The Impact of College Sports Success on the Quantity and Quality of Student Applications

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The Impact of College Sports Success on the Quantity and Quality of Student Applications*

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Abstract

Empirical studies have produced mixed results on the relationship between a school's sports success and the quantity and quality of students that apply to the school. This study uses two unique datasets to shed additional light on the indirect benefits that sports success provides to NCAA Division I schools. Key findings include: (i) football and basketball success significantly increase the quantity of applications to a school, with estimates ranging from 2-8% for the top 20 football schools and the top 16 basketball schools each year, (ii) private schools see increases in application rates after sports success that are 2-4 times higher than public schools, (iii) the extra applications received are composed of both low and high SAT scoring students thus providing potential for schools to improve their admission outcomes, and (iv) schools appear to exploit these increases in applications by improving both the number and the quality of incoming students.

Keywords: School choice; Student quality; College sports

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1. Introduction

Since the beginning of intercollegiate sports, the role of athletics within higher education has been the topic of heated debate.[1] Whether to invest funds into building a new football stadium or to improve a school's library can cause major disagreements. Lately the debate has become especially contentious as a result of widely publicized scandals involving student athletes and coaches and because of the increasing amount of resources schools must invest to remain competitive in today's intercollegiate athletic environment. In fact, Congress has recently begun to question the National Collegiate Athletic Association's (NCAA) role in higher education and their tax exempt status. Representative Bill Thomas asked the president of the NCAA, Dr. Myles Brand, in 2006: "*How does playing major college football or men's basketball in a highly commercialized, profit-seeking, entertainment environment further the educational purpose of your member institutions*?"[2]

Some analysts would answer Representative Bill Thomas's question by suggesting that sports *does not* further the academic objectives of higher education. They would argue that intercollegiate athletics is akin to an "arms race" because of the rank-dependent nature of sports and that the money spent on athletic programs should be used to directly influence the academic mission of the school instead. However, others suggest that athletics may act more as a complement than a substitute to a school's academic mission because of a variety of indirect benefits generated by athletic programs such as student body unity, increased student body diversity, increased alumni donations and increased applications.

Until recently, evidence for the indirect benefits of the exposure provided by successful athletic programs was based more on anecdote than empirical research.[3] Early work by Coughlin and Erekson (1984) looked at athletics and contributions, but also raised interesting questions about the role of athletics in higher education. Another seminal paper, McCormick and Tinsley (1987) hypothesized that schools with athletic success may receive more applications, thereby allowing the schools to be more selective in the quality of students they admit. They used data on average SAT scores and in-conference football winning percentages for 44 schools in "major" athletic conferences for the years 1981-1984, and found some evidence that football success can increase average incoming student quality.[4] Subsequent research has further tested the increased applications (quantity effect) and increased selectivity (quality effect) hypotheses of McCormick and Tinsley, but has produced mixed results.[5] The inconsistent results in the literature are likely the product of: (i) different indicators of athletic success, (ii) a limited number of observations across time and across schools which has typically necessitated a cross-sectional analysis, and (iii) different econometric specifications.

This study extends the literature on the indirect benefits of sports success by addressing some of the data limitations and methodological difficulties of previous work. To do this we constructed a comprehensive dataset of school applications, SAT scores, control variables, and athletic success indicators. Our dataset is a panel of all (approximately 330) NCAA Division I schools from 1983-2002. Our analysis uses plausible indicators for both football and basketball success which are estimated jointly in a fixed-effects framework. This allows a more comprehensive examination of the impact of sports success on the quantity and quality of incoming students. Using this data and identification strategy, we find evidence that both football and basketball success can have sizeable impacts on the number of applications received by a school (in the range of 2-15% depending on the sport, level of success and type of school), and modest impacts on average student quality as measured by SAT scores.

Due to concerns with the reliability of the self-reported SAT scores in our primary dataset, we also acquired a unique administrative dataset that reports the SAT scores of high school students preparing for college to further understand the average "quality" of the student that sports success attracts. This individual-level data is aggregated to the school level and allows us to analyze the impact of sports success on the number of SAT-takers (by SAT score) who sent their SAT scores to Division I schools. Again the panel nature of the data allows us to estimate a fixed effects model to control for unobserved school-level variables. The results of this analysis show that sports success has an impact on where students send their SAT scores. This analysis confirms and expands the results from the application dataset. Furthermore, this data makes it clear that both low and high SAT scoring students are influenced by athletic events.[6]

Besides increasing the quality of enrolled students, schools have other ways to exploit an increased number of applications due to sports success: through increased enrollments or increased tuition. In fact, some schools that offer automatic admission to students who reach certain quality thresholds may be forced to enroll more students when the demand for education at their school goes up. Using the same athletic success indicators and fixed-effects framework, we find that schools with basketball success tend to exploit an increase in applications by being more selective in the students they enroll. Schools with football success on the other hand, tend to increase enrollments.

