

YOUTH SPORTS HELP CLOSE THE EDUCATION GAP

A THESIS

Presented to

The Faculty of the Department of Economics and Business

The Colorado College

In Partial Fulfillment of the Requirements of the Degree

Bachelor of Arts

By

Samantha G. Curran

May 2016

YOUTH SPORTS HELP CLOSE THE EDUCATION GAP

Samantha G. Curran

May 2016

Economics

Abstract

The purpose of this paper is to examine the impact of youth sport participation on a student's likelihood of attending college. A cross sectional dataset of approximately 12,000 eighth grade students, located in the United States is used. The decision to attend college is modeled as a function of high school experiences, extracurricular involvement, grades, test scores, and educational aspirations. The probit model results indicate that sports in general increased the probability of a student attending college with statistical significance.

KEYWORDS: College attendance, youth sport participation, educational aspirations, team sports, individual sports

JEL CODE: Z20

ON MY HONOR I HAVE NEITHER GIVEN NOR RECEIVED
UNAUTHORIZED AID ON THIS THESIS

Samantha Curran

Samantha Curran

TABLE OF CONTENTS

ABSTRACT	
INTRODUCTION	1
LITERATURE REVIEW	3
Youth Sport Participation	5
Mental Health Benefits	5
Social Benefits	6
Academic Benefits	7
Conclusion	7
THEORY	9
A Simple Model.....	9
Modifications	10
Empirical Model.....	11
Hypotheses	14
DATASET.....	15
Advantages and Disadvantages	16
METHODOLOGY	17
RESULTS	19
DISCUSSION	23
Future Modifications	26
CONCLUSION	27
REFERENCES	29

Introduction

Professional sports play a significant and public role in today's society; they are a source of civic pride, entertainment, and boost local economies (Marci, 2012). Sports, however, are not only significant at the professional level; youth sports act as one of the earliest forms of education for adolescents and are associated with multiple direct benefits (Coakley, 2011). Sports provide children the opportunity to learn a number of life skills that aid in their development as a person (Kirk, 2013). Recent studies have found benefits related to increases in academic success, self-esteem, positive behavior, and even educational aspirations (Gilman, Meyers, and Perez, 2004).

As participation in sports is linked to increases in educational aspirations, it is possible that the more children who participate in sports, the larger the number of high school graduates who aspire to attend college. In 2014, only 65.9% of high school graduates living in the United States chose to continue their education at the collegiate level; which leads to a large education gap (Norris, 2014). The idea behind this paper is to discover whether these direct benefits of youth sport participation, specifically during the high school years, can help tighten this gap by increasing the probability of students attending college. In addition to examining the relationship between youth sport participation and educational attainment, the effects of team sports and individual sports on educational attainment will be examined as well. Although both team and individual sports yield many benefits, they are vastly different.

The benefits and burdens of winning and losing games in team sports do not fall onto one individual; the result weighs on the team as a whole. As a result, it is not a matter of which team has the most skilled player; winning and losing depends on how

every player performs the day of competition. This causes a main focus of team sports to revolve around teamwork and communication. Individual sports on the other hand, revolve around how well one individual player does on the day of competition. This leads to individual sports focusing on discipline and self-confidence. It is widely known that team and individual sports are very different; however, it is unknown if the two yield different or similar benefits on attending college. In order to fill this gap in the literature, this paper will analyze the affects team and individual sports have on attending college.

The framework for this paper is to study not only the difference between team and individual sports, but to examine the relationship of sports in general on educational attainment. A cross sectional dataset of approximately 12,000 eighth grade students, located in the United States, is used to create two models which are outlined in detail in the Theory section. Model 1 focuses on the relationship of sports on attending college. Model 2 breaks sports into two categories, team and individual sports, to analyze the relationships of the two on educational attainment. A series of tests are run to examine these relationships and the outcomes are presented in the Results section, followed by a discussion to provide clarity behind the model's outcomes.

Literature Review

There are many determinants that are factored in when a student is deciding to attend college or not. Perna, Choy, Horn, Nuñez, and Chen, have revealed patterns in the type of students who choose to obtain a postsecondary education (Perna, 2000; Choy, Horn, Nuñez, and Chen, 2000). These patterns include factors such as a student's high school class rank, SAT scores, family income, family dynamic, sex, race, and parent educational attainment (Aughinbaugh, 2008). One such pattern illustrates that students who are female, neither Black nor Hispanic, received mostly A's and B's in high school, lived with both parents up to around age twelve, had better educated parents, and had parents who received higher levels of income, were more likely to attend a four year university than those who fulfilled different characteristics (Auginbaugh, 2008).

Additional research suggests that how students spend their free time outside of the classroom is another influential determinant of attending college. Around forty to fifty percent of a child's waking hours are spent outside of school (Larson and Verma, 1999). What a child chooses to do during this time, greatly influences their decision to attend college or not. The existing research suggests a positive relationship between participation in extracurricular activities and educational attainment. Involvement in extracurricular activities provides adolescents with structured environments that are linked to increases in self-esteem, high school grade-point average (GPA), educational aspirations, social competence, and school engagement (Barber, Stone, and Hunt, 2003).

