FACTORS AFFECTING THE DISTRIBUTION AND ACCESS TO ATHLETIC OPPORTUNITIES FOR NEW JERSEY HIGH SCHOOL STUDENTS

BY

PAUL CASARICO

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Approved by

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Professor Bruce D. Baker, Chair

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Professor Catherine A. Lugg, Committee

_____

Samuel Fancera, Ed.D, Third Reader

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Dr. Bruce Baker, Dissertation Chairperson

ABSTRACT OF DISSERTATION

The requirement for continuous improvements and the lack of funds for schools to properly implement all the mandates puts schools in the inevitable position of having to make tough decisions with regards to programs. The central theme of NCLB requires states to adopt a plan for accountability that will lead to increased achievement for all students. Due to the need to fund and support cognitive activities, monies are often stripped from non-cognitive programs. While schools have never had an abundance of funds, co-curricular activities and interscholastic athletics have often been singled out as programs that could be cut for the sake of saving money while placing greater concentration on academic performance (Pressley & Whitley, 1996).

Further exacerbating the problem in the state of New Jersey is that educational resources are differentially distributed in schools (McNeal, 2010). Even though the total cost per pupil for lower socioeconomic schools is not significantly different from that of higher socioeconomic schools, more affluent districts have a higher per student cost for athletics (Bao, Romeo, & Harvey, 2010). Involvement in high school athletics occurs at lower rates among members of those groups that are typically less economically

advantaged. Differential access and opportunities to athletics has the potential to exclude certain students from alternative pathways to increased achievement (McNeal, 2010).

To create the most productive environment for students, educational leaders must consider not only what happens in the classroom. While usually constituting less than three percent of the overall budget, extracurricular activities have been associated with several positive outcomes. Being able to determine what factors effect the distribution and access to athletic opportunities will assist educational administrators to make more informed decisions regarding spending in their districts.

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Introduction

Since the 1980's, the US educational system has experienced several waves of school reforms – the effective schools movement, school restructuring, site-based management, comprehensive school reform, each created in response to lagging student academic achievement (Chaplin & Puma, 2003). These reforms were all started a decade before the much publicized and critiqued No Child Left Behind mandate came into effect and drastically changed the educational landscape. Most recently, states have started creating statewide curriculum and assessment standards, further dictating to local schools what and how to teach students (Killeen, Monk, & Sipple, 2004). The only constant during the past thirty years in education has been a push for school improvement. With continuing changes to what is deemed as the best fix for school and students and as pressure grows for public schools to be accountable for ever-higher standards, educators are simultaneously struggling to meet the needs of an increasingly diverse population and dealing with a number of issues that would have been unthinkable just a decade ago (Corbett, 2007). The pressure on school leaders has been magnified due to the requirements for continuous improvement established by NCLB, greater attention to comprehensive examinations, caps on local budgets and the recent economic downturn. With educational reform and new federal, state and local regulations being placed on public schools, school districts have started searching for ways to meet all of these new demands and to find different and meaningful ways to educate all students.

New educational mandates focus on the cognitive domain often at the expense of everything else a school can and should offer (Pressley & Whitley, 1996). This runs counter to theory of teaching the whole child or Howard Gardner's (1983) pluralistic view of intelligence. Developing a student's personal and social skills, creating a positive self-concept, self discipline and self worth, are all laudable goals of education that are not necessarily measurable through testing. However, in the new age of accountability these are all deemed expendable by the pressures to meet AYP in mathematics and language arts scores (Fullarton, 2003).

The requirement for continuous academic improvements and the lack of funds for schools to properly implement all the mandates puts public schools in the inevitable position of having to make tough decisions with regards to programs. The central theme of NCLB requires states to adopt a plan for accountability that will lead to increased achievement for all students. Due to the need to fund and support cognitive activities, monies are often stripped from non-cognitive programs. While schools have never had an abundance of funds, co-curricular activities and interscholastic athletics have often been singled out as programs that could be cut for the sake of saving money while placing greater concentration on academic performance (Pressley & Whitley, 1996).

Further exacerbating the problem in the state of New Jersey is that educational resources are differentially distributed in schools (McNeal, 2010). Even though the total cost per student for lower socioeconomic schools is not significantly different from that for higher socioeconomic schools, higher SES leads to lower per student cost for administration and operations. Furthermore, higher SES also leads to higher per student cost per extracurricular activities (Bao, Romeo & Harvey, 2010).

To alleviate some of the financial stress, many schools have started to charge fees for participation in student activities and athletics. In a March 2010 survey of New Jersey Districts taken by the New Jersey School Boards Association to analyze the impact of reduced school funding, 31% of districts stated that they were considering charging fees for student participation in extracurricular activities. An analysis of the districts that were considering activity fees, shows that those of higher socio-economic status were more likely to consider the option (NJSB, 2010):

Table 1

District Factor Group	Yes (Planning to implement, or discussing, activity fees	No
A	0	100%
B	20.6%	79.4%
CD	20.7%	79.3%
DE	28.6%	71.4%
FG	37.3%	62.7%
GH	37.1%	62.9%
I	46.8%	53.2%
J	58.8%	41.2%

This information further illustrates the disparity and distribution of student access to extracurricular activities. Involvement in extracurricular activities occurs at lower rates among members of those groups that are typically less economically advantaged. This differential access to extracurricular activities has the potential to exclude certain students from alternative pathways to increased achievement (McNeal, 2010).

Perceptions of the Significance of High School Athletics

There has always been a segment of the population that has questioned the role of athletics in public education, feeling that these activities compete with the student's time and attention for academic learning (Camp, 1990). Coleman's (1961) zero-sum model suggested that students who put their energies into sports were less likely to pursue academic objectives because students would not have time or energy to achieve excellence and satisfaction in both roles. With increased pressure for academic achievement, districts have been forced to reduce the scope of their athletic and co-curricular programs, with many districts cutting programs that fall outside the realm of the cognitive domain (Corbett, 2007).

As Holland and Andre (1987) stated in their extensive review of the literature about the effects of participation in athletics and extracurricular activities:

> …tightened school budgets have produced a heightened perception of the need for accountability in school programs and a new emphasis on academic achievement. As a result, educators and the public have looked critically at the activity programs offered in secondary schools. Some programs have been eliminated to provide resources perceived as better used elsewhere. (p. 437)

In New Jersey, which has instituted funding caps on local budgets, many school districts have eliminated major parts of their athletic and extra-curricular activities or have started charging students a fee to participate in extracurricular and athletic activities to meet the new regulations (Nussbaum, 2006). Coupled with the recent downturn in the economy, school districts are channeling resources into the classroom at the expense of extra-curricular and athletic programs because these activities are often viewed as the most expensive, non-essential program that a district operates.

Schools that are eliminating athletic programs are unfortunately eliminating something that can help produce a well-rounded education for students and sometimes offer the only reason why a student may stay in school (Otto & Alwin, 1977). Participation on a sports team can have a major influence on student's engagement with schools (Finn, 1989). A student's engagement with their school is usually not associated with a math or science class rather; engagement usually happens with a student's participation in an activity, sport, or club. Athletic participation allows students to pursue areas of their interest beyond the curricular offerings of the normal school day and are often sources of great enjoyment and satisfaction. While many students understand the need for an education, events taking place outside of the classroom are significant and often times more important to a student. Athletics and extra-curricular activities can "transform the mundane world of public school" (Corbett, 2007, p. 5).

Participation in activities outside of the regular school day help students develop a sense of 'belonging' to their school community that can help to promote a feeling of self-worth and assist students to become resilient learners (Finn, 1989). From a psychological point of view, participation in sports and extracurricular activities has shown to cause an increase in student's interest in school and an increase in positive attitudes, both of which have lead to increase in student achievement (Fredericks & Eccles, 2002).

The elimination of after school opportunities can eliminates student's ability to form meaningful bonds with their schools thus eliminating a factor that has been found to protect students against a variety of risk behaviors (Griffin, 2007). The educational experiences that occur outside the classroom are extensions of the lessons learned within the classrooms. In examining the costs of extracurricular and athletic programs, schools

are eliminating what may be the cheapest means of improving academic performance as well as instilling socially acceptable values and norms of conduct in young people (Pressley & Whitley, 1996).

A common view of education with regards to student engagement focuses on intellectual work a primary goal of education. However, taking achievement as the only outcome of thirteen years of education is a narrow focus. Beyond providing formal learning experiences, high schools also provide opportunities for non-formal learning experiences. Other key outcomes of schooling are the development of student's personal and social skills, as well as a positive self-concept, self-discipline and self-worth (Fullarton, 2003). Since school is central to the daily life of many youths with the majority of their time being spent there, the institute of school serves as a guiding force in student's lives (Corbett, 2007). While time spent in a classroom has the ability to positively affect student's cognitive growth, often times the activities that take place outside of the classroom at schools have the ability to positively affect student's social-emotional growth.

Student involvement in athletics has been shown to be associated with several positive outcomes, including increased school performance and effort, decreased drop-out rates and increased individual self-esteem and perception of self-worth (McNeal, 1995). Involvement in sports is associated with developing several important skills that are valued in the workplace but not regularly evaluated in the classroom. As part of a team, students learn to accept a role, work towards a common goal and experience the highs of winning and how to deal with losing. As part of various co-curricular endeavors, students take on different responsibilities, work under time-constraints and

interact with different students that they may never see in their classes. Teamwork ability, developing self-confidence and the ability to succeed in competitive situations are all areas that students are exposed to when involved in sports and extracurricular activities (Lipscomb, 2007).

Studies have shown that students with a higher level of integration lead to a decreased likelihood of exiting the school environment and that involvement in athletic activities is a positive means of providing students with attachment to school (McNeal, 1995). Once students get involved and feel a sense of attachment to school these increases their motivation to perform well (Finn, 1989). Therefore, participation builds student's interest in schools, increases their motivation and self-efficacy and is then more likely to be successful in the classrooms. Sports programs offer alternative environments in which "children can learn about themselves and their worlds, and can discover opportunities for carving their own versions of success" (Eccles, 1999, p. 31). With pressures possibly forcing school districts to eliminate athletic opportunities the bond between student and school is in danger of being severed.

Access to Athletic Opportunities

The school and community contexts in which athletic activities take place are likely to influence student's access and ability to participate. Larger schools have been found to be less conducive for student athletic participation (McNeal, 1995). In large schools, the ratio of setting to participants tends to be low, making activities "over-personed" whereas in small schools the ratio or settings to participants was high, making activities "under-personed" (Holland & Andre, 1987). There are a maximum number of slots available on sport teams. In a small school it takes a greater portion of the student

body to fill the available slots, therefore creating greater participation rates. Participation rates have been found to be higher for small schools in both urban as well as rural areas and these students have reported experiencing more involvement and satisfaction. In larger schools, the limited number of spots may lead to increased competition and increased skill requirements, which reduces some student's ability to participate (Feldman & Matjasko, 2005).

Another barrier to student's access to athletic opportunities is also linked to the socioeconomic status of the school they attend. The lower percentage of sports participation in lower SES schools is primarily the result of these schools having fewer offerings and smaller levels of team levels (ie. junior varsity, sophomore or freshmen teams) (Ponessa, 1991). Despite total cost per student not being significantly different for lower socioeconomic schools from that for higher socioeconomic schools, higher SES schools have been found to have higher per student costs for athletics and extracurricular activities, thus raising the question as to whether money is being spent effectively by lower socioeconomic schools (Bao, Romeo & Harvey, 2010).

Statement of the Problem

To create the most positive classroom environment for students, educational leaders must consider not only what happens in the classroom. Several studies have been completed which support the notion that athletic participation has a significant positive role in student learning. However, what has not been studied very closely are the opportunities and access that student's have to participate in athletics at their high schools.

Although athletic budgets only take up one to three percent of the total school budget (Pressley & Whitley, 1996), each public school district in New Jersey allocates and spends money differently. The composition and enrollment of schools also varies dramatically from school to school. This paper will attempt to determine what are the factors affect the distribution of opportunities and access to athletic opportunities for New Jersey high school students.

CHAPTER II: REVIEW OF THE LITERATURE

Districts under budgetary stress often include athletic programs as a disposable account line when searching for ways to balance their budgets. The body of research literature, however, advocates for the continuation of the extra-curriculum in the promotion of positive school attitudes and academic productiveness (Lewis, 2004).

Athletic participation meet non-cognitive needs and can contribute positively to, rather than subvert, achievement outcomes (Howley and Huang, 1991). While a lot of research has been done on the benefits for students with regards to athletic participation, student's access to participation in athletic activities as well as local taxpayer preferences regarding athletic activities is an area without a lot of research.

History of Athletics in Schools

The development of school athletic teams and extracurricular activities was perceived by many as a fad that would pass and quickly fade out of style (Millard, 1930). Prior to 1900, after school activities were viewed as a distraction from academic pursuits (Gholson & Buser, 1983). Non-academic activities were viewed as being primarily recreational and therefore were detrimental to academic achievement, and consequently were discouraged (Marsh & Kleitman, 2002). The prevailing belief was that school should focus solely on narrowly defined academic outcomes (Deam & Bear, 1928). One of the early philosophies behind extracurricular activities was that they should, wherever at all possible, "grow out of curricular activities and return to curricular activities to enrich them" (Millard, 1930, p. 12). Educators of this era viewed non-academic activities as something that was detrimental to academic development with school being an area

that should focus exclusively on academic outcomes (Marsh & Kleitman, 2002). Athletic and extracurricular activities, therefore, were not common place prior to 1900 (Corbett, 2007).