Throughout our analysis we illustrate how the average effects that we find differ between public and private schools. We find that this differentiation is often of significance. Specifically, we show that private schools see increases in application rates after sports successes that are 2-4 times higher than public schools. Furthermore, we show that the increases in enrollment that take place after football success are mainly driven by public schools. We also find some evidence that private schools exploit an increase in applications due to basketball success by increasing tuition rates.

We think that our results significantly extend the existing literature and provide important insights about the impact of sports success on college choice. As Siegfried and Getz (2006) recently pointed out, students often choose a college or university based on limited information about reputation. Athletics is one instrument that institutions of higher education have at their disposal that can be used to directly affect reputation and the prominence of their schools.[7] Our results suggest that sports success can affect the number of incoming applications, and through a school's selectivity, the quality of the incoming class. Whether or not the expenditures required to receive these indirect benefits promote efficiency in education is certainly not determined in the present analysis. Nonetheless, with the large and detailed datasets we acquired combined with the fixed effect specification that included both college basketball and football success variables while controlling for unobserved school-specific effects, it is our view that the range of estimates showing the sensitivity of applications to college sports performance can aid university administrators and faculty in better understanding how athletic programs relate to recruitment for their respective institutions.

The paper proceeds as follows. Section 2 provides a brief literature review of previous work that has investigated the relationship between a school's sports success and the quantity and quality of students that apply to the school. Section 3 describes the data used in our analysis. Section 4 presents our empirical strategy for identifying school-level effects due to athletic success. Section 5 describes the results from our empirical analysis. Finally, section 6 concludes the study.

2. Literature Review

Athletics is a prominent part of higher education. Yet the empirical work on the impact of sports success on the quantity and quality of incoming students is surprisingly limited. Since the seminal work by McCormick and Tinsley (1987), there have been a small number of studies that have attempted to provide empirical evidence on this topic. In this section we review these studies to motivate the present analysis.

Table 1 provides a summary of the previous literature.[8] The table is divided into two panels. Panel A describes the studies that have directly or indirectly looked at the relationship between sports success and the *quantity* of incoming applications. These studies have found some evidence that basketball and football success can increase applications or out-of-state enrollments. Panel B describes the studies that have looked at the relationship between sports success and the *quality* of incoming applications. These studies all re-analyze the work of McCormick and Tinsley (1987) using different data and control variables. The results of these studies are mixed. Some of these analyses find evidence for football and basketball success affecting incoming average SAT scores whereas others do not.

Differences in how the studies measured sports success make it difficult to compare the primary results of these studies. For example, Mixon and Hsing (1994) and McCormick and Tinsley use the broad measures of being in various NCAA and the National Association of Intercollegiate Athletics (NAIA) athletic divisions or being in "big-time" athletic conferences to proxy prominent and exciting athletic events at a university. Basketball success was modeled by Bremmer and Kesselring (1993) as being the number of NCAA basketball tournament appearances prior to the year the analysis was conducted. Mixon (1995) and Mixon and Ressler (1995) on the other hand use the number of rounds a basketball team played in the NCAA basketball tournament. Football success was measured by Murphy and Trandel (1994) and McCormick and Tinsley as within-conference winning percentage. Bremmer and Kesslring used the number of football bowl games in the preceeding ten years. Finally Tucker and Amato used the Associated Press's end of year rankings of football teams. While capturing some measures of historical athletic success, many of these variables may fail to capture the shorter-term episodic success that is an important feature of college sports.

Perhaps more important to the reliability of the results of these studies than the differences in how sports success was measured, are the data limitations they faced and the resulting identification strategies employed. All of the analyses except for that of Murphy and Trandel (1994) use a single year of school information for a limited set of schools.[9] For example, Mixon and Ressler (1995) collected data from "Peterson's Guide" for one year and 156 schools that participate in Division I-A collegiate basketball. The lack of temporal variation in this data necessitates a cross-sectional identification strategy. A major concern with cross-sectional analyses of this type is the possibility that there is unobserved school-specific information, correlated with sports success, that may bias estimates. In fact, much of the debate surrounding differences in estimates in these cross-sectional analyses hinges on arguments about the “proper” school quality controls to include in the regressions. Another concern is the college guide data that is typically used. It is widely known that the self-reported data (especially data on SAT scores) from sources such as U.S. News and World Report and Peterson’s can have inaccuracies or problems with institutions not reporting data.[10]

The present study attempts to overcome some of the data and identification strategy limitations of this earlier literature. The goal is to acquire more complete datasets and to provide an identification strategy that seeks to better