James Coleman's work, *The Adolescent Society* (1961), was some of the first work done on the relationship between extracurricular activities and academic success. Contrary to many common beliefs, Coleman's theory stated that extracurricular activities

were detrimental to student's academic success, as the time and energy allotted to these activities, allocated time away from schooling and academic interests (Troutman and Dufur, 2007). Coleman's theory promoted further sociological attention to this relationship, leading to a number of newer studies.

In contrast to Coleman's suggestions, other studies have shown that there is a positive relationship between child development and participation in extracurricular activities. As nearly fifty percent of a child's total waking hours is spent outside of school (Larson and Verma, 1999), structured extracurricular activities foster pro-social behaviors, positive academic performance, school engagement, skill building, promotes self-concept, and provides students with a sense of belonging (Eccles, Barber, Stone, and Hunt, 2003). Children who do not take part in extracurricular activities are more subject to spending their free time pursuing nonproductive activities such as watching television, playing video games, or "hanging out" with friends (Gilman, Meyers, and Perez, 2004). Although these activities are not harmful when consumed in small quantities, the more time children spend in unstructured, unsupervised environments, the less optimal their academic performance and behaviors become (Gilman, Meyers, and Perez, 2004). Youth sports in particular, provide adolescents with fun learning environments that keep them active and involved in productive activities.

Although a majority of organized extracurricular activities provide academic and social developmental benefits to children (Mahoney, Cairns, and Farmer), there are differences between each activity. This paper will focus solely on youth sport participation, as it has a stronger positive impact on postsecondary education than

participation in any other extracurricular activity (Carlson, Scott, Planty, and Thompson, 2005).

Youth Sport Participation

As a result of the skills and experiences student-athletes are exposed to, previous studies conclude that high school athletes were more likely to attend college when compared to their non-athlete counterparts (Shifrer, Pearson, Muller, Wilkinson, 2015). There are many possible explanations as to why this may be, but the existing research provides three key explanations. First, a student that excels at a specific sport is exposed to the possibility of playing in college and receiving athletic scholarships (Shifrer, Pearson, Muller, Wilkinson, 2015). Second, the application process for attending college is very competitive. By participating in sports, you may appear to the admissions office as a “well rounded” student, who strives to be the best and has certain skills that will help them succeed at an institution (Shifrer, Pearson, Muller, Wilkinson, 2015). Finally, sport participation fosters many psychological, social, and academic benefits through the exposure of motivated peer groups, increased status among peers, and more adult interaction (DeMeulenaere, 2010).

Mental Health Benefits: Regular participation in athletics for high school students is associated with improving mental health amongst teens (Gilman, Meyers, and Perez, 2004). Studies report that adolescents who participate in sports have lower levels of depression, stress, anxiety, higher self-esteems, and a greater sense of self-efficiency (Scifrer, Pearson, Muller, Wilkinson, 2015; Bailey, 2006). Sports provide teenagers a safe way to escape the tensions of life (Coleman, 1991), while channeling their tensions into productive manners rather than destructive behavior (Zaff, Moore, Papillo, and

Williams, 2003). Through sports, adolescents are offered a more supportive peer group and are encouraged to interact with adults (Moran and Naples, 2014), which help children become more focused on health-enhancing behaviors and educational aspirations (Pate, Trost, Levin, and Dowda, 2000).

Females especially are impacted by athletic participation and some research suggests that females benefit more than males as sports provides them with unique opportunities to develop characteristics that have been traditionally unfeminine (Scifrer, Pearson, Muller, Wilkinson, 2015). The World Health Organization conducted a study that supports this by reporting that girls who participate in athletics are less likely to develop eating disorders, have a higher self-image, are less likely to get pregnant, and have more feelings of empowerment (Moran and Naples, 2014).

Social Benefits: Involvement in sports as a youth acts as a socialization and integration mechanism (Troutman and Dufur, 2007). Through participation in sports, adolescents develop a sense of belonging, social acceptance, and self-worth (Gilman, Meyers, and Perez, 2004). By bringing adolescents together with all sorts of social and economic backgrounds, through shared interests, they are provided with opportunities to develop valued competencies, social networks, community cohesion, and civic pride (Bailey, 2006). In a 1983 longitudinal study, adolescents who reportedly viewed themselves as “jocks” in high school were found to have the highest self-esteem and lowest amount of social isolation when compared to those students who identified themselves as something other than a “jock” (Gilman, Meyers, and Perez, 2004). With the sense of belonging and social acceptance, student athletes are found to have a more pro-school attitude and enjoy their high school experience more than non-athletes

(Bailey, 2006). This positive attitude towards learning and attending school is associated with higher academic achievement and higher college aspirations (Gilman, Meyers, and Perez, 2004).