In the early 20th century, G. Stanley Hall, an American psychologist, introduced a theory that adolescence required a moratorium on adult responsibilities (Kett, 2003). Hall believed that the crucial ingredient in the development of any civilization was how it developed the social man and he believed that schools had a responsibility to direct youth through organized activities (Spring, 1974). During this time period, American high schools were transforming with the objectives of high schools shifting from just teaching academic subjects to one of creating an environment that encompassed the social life of teenagers. Using Hall's philosophies as justification, high schools started creating interscholastic team sports to attract and retain boys and these activities were brought under the umbrella of the school. (Tyack & Hansot, 1990).

In the 1918 report from the National Education Association titled *The Seven Cardinal Principals of Secondary Education,* they stated that one of the major goals of high school was to give men, "common ideas, common ideals and common modes of thought" and that this could be accomplished through, "the participation of pupils in common activities such as athletic games, social activities and the government of schools (Spring, p. 492). The report made educators view school activities as "vital and productive facets of the school setting" with special emphasis on "programs related to citizenship, ethical character and health" (Joekel, 1985, p. 3).

In Spring's (1974) analysis of the history of interscholastic athletics, he found that a crucial period where athletics gained a firm foothold in public schools was in the latter part of the 1920's. Basketball was just created, baseball was becoming the national pastime and college football was becoming a mass spectator sport. Prior to this time, games between schools were controlled by students. Coaching was becoming a profession and coaches were starting to be paid to manage teams. From The Carnegie Foundation for the Advancement of Teaching, an extensive study of athletics done in 1929 and 1931, it was found that athletics was starting to be seen as an extension of physical education which assisted in its promotion and expansion into secondary schools (Spring, 1974).

In the beginning of the 1960s, James Coleman (1961) proposed a zero-sum model for athletics, which created a shift in thinking about the role of high school athletics. Coleman concluded that school-based athletic participation was the chief predictor of student's social status within a school. Therefore students would focus their energies in this area. The social rewards and levels of prestige that could be experienced by performing well on a sports team would have such an influence on students that it would negatively affect their efforts with their academics. Thus, Coleman (1961) argued that any time spent on sports would detract from academic pursuits.

Following the notion that school is a place for only academic activities, studies in the 1950's – 1960's questioned the relevance and appropriateness for any non-academic activities (Gholson, 1983). Critics argued that student culture placed more value on

social status than academics (Otto, 1976) and this would lead to more emphasis being placed on gaining social status than academic-orientated activities (Lewis, 2004).

Critics of Coleman's research pointed to several faults in his data analysis, noting that his zero-sum model was not justified by his data (Rehberg & Schafer, 1968). None-the-less, his report sparked an era of negative perceptions about the importance and relevance of high school sports. It was not until Holland and Andre (1987) completed a review of the literature that the perception of high school athletics and extracurricular activities began to change. Over the past thirty years researchers have found mainly positive relationships between activity participation and many student outcomes with very few studies producing evidence of any harmful effects of participation (Marsh & Kleitman, 2002). Involvement in sports became more acceptable after the Holland and Andre study when it was shown that there was a direct link between participation in activities outside of the classroom and academic achievement (Marsh, 1992).

Athletic Participation Effect on Student Outcomes

Academic Achievement

Almost every public in the United States offers some type of extracurricular activity, such as music, academic clubs and sports. Feldman and Matjasko (2005) found that 70% of adolescents participate in at least one school-based extracurricular activity. Several studies have been done to determine the benefits of extracurricular activities on student achievement, self-concept and other social development issues (Eccles, 1999; Gerber, 1996; Gholson, 1985).

The most frequent studied participation analysis examines academic achievement in relation to athletic involvement. In Holland and Andres's (1987) review of the early research between school-based activity participation and academic performance they found mixed results between the associations of these two variables. These researchers looked at five areas and found that athletic participation was correlated with higher levels of self-esteem, involvement in political and social activities during young adulthood, improved race relations, feelings of control over one's life, lower delinquency rates, academic abilities and grades, and educational aspirations and attainments.

One of the earliest studies with regards to effects of high school sport participation on academic achievement by Eidsmore (1964) found the overall GPA of varsity football players in Iowa to be higher than the GPAs of non-participants. This finding was in contrast to Coleman's (1961) view that participation in extracurricular activities and academic outcomes was a zero-sum and any time taken away from direct educational activities would have a detrimental effect on academic achievement. The studies from this time period found that educational attainment among male students was related more to SES, intellectual ability and social relationships (Feldman & Matjasko, 2005).

Currently, however, the literature supports the finding that there is a positive relationship between athletic participation and academic achievement (Feldman & Matjasko, 2005; Holland & Andre, 1987). Although some studies noted small relationships between athletic participation and student achievement, they are consistently positive (Brown & Steinberg, 1991; Gerber 1996; Tashman et al., 1998).

Although it not be directly involved with the curriculum, participation assists in facilitating the total development of the student (Holland & Andre, 1987).

With regards to the effects of athletic participation and GPA, many studies have found a positive relationship between the two (Camp, 1990; NcNeal, 1995; Gerber, 1996; Eccles & Barber, 1999; Marsh and Kleitman, 2003). Both male and female athletes had significantly higher GPAs than non-athlete peers (Nuhn, 1991) and math and English grades were positively affected by participation in interscholastic sports (Broh, 2002). Investigating the effects of both athletic and non-athletic activities Marsh and Kleitman (2003) found that the number and the total time spent on school-sponsored extracurricular activities were both positively related to grades. Similar relations were found by Broh (2002) in his evaluation of the effect of interscholastic sports and music participation on student's math and English grades and time spent on homework. Students participating in more than one athletic event had significantly higher grades than students only involved in one athletic team (Marsh & Kleitman, 2003; McHale, et. all, 2005).

In analyzing participation in extracurricular activities and academic factors, most studies only examine a linear relationship. Marsh (1992), using non-linear regression, found that there was an inverted U shaped relationship between participation levels and academic achievement. Contradicting the zero-sum model, Marsh found that the statistically significant effects of extracurricular participation are typically small but consistently positive. What he also found in his examination of sixteen different activities effect on twenty-two academic and non-academic outcomes was that there are increasingly positive effects for low to moderate levels of participation and ultimately an

inflection point beyond which there are diminishing returns for increased levels of participation.

Pro-social Effects

Involvement in athletic activities affords students the opportunity to be in situations that will be beneficial towards improving their personal development. Students who form relationships with other students at school through sports, clubs or other activities have been found to be even more effective in protecting against a variety of risk behaviors, including truancy, substance abuse and delinquency (Cooley and others 1992; Koerner & Reum, 1992; Harrison & Narayan, 2003). In an examination of extracurricular participation's association with student dropouts, Zill (1995) researched adolescents' time use patterns. He found that participation in 1 to 4 hours of extracurricular activities per week was related to a reduced likelihood of dropping out. School dropout rates among at-risk students were markedly lower for those who had participated in sports than for those who had not (Mahoney & Cairns, 1997).

Other positive effects that are a result of school engagement are found in a study by the Department of Health and Human Services (1995) that found that students who are not engaged in athletics and extracurricular activities are:

- 57% more likely to have dropped out of school by the time they would have been seniors
- 49% more likely to have used drugs
- 37 % more likely to have become teen parents
- 35% more likely to have smoked cigarettes
- 27% more likely to have been arrested.

Examining the relationship between extracurricular participation and its influence on adolescent decisions with regards to sexual activity, rates of teenage pregnancies were lower when students participated in 1 to 4 hours of school activities per week (Zill, 1995). From a nationally representation of female athletes, Miller, Sabo, Farrell, Barnes and Melnick, (1998) found that student-athletes reported fewer sexual experiences, fewer partners, later onset of first intercourse, higher rates of contraceptive use and lower rates of pregnancy than that of female non-athletes.

Student Engagement with Schools

When analyzing students at risk and the reasons they drop out, Finn (1993) states that students who regularly participate in athletics and extracurricular activities develop a sense of "belonging" to their school community, in that it becomes a conspicuous part of the school and the school is an important part of their lives. This "belonging" helps promote a feeling of self-worth and assists students in becoming resilient learners. A positive connection to school has the power to lead students to acquire new skills and strengthen or develop more positive attitudes towards school as well as creating social reward. Motivation is essential to getting students involved in their learning and that increases in student performance are directly related to the school's ability to keep students engaged (Fullarton, 2003).

Another psychological component concerns whether or not students value school success and whether they believe that education will benefit them personally. Students who do not feel that they belong at school or reflect school values become disengaged from school and often times become disaffected. Students that are not able to make a

positive, voluntary connection to school through athletics or other school activities never experience social rewards that have the ability to improve their academic performance (Finn, 1993).

In summarizing what makes schools effective, Thomson (2005) concluded that:

> School effectiveness is about a great deal more than maximizing academic achievement. Learning and the love of learning, personal development and self-esteem, life skills, problem solving and learning how to learn; the development of independent thinkers and well-rounded confident individuals; all rank as highly or more highly outcomes of effective schooling as success in a narrow range of academic disciplines. (p. 10)

Finn (1989) states that there is a synergistic relationship between learning and engagement with the school community developing a sense of "belonging" to their school community and school is perceived as an important part of their own lives. In a study of Australian high school students, Thomson (2005) drew on Finn's (1989) taxonomy of student engagement behaviors. At the lowest level of student engagement, students comply with school rules while at the highest level students actively participate in the social, extracurricular and athletic aspects of school life. Understanding the benefits of students reaching the highest level, Thomson attempted to determine what school characteristics link with student's engagement. One of the key findings was that the school environment has a major influence on whether a student participates in extracurricular activities. Levels of engagement were found to be higher where students believed that their school has a good climate that is one where they have high quality teachers, effective discipline, high levels of student learning and positive school spirit. Schools which encourage all students to belong to a club or sport as opposed to

environments where only the elite or the “nerds” are involved, is one of the key factors influencing engagement (Thompson, 2005).

Factors Effecting the Distribution and Access to Athletic Opportunities

If the effects of athletic participation are judged to be meaningful, then the important question becomes one of identifying the factors that provide the greatest access for student participation. Individual demand for expenditures is assumed to depend upon his or her income level, the tax price of educational spending and other characteristics thought to influence tastes for education (Miller, 1996).

Financial Resource Allocation / Median Voter Model

Educational opportunities and resources are unevenly distributed between rich and poor sectors of society and differences in school funding between wealthy and poor districts results largely from the behaviors of local parents and taxpayers (Mintrom, 1993). There is no consensus about the quality of education to which every child is entitled or to the extent to which each citizen should pay for that education, therefore, local districts are entrusted to make these decisions; decisions that usually reflect the wants of the community. Educational spending differences result largely from taxpayer preferences, where educational spending can be viewed as more a matter of choice than a matter of accounting (Zengel, 2010).

The Median Voter Model best captures the desires of a community. Constructed on the premise that a district’s communal demand for educational outcomes is a function of, among other variables, income, taste, and tax price, income inequality can result in greater public spending whenever mean income rises relative to that of the median voter

(Duncombe & Yinger, 2000). Public education is a significant component of the public budget, with education being greatly affected by the changes in income distribution. Also, not all households benefit from the quality and quantity of publicly provided education. Households without school age children, the elderly and families with children in private schools may only indirectly benefit from investments in public education. As a result the income and demographic composition of the community play an important role in the overall support for public education (Corcoran & Evans, 2010).

Median Voter Income

In New Jersey, for the past four decades, the state has attempted several different school funding equalization efforts. Most of these efforts have not been successful in equalizing school funding across all districts which can be attributed to the difference in response of rich and poor districts to increases in state-level funding. Because budgets in New Jersey are controlled by local boards of education, more affluent districts will attempt to maintain their advantage over less-affluent districts, therefore through local-level behavior, parents and tax payers can undermine equalization efforts (Mintrom, 1993).

An increase in state-level funding to school districts reduces the local level cost for educating each student. With this extra funding, poorer districts view this money infusion as a substitute for local funding, while richer districts treat it as a complement to their budget funding. Lower SES districts are more likely to use the extra state aid to decrease the taxes for local taxpayers while by using the money to decrease the local budget or at minimum keep it at the same levels. With any increase in state aid, higher

SES districts view this extra infusion of money as a complement to their existing budgets and look for ways to use these funds on top of what they already have budgeted (Mintrom, 1993). Due to the local-level dominance of school budgets, schools will continue to meet the wants the local community and use the monies they have available in the areas that they feel best represent and promote their values and beliefs (McNeal, 1999). While the state government may attempt to off-set the discrepancies in funding that students receive, the various influences in the fiscal system work with different premises of how money should be spent, so the ultimate spending increments often bear no resemblance to what the policymakers intended (Roza, 2010).

