and urban) and J districts (affluent and suburban) have similar resources and thus, can spend similarly on athletics. However, this study shows that J districts spend significantly more on athletics than A districts spend. Remember, 20 of the 31 Abbott districts are A districts.

A reason for the athletic spending difference between A and J districts could be that poor and urban districts receive large amounts of state aid through school funding reforms and are consequently held highly accountable for increasing student outcomes. It makes sense, then, that poor urban school target resources to more narrowly measured outcomes. This is perhaps best illustrated by the finding that poor urban Abbott districts actually spend less on athletics than even the poor urban, non-Abbott districts, which have more money to spend on athletics.

Another reason for the athletic spending difference between A and J districts could be related to fiscal capacity (Baker, 2009; Duncombe & Yinger, 2009). Evidence of this can be found in Ridgewood, New Jersey, where the local school district (J district) pays $33,000 to a local hockey rink for ice time (Roberts, 2010). Clearly, it seems that

smaller, wealthier school districts have a greater fiscal capacity to support athletics. In other words, the Ridgewood school district pays $33,000 for ice time because it can.

Policy Implications

Governor Christie's proposed budget would cut $820 million in aid statewide. Such revenue loss will surely result in budget cuts. One area on the chopping block is athletics. The easy thing for educational administrators to do is cut athletics while referencing the *Palmer v. Merluzzi* (1988/1989) decision in which athletic participation was ruled to be merely a privilege and thus, is not constitutionally protected. The much harder, more time consuming thing for educational administrators to do is to weigh all the evidence before making decisions regarding athletic spending in schools. Franklin School Board President Shirley Pietrucha sums it best when she says, "How we cut needs to have more time and thought" (Stirling, 2010, p.2).

This study suggests educational administrators should certainly give athletic spending decisions more thought. Recall, A districts spend roughly one half of one percent of their total budget on athletics. This equates to half a penny on the dollar. Cutting a half a penny on every dollar seems to be an effort in futility when considering a revenue loss of $820 million. Granted, Governor Christie's budget cuts will be absorbed by school districts, both rich and poor, throughout the state. With that in mind, lower fiscal capacity communities might ponder the elimination of athletics so that resources can be targeted to increasing outcomes more efficiently. But, consider this: The most any district factor group spent on athletics was roughly one and a half percent of their total budget. Even if that figure was rounded up to the nearest percent and all district factor groups increased their level of athletic funding to that same figure, it would mean that no

matter what the district factor group, no school would spend more than two percent of their total budget on athletics. This equates to two cents on every dollar. Will cutting two cents on every dollar really matter in the grand scheme of New Jersey education funding reform? Probably not.

Take, for instance, the effect Governor Christie's budget cuts will have on the Bridgewater-Raritan school district. The Bridgewater-Raritan school district stands to lose fifty-five percent of its state-aid, a loss of $9 million in revenue. Do the math. Athletic spending represents two percent of the budget. The Bridgewater-Raritan school district is losing fifty-five percent of its budget. Even if athletics are cut, where does the Bridgewater-Raritan school district make up the other fifty-three percent in losses? Obviously, cuts in other areas must be made. Recently, the Bridgewater-Raritan school board presented a budget which included the elimination of 180 jobs (of which 95 were teaching positions), the elimination of several programs and electives in middle school and high school, the postponing of all middle school sports, and the institution of a pay-to-play system for sports and extracurricular activities at the high school level. So, it seems as if the Bridgewater-Raritan school board really took some time to decide what to do regarding athletic spending. But, most of the savings resulted from job eliminations. Clearly, this indicates the elimination of athletics, alone, will do little to ease budgetary pressures in New Jersey schools.

Limitations

This study investigated athletic expenditures in New Jersey schools. New Jersey is a state heavily involved in school funding reform. Because of this, spending differences may be a result of state policies rather than local preferences.

For instance, the model used in this study suggests that higher percentages of Blacks in a community are mildly associated with decreased athletic expenditures. This somewhat contradicts previous research which suggests Blacks are more likely than Whites to participate in sports (Eitle & Eitle, 2002). This is contradictory because higher participation rates lead to increased costs. A number of inferences can be made from this. It might be possible that Blacks view athletics differently than they had in the past, and no longer perceive athletics to be the best chance to get a college education (Braddock, 1981; Michener, 1976; Spady, 1970). Also, it might be possible that poor urban districts (having higher concentrations of Blacks) must use resources more efficiently and thus, spend less on athletics. But, what if athletic participation remains an important means for Blacks getting into college but, because of state policies, poor urban school districts are required to spend significantly less on athletics than their smaller, wealthier counterparts? It could be a major disadvantage in poor urban communities, where state-aid is often viewed as a substitute for, and not a compliment to, education funding (Mintrom, 1993).

Future Research

This study provides empirical data on athletic expenditures in one state. More needs to be done.

First, research is needed that investigates the effect, if any, of the elimination of athletics on student outcomes. A resource not mentioned in this study is time. Part of the reason students are low achieving may be that time needed for academic reinforcement is spent on the athletic field. Athletic participation, in New Jersey, is not constitutionally protected. Therefore, the state can take away the privilege of athletic participation at any time, thus targeting resources (money and time) more efficiently on increasing student outcomes. The problem is that unlike poor urban communities, higher fiscal capacity communities will be able to afford athletics without having to rely on state-aid to pay for such. This might place poor urban school districts at a disadvantage.

Second, research is needed that advances the notion of using non-public revenue sources such as donations (Molnar & Reaves, 2001), entrepreneurial activities (Kowal, 2003), and user fees to fund athletics. After all, athletic programming services only a portion of a school district's total enrollment. Therefore, those who want the service should be the ones who pay for that service, especially if the offering of such services is not required by law. In other words, it makes sound financial sense that the person playing football pay for the uniform. If senior citizens want higher athletic spending despite favoring lower overall education spending, let them make a donation to the athletic program if they want to see that Friday night football game. A problem exists, however, when school districts are disadvantaged because they did not benefit from the receipt of non-public revenue.

Third, research needs to investigate current practices of making extra-curricular programs, such as athletics, part of the curriculum (Texas Education Agency, 2008). It might make better sense to give physical education credit to high school athletes rather

than require varsity athletes to attend physical education classes. In this case, what was previously considered extra-curricular now becomes part of the curriculum and thus, can possibly be funded with state-aid. In addition, the time normally spent in physical education class can now be spent in a study session with teaching resources more readily available.

If such research is conducted, educational administrators will be able to make more informed financial decisions, something desperately needed during a time when they are under great pressure to become more efficient.

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