Academic Benefits: The relationship between high school athletic participation and academic achievement is one of the most discussed topics in all of sports studies (Hartmann, 2008). It has long been known that higher levels of physical activity are linked to greater academic success amongst students (Fox, Anderson, Sztainer, and Wall, 2009). Many studies have revealed that when high school athletes are compared to non-athletes, the athletes tend to perform better academically (Eccles, Barber, Stone, and Hunt, 2003), receiving higher GPA's, better test scores, higher graduation rates, and have higher college aspirations (Hartman, 2008; Holloway, 1999).

Existing research suggests that adolescents, who participate in sports throughout high school, develop certain traits like perseverance, discipline, and self-control (Carlson, Scott, Planty, and Thompson, 2005). The enhancement of these specific skills and habits is linked to helping students succeed in the classroom (Hartman, 2008, Bailey, 2008), and is reason for why student athletes are found to be five percent more likely to have the desire to attend college than their non-athlete counterparts (Moran and Napels, 2014).

Conclusion: There are many direct benefits to high school students participating in sports. It is important to highlight these benefits as they each play a significant role on increasing a student's likelihood of attending college. Although each benefit (mental and physical health benefits, social benefits, and academic benefits), are all vastly different, they each tie into determining the likelihood of students' decisions to attend college. Students who enjoy school, are mentally healthy, and receive better grades have higher

chances of attending college than those who do not. As each one of those characteristics can arise from participating in sports, the literature suggests that sports in all have a positive affect on attending college.

Although there is large consensus that participation in youth sports increases academic achievement and a student's probability of attending college; there is little knowledge on the impact of team sport participation versus individual sport participation on the decision to attend college. The primary purpose of this paper is to fill this gap in the literature. A detailed examination on the relationship of team and individual sports on attending college is completed. In this model, team and individual sports are viewed as separate entities, with the purpose of discovering which type of sport may have the greatest affect on attending college.

Theory

Throughout the literature, there is an overall consensus that participation in youth sports increases academic achievement and a student's probability of attending college. However, there is little knowledge on the impact of team sport participation versus individual sport participation on the decision to attend college. The positive relationship between athletic participation and academic success is in large part explained by increases in social skills, developing a sense of community, and integration with peers and adults. As a result, are there different academic outcomes if an athlete participates in a team sport or an individual sport? This paper will not only further the research on the relationship between youth sport participation and educational attainment, but will fill the gap in the literature on the different effects of team sport participation versus individual sport participation on the decision to attend college.

A Simple Model:

A study completed by Naomi Fejgin, a sociologist who specializes in physical education, is used as the foundation for this model. Fejgin analyzes participation in competitive sports and its contribution to academic success by running OLS regressions for multiple models (Fejgin, 1994). The dependent variables for these models include: "education aspiration", "locus of control", "self-concept", "discipline problems", and "average grades", all concepts that lead to attending college. The independent variables include extracurricular activities and various background information, such as family income and race.

Modifications:

A few modifications were made to Fejgin's model to better represent the question being asked in this paper. As this paper is focused on the contributions athletics has on choosing to attend college, instead of academic success in high school, the dependent variable used in this model is called "college". "College" is a binary variable that marks whether each student attended a post-secondary institution or not. In addition to examining extracurricular activities, this paper measures the impact of both team and individual sports on educational attainment.

In order to account for the differences between team sports and individual sports, two models will be used in order to avoid multicollinearity. Model 1 includes twenty-two variables, while Model 2 includes twenty-three. The difference between the two models is that Model 1 includes the variable "sport" and Model 2 includes the variables "team" and "individual". The variables in these models were all selected based on previous determinants of those who choose to attend college.

In order to make this model a significant one, all influential aspects of choosing to go to college must be included as control variables as they also affect the decision to go to college. These variables include demographic information, study habits, grades, test scores, and extracurricular activities. A full list of the variables can be seen in the next section.

Empirical Model:

The empirical model used in this paper is as follows:

Model 1: (3.1)

$$\begin{aligned} \text{College} = & \beta_0 + \beta_1 \text{Female} + \beta_2 \text{White} + \beta_3 \text{Black} + \beta_4 \text{Hispanic} + \beta_5 \text{FatherEmploy} + \\ & \beta_6 \text{MotherEmploy} + \beta_7 \text{LivingMom} + \beta_8 \text{EducAspiration} + \\ & \beta_9 \text{StandardizedTestComposite} + \beta_{10} \text{FamilyIncome} + \beta_{11} \text{HW} + \beta_{12} \text{BothParents} + \\ & \beta_{13} \text{SelfEsteem} + \beta_{14} \text{Suspended} + \beta_{15} \text{Skip} + \beta_{16} \text{HobbyClub} + \beta_{17} \text{ServiceClub} + \\ & \beta_{18} \text{AcademicClub} + \beta_{19} \text{Band} + \beta_{20} \text{Sport} + \beta_{21} \text{AvgGrade} + \beta_{22} \text{ParentsEduc} + \varepsilon \end{aligned}$$