Median Voter Tastes

Colburn and Horowitz (2003) identified several demographic characteristics that have an influence on variation in educational spending between different districts, including: Age, the income distribution, and the number of school children living in a district. While tax financed public education may provide some benefits to society and to the local community, most of the return on this spending accrues to families with children (Poterba, 1996). The costs of public education fall on households with and without school-age children which often causes intergenerational tensions. Elderly tend to vote in their narrowly defined self-interests, making this segment of society less willing to support increases in educational funding (Ladd & Murray, 2000). Various studies have found that when compared to younger groups, the elderly have a weaker preference for K-12 education (Vinovskis, 1993), are less willing to vote for school bond referendums (Button, 1992) and are more willing to support tax property limitations (Lad and Wilson,

1983). The higher the proportion of people over 65 in a state, the lower the amount the state spends on both the state and local level, per child on K-12 education (Poterba, 1997).

Higher income residents will have a greater demand for education, where educational spending per student is usually higher in high-income districts when compared to low-income districts (Colburn & Horowitz, 2003). Wealthier parents view education as a normal good and are more invested in their children's cognitive development and are therefore more willing to pay extra for education programs (Reardon, 2011). In a study of New York school districts, Brent, Roelke and Monk (1996) found discrepancies in the allocations of resources between wealthy and poorer districts. The wealthiest districts have an increased number of teachers allocated to subjects on a per pupil basis. They also found that higher spending districts tend to devote a larger share of their core curriculum resource base to advanced rather than remedial offerings. There is a greater percentage of student time allocation in advanced courses in higher spending, wealthier districts while lower spending, poorer districts have greater time allocation percentages in remedial courses.

Adults with children are relatively high demanders of school spending since they receive and have direct benefits from the spending (Miller, 1996). Education can be characterized as a publicly provided private good, where benefits are targeted disproportionately to a minority of the population (Corcoran & Evans, 2010). An increase in a community in the school-aged population raises the share of spending that flows to education (Poterba, 1996).

Median Voter Tax Price

Public school finances have continually come under great scrutiny because school finances affect the resources that are available for education and sometime more importantly because they have a direct impact on state and local taxation. Most voters support public financing for education, however, there is great disagreement on the quality and the cost of public education (Colburn & Horowitz, 2002). There is no consensus a preferred method of school finance, so individual states have also tried a number of different approaches to equalize the level of educational spending. In New Jersey, the school funding system that is in place is mainly the result a state Supreme Court Cases (*Abbott v Burke*, 1990). From Robinson v Cahill, it was determined that the New Jersey school funding system was unconstitutional due to its inability to provide a thorough and efficient education. The reliance on local property taxes to fund education resulted in substantial differences in per pupil expenditures leading the New Jersey Supreme Court to mandate that a more equalized school funding system be enacted (Zengel, 2010). The Abbot decision, almost twenty years later, mandated that the state guarantee a level of funding for 28 poor urban districts be equivalent to the level of educational funding in affluent districts. This decision has had major implications on school funding in New Jersey for the last 30 years.

Despite more state monies being funneled into the 28 Abbot school districts, the disparity between educational funding continues in New Jersey. Local taxpayers act in ways that continue to maintain educational funding disparities. Due to districts varying fiscal capacities, wealthier districts continue to be able to spend more on education as well as additional non-classroom programs. While lower fiscal capacity communities

may have a similar appreciation for extracurricular programs, due to their inability to raise the necessary funds they have had to eliminate these programs and target their resources on more narrowly measured student outcomes (Zengel, 2010). Growing wealth at the top of the income distribution lowers the tax price of raising revenue, allowing higher wealth districts to obtain greater public services at a lower cost (Poterba, 1996).

Other Factors Affecting Athletic Opportunity and Access

School Size

One of the earliest studies examining school size and athletic participation found that students in large high schools reported to have taken part in far fewer activities that students from small schools (Larsen, 1949). Students from large schools reported having difficulty finding spots on various teams. Many athletic teams have a maximum number of participants or slot regardless of the size of the school. In smaller schools, a greater percentage of the student body is needed to fill these spots than in larger schools, offering more students an opportunity to participate. In larger schools, the limited number of spots may lead to increased competition and increased skill requirement leading to student specialization thus reducing a student's ability to participate (Feldman and Matjasko, 2005).

The types of extracurricular opportunities are relatively constant across school districts but the number of available positions in these settings is a function of size. In larger schools the absolute number of available positions is large but due to the number of potential participants, the positions are relatively scarce. By contrast, small schools have roughly the same kinds of activities with fewer positions available than larger schools, however, the potential participants for these activities are relatively scarce

(Morgan and Alwin, 1980). Barker and Gump (1964) termed this phenomenon in the small school setting as schools being "under-manned." To fill the necessary positions, small schools must induce higher levels of participation than larger schools because larger schools are on the opposite end of the spectrum with activities being "over-manned." Barker and Gump (1964) postulated that there are two forces, "attraction force" and "foreign force" that tend to promote student participation in undermanned settings:

> Individuals in undermanned settings who might otherwise attend only to watch or participate peripherally will be pressed into service (foreign force) in important functions more often; they will have a larger share of responsibility for the setting and will experience more feeling of responsibility and obligation (attraction force) (Barker & Gump, 1964, p. 133).

Small schools generate greater opportunity to participate as well as the feeling that every student is needed.

When analyzing the effect on school size and student participation in athletic activities, numerous studies have found an inverse relationship between the two variables (Barker & Gump, 1964; Lindsay, 1982; Marsch, 1988; McNeal, 1998). Analyzing several independent variables and their influence on participation in athletics, participation was determined more by high school size than by academic ability, gender, sociability, curriculum track and rank in class (Lindsay, 1984). Using the NELS 88 data set, Coladarci and Cobb (1996) found that participation was significantly higher for smaller school students, with school size outweighing the other variables including SES, academic achievement and student self-esteem.

Smaller schools place higher prestige and enthusiasm on sports participation than larger schools, whereas students in larger schools were more polarized in terms of

participation (Holland & Andre, 1987). In larger schools, there appears to be a group of active participants at one end of the continuum and a larger group of students who did not participate in any activities at the other. In the small schools there were few students who did not participate in anything (Hamilton, 1983). The greater and more varied participation in athletics by students in small schools is the best-supported finding in the school size research which is further supported by the fact that participation holds true regardless of setting and is most applicable to minority and low-SES students (Cotton, 1996). In small schools, disadvantaged students do better in both athletic participation and academic achievement in comparison to identically disadvantaged students in large schools (Howley & Huang, 1991).

Student's Social Economic Status

The effect of SES on student academic outcome has been an area of study that has a wealth of research with most findings demonstrating that the level of SES that a student attends has a significant impact on student achievement. The percentage of students on free/reduced lunch indicates the financial and human resources that parents and students can bring to their participation activities. Children of lower-SES parents are less likely to participate in activities than children from higher-SES parents due to the direct costs of activities (Stearns & Glennie, 2010). Upper SES students are more likely to have opportunities to participate in several different activities as well as have greater opportunity to have more activities that are significantly more open for student access (McNeal, 2010). Students attending schools with better social milieus have better access

to educational resources and are more likely to use school activities as a mechanism for conveying class advantages (McNeal, 1999).

In an analysis of how effectively school districts in New Jersey spend money, Bao, Romeo and Harvey (2010) found that higher SES schools spend more on extracurricular activities. Even though the total cost per student for lower socioeconomic schools was not found to be significantly different from that for higher socioeconomic schools, higher SES leads to lower per student cost for operations and higher per student cost for teachers and extracurricular activities. Lower SES schools are spending more for supplies and administration, areas that may not have as much effect on the quality of education. This diversion of funds from athletic and extracurricular activities is detrimental to low SES students (Bao, Romeo & Harvey, 2010). Combining the effects of school size and SES, larger schools tend to be located in more urban areas and also have higher concentrations of low-socioeconomic status (McNeal, 1999).

Significance of this Study

To create the most productive environment for students, educational leaders must consider not only what happens in the classroom. While usually constituting less than three percent of the overall budget, athletics has been associated with several positive outcomes. There is, however, limited research in exploring why there are differences in how many sports and levels school offer. Given that participation in athletics has the potential to provide positive outcomes for students, schools need to maximize opportunities for students to participate. This study will attempt to identify variables that

have the greatest influence on a school's ability to provide athletic teams and levels for students.

This study will attempt to verify the research dealing with the significance of school size as well as use accountability measures and the Median Voter Model to in ways that have not yet been examined on athletic opportunity and access.

Most studies have determined that athletic participation has helped lead to academic success. This analysis will examine the accountability variables in a different mode. While studies have determined that athletic participation lead to academic success, the analysis in this study will reconfigure the variables to determine if proficiency rates on the HSPA Language Art and math sections as well as graduation rates lead to a greater athletic opportunity.

This study will also further the research by using the Median Voter Model as a mechanism to determine if community demands determine the number of teams, number of levels of play as well as participation rates in the schools they support. Examining how the income, tax price and tastes of community impact student's ability to participate in athletics will enable districts to be better adept at making decisions regarding athletics in schools. Public schools need to make sure that they are creating the best learning environments by providing maximum opportunities and access for students.

CHAPTER III: METHODS

Data and Methods

To determine the factors that affect both the distribution of and access to athletic activities, data will be collected for all New Jersey public high schools. Data will come from the New Jersey Department of Education's (NJDOE) Report Cards for each school district, from the New Jersey State Interscholastic Athletic Association (NJSIAA) school reports and the NCES Common Core of Data – School District Demographics System database.

The NJDOE creates a report card for each public school in the state of New Jersey on an annual basis. These reports contain data for each school regarding: School Environment Information, Student Information, Student Performance Indicators, and District Financial Data.

Each year the NJSIAA requires each participating school to identify how many programs they offer for each sports season (Fall, Winter, Spring), how many levels of each program (Varsity, Junior Varsity, Freshman) and how many male and female students participate at each level.

The NCES Common Core of Data provides access to school district demographic and related geographic data. This database will be used to gather data regarding the percent of senior citizens, and percent of public school aged children in each New Jersey school district.

Private, religious, charter and magnet schools will not be part of the data set.

Data from each high school will be divided into two overarching categories: 1) Determinants: Factors that drive / constrain student access to athletic activities and 2) Outcomes: School measures that influence access and opportunity to athletic activities.

Factors that Drive / Constrain Access

Factors that drive and constrain student's ability to be involved in athletic activities are divided into three subsets: Money, Accountability Pressures, and School Size. Money will be examined through the median voter model by analyzing the income, tax price, and tastes of each district. The median voter model is constructed on the premise that district's demand for educational opportunities is a function of the district's income, tastes and taxes (Duncombe and Yinger, 2000). Data for these variables will come from each district's NJDOE Report Card.

With the advent of NCLB, school districts must monitor the achievement of their students and ensure that they are making proper progress each year. Three units of measure will be collected from school's report cards to analyze Accountability Pressures: 1) Proficiency Rates on the Math Section of the High School Proficiency Assessment, 2) Proficiency Rates on the Language Arts Section of the High School Proficiency Assessment, and 3) Graduation rates. Figures from each of these variables are contained in each school's NJDOE Report Card.

The size of a school is a mitigating factor in terms of the number of athletic opportunities that are available to students with the number of available athletic positions being a function of the size of student enrollment. School enrollment figures will come from each school's NJDOE Report Card.

Table 2
Definitions of Determinant Variables

Factors	Variables
Money	
Median Voter Income	1) Median Family Income
Median Voter Tax Price	1) Total Cost Per Pupil 2) Total Extracurricular Costs
Median Voter Tastes	1) Percent of Senior Citizens 2) Percent of Public School Children
Accountability	
Accountability Pressures	1) HSPA Language Arts Proficiency Rates 2) HSPA Math Proficiency Rates 3) Graduation Rates
Economies of Scale	
Size	1) Enrollment numbers

Median Voter Income: Income levels have been shown to be a strong predictor of educational spending. In New Jersey, districts are classified according to their District Factor Grouping (DFGs). DFGs were first developed by the New Jersey Department of Education in 1975 for the purpose of comparing student performance on statewide assessments across demographically similar school districts. The DFGs represent an approximate measure of a community's relative socioeconomic status (SES). Schools will be grouped together according to their DFG so that comparison can be made based on SES. Median family income for each district will also be used to determine district's income levels. In New Jersey, school budgets are predominately financed by property

taxes. The median family income variable will indicate give insight into the district's tax base.

Median Voter Tax Price: In New Jersey, each district does not have the same cost per-pupil, rather, every district creates its own school budget. School districts also receive varying amounts of state aid. Based on the amount of money districts are able to raise locally through taxes, coupled with the amount of state aid it receives, each district has a different fiscal capacity when it comes to the amount of education it can finance. Because some schools have greater fiscal capacity, they are able to purchase different or more programs or offerings. The two variables under Median Voter Tax Price, Total Overall Budget and Total Extracurricular Costs, will be used to distinguish and examine the effect of each district's fiscal capacity on extracurricular spending.

Median Voter Tastes: Educational opportunities and resources are differentially distributed between districts which is largely a product of the behaviors of the taxpayers. Local citizens often vote on school budgets not with regards to the significance of the program that students will receive but rather through the lens of how much it will cost them, with most of the return for tax-financed public education being realized by families with children. Citizens without children, most often senior citizens, are therefore more likely to vote against school budgets due to the lack of return they realize with an increase in their taxes. To account for varying Median Voter Tastes, a variable accounting for the percentage of senior citizens in each district will be created as well as a variable measuring the percent of public school children in each community.

Accountability: The last 10 years has seen a marked increase in the amount of standardized testing that takes place in New Jersey schools. This started with the

introduction of No Child Left Behind at the turn of the century and has most recently been the focus of introducing new end of course tests in a myriad of high school subjects. Schools have been labeled according to their testing results and in the near future student's achievement on these new standardized tests will be 50% of teacher's evaluations. This increased focus on accountability has forced schools to redirect funds into testable areas. To analyze accountability pressures variables for each school's Language Arts and Math High School Proficiency Assessments and their graduation rates will be derived to examine accountability pressures in concert with how schools spend money.

Economies of Scale: In business, it is widely assumed that larger organizations operate more efficiently that smaller ones because increasing size decreases per unit cost. Schools, however, do not operate the same as businesses and there is conflicting research as to what is the optimal size of school to achieve maximum student achievement. When examining school size and athletic opportunities, there are a finite number of possible positions where smaller schools may not have enough students to fill the spots and larger schools have too many students competing for a smaller number of positions. To account for this predicament in schools, a variable for the enrollment of each school will created.

Access, Opportunity and Success Measures

Student's access and opportunity to be involved in athletic activities is divided into two subsets: Opportunity and Access. The opportunity variable is a function of the available programs and number of positions that each school allots. The available programs variable will consist of the number of sports team a school offers the number of positions available for each team. This data will come from the 2009-2010 sports participation forms that schools must submit to the NJSIAA.

Student's access to athletic opportunities will be analyzed through participation rates. Combining the data from NJSIAA with enrollment figures from NJDOE report cards, variables dealing with the overall student percentage, male participation and female participation in athletics will be created for each school.

Success of athletic teams will be measured by how many group state championships a school has earned between 2000 – 2010. Teams can compete for 33 different state championships throughout the year. Using data from the NJSIAA, the variable success will be created which will be the number of state championships a school has won over the ten year interval.

Table 3
Definitions of Outcome Variables

Factors	Variables
Opportunity	
Available Programs	1. Number of Sport Teams Offered 2. Total Number of Positions Available
Access	
Participation Rates	1. Percent of All Students Participating 2. Percent of Male Students Participating 3. Percent of Female Students Participating
Success	
Championships	1. Number of Group Championships won between 2000-2010

Available Programs: In the state of New Jersey, there are 34 recognized sports; 18 for boys and 16 for girls. Each school determines which sports they offer to students as well as how many levels (Varsity, Junior Varsity, and Freshman) based upon different factors related to each district. Certain schools put a premium on particular sports while other schools attempt to be equitable with the athletic opportunities. Data on how many teams are supported as well as how many students participate on each team and each level will be derived from NJSIAA school reports.

Access: High schools in New Jersey can offer a wide range of interscholastic sports programs for students. There are, however, great differences in what is offered and how many levels of competition available from school to school. This disparity leads to differentiated access across the state. To analyze this, an overall participation rate

variable and participation rates for males and females respectively will be created using NJSIAA participation rate data.

Success: New Jersey holds state wide tournaments and recognizes group champions for 33 sports. Teams play down to an overall champion based upon school size classifications, with most sports crowning four group champions per sport. To analyze success, group championships from each of the 33 recognized sports were tabulated from the years 2000-2010 for each school.

Data Analysis

Descriptive Statistics

The data analysis will begin with a descriptive summary of the determinant factors. Schools will be grouped together according to their DFG status, County Location, and School Size. The mean, standard deviation, frequency and number of observations will be calculate for the median family income, total cost per pupil, total extracurricular costs, percent of senior citizens, percent of school aged children, HSPA math, HSPA Language Arts, graduation rates, school size variables, sports offered, levels offered, total participation rates, male participation rates, female participation rates and number of group state sport championships earned. The descriptive for these variables will be used to provide summary comparisons.

Regression Analysis

A series of regressions will be used to answer the following research questions:

Research Question 1:

Is student access to athletic activities a product of Median Voter Income, Median Voter Tax Price and Median Voter Tastes?

The following models will be tested:

Total Sports Offered = f (Median Family Income, Percent Senior Citizens, Percent School Aged Children)

Total Sports Offered = f (Total Cost per Pupil)

Total Sports Offered = f (Extracurricular Spending per Pupil)

Total Positions Available = f (Median Family Income, Percent Senior Citizens, Percent School Aged Children)

Total Positions Available = f (Total Cost per Pupil)

Total Positions Available = f (Extracurricular Spending per Pupil)

Overall Participation Rates = f (Median Family Income, Percent Senior Citizens, Percent School Aged Children)

Overall Participation Rates = f (Total Cost per Pupil)

Overall Participation Rates = f (Extracurricular Spending per Pupil)

Male Participation Rates = f (Median Family Income, Percent Senior Citizens, Percent School Aged Children)

Male Participation Rates = f (Total Cost per Pupil)

Male Participation Rates = f (Extracurricular Spending per Pupil)

Female Participation Rates = f (Median Family Income, Percent Senior Citizens, Percent School Aged Children)

Female Participation Rates = f (Total Cost per Pupil)

Female Participation Rates = f (Extracurricular Spending per Pupil)

Research Question #2

Is student access to athletic activities a product of accountability constraints?

Total Sports Offered = f (HSPA Language Arts Proficiency Rates, HSPA Math Proficiency Rates, Graduation Rates)

Total Positions Available = f (HSPA Language Arts Proficiency Rates, HSPA Math Proficiency Rates, Graduation Rates)

Overall Participation Rates = f (HSPA Language Arts Proficiency Rates, HSPA Math Proficiency Rates, Graduation Rates)

Male Participation Rates = f (HSPA Language Arts Proficiency Rates, HSPA Math Proficiency Rates, Graduation Rates)

Female Participation Rates = f (HSPA Language Arts Proficiency Rates, HSPA Math Proficiency Rates, Graduation Rates)

Research Question #3

Is student access to athletic activities a product of school size?

Total Sports Offered = f (School Size)

Total Positions Available = f (School Size)

Overall Participating Rates = f (School Size)

Male Participation Rates = f (School Size)

Female Participation Rates = f (School Size)

Research Question #4

Is athletic success a product of the median voter model?

Total Group Championships = f (Median Family Income, Percent Senior Citizens, Percent, School Aged Children)

Total Group Championships = f (Total Cost per Pupil)

Total Group Championships = f (Extracurricular Spending per Pupil)

Research Question #5

Is athletic success a product of accountability constraints?

Total Group Championship = f (HSPA Language Arts Proficiency Rates, HSPA Math Proficiency Rates, Graduation Rates)

Research Question #6

Is athletic success a product of economies of scale?

Total Group Championship = f (School Size)

Research Question #7

Are student athletic opportunities, access and success a product of the Median Voter Model and Economies of Scale?

Total Sports Offered = f (Median Family Income, Percent Senior Citizens, Percent, School Aged Children)

Total Positions Available = f (Median Family Income, Percent Senior Citizens, Percent, School Aged Children)

Overall Participation = f (Median Family Income, Percent Senior Citizens, Percent, School Aged Children)

Male Participation = f (Median Family Income, Percent Senior Citizens, Percent, School Aged Children)

Female Participation = f (Median Family Income, Percent Senior Citizens, Percent, School Aged Children)

CHAPTER 4 – FINDINGS

Descriptive Statistics Analysis

Descriptive statistics tables describing median voter variables, accountability variables and economies of scale were created to compare school districts by DFG, Median House Price Quintiles, County and School Size. These variables were chosen to be able to analyze the data in several different formats to gain insight into economical, economies of scale and/or regional difference that influence student opportunities and access to athletics. Overall state-wide averages for all variables were derived as a reference when analyzing the different variable configurations (Table 4)

Table 4
State Means for Median Voter, Accountability, Economies of Scale and Outcome

Variable	N	Min	Max	Mean	SD
Median Voter Variables					
Median Family Income	305	$24,612	$155,888	$72,035	$24,160
Extracurricular Budget	305	$66	$1339	$416	$259
Total Cost Per Pupil	305	$11,567	$24,825	$15,768	$2222
School Aged Population %	305	6%	29%	18.1%	3.0%
Senior Citizen Population %	305	5%	55%	13.8%	5.9%
Accountability Variables					
Language Arts					
Partially Proficient	305	0.3%	69.1%	12.6%	13.1%
Proficient	305	30.9%	91.4%	70.0%	10.6%
Advanced Proficient	305	0%	54.9%	17.6%	12.4%
Total Proficiency	305	30.9%	99.7%	87.5%	13.1%
Mathematics					
Partially Proficient	305	2.8%	88.8%	26.3%	18.4%
Proficient	305	11.2%	72.5%	50.9%	10.9%
Advanced Proficient	305	0%	71.3%	22.8%	15.9%
Total Proficiency	305	11.2%	97.2%	73.7%	18.5%
Graduation Rates	305	44.3%	100%	95.6%	6.8%
Economies of Scale					
School Size	305	149	3335	1196.8	605.3
Outcome Variables					
Total Sports	305	10	31	21.6	4.8
Total Levels	305	12	61	37.9	10.6
Total Participation Rates	305	7%	135%	68.6%	22.9%
Male Participation Rates	305	4%	78%	40.12%	15.2%
Female Participation Rates	305	3%	62%	28.9%	10.8%
State Championships	305	0	40	4.0	4.6

DFG Descriptive Statistics

Data for the median voter variables for 305 New Jersey high schools was obtained from the NJDOE 2010 Report Card Data and the NCES Common Core of Data – School District Demographics System Database. Schools were grouped according to their DFG classification and standard descriptive statistics were generated (Table 5).

As expected, the average median family income increases as the DFG increases. Camden has the lowest median family income at $24,612 and Milburn has the highest at $158,888. The overall state median family income average is $72,035. DFG J has an average income level almost four times as great as DFG A.

DFG A has the highest average total cost per pupil at $17,497. This is most likely attributed to most *Abbott* districts being in this classification, thus receiving a disproportional amount of state aid compared to the other districts. There is less than $1100 difference in spending between all the other DFG schools. South Hunterdon High School had the highest cost per pupil at $24,825 while Williamstown High School was the lowest at $11,807.

The average amount budgeted for extracurricular activities become increasingly greater between the first four district factor groups (A – DE), reaching it highest overall average in DFG GH. The amounts budgeted for extracurricular activities in top three DFG groups (GH – J) are greater than the lower five groups (A-FG), with the top three groups spending over 3.5 times more on extracurricular activities than group A. Paterson Eastside has the small extracurricular expenditure per pupil at $66 and Delaware Valley in Hunterdon County spends the most at $1339.

Senior citizen percentages become progressively less between DFGs B-J, while school aged populations progressively increase during this same interval. These observations support the median voter premise that senior citizens are less willing to support “extras” while parents with school aged children and residing in higher SES areas are more willing to support ancillary programs.

Accountability pressures are summarized in Table 5 and Table 6. All three tables support the relevant research that students from higher SES districts perform better on standardized testing and have higher graduation rates than lower SES districts. As the DFG level increases student total and advanced proficiency scores on both sections of the HPSA increase at each subsequent level. DFG groups GH, I and J have approximately a 37% higher total proficiency rate than A districts on HSPA Language Arts and 50% on the math section of the HSPA. Graduation rates also increase moving from the lowest to highest DFG classifications (Table 6). School size (Table 9) means are scattered throughout the various DFG with the three highest DFG groups accounting for the highest averages. Weequahic has the smallest enrollment with 149 students and Clifton is the largest at 3335 students.

Table 5
Descriptive of Median Voter Variables by DFG

DFG		N	Minimum	Maximum	Mean	SD
A	Median Family Income	35	$24,612	$77,976	$37,506	$10,042
	Extracurricular Budget	35	$66	$392	$148	$68
	Total Cost Per Pupil	35	$14,497	$22,705	$17,497	$1728
	School Aged Population %	35	13%	25%	19.8%	2.1%
	Senior Citizen Population %	35	6%	15%	10.6%	2.3%
B	Median Family Income	30	$41,607	$ 58,841	$49,944	$4701
	Extracurricular Budget	30	$168	$738	$352	$159
	Total Cost Per Pupil	30	$12,208	$20,594	$15,769	$2004
	School Aged Population %	30	8%	21%	16.9%	2.9%
	Senior Citizen Population %	30	9%	54%	16.6%	9.8%
CD	Median Family Income	29	$ 40,040	$ 64,635	$57,470	$4841
	Extracurricular Budget	29	$145	$983	$367	$ 88
	Total Cost Per Pupil	29	$11,807	$24,244	$14,928	$ 2379
	School Aged Population %	29	12%	23%	17.8%	3.0%
	Senior Citizen Population %	29	9%	26%	14.7%	5.8%
DE	Median Family Income	50	$ 55,260	$113,187	$66,102	$8737
	Extracurricular Budget	50	$163	$1250	$445	$232
	Total Cost Per Pupil	50	$11,936	$22,264	$14,787	$2158
	School Aged Population %	50	13%	21%	17.0%	2.2%
	Senior Citizen Population %	50	9%	26%	14.8%	3.6%
FG	Median Family Income	44	$ 57,987	$ 81,649	$71,058	$5341
	Extracurricular Budget	44	$174	$966	$410	$205
	Total Cost Per Pupil	44	$11,956	$21,451	$14,957	$1879
	School Aged Population %	44	7%	24%	17.6%	3.0%
	Senior Citizen Population %	44	6%	44%	14.3%	5.9%
GH	Median Family Income	54	$ 53,374	$117,980	$82,677	$9341
	Extracurricular Budget	54	$ 140	$1339	$545	$316
	Total Cost Per Pupil	54	$13,651	$24,825	$16,341	$2266
	School Aged Population %	54	13%	24%	17.9%	2.2%
	Senior Citizen Population %	54	6%	22%	13.2%	3.5%
I	Median Family Income	44	$ 85,022	$135,806	$103,520	$ 12,268
	Extracurricular Budget	44	$157	$1163	$524	$281
	Total Cost Per Pupil	44	$13,242	$20,005	$16,044	$2097
	School Aged Population %	44	13%	23%	19.7%	2.4%
	Senior Citizen Population %	44	7%	23%	13.1%	3.1%
J	Median Family Income	12	$ 85,108	$158,888	$121,800	$ 20,345
	Extracurricular Budget	12	$215	$1004	$431	$231
	Total Cost Per Pupil	12	$13,188	$20,018	$15,469	$1996
	School Aged Population %	12	18%	28%	21.9%	2.8%
	Senior Citizen Population %	12	5%	16%	10.6%	3.6%