Model 2: (3.2)

$$\begin{aligned} \text{College} = & \beta_0 + \beta_1 \text{Female} + \beta_2 \text{White} + \beta_3 \text{Black} + \beta_4 \text{Hispanic} + \beta_5 \text{FatherEmploy} + \\ & \beta_6 \text{MotherEmploy} + \beta_7 \text{LivingMom} + \beta_8 \text{EducAspiration} + \\ & \beta_9 \text{StandardizedTestComposite} + \beta_{10} \text{FamilyIncome} + \beta_{11} \text{HW} + \beta_{12} \text{BothParents} + \\ & \beta_{13} \text{SelfEsteem} + \beta_{14} \text{Suspended} + \beta_{15} \text{Skip} + \beta_{16} \text{HobbyClub} + \beta_{17} \text{ServiceClub} + \\ & \beta_{18} \text{AcademicClub} + \beta_{19} \text{Band} + \beta_{20} \text{Individual} + \beta_{21} \text{Team} + \beta_{22} \text{AvgGrade} + \\ & \beta_{23} \text{ParentsEduc} + \varepsilon \end{aligned}$$

“College” represents the dependent variable, which measured whether the student attended a post-secondary institution by the year 2000. A full list of the independent variables and their signified meaning are as follows:

TABLE 3.1:
SUMMARY STATISTICS

Variable	Definition	Mean	Std. Deviation	Minimum	Maximum
β_1	Represents the Constant term for the model				
Female	Represents whether the sample member is male or female	.4969532	.5000113	0	1
White	Represents if the sample member is of white ethnicity	.7014369	.4576481	0	1
Black	Represents if the sample member is of black ethnicity	.0923363	.289513	0	1
Hispanic	Represents if the sample member is of Hispanic ethnicity	.1280823	.3341963	0	1
LivingMom	Represents if the mother of the sample member is living at the start of the survey (1988)	.018643	.2733939	0	1
MotherEmploy	Represents the employment status of the mother at the start of the survey (1988)	.8930868	.3090166	0	1
FatherEmploy	Represents the employment status of the father at the start of the survey (1988)	.9250421	.2633357	0	1
EducAspiration	Represents the educational goals the sample member sets for themselves	.8112773	.3913055	0	1
Standardized Test Composite	Represents the overall standardized test score for the sample member	51.32294	9.980579	30.31	71.82
FamilyIncome	Represents the yearly income of the sample member's family	52013.14	62824.81	0	450000
HW	Represents the number of hours the sample member spends doing homework	2.559959	2.902653	0	15
Sports	Represents if the sample member is involved in sports as an extracurricular activity	.1233119	.3287983	0	1
Individual	Represents whether the sample member participates in an individual sport	.3323442	.4710795	0	1

Team	Represents whether the sample member participates in a team sport	.5363159	.4987067	0	1
SelfEsteem	Represents if the sample member considers themselves to have a high or low self-esteem	.976981	.26179	0	1
Suspended	Represents if the sample member has ever been suspended during high school	.0444701	.2061455	0	1
Skip	Represents if the sample member ever purposely skipped class during high school	.5005168	.5000232	0	1
ServiceClub	Represents the involvement of the sample member in school service clubs during high school	.2227337	.4161005	0	1
AcademicClub	Represents the involvement of the sample member in school academic clubs during high school	.4637635	.4987116	0	1
HobbyClub	Represents the involvement of the sample member in school hobby clubs during high school	.1502276	.3573138	0	1
Band	Represents the involvement of the sample member in band during high school	.3004128	.4584618	0	1
AvgGrade	Represents the average of the sample member's grades from all high school core classes	6.887938	2.568848	1	13
ParentsEduc	Represents the years of education the sample member's parents attained	14.36783	3.108336	10	24
ε	Represents the error term for the model				

Hypotheses

The purpose of this model is to test the significance of youth sport participation, including both team and individual sports, and their affect on attending college. The null and alternative hypotheses are used to test the affect of each independent variable on the dependent variable and are as follows:

Null Hypothesis: Youth sport participation does not affect a student's probability of attending college.

Alternative Hypothesis: Youth sport participation positively affects a student's likelihood of attending college.

When studying the independent variables and their respective coefficients, the variables that are significant, meaning the Z-statistic is greater than 1.96 at the 5% significance level, indicate that they do cause a change in the dependent variable. Thus the null hypothesis can be rejected at the 5% significance level.

Dataset

A longitudinal study, *High School and Beyond*, from the National Center for Education Statistics was used to determine the relationship between youth sport participation and educational attainment (Biau, Kernéis, and Porcher, 2008). Within this study 12,145 eighth grade students, spanning from all over the United States, were asked a series of questions regarding, school, work, home experiences, health, extracurricular involvement, aspirations, and social experiences. The study began in 1988 and continued through four follow-up surveys, finishing in the year 2000. To further enhance the data, the student's parents, teachers, and their schools were asked similar questions regarding the student, background information, and school environment. In addition, this also allowed for the acquiring of student transcripts, including grades, test scores, and enrollment statuses.