Table 6
Descriptive of Accountability Variables by DFG

		Graduation Rates			
DFG	N	Minimum	Maximum	Mean	SD
A	38	44.3%	100%	88.1%	13.6%
B	33	70.4%	100%	90.5%	7.5%
CD	29	86.6%	100%	95.0%	3.4%
DE	51	81.9%	100%	96.3%	3.4%
FG	44	95.8%	100%	98.9%	1.2%
GH	55	94.0%	100%	98.3%	1.4%
I	47	95.8%	100%	98.9%	1.2%
J	12	98.7%	100%	99.5%	0.5%

Opportunity, access and success are compared across the eight DFG classifications through analysis of the number of sports and levels each school offers, each school's overall participation as well gender specific participation rates and the number of championships each school earned between 2000 – 2010 (Table 8). Opportunities for students steadily increase as DFG increases, moving from a low point of 17.5 available sports in DFG A to a high of 26.7 in DFG J. Ridge, Hunterdon Central, Wayne Hills and Wayne Valley offer the most sports, 31, while Hunterdon Central and Wayne Valley offers the most levels, 61. Lindelwood High School supports the fewest sports teams, 10, with West Side offering the lowest number of levels at 12. The top three DFG classifications offer a little under 46 levels while the bottom three groups offer a little more than 31. There is a difference of 21 levels between A and J districts.

The disparities in opportunities help explain the variations in participation rates. After a decrease in total participation and female participation between DFG A and B, all three rates steadily increase reaching a high point of 87% overall, 51% male and 38% female for DFG J. New Providence High School has the highest overall participation and male participation rate, 135% and 78%, while Haddonfield has the highest female

participation rate at 62%. Newark West Side High School had the lowest overall, male and female participation rates at 7%, 4% and 3% respectively. There appears to be a significant difference between male and female participation, with male participation being greater between 10% to 13% at each DFG level.

There is a large disparity between J districts and the other seven DFG classifications in terms of success. J schools experience 5 times more championships than DFGs A – EF, 3 times greater than DFG GH and almost twice as many as I districts. The top two groupings have a clear advantage over the other groups and schools in DFG J are the only group where all schools have earned a group championship. Haddonfield High School was by far the most successful, earning 40 group championships, with the second closest school, Moorestown, earning 24 titles. Seventy-six schools did not win any championships.

Table 7
Descriptive of Accountability Variables

HSPA Language Arts

DFG		N	Minimum	Maximum	Mean	SD
A	Partially Proficient	38	5.8%	69.1%	39.4%	17.0%
	Proficient	38	1.4%	91.3%	57.2%	18.0%
	Advanced Proficient	38	0.0%	54.8%	3.7%	9.2%
	Total Proficiency	38	30.9%	94.2%	61.6%	17.2%
B	Partially Proficient	33	4.8%	45.7%	19.0%	10.1%
	Proficient	33	54.3%	86.0%	73.7%	7.5%
	Advanced Proficient	33	0.0%	17.7%	7.3%	4.4%
	Total Proficiency	33	54.3%	95.2%	81.0%	10.0%
CD	Partially Proficient	29	3.7%	27.9%	13.3%	6.1%
	Proficient	29	67.2%	91.4%	76.1%	5.3%
	Advanced Proficient	29	2.7%	20.4%	10.6%	4.9%
	Total Proficiency	29	72.1%	96.3%	86.7%	6.2%
DE	Partially Proficient	51	1.5%	41.9%	10.5%	6.3%
	Proficient	51	57.1%	87.4%	75.6%	5.9%
	Advanced Proficient	51	1.0%	24.0%	13.9%	5.5%
	Total Proficiency	51	58.1%	98.5%	89.5%	6.3%
FG	Partially Proficient	44	2.0%	18.9%	8.2%	3.5%
	Proficient	44	64.4%	86.8%	76.6%	4.8%
	Advanced Proficient	44	0.0%	29.4%	15.1%	5.9%
	Total Proficiency	44	81.1%	98.0%	91.8%	3.5%
GH	Partially Proficient	55	0.8%	12.9%	6.2%	3.2%
	Proficient	55	53.1%	84.9%	71.0%	6.8%
	Advanced Proficient	55	8.9%	39.8%	22.9%	7.1%
	Total Proficiency	55	87.1%	99.1%	93.9%	3.1%
I	Partially Proficient	47	0.3%	10.4%	3.2%	2.0%
	Proficient	47	45.7%	80.5%	62.3%	7.2%
	Advanced Proficient	47	14.8%	49.0%	34.5%	7.4%
	Total Proficiency	47	89.6%	99.7%	96.8%	2.0%
J	Partially Proficient	12	0.7%	4.0%	2.2%	0.9%
	Proficient	12	42.2%	68.7%	54.8%	7.7%
	Advanced Proficient	12	28.6%	54.9%	43.0%	7.5%
	Total Proficiency	12	95.9%	99.4%	97.8%	0.9%

Table 8
Descriptive of Accountability Variables

HSPA Mathematics

DFG		N	Minimum	Maximum	Mean	SD
A	Partially Proficient	38	5.8%	69.1%	39.4%	17.0%
	Proficient	38	1.4%	91.3%	57.2%	18.0%
	Advanced Proficient	38	0.0%	54.8%	3.7%	9.2%
	Total Proficiency	38	30.9%	94.2%	61.6%	17.2%
B	Partially Proficient	33	4.8%	45.7%	19.0%	10.1%
	Proficient	33	54.3%	86.0%	73.7%	7.5%
	Advanced Proficient	33	0.0%	17.7%	7.3%	4.4%
	Total Proficiency	33	54.3%	95.2%	81.0%	10.0%
CD	Partially Proficient	29	3.7%	27.9%	13.3%	6.1%
	Proficient	29	67.2%	91.4%	76.1%	5.3%
	Advanced Proficient	29	2.7%	20.4%	10.6%	4.9%
	Total Proficiency	29	72.1%	96.3%	86.7%	6.2%
DE	Partially Proficient	51	1.5%	41.9%	10.5%	6.3%
	Proficient	51	57.1%	87.4%	75.6%	5.9%
	Advanced Proficient	51	1.0%	24.0%	13.9%	5.5%
	Total Proficiency	51	58.1%	98.5%	89.5%	6.3%
FG	Partially Proficient	44	2.0%	18.9%	8.2%	3.5%
	Proficient	44	64.4%	86.8%	76.6%	4.8%
	Advanced Proficient	44	0.0%	29.4%	15.1%	5.9%
	Total Proficiency	44	81.1%	98.0%	91.8%	3.5%
GH	Partially Proficient	55	0.8%	12.9%	6.2%	3.2%
	Proficient	55	53.1%	84.9%	71.0%	6.8%
	Advanced Proficient	55	8.9%	39.8%	22.9%	7.1%
	Total Proficiency	55	87.1%	99.1%	93.9%	3.1%
I	Partially Proficient	47	0.3%	10.4%	3.2%	2.0%
	Proficient	47	45.7%	80.5%	62.3%	7.2%
	Advanced Proficient	47	14.8%	49.0%	34.5%	7.4%
	Total Proficiency	47	89.6%	99.7%	96.8%	2.0%
J	Partially Proficient	12	0.7%	4.0%	2.2%	0.9%
	Proficient	12	42.2%	68.7%	54.8%	7.7%
	Advanced Proficient	12	28.6%	54.9%	43.0%	7.5%
	Total Proficiency	12	95.9%	99.4%	97.8%	0.9%

Table 9 Descriptive of Outcome Variables by DFG

DFG	Variable	N	Minimum	Maximum	Mean	SD
A	Total Sports	35	11	25	17.5	3.9
	Total Levels	35	12	46	28.5	9.0
	Total Participation Rates	35	4%	100.5%	33.4%	19.2%
	Male Participation Rates	35	4%	91%	27.4%	15.9%
	Female Participation Rates	35	3%	47%	16.7%	10.2%
	State Championships	35	0	16	2.7	3.8
B	Total Sports	30	10	29	19.4	4.1
	Total Levels	30	21	46	32.2	6.8
	Total Participation Rates	30	11%	51%	26.8%	9.4%
	Male Participation Rates	30	15%	61%	35.0%	11.3%
	Female Participation Rates	30	10%	40%	24.2%	8.0%
	State Championships	30	0	14	2.1	2.8
CD	Total Sports	29	11	28	19.8	4.8
	Total Levels	29	17	50	33.5	10.1
	Total Participation Rates	29	34%	97%	63.1%	19.2%
	Male Participation Rates	29	22%	57%	36.8%	11.3%
	Female Participation Rates	29	11%	43%	26.3%	8.6%
	State Championships	29	0	10	2.4	3.1
DE	Total Sports	50	11	29	20.9	4.5
	Total Levels	50	18	55	36.3	9.1
	Total Participation Rates	50	36%	102%	68.0%	15.5%
	Male Participation Rates	50	25%	58%	39.9%	9.0%
	Female Participation Rates	50	12%	44%	28.3%	6.9%
	State Championships	50	0	14	3.7	3.6
FG	Total Sports	44	11	29	21.5	3.8
	Total Levels	44	19	57	39.1	8.2%
	Total Participation Rates	44	44%	113%	73.4%	18.2%
	Male Participation Rates	44	25%	64%	43.0%	10.1%
	Female Participation Rates	44	18%	60%	30.7%	8.8%
	State Championships	44	0	10	2.7	2.7
GH	Total Sports	54	13	31	23.7	3.7
	Total Levels	54	16	61	43.3	8.3
	Total Participation Rates	54	38%	119%	74.0%	19.7%
	Male Participation Rates	54	23%	71%	42.6%	11.3%
	Female Participation Rates	54	15%	55%	31.4%	9.6%
	State Championships	54	0	13	4.1	3.3
I	Total Sports	44	17	31	25.7	2.9
	Total Levels	44	27	61	45.9	7.5
	Total Participation Rates	44	41%	135%	82.8%	20.5%
	Male Participation Rates	44	23%	78%	48.1%	12.3%
	Female Participation Rates	44	18%	56%	35.0%	8.6%
	State Championships	44	0	24	6.9	5.2
J	Total Sports	12	23	31	26.7	2.6
	Total Levels	12	40	60	49.8	5.7
	Total Participation Rates	12	65%	127%	87.0%	22.9%
	Male Participation Rates	12	40%	73%	51.7%	12.1%
	Female Participation Rates	12	26%	62%	38.9%	12.5%
	State Championships	12	3	40	11.9	10.4

Table 10
Descriptive of Economies of Scale Variable by DFG

School Size

DFG	N	Minimum	Maximum	Mean	SD
A	35	149	2776	1227	639
B	30	362	2548	1095	487
CD	29	334	3335	1164	783
DE	50	292	2387	1137	536
FG	44	319	3115	1074	560
GH	54	226	2456	1339	548
I	44	431	2999	1333	621
J	12	720	1715	1273	396

Median House Price Quintiles Descriptive Statistics

Looking at SES in a format other than DFG classifications, median house prices for all districts were categorized into five groups, moving from least to greatest (Table 10). The average house price in New Jersey is $383,719 with West Morris Mendham Township with the highest house price at $941,000 while Asbury Park, Atlantic City and Newark city had the lowest at $83,200.

Total costs per pupil figures are relatively consistent with quintile 3 having the lowest value at $15,458 and the highest value of $16,127 in quintile 5. Extracurricular budgets steadily increased as house prices move up to the higher quintiles. Quintile 5 had the highest average extracurricular budget, with a per student expenditure of $560. The top two quintiles spend 50% more on extracurricular than quintile 1 schools.

The senior citizen average population was greatest in quintile 2 and quintile 2 schools spent significantly less than the three higher quintiles. Egg Harbor has the highest percentage of senior citizen at 55% with West Windsor Plainsboro North and South the smallest at 5%.

Proficiencies on the HPSA Language Arts and math sections as well as graduation rates increased as house prices move from lower to the higher quintiles (Table 11 – Table 12). Student performance in the advanced proficient range also increased as house prices increased. Compared to the 1st quintile, students in the 5th quintile scored 3.5 times higher in the advanced proficient range on the Language Arts section and 4 times higher on the math section. This again supports the research that students from higher SES districts perform at a higher rate. Quintile 3 had the largest average schools size; however there was not a lot of variation across the other quintiles (Table 10).

Similar to the DFG findings, the number of sports and the number of positions steady increase as median home values increase (Table 14). Quintile 5 schools offer more teams and positions than the other 4 groups, with 5 more sports and 10 more positions than quintile 1 schools. All three participation rates steadily increase as home values increase, with overall participation rates differing by over 30% between the highest and lowest quintiles.

Table 11
Descriptive of Median Voter Variables by Median House Price Quintiles

		N	Minimum	Maximum	Mean	SD
Quintile 1	Extracurricular Budget	61	$66	$1022	$332	$204
	Total Cost Per Pupil	61	$11,897	$22,705	$15,543	$2215
	School Aged Population %	61	8%	25%	19%	2.9%
	Senior Citizen Population %	61	8%	54%	13%	7.8%
Quintile 2	Extracurricular Budget	62	$66	$798	$357	$203
	Total Cost Per Pupil	62	$11,756	$19,343	$15,642	$1806
	School Aged Population %	62	13%	24%	19%	2.1%
	Senior Citizen Population %	62	28%	40%	37%	2.1%
Quintile 3	Extracurricular Budget	62	$83	$1250	$367	$268
	Total Cost Per Pupil	62	$11,536	$24,825	$15,458	$2634
	School Aged Population %	62	9%	16%	12%	1.5%
	Senior Citizen Population %	62	7%	44%	13%	4.9%
Quintile 4	Extracurricular Budget	62	$133	$1339	$460	$265
	Total Cost Per Pupil	62	$12,172	$24,244	$16,033	$2584
	School Aged Population %	62	12%	24%	17%	2.6%
	Senior Citizen Population %	62	6%	23%	15%	3.9%
Quintile 5	Extracurricular Budget	61	$192	$1245	$560	$276
	Total Cost Per Pupil	61	$13,188	$20,018	$16,127	$1944
	School Aged Population %	61	7%	28%	19%	3.5%
	Senior Citizen Population %	61	5%	26%	13%	3.6%

Table 12
Descriptive of Accountability Variables by Median House Price Quintiles

HSPA Language Arts

		N	Minimum	Maximum	Mean	SD
Quintile 1	Partially Proficient	61	3.7%	68.3%	18.2%	14.6%
	Proficient		31.7%	91.4%	72.8%	11.4%
	Advanced Proficient		0%	25.9%	9.0%	5.9%
	Total Proficiency		31.7%	96.3%	81.8%	14.6%
Quintile 2	Partially Proficient	62	1.5%	69.1%	20.13 %	17.8%
	Proficient		30.9%	84.1%	68.7%	12.3%
	Advanced Proficient		0%	38.3%	11.2%	8.6%
	Total Proficiency		31.0%	98.5%	79.9%	17.8%
Quintile 3	Partially Proficient	62	1.1%	54.3%	12.9%	10.7%
	Proficient		44.8%	87.4%	73.5%	7.96%
	Advanced Proficient		0%	39.8%	13.3%	7.9%
	Total Proficiency		45.8%	98.9%	87.1%	10.6%
Quintile 4	Partially Proficient	62	1.4%	26.4%	7.1%	4.8%
	Proficient		50.0%	86.8%	72.1%	8.3%
	Advanced Proficient		4.7%	47.6%	20.8%	10.2%
	Total Proficiency		73.6%	98.6%	93.0%	4.8%
Quintile 5	Partially Proficient	61	0.3%	19.5%	4.4%	4.2%
	Proficient		42.2%	81.2%	62.4%	8.6%
	Advanced Proficient		0%	54.9%	33.2%	10.9%
	Total Proficiency		80.5%	99.7%	95.6%	4.2%

Table 13
Descriptive of Accountability Variables by Median House Price Quintiles

		HSPA Mathematics				
		N	Minimum	Maximum	Mean	SD
Quintile 1	Partially Proficient	61	12.3%	88.8%	38.8%	19.6%
	Proficient		11.2%	72.5%	50.1%	14.0%
	Advanced Proficient		0%	31.1%	11.1%	7.5%
	Total Proficiency		11.2%	87.7%	61.2%	19.5%
Quintile 2	Partially Proficient	62	7.8%	87.9%	35.3%	21.3%
	Proficient		12.1%	71.9%	50.0%	12.7%
	Advanced Proficient		0%	46.9%	14.7%	11.3%
	Total Proficiency		12.1%	92.2%	64.7%	21.3%
Quintile 3	Partially Proficient	62	3.3%	70.7%	27.7%	14.6%
	Proficient		29.3%	69.3%	53.9%	8.7%
	Advanced Proficient		0%	54.1%	18.4%	10.1%
	Total Proficiency		29.3%	96.7%	72.3%	14.6%
Quintile 4	Partially Proficient	62	5.8%	52.3%	18.8%	9.4%
	Proficient		41.1%	70.1%	54.9%	6.8%
	Advanced Proficient		3.8%	46.8%	26.3%	11.5%
	Total Proficiency		47.7%	94.3%	81.2%	9.4%
Quintile 5	Partially Proficient	61	2.8%	57.9%	11.2%	8.2%
	Proficient		24.8%	69.8%	45.7%	8.7%
	Advanced Proficient		0.8%	71.3%	43.2%	13.0%
	Total Proficiency		42.1	97.2%	88.8%	8.2%

Table 14
Descriptive of Accountability Variables by Median House Price Quintiles

Graduation Rates

	N	Minimum	Maximum	Mean	SD
Quintile 1	61	44.3%	100%	91.5%	10.5%
Quintile 2	62	68.8%	100%	94.2%	6.7%
Quintile 3	62	70.4%	100%	95.6%	5.5%
Quintile 4	62	75.7%	100%	97.7%	3.4%
Quintile 5	61	95.8%	100%	99.0%	1.1%

Table 15
Descriptive of Economies of Scale by Median House Price Quintiles

School Size

	N	Minimum	Maximum	Mean	SD
Quintile 1	61	149	2773	1097	572
Quintile 2	62	226	2548	1198	558
Quintile 3	62	226	3335	1349	718
Quintile 4	62	326	2999	1165	644
Quintile 5	61	339	2077	1161	460

Table 16
Descriptive of Outcome Variables by Median House Price Quintiles

Classification	Variable	N	Min	Max	Mean	SD
Quintile 1	Total Sports	61	10	27	19.5	3.8
	Total Levels	61	12	52	33.2	8.7
	Total Participation Rates	61	4%	101%	50.2%	27.5%
	Male Participation Rates	61	4%	91%	39.4%	20.7%
	Female Participation Rates	61	3%	47%	28.1%	12.3%
	State Championships	61	0	14	3	3.5
Quintile 2	Total Sports	62	4	29	20.1	5.6
	Total Levels	62	6	55	35.0	11.8
	Total Participation Rates	62	11%	51%	58.2%	6.2%
	Male Participation Rates	62	2%	96%	37.9%	24.8%
	Female Participation Rates	62	2%	53%	27.2%	19.5%
	State Championships	62	0	16	3.4	3.7
Quintile 3	Total Sports	62	5	29	21.2	4.8
	Total Levels	62	7	57	37.5	9.8
	Total Participation Rates	62	11%	105%	58.1%	23.8%
	Male Participation Rates	62	14%	64%	37.0%	11.7%
	Female Participation Rates	62	7%	41%	25.1%	8.7%
	State Championships	62	0	10	2.9	2.8
Quintile 4	Total Sports	62	13	31	22.1	4.6
	Total Levels	62	18	61	39.2	10.0
	Total Participation Rates	62	8.9	120%	72.6%	24.9%
	Male Participation Rates	62	9%	71%	43.7%	12.5%
	Female Participation Rates	62	4%	62%	31.8%	10.4%
	State Championships	62	0	40	4.5	6.0
Quintile 5	Total Sports	61	11	31	24.6	4.5
	Total Levels	61	19	61	43.9	9.9
	Total Participation Rates	61	29%	135%	81.4%	21.0%
	Male Participation Rates	61	22%	78%	48.3%	11.9%
	Female Participation Rates	61	15%	58%	34.4%	9.1%
	State Championships	61	0	24	6.3	5.2

School Size Descriptive Statistics

New Jersey high schools were placed into five groups according to size, from smallest (Group 1) to largest (Group 5) (Table 15). There were not any discernable differences in any of the median voter variables other than smaller schools spending more on extracurricular activities than larger schools. This is most likely a result of economies of scale. School aged and senior citizen percentages were similar with the biggest school aged discrepancy being between Group 5 and Group 1 at 2%, and between senior citizens the biggest difference was 1.7% between Goup1 and Group 5.

All three accountability variables were consistent across all five school size groupings (Table 16 – Table 17). Group 3 had the highest Language Arts average at 89.2% and Group 4 had the highest math at 75.9%. The lowest Language Arts was Group 2's 84.8 and the lowest math was 70.6% in Group 1. Graduation rates all fell within 1.6% of each other, with Group 4 having the highest graduation rate at 96.5% and Group 2 the lowest at 94.9%.

The number of sports and levels slowly increase with each subsequent increase in school size. Total sports are lowest in group 1 with 17.1 sports available and reaches a high point of 24 in Group 5. The same progression is seen in levels, with Group 1 offering the least number of levels and 26.7 with increases at each increment culminating in the largest number of levels in Group 5 with 43.8 levels. When examining participation rates the opposite pattern takes place with the smaller schools having higher total, male and female rates than larger schools. Group 1's overall 78.7%, male 53.4% and 38.4% female slowly decrease at each group size increase, with the lowest rates being in Group 5 with 46.9% total, 28.7% male and 20.3% female. These two findings

support the research that larger schools have the capability to offer more sports and levels but smaller schools need a greater percentage of the student body to fill the spots (Feldman and Matjasko, 2005).

The smallest group achieved the lowest number of championships (2.60) with the largest group garnering the most (4.8) (Table 18). This most likely the result of smaller schools not being able to support as many sports teams as larger thus giving larger schools more opportunities to compete in a larger array of sports and therefore more opportunities to win more championships.

Table 17
Descriptive of Median Voter Variables Grouped By School Size

		N	Minimum	Maximum	Mean	SD
Group 1	Median Family Income	62	$26,370	$105,013	$63,650	$18,218
	Extracurricular Budget	62	$70	$1250	$447	$284
	Total Cost Per Pupil	62	$12,315	$24,825	$15,799	$2572
	School Aged Population %	62	7%	22%	16.8%	2.8%
	Senior Citizen Population %	62	8%	23%	14.2%	3.3%
Group 2	Median Family Income	61	$24,612	$153,227	$70,690	$26,199
	Extracurricular Budget	61	$102	$1339	$445	$266
	Total Cost Per Pupil	61	$11,567	$22,306	$15,945	$2137
	School Aged Population %	61	13%	28%	18.6%	2.7%
	Senior Citizen Population %	61	6%	22%	13.1%	3.3%
Group 3	Median Family Income	62	$30,502	$125,679	$74,489	$23,630
	Extracurricular Budget	62	$66	$1163	$481	$291
	Total Cost Per Pupil	62	$11,545	$22,430	$16,372	$2371
	School Aged Population %	62	8%	23%	17.8%	2.9%
	Senior Citizen Population %	62	8%	54%	14.4%	6.1%
Group 4	Median Family Income	62	$34,083	$158,888	$76,656	$25,569
	Extracurricular Budget	62	$74	$1006	$372	$228
	Total Cost Per Pupil	62	$11,756	$20,341	$15,256	$1769
	School Aged Population %	62	10%	24%	18.7%	2.6%
	Senior Citizen Population %	62	5%	48%	13.4%	6.9%
Group 5	Median Family Income	60	$28,288	$129,150	$72,402	$25,659
	Extracurricular Budget	60	$66	$1009	$326	$232
	Total Cost Per Pupil	60	$11,536	$41,887	$15,867	$3988
	School Aged Population %	60	12%	25%	18.8%	2.5%
	Senior Citizen Population %	60	7%	23%	12.5%	3.3%

Table 18
Descriptive of Accountability Variables – School Size

HSPA Language Arts

		N	Minimum	Maximum	Mean	SD
Group 1	Partially Proficient	62	1.4%	62.5%	13.4%	11.2%
	Proficient		37.5%	91.4%	73.3%	10.1%
	Advanced Proficient		0%	46.7%	13.2%	9.7%
	Total Proficiency		38%	98.6%	86.5%	11.25%
Group 2	Partially Proficient	61	0.9%	69.1%	15.2%	17.8%
	Proficient		30.9%	82.3%	69.0%	13.4%
	Advanced Proficient		0.0%	50.9%	15.8%	12.8%
	Total Proficiency		30.9%	99.1%	84.8%	17.8%
Group 3	Partially Proficient	62	0.6%	49.4%	10.8%	10.7%
	Proficient		50.3%	86%	69.9%	9.0%
	Advanced Proficient		0.0%	47.7%	19.3%	12.6%
	Total Proficiency		50.6%	99.4%	89.2%	10.7%
Group 4	Partially Proficient	62	0.3%	61.3%	11.6%	13.2%
	Proficient		1.4%	86.4%	67.8%	13.4%
	Advanced Proficient		0.0%	54.9%	20.7%	13.7%
	Total Proficiency		38.7%	99.7%	88.9%	12.2%
Group 5	Partially Proficient	60	1.1%	55.6%	12.2%	12.3%
	Proficient		43.3%	82.6%	68.3%	8.9%
	Advanced Proficient		0.0%	42.9%	19.4%	12.6%
	Total Proficiency		44.4%	98.96%	87.8%	12.3%