This panel dataset, spans across twelve years of these student's lives and conducts four additional surveys that were taken place in significant years. The first follow-up was completed in 1990, taking place when most students were in their sophomore year of high school, the second follow-up was conducted in 1992, when majority of the sample members were in their senior year of high school, the third follow-up was conducted in 1994, when most sample members were two years out of high school, and the fourth and final follow-up was taken four years later in 2000 to include any post secondary education, jobs, and lifestyle changes. Each follow-up survey marked any changes in the student's life, enrollment statuses, behavioral issues, extracurricular involvement, and average grades.

Advantages and Disadvantages

There are two key advantages to this dataset. First, the large sample size minimizes the risk for Type I and Type II errors and makes the results more representative of an entire population (Biau, Kernéis, and Porcher, 2008). Second, very few studies execute an analysis for the type of sport being played. A majority of the previously completed studies regarding this topic, looked at the effect of sports overall. This study divided sports into two categories, team and individual, which highlighted the differences and similarities between the two.

One limitation of this dataset is that it is a self-reported survey. This means that sample members had the ability to answer questions misleadingly; therefore, it is unknown if the answers provided were a true representation of the sample member. As a result, this survey is susceptible to self-reported bias, meaning that the sample members could answer a question dishonestly. Many studies are prone to self-report bias, and in order to minimize these errors in the data, the model must draw from a large sample size. This model uses 12,141 students in order to account for this potential limitation.

Methodology

In order to simplify the model, the data was transformed from panel data into a cross-sectional dataset. The only variable used in this model from the year 2000 is “college”, used to indicate the enrollment of a student in a post-secondary institution. All of the independent variables are derived from the surveys conducted before the year 2000, to compile a dataset that will take past events and predict the likelihood of attending college in the future. Combining the answers for each individual variable from the first four surveys, into one new variable, generated the independent variables used in this model. To be more specific, the continuous variables took an average of the first four surveys. Examples of these variables include averages for family income, grades, and test scores. For the dummy variables, each data point was coded as either a 1 or a 0 indicating whether the student at any point, during the twelve years, participated in that specific activity or not. For example, if a sample member ever indicated in the first four surveys that they participated in sports, it was coded as 1 for having participated.

The dependent variable in this model is called “college”, which is a binary variable that measures whether or not a student attended a post-secondary institution. As the dependent variable is binary, meaning it can only take two values, attending college and not attending college, a probit model must be used. The probit model measured the maximum likelihood of a student attending college based upon the independent variables.

The estimated parameters were generated once the probit regression was run. These estimations provided the sign of the coefficients, indicating the direction of the effect; however, they did not include the marginal effects, meaning the coefficients were an inaccurate representation of the probability for a unit change in an independent

variable. Therefore, average marginal effects were calculated, allowing for accurate interpretation of the probabilities of the independent variables affecting educational attainment. Once the marginal effects were generated, a few tests were run to check on the accuracy of the marginal effects.

A heteroskedastic probit regression was run in order to test for heteroskedasticity within the two models. Heteroskedasticity is when the variance amongst the variables is non-constant. As both models produced smaller wald chi-squared values than what is on the Chi-Square Distribution Table, it can be concluded that both models are homoscedastic. This means that the error term in this model is constant across all independent variables.

In addition to testing for heteroskedasticity, multicollinearity was tested for as well. Multicollinearity occurs when two variables are highly correlated, meaning that two variables are linearly related. In order to detect for multicollinearity, a simple correlation test was run using all of the independent variables. If two variables are highly correlated, having a correlation value of 0.5 or higher, multicollinearity is present. In both Models 1 and 2 multicollinearity was absent, indicating that all variables are independently related to one another and produce accurate results.

Results

When the probit regression was run with the marginal effects, both Model 1 and Model 2 were found to be statistically significant with a p-value of 0.000. This indicates that overall, the variables are a good fit for the two models. In Model 1, a few variables are worth mentioning. The variables “sport”, “female”, “education aspiration”, “average grades”, and “band” were all significant variables that positively affected a student’s probability of attending college. Of those variables “education aspiration” and “sport” had the largest affect of attending college with probabilities of 0.0921 and 0.0267 or 9.21% and 2.67% respectively. In Model 2, the same variables were found to positively affect the dependent variable with statistical significance, with the addition of “team” being significant as well. The variable “team” increased the probability of attending college by 0.0279 or 2.79% and the variable “individual” increased the probability of attending college by 0.009 or 0.9%; however, “individual” was statistically insignificant.

A full list of the significant variables and variables worth mentioning from models 1 and 2, are listed in the following tables. The tables include the variables corresponding average marginal effects and z-statistics. Table 6.1 gives the results of Model 1 and Table 6.2 gives the results of Model 2.

TABLE 6.1

MODEL 1 RESULTS FOR IMPACT ON ATTENDING COLLEGE

Variable	dy/dx (z-statistic)
Female	.0180637 (2.36)
EducAspiration	.0921534 (11.19)
StandardizeTestComposite	.0030815 (5.96)
FamilyIncome	8.68e-07 (2.82)
Sport	.026738 (3.57)
Suspended	-.0368023 (-2.45)
ServiceClub	.0259468 (2.55)
Band	.0209398 (2.46)
AvgGrade	.0217463 (10.14)
ParentsEduc	.0209912 (9.29)

TABLE 6.2

MODEL 2 RESULTS FOR IMPACT ON ATTENDING COLLEGE

Variable	dy/dx (z-statistic)
Female	0.214494 (2.67)
EducAspiration	.0884935 (10.41)
StandardizeTestComposite	.0030808 (5.75)
FamilyIncome	8.03e-07 (2.63)
Individual	.009103 (0.24)
Team	.0279994 (3.58)
BothParents	-.0641333 (-2.00)
Suspended	-.0354928 (-2.29)
ServiceClub	.02199042 (2.09)
Band	.0234601 (2.67)
AvgGrade	.0218679 (9.97)
ParentsEduc	.0207593 (8.89)

In order to understand why the variable “team” was significant and “individual” was not, a correlation test was run to see if the two variables were highly correlated affecting their significance. Although the variables “team” and “individual” were not correlated enough to fully explain the insignificance of the variable “individual”, the two were more correlated than most, at a correlation value of 0.2165.

Discussion

Based on the results of this model, an adolescent's involvement in extracurricular activities, no matter the type of activity, positively impacts their probability of attending college. As previously discussed, forty to fifty percent of a child's waking hours are spent outside of school. The involvement of extracurricular activities dedicates more time to learning and developing social and working skills, while lessening the time for less progressive activities such as watching television and playing video games. These activities act as a method for continuing a child's learning beyond being in the classroom, providing them with more opportunities to learn and grow.

When taking a closer look at the activities and their corresponding marginal effects, it is apparent that each activity affects the probability of attending college with different magnitudes. Although students who participate in any extracurricular activity are more likely to attend college, students who play sports increase their likelihood of attending college by 0.0267 or 2.67%. The variables "HobbyClub" and "AcademicClub" were found insignificant at around the 20% confidence level; however, their marginal affects were positive. "Band" and "ServiceClub" were both significant and had positive marginal affects as well; although, sports remains as having the largest impact.

Based on the literature available for youth sports and educational success, a valid reasoning for why this may be the case is because of the specific skill sets athletes develop through sports. Youth sports are a unique extracurricular activity that challenges people in a wide range of ways. Athletes are not only put to a physical test every time they take the field or court, but they are required to develop self-confidence, respect, and must learn how to work with others to be a team player. These skills and characteristics

are not only required on the field, but are connected in all aspects of life; in school, work, and social activities. Children who participate in sports are constantly surrounded by people demonstrating these characteristics and have more opportunities to develop and learn these important skills.

In addition to the enhancement of life skills, youth sport participation provides students with different avenues to attend college. First, participating in competitive sports opens the idea of playing in college and receiving athletic scholarships. This is very appealing for many individuals, as they not only get to continue playing the sports they enjoy, but they may also receive funding to help pay for the tuition of these post-secondary institutions. Secondly, high school athletes have to keep a standard grade point average in order to be eligible to play. This provides motivation and incentive to study and do well in school, assisting their academic success. In general, students who receive better grades are provided with more opportunities to attend college because they have more options. Universities accept students based on a number of things; however, a student's grade point average is arguably one of the most influential aspects (Chapman, 1981). Students with lower GPA's are limited to the schools they can attend, decreasing their likelihood of continuing their education and increasing their probability of choosing other life avenues.

When comparing team sports and individual sports, this model does not show any significant difference in their affect on the probability of attending college. The variable "team" was found to be statistically significant and increase a student's likelihood of attending college by 0.0279, or about 2.8%. The variable "individual" also had a positive marginal affect, meaning it increased probability of attending college by 0.009 or 0.9%;

however, this variable was insignificant, so its measure of affect cannot be perceived as accurate.

It is possible that team sports and individual sports help children develop too similar of skill sets that no difference between the two can be drawn. This can be explained by the fact that sports in general, team or individual, help enhance self-esteem, good sportsmanlike behavior, social skills, and emphasizes the importance of setting goals. Individual sports for example, although primarily focused on individual scores and times, still maintain some aspect of community, which is found in team sports. Swimming, track, and gymnastics are all perfect examples. Although the participants of these sports compete on their own, they constantly practice with the same group of people and even work to win team titles, in addition to their own individual titles, by combining all of the individual scores. This provides athletes who participate in individual sports the opportunity to communicate, lead, and work with others to achieve their goals, which matches the foundation of team sports. As a result, the two can be viewed as having many similarities, leading to similar affects on the probability of attending college.

An additional explanation could be that a number of the students in this dataset participated in both team and individual sports or did not stick to one sport all the way through high school. This would result in correlation between the variables “team” and “individual”. Many student athletes in high school take part in more than one sport (Santa, 2008). This dataset does not take into account multisport athletes or changes in sport participation, therefore it is difficult to detect a difference between the affect of team and individual sports on attending college.