Table 19
Descriptive of Accountability Variables – School Size

		HSPA Math				
		N	Minimum	Maximum	Mean	SD
Group 1	Partially Proficient	62	6.0%	82.5%	29.3%	17.3%
	Proficient		17.5%	72.5%	52.3%	11.7%
	Advanced Proficient		0.0%	63.3%	18.3%	13.1%
	Total Proficiency		17.5%	94.0%	70.6%	17.4%
Group 2	Partially Proficient	61	2.8%	88.8%	29.0%	22.6%
	Proficient		11.2%	97.2%	70.9%	22.6%
	Advanced Proficient		0.0%	53.0%	20.1%	14.96%
	Total Proficiency		11.2%	97.2%	70.9%	22.6%
Group 3	Partially Proficient		4.9%	73.5%	24.8%	17.2%
	Proficient		25.1%	66.9%	51.1%	9.6%
	Advanced Proficient		0.0%	63.3%	24.1%	15.5%
	Total Proficiency		26.5%	95.1%	75.2%	17.2%
Group 4	Partially Proficient	62	2.9%	74.0%	23.0%	16.1%
	Proficient		0.7%	69.3%	49.7%	12.0%
	Advanced Proficient		0.5%	74.3%	27.2%	18.3%
	Total Proficiency		18.4%	97.1%	75.9%	17.7%
Group 5	Partially Proficient	60	5.2%	73.7%	25.2%	16.1%
	Proficient		24.5%	70.9%	49.7%	9.6%
	Advanced Proficient		0.0%	56.0%	25.1%	16.1%
	Total Proficiency		26.3%	94.8%	74.8%	18.1%
			26.3%	94.8%	74.8%	18.1%

Table 20
Descriptive of Accountability Variables by School Size

Graduation Rates

	N	Minimum	Maximum	Mean	SD
Group 1	62	44.3%	100%	95.1%	8.4%
Group 2	61	44.7%	100%	94.9%	8.7%
Group 3	62	70.4%	100%	95.6%	6.1%
Group 4	62	70.5%	100%	96.5%	4.5%
Group 5	60	71.1%	99.8%	96.0%	5.3%

Table 21
Descriptive of Outcome Variables by School Size

	Variable	N	Minimum	Maximum	Mean	SD
Group 1	Total Sports	62	11	30	17.1	4.5
	Total Levels	62	17	42	26.7	7.7
	Total Participation Rates	62	22%	135%	78.7%	25.7%
	Male Participation Rates	62	16%	78%	53.4%	18.6%
	Female Participation Rates	62	16%	52%	38.4%	18.21%
	State Championships	62	0	18	2.6	3.1
Group 2	Total Sports	61	13	29	19.7	4.0
	Total Levels	61	19	52	34.2	7.6
	Total Participation Rates	61	23%	126%	68.6%	27.3%
	Male Participation Rates	61	22%	73%	43.4%	11.7%
	Female Participation Rates	61	12%	62%	31.1%	11.5%
	State Championships	61	0	40	4.6	6.5
Group 3	Total Sports	62	13	29	23.1	3.8
	Total Levels	62	22	54	40.6	7.7
	Total Participation Rates	62	15%	118%	67.0%	26.4%
	Male Participation Rates	62	15%	69%	42.1%	11.6%
	Female Participation Rates	62	9%	55%	30.2%	8.8%
	State Championships	62	0	15	3.9	3.6
Group 4	Total Sports	62	12	31	23.8	3.8
	Total Levels	62	20	61	43.7	7.9
	Total Participation Rates	62	11%	91%	57.5%	20.6%
	Male Participation Rates	62	12%	54%	35.6%	8.9%
	Female Participation Rates	62	5%	45%	25.9%	8.2%
	State Championships	62	0	24	4.3	4.5
Group 5	Total Sports	60	14	31	24.0	5.1
	Total Levels	60	16	61	43.8	11.4
	Total Participation Rates	60	4%	96%	46.9%	19.8%
	Male Participation Rates	60	3%	62%	28.7%	10.4%
	Female Participation Rates	60	2%	35%	20.3%	8.2%
	State Championships	60	0	20	4.8	4.7

Regression Analysis

Research Question 1a

Are student opportunities to athletic activities a product of the Median Voter Model?

Table 22 Regression of Opportunity on Median Voter Variables

	Total Sports Offered			Total Positions Available		
Variable	Estimate	SE	p	Estimate	SE	p
Constant	8.559	2.337	.000*	9.357	5.005	.063***
Median Family Income	1.019	.101	.000*	2.328	.216	.000
Senior Citizen Population %	.146	.057	.010*	.216	.121	.075***
School Aged Population %	.203	.102	.048**	.484	.218	.027**
R^2	.538			.561		
Adj R^2	.289			.315		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Median Family Income is in $10,000 increments

To estimate the influence median voter variables have on the student athletic opportunities, six regression models were utilized against the median voter variables: total sports offered and total positions available (Table 19 – Table 21). For the first two models, Median Family Income, Senior Citizen Population and School Aged Population were found to be statistically significant.

The models suggest that for every increase of $10,000 in the median family income, the school will offer 1 more sport and a little more than 2 positions. This supports the notion that education spending is influenced by taxpayer preference with higher SES communities willing and able to support additional non-classroom programs. Higher income communities spend more on advanced educational programming (Brent, Roellke and Monk, 1997). The model also supports the idea that with a higher

percentage of students living in a community, the voters will want and support more athletic opportunities for students.

Table 23 Regression of Opportunity on Median Voter Variables

	Total Sports Offered			Total Positions Available		
Variable	Estimate	SE	p	Estimate	SE	p
Constant	23.269	1.990	.000*	44.703	4.328	.000*
Total Spending per Pupil	.000	.000	.389	.000	.000	.112
R^2	.049					
Adj R^2	.002					

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Total Spending per Pupil is in $1000 increments

Table 24 Regression of Opportunity on Median Voter Variables

	Total Sports Offered			Total Positions Available		
Variable	Estimate	SE	p	Estimate	SE	p
Constant	20.063	.516	.000*	34.567	1.125	.000*
Extracurricular Spending per Pupil	.005	.001	.001*	.008	.002	.001*
R^2	.194			.195		
Adj R^2	.038			.038		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level

To account for multicollinearity, separate regressions were run for the two opportunity variables against the median voter variables (Table 20 – Table 21). Total spending per pupil was not found to be a significant indicator on either total sports or total levels. This is most likely attributed to New Jersey's unique school funding

formulas that attempt to equalize school spending between all districts. As was identified in the descriptive discussion, there is less than $1100 difference in spending between the 8 DFG classifications.

Despite overall cost per pupils begin relatively the same throughout the state, when analyzing how districts allocate money per pupil within their budgets, there are significant differences. The findings of this study support the research that suggests wealthier districts have higher per student costs for athletics and extracurricular activities (Bao, Romeo & Harvey, 2010; Zengel, 2010). An increase of $200 in extracurricular spending per student leads to an addition sport being offered and approximately one and a half more levels. Educational opportunities and resources are distributed differently between districts which is largely a product of the local taxpayer's behaviors. Higher SES districts are more willing to pay extra for additional educational programs (Reardon, 2011) and this extra funding for sports gives students from wealthier districts greater opportunity in terms of available teams and levels.

Table 25 Regression of Access on Median Voter Variables

	Overall Participation Rates			Male Participation Rates			Female Participation Rates		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Constant	.486	.116	.000*	.326	.082	.000*	.159	.056	.005*
Median Family Income	.041	.005	.000*	.019	.004	.000*	.018	.002	.000*
Senior Citizen Population %	.006	.003	.045**	.003	.002	.202	.003	.001	.048**
School Aged Population %	-.009	.005	.063***	-.005	.004	.169	-.002	.002	.380
R^2	.456			.320			.426		
Adj R^2	.208			.102			.182		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Median Family Income is in $10,000 increments

Table 26 Regression of Access on Median Voter Variables

	Overall Participation Rates			Male Participation Rates			Female Participation Rates		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Constant	.713	.094	.000*	.402	.062	.000*	.294	.044	.000
Total Spending per Pupil	.000	.000	.767	.000	.000	.932	.000	.000	.908
R^2	.017			.005			.007		
Adj R^2	.000			.000			.000		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Total Spending per Pupil is in $1000 increments

Table 27 Regression of Access on Median Voter Variables

	Overall Participation Rates			Male Participation Rates			Female Participation Rates		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Constant	.549	.023	.000*	.344	.016	.000	.223	.011	.000*
Extracurricular Spending per Pupil	.0003	.000	.000*	.0002	.000	.000*	.0002	.000	.000*
R^2	.370			.257			.377		
Adj R^2	.137			.066			.142		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level

Research Question 1b

Is student access to athletic activities a product of the Median Voter Model?

Nine regression models were created to observe the effects of median voter variables on three different student participation rates: overall participation rates, male participation rates and female participation rates (Table 22 – Table 24). For the first three models, median family income proved to be significant for all three levels of participation. Students from schools with higher median family incomes have increased levels of participation. For every $10,000 increase in median family income overall participation increases 4%, male participation 1.9% and female participation 1.8%.

Total spending per pupil was not found to have any influence on participation rates but amount spent on extracurricular was found to be significant. For each $100 extra spent on extracurricular per pupil, total participation rates increased 3.3%, male participation 2% and female participation 2%.

For overall participation rates, as the school aged population increased participation rates decreased. This is most likely the result of there being more students than the number of available spots. A finding contrary to the existing research was that senior citizen population was found to be positively associated with overall and female participation rates, suggesting that higher senior citizen population percentages result in higher participation rates.

Table 28 Regression of Opportunity on Accountability Constraints

	Total Sports Offered			Total Positions Available		
Variable	Estimate	SE	p	Estimate	SE	p
Constant	15.099	4.281	.000*	21.363	8.827	.016**
Graduation Rate	-.051	.046	.275	-.078	.095	.418
HSPA LA Proficiency Rates	.030	.047	.528	.023	.098	.814
HSPA Math Proficiency Rates	.116	.034	.001*	.295	.070	.000*
R^2	.211			.255		
Adj R^2	.203			.248		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level

Research Question 2a

Are student opportunities to athletic activities a product of accountability constraints?

HSPA Math scores were found to be the only accountability variable to have a positive association with both total sports offered and total positions available (Table 25). The results suggest that a ten percent increase in proficiency on the math section leads to 1 extra sport and 2 extra positions being available to students.

Table 29 Regression of Access on Accountability Constraints

	Overall Participation Rates			Male Participation Rates			Female Participation Rates		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Constant	.809	.275	.004*	.543	.169	.001*	.250	.117	.034**
Graduation Rate	-.005	.003	.074***	-.004	.002	.055**	-.002	.001	.160
HSPA LA Proficiency Rates	.001	.003	.648	.001	.002	.705	.001	.001	.537
HSPA Math Proficiency Rates	.004	.002	.079**	.002	.001	.103***	.002	.001	.038**
R^2	.062				.042				
Adj R^2	.052				.033				

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level

Research Question 2b

Is student access to athletic activities a product of accountability constraints?

Most studies have determined that athletic participation has helped lead to academic success. This analysis flipped the variables to determine if proficiency rates on the HSPA Language Art and Math sections as well as graduation rates leads to a greater rate of athletic participation (Table 26). Performance on the math section of the HSPA was found to be a significant positive predictor of overall, male and female participation rates. A ten percent increase in math performance on the HSPA increases overall participation rates by 4%, male participation rates by 2% and female participation rates by 2%.

Table 30 Regression of Opportunity on Economies of Scale

	Total Sports Offered			Total Positions Available		
Variable	Estimate	SE	p	Estimate	SE	p
Constant	16.665	.572	.000*	26.127	1.161	.000*
School Size	.399	.043	.000*	.967	.007	.000*
R^2	.221			.288		
Adj R^2	.218			.285		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: School Size = High school enrollment in increments of 100

Research Question 3a

Are student opportunities to athletic activities a product of economies of scale?

Larger schools have the capacity to provide and support a larger number of absolute athletic teams and positions than smaller schools. The model supports this, with increases in student enrollment having a positive effect on both total sports offered and total positions available (Table 27). For each increase of approximately 250 students, schools add one sport and for each increase of 100 students schools offer one more position. Availability of programs and positions is a function of the size of the school, with larger schools providing more teams and positions for students. This again appears to be a product of economies of scale where larger schools have the capacity to both offer more sports and positions to students because they have the student body to fill the necessary spots.

Table 31 Regression of Access on Economies of Scale

	Overall Participation Rates			Male Participation Rates			Female Participation Rates		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Constant	1.011	.033	.000*	.600	.020	.000*	.415	.015	.000*
School Size	-.026	.002	.000*	-.016	.001	.000*	-.010	.001	.000*
R^2	.260			.264			.226		
Adj R^2	.258			.262			.223		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: School Size = High school enrollment in increments of 100

Research Question 3b

Is student access to athletic activities a product of economies of scale?

Most athletic teams have a maximum number of participants for slots available for students. Students that attend larger schools are competing for a limited number of slots whereas at smaller schools a larger percentage of the student body is needed to fill the existing spots. The results support the idea the number of available positions is a function of size (Table 28). For all three participation rates there was a significant negative relationship between school size and participation rates. For each increase in enrollment of 100 students, overall participation is reduced by 2.6%, male participation by 1.6% and female participation by 1.0%. Larger schools have a larger absolute number of available positions but due to the increased number of potential participants and increased competition, larger schools have smaller participation rates (Morgan & Alwin, 1980).

Table 32 Regression of Athletic Success on the Median Voter Model

	Group Championships		
Variable	Estimate	SE	p
Constant	-11.195	2.354	.000*
Median Family Income	.611	.101	.000*
Senior Citizen Population %	.135	.057	.018**
School Aged Population %	.497	.103	.000*
R^2	.448		
Adj R^2	.201		

*significant at the 1% level, ** significant at the 5% level,
*** significant at the 10% level
Note: Median Family Income is in $10,000 increments

Table 33 Regression of Athletic Success on the Median Voter Model

	Group Championships		
Variable	Estimate	SE	p
Constant	2.586	1.894	.173
Total Spending per Pupil	.000	.000	.446
R^2	.044		
Adj R^2	.002		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Total Spending per Pupil in $1000 increments

Table 34 Regression of Athletic Success on the Median Voter Model

	Group Championships		
Variable	Estimate	SE	p
Constant	2.820	.493	.000
Extracurricular Spending per Pupil	.003	.001	.005
R^2	.162		
Adj R^2	.026		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level

Research Question 4

Is athletic success a product of the median voter model?

While there is a lot of research demonstrating the benefits of athletic participation and the role SES has on both student achievement and availability to sports, there is not any significant research analyzing what makes schools have successful teams (Table 29 – Table 31). In other terms, does spending more money on athletics increase the number of championships for a school? From this research, schools with higher median family incomes have a higher rate of success in terms of team championships. The results suggest that for every $10,000 increase in family income leads to over a half an extra championship. This supports the descriptive results where the highest DFG and quintile schools experienced more championships. While total cost per pupil was not found to have a significant influence on championships, the results on extracurricular expenditure indicate that for every $1000 spent a school will experience 3 more championships. Following the median voter income premise that more affluent districts attempt to maintain their advantage over less-affluent districts (Mintron, 1993), these findings suggest that wealthier districts value athletic success more than poorer districts and are willing to pay for winning teams.

Table 35 Regression of Athletic Success on Accountability Constraints

	Group Championships		
Variable	Estimate	SE	p
Constant	6.756	4.011	.093***
Graduation Rate	-.023	.043	.598
HSPA LA Proficiency Rates	-.074	.044	.115
HSPA Math Proficiency Rates	.039	.045	.381
R^2	.155		
Adj R^2	.141		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level

Research Question 5

Is athletic success a product of accountability constraints?

None of the accountability constraints have a significant influence on school's athletic success (Table 32).

Table 36 Regression of Athletic Success on Economies of Scale

	Group Championships		
Variable	Estimate	SE	p
Constant	2.701	.573	.000*
School Size	.001	.000	.011**
R^2	.021		
Adj R^2	.018		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: School Size = High school enrollment in increments of 100 students

Research Question 6

Is athletic success a product of economies of scale?

School size has a positive relationship with the number of championships schools achieve. Larger schools win more championships than smaller schools. For every increase of 100 students a school achieves 1/10 of a championship (Table 33). This finding supports the findings in the descriptive summary of school size, where larger schools win more championships than smaller schools. This again is most likely the result of economies of scale where larger schools offer more sports than smaller schools thus giving them an absolute advantage in terms of the total number of opportunities to win a championship. Having more teams to compete increases the opportunity and likelihood of more championships.

Table 37 Regression of Opportunity on Median Voter and Economies of Scale Variables

	Total Sports Offered			Total Positions Available		
Variable	Estimate	SE	p	Estimate	SE	p
Constant	7.294	1.972	.000*	6.329	4.00	.115
Median Family Income	.097	.008	.000*	.221	.017	.000*
Senior Citizen Population %	.146	.048	.002*	.215	.097	.027**
School Aged Population %	.043	.087	.619	.103	.177	.561
School Size	.004	.000	.000*	.009*	.001	.000*
R^2	.705			.752		
Adj R^2	.467			.565		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Median Family Income = increments of $10,000. School Size = High school enrollment in increments of 100 students

Table 38 Regression of Access Opportunity on Median Voter and Economies of Scale Variables

	Overall Participation Rates			Male Participation Rates			Female Participation Rates		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Constant	.560	.090	.000*	.375	.066	.000*	.196	.045	.000*
Median Family Income	.004	.000	.000*	.002	.000	.000*	.002	.000	.000*
Senior Citizen Population %	.006	.002	.009*	.003	.002	.108	.003	.001	.013**
School Aged Population %	.000	.004	.975	.001	.003	.660	.002	.002	.296
School Size	.000	.000	.000*	.000	.000	.000*	.000	.000	.000*
R^2	.729			.654			.689		
Adj R^2	.531			.427			.475		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Median Family Income is in $10,000 increments. School Size = High school enrollment in increments of 100 students

Table 39 Regression of Athletic Success on Median Voter Model and Economies of Scale Variables

	Group Championships		
Variable	Estimate	SE	p
Constant	-11.417	2.351	.000*
Median Family Income	.060	.010	.000*
Senior Citizen Population %	.135	.057	.018**
School Aged Population %	.470	.104	.000*
School Size	.001	.000	.100***
R^2	.456		
Adj R^2	.208		

*significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level
Note: Median Family Income is in $10,000 increments. School Size = High school enrollment in increments of 100 students

Research Question 7

Are student athletic opportunities, access and success a product of the Median Voter Model and Economies of Scale?

Six final regressions, combining median voter variables and economies of scale were created to examine the combine effects of these variables on opportunities, access and championships (Tables 37 – Table 39). This combination of variables created the most robust models with the highest adjusted R^2 values. Median family income and school size were significant determinants of all the independent variables: total number of sports and levels, all three participation rates and championships. Senior Citizen population results again went against the relevant research by having a significant positive relationship with the number of sports and levels offered as well as the overall and female participation rates.

CHAPTER 5 – DISCUSSION

Summary of Findings

The findings of this study support the previous research that while there is not significant difference for the total cost per pupil between lower socioeconomic schools and higher socioeconomic schools, higher SES schools have a higher per student cost for athletics and extracurricular activities (Bao, Romeo, & Harvey, 2010). While district budgets are not significantly different from one DFG group to the next, the extra money spent on extracurricular activities creates more opportunities for students in the higher DFG groups by affording them the opportunity to support more sports and levels of play for students. Upper SES students are more likely to have opportunities to participation in several different activities as well as have more activities that are significantly more open for student access (McNeal, 2010).

With more sports and levels to choose from, students attending schools with higher median family incomes experience higher rates of overall, male and female athletic participation rates than students attending lower DFG schools. The research indicates that for every $10,000 increase in median family income there is an increase of 1 sport and 2 positions for students in those districts, overall participation increases 2.5%, male participation 1.4% and female participation 1.3%. These finding support the research that higher income communities are willing to pay for extra programs such as athletics, thus providing more opportunity for students to participate (Reardon, 2011).

As a result of more opportunities and access, students from the higher DFG schools also experience higher rates of success as measured by the number of state championships they earn. J schools experience championships at almost a 5 times greater

rate than DFGs A – EF. From the regression analysis, a $10,000 increase in median family income leads to a school having an extra half of championship as measure by state group titles.

With increased opportunities and access, the findings of this study also support the research with regards to the link between higher academic achievement and increased athletic participation (Eidsmore, 1964; Feldman & Matjasko, 2005; Holland and Andre, 1987). As the DFG level increases, student total and advanced proficiency levels on both sections of the HSPA and graduation rates also increase. The greatest disparity between rates of achievement are between DFG A and J, with students from the highest group scoring 36% and 55% better on the respective HSPA Language Arts and math sections and have a 11% higher graduation rate. A reason often suggested why there is differences in athletic spending between A and J districts is that poor districts receive large amounts of state aid through various court rulings and are consequently held to higher accountability with regards to student outcomes and monies need to be focused on the classroom. The descriptive analysis suggests, however, that the schools spending more on athletics perform at higher rates on both sections of the HSPA and have higher graduation rates. The regression analysis found that for each 10% increase in student performance on the math section of the HSPA there is an increase of 1 sport and 2 extra positions. Performance on the math section of the HSPA was also found to be a significant positive predictor of overall, male and female participation rates. A ten percent increase in math performance on the HSPA increases overall participation rates by 4%, male participation rates by 2% and female participation rates by 2%.

When analyzing opportunities and access in formats other than DFG, the results still support the relevant research. Median house price results are similar to the DFG results with higher total cost per pupil for extracurricular activities associated with movement to the higher median house quintiles. The top quintiles also had higher HSPA test scores and graduation rates and greater success with more state championships. Higher income counties spend more on athletics and have higher achievement rates. In terms of success, championships appear to be even distributed around the state. Despite smaller schools spending more on athletics, larger sized schools earn more championships. These two results are most likely the result of economies of scale with smaller schools having to spend more money per student while still not being able to support as many sports teams as larger schools because they do not have the student body to fill the necessary positions.

Implications for Practice

There is plenty of relevant research that demonstrates the positive role athletics has on several different student factors. Given that athletics has a positive influence on student achievement, the findings from this study help advance the literature involving student athletic participation by exploring the factors that most directly determine athletic opportunity and access for students. Given that athletic participation leads to positive student outcomes, the results from this study give insight into the specific variables communities can manipulate to maximize athletic opportunities.

The findings of this study support the economies of scale studies that suggest that smaller school have higher rates of participation and larger schools are able to offer more

sports and levels. This study furthered the economies of scale research by demonstrating that increases in school enrollments are associated with increases in championships earned.

The research on accountability measures was also supported by the findings. Increased achievement on the math section of the HSPA exam was associated with more opportunities and higher participation rates for students.

This study differed from the relevant research by using the Median Voter Model as a mechanism to look at opportunity and access. The findings suggest that while the total cost per pupil is relatively consistent across all school districts, how districts choose to spend money is the most significant difference. The amount of money spent on extracurricular and sports varies tremendously between districts, with higher academic and athletically performing schools spending significantly more than lower performing districts. The regressions suggest that minor increases in athletic expenditures have the ability to increase opportunity and access. Understanding that exposure to athletics is a positive force for students, schools districts need to analyze their spending and understand that a small increase in athletic spending has the potential to have several positive influences on students. Although athletic budgets only take up one to three percent of the total school budget the returns on this investment are significant.

This paper also extended the research by using the Median Voter, accountability, and economies of scale variables to determine if they influence high school's rate of athletic success. For towns having a high level of pride in their high school sports teams, there are budget line items that can be manipulated that have the potential to increase the likelihood of more championships.

Limitations

This study only examined high schools in New Jersey. Due to New Jersey's unique school funding legislation, the results may not be applicable to other states. Also, the accountability variables that were used in this study are being phased out over the next few years. The formula to calculate graduation rates has recently changed. Graduation rates under the old calculation formula were not found to be a significant variable in any of the regression models. The new calculation may prove to be a better accountability variable.

After the 2013-2014 school year, the HSPA exam will no longer be used as the high school graduation assessment. New Jersey has joined a 22 state consortium that has created new standards and assessments for Language Arts and mathematics. Over the next two years tests for Language Arts and mathematics are being field tested with full operational administration taking place in the 2014-2015 school year. These new tests are different from the HSPA in not only form and design but also content.

Also, starting in the 2013-2014 school year, 50% of teacher and principal evaluations will be tied directly to student achievement. Districts have been mandated to bring their evaluation practices into compliance with strict state regulations which is in stark contrast to the autonomy individual districts have had in terms of evaluation practices.

Testing changes coupled with an overhaul of the evaluation systems will be bringing greater attention to accountability factors. The implications of these major changes on the different facets of schooling are hard to predict at this time. When NCLB was first introduced, district funneled funds towards cognitive activities and away from

areas not directly related to classroom instruction. There will be natural pressure to focus resources and attention again on all things classroom related with students achievement now becoming part of teacher and principal's evaluations. The implications on opportunity and access will need to be reexamined under these new conditions.

Further research

As mentioned in the limitations section, changes to the accountability measures taking place over the next few years could have major implications on school operations and spending practices. This study demonstrates that schools spending more on extracurricular activities performed better on the state testing requirements. Once the new testing has been fully implemented, further studies analyzing spending and student opportunities should be done to see if the newest regulations are having an adverse effect on these variables or if the disparity between low and high socioeconomic districts is increasing.

This study supports the notion that there is a link between athletic success and how much money a school spends on athletics. Higher DFG schools spend more per pupil on athletics and experience greater rates of success than lower DFG schools. Further examination could be done to examine if there are certain sports where higher DFG schools have an advantage which could be directly attributed to money. Some sports have higher barriers to entry due to the cost to fund them or facility constraints (Field Hockey, Ice Hockey, Swimming, and Lacrosse). These are also sports that need a larger number of participants in order to field the teams. Further analysis of participation rates and how they relate to specific sports could better explain in concrete detail where

there are socioeconomic discrepancies and whether or not certain sports have a better return on investment.

There also appears to be rather large differences in participation rates between male and female students. Further research could examine the opportunities available by gender and determine if male students are afforded more opportunity to participate and if so why does this difference exist.

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