Future Modifications:

The results of this paper concur with the literature. However, a difference between the relationship of team and individual sports on attending college is not found. If this experiment were to be completed again, a more clear and detailed dataset may lead to distinguishing results. A dataset that accounts for changes in sport participation and multisport athletes, may better detect which type of sport, team or individual, has a larger affect on educational attainment.

In addition, looking at who finishes college as opposed to who simply attends college would be interesting to add to this study. In today's society, attending college is becoming more of a standard. More professions require a college degree, increasing the number of people attending post-secondary institutions. As a result, it is possible that youth sport participation, although impactful, may not have as large of an affect on the likelihood of attending college as it once did. It is possible however; that youth sport participation has a larger significant impact on the percentage of people who graduate from college.

Conclusion

Irrespective of the increased focus on the education gap by the federal government over the past decade, the education gap is still an ever more prevailing issue within the United States (Camera, 2016). Specific acts, such as No Child Left Behind, and increases in spending have shown little progress in tightening this gap (Porter, 2015). This paper proposes the idea that participation in sports during the high school years will increase the likelihood of students attending college, thus aiding in tightening the achievement gap, regardless of family status, race, gender, or origin. This paper focused on the relationship between youth sport participation and its affect on educational attainment. In addition to examining this relationship, the effects of team sports and individual sports on educational attainment were examined as well.

A cross sectional dataset of approximately 12,000 eighth grade students, located in the United States, was used to create two models which examined the relationship of sports on attending college, and more specifically, team and individual sports and their affects on attending college. Two probit regressions were run, one for each model, and generated results that are in consensus with the available literature. The results concluded that participation in sports increases a student's likelihood of attending college. Among all extracurricular activities, athletics results in the largest impact. However, when dividing sports into two categories, team and individual sports, no conclusions on their effects on educational attainment may be drawn.

Contrary to the many differences between team and individual sports, this study shows no statistically significant difference and cannot confirm that the two have individual effects on the probability of attending college. A probable cause for this result

is not taking into account students who were multisport athletes or who simply changed from playing one sport to another during high school. Although no difference between team sports and individual sports can be seen, it is important to note the significant affect of sports in general on attending college.

Youth sports provide children with a positive environment to learn and grow, and it gives them the opportunity to have a better future through the continuation of learning. It can be concluded that youth sports are an important part of a child's development that can help improve their grades and their educational aspirations. As a result, youth sports provide adolescents an avenue for bettering themselves and thus betting their opportunities for the future.

References

- Bailey, R. (2006). Physical Education and Sport in Schools: A Review of Benefits and Outcomes. *J School Health Journal of School Health*, 76(8), 397-401.
- Bergeron, M. F. (2007). Improving health through youth sports: Is participation enough? Retrieved January 18, 2016, from https://0ea29dd9a16d63dcc571-314f1dcf5bee97a05ffca38f060fb9e3.ssl.cf1.rackcdn.com/uploads/center_resource/document/451/Health_Improvement_Through_Sports.pdf
- Biau, D. J., Kernéis, S., & Porcher, R. (2008). Statistics in Brief: The Importance of Sample Size in the Planning and Interpretation of Medical Research. *NCBI*. Retrieved March 7, 2016, from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2493004/>
- Carlson, D., Scott, L., Planty, M., Thompson, J. (2005). What is the Status of High School Athletes 8 Years After Their Senior year? Retrieved December 2, 2015.
- Camera, L. (2016). Achievement Gap Between White and Black Students Still Gaping. *U.S. News & World Report*. Retrieved March 7, 2016, from <http://www.usnews.com/news/blogs/data-mine/2016/01/13/achievement-gap-between-white-and-black-students-still-gaping>
- Chapman, D. W.. (1981). A Model of Student College Choice. *The Journal of Higher Education*, 52(5), 490–505. <http://doi.org/10.2307/1981837>
- Choy, S. P., Horn, L. J., Nuñez, A.-M. and Chen, X. (2000), Transition to College: What Helps At-Risk Students and Students Whose Parents Did Not Attend College. *New Directions for Institutional Research*, 2000: 45–63. doi: 10.1002/ir.10704
- Coakley, J. (2011). Youth Sports: What Counts as "Positive Development" *Sports & Social Issues*. Retrieved March 5, 2016, from <http://jss.sagepub.com/content/35/3/306.short>
- DeMeulenaere, E. (2010). Playing the game: Sports as a force for promoting improved academic performance for urban youth. *Journal of Cultural Diversity*, 17(4), 127-135.
- Eccles, J. S., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular Activities and Adolescent Development. *Journal of Social Issues J Social Issues*, 59(4), 865-889.

- Fejgin, N. (1994). *Participation in High School Competitive Sports: A subversion of School Mission or Contribution to Academic Success*. Retrieved from https://books.google.com/books?id=NNuDZJtRweUC&pg=PA95&lpg=PA95&q=NaomiFejgin&source=bl&ots=eCVoDFe9cg&sig=tV2h2RGqCHVH6N3oZn7stDmxTTs&hl=en&sa=X&ved=0ahUKEwiC6Zymwa_LAhVBRmMKHdqdCowQ6AEIjAC#v=onepage&q=NaomiFejgin&f=false.
- Fox, C. K., Barr-Anderson, D., Neumark-Sztainer, D., & Wall, M. (2010). Physical Activity and Sports Team Participation: Associations With Academic Outcomes in Middle School and High School Students. *Journal of School Health, 80*(1), 31-37.
- Gerber, S. B. (1996). Extracurricular Activities and Academic Achievement. *Journal of Research and Development in Education, 30*, 42, 50.
- Gilman, R., Meyers, J., & Perez, L. (2003). Structured extracurricular activities among adolescents: Findings and implications for school psychologists. *Psychol. Schs. Psychology in the Schools, 41*(1), 31-41.
- Hartmann, D., Dr. (2008). High School Participation and Educational Attainment: Recognizing, Assessing, and Utilizing the Relationship. Retrieved January 9, 2016.
- Holloway, J. H. (1999). Extracurricular Activities: The Path to Academic Success? Retrieved December 12, 2015.
- Kirk. (n.d.). Youth Development. *The YMCA*. Retrieved March 5, 2016, from http://www.ymcaroanoke.org/sites/default/files/program_guides/SUMMER_2013/2013_summer-kfy.pdf
- Larson, R. W., & Verma, S. (1999). How children and adolescents spend time across the world: Work, play, and developmental opportunities. *Psychological Bulletin, 125*(6), 701-736.
- Mahoney, Joseph L.; Cairns, Beverley D.; Farmer, Thomas W. *Journal of Educational Psychology, Vol 95*(2), Jun 2003, 409-418. <http://dx.doi.org/10.1037/0022-0663.95.2.409>
- Marci, K. J. (2012). Not Just a Game: Sport and Society in the United States. *Student Pulse, 4*(08). Retrieved March 5, 2016, from <http://www.studentpulse.com/articles/676/not-just-a-game-sport-and-society-in-the-united-states>

- Moran, G. (2014). The Effect of Participation in Youth Sports on Women's Economic Success. Retrieved December 15, 2015, from <http://business.tcnj.edu/files/2014/05/Moran-2014-SeniorThesis.revised.pdf>
- Norris, F. (2014). Fewer U.S. Graduates Opt for College After High School. *The New York Times*. Retrieved March 5, 2016, from http://www.nytimes.com/2014/04/26/business/fewer-us-high-school-graduates-opt-for-college.html?_r=0
- Okely, A. D., Booth, M. L., & Patterson, J. W. (2001). Relationship of physical activity to fundamental movement skills among adolescents. *Medicine and Science in Sports and Exercise*, 33(11), 1899-1904. Retrieved December 18, 2015.
- Pate, R., Troast, S., Levin, S., & Dowda, M. (n.d.). Sports Participation and Health-Related Behaviors Among US Youth. Retrieved January 20, 2016, from <http://archpedi.jamanetwork.com/article.aspx?articleid=351023>
- Perna, L. W.. (2000). Differences in the Decision to Attend College among African Americans, Hispanics, and Whites. *The Journal of Higher Education*, 71(2), 117–141. <http://doi.org/10.2307/2649245>
- Porter, A. (2015). Newsroom. Retrieved March 07, 2016, from <https://www.gse.upenn.edu/news/rethinking-achievement-gap>
- Santa, J. (2008, December 14). *Are There Benefits of Multiple Sports Participation?* Lecture presented at 39th Annual NIAAA / NFHS Conference in California, San Diego. Retrieved March 7, 2016, from <http://www.easd.k12.pa.us/ehs/athletics/BenefitsofMultipleSportParticipation070910.pdf>
- Shifrer, D., Pearson, J., Muller, C., & Wilkinson, L. (2012). College-Going Benefits of High School Sports Participation: Race and Gender Differences Over Three Decades. *Youth & Society*, 47(3), 295-318.
- Sports Participation & Health-Related Benefits. (2001, June). Retrieved February 1, 2016, from https://www.iahsaa.org/resource_center/Academic_Assistance/Benefits_Sports.htm
- Troutman, K. P., & Dufur, M. J. (2007). From High School Jocks to College Grads: Assessing the Long-Term Effects of High School Sport Participation on Females' Educational Attainment. *Youth & Society*, 38(4), 443-462.
- Williams, Staurowsky, & DeSousa. (2009). Her Life Depends On It II: Sport, Physical Activity, and the Health and Well-Being of American Girls and Women. Retrieved December 15, 2015.

Zaff, J. F., Moore, K. A., Papillo, A. R., & Williams, S. (2003). Implications of Extracurricular Activity Participation During Adolescence on Positive Outcomes. *Journal of Adolescent Research J Adolesc Res*, 18(6), 599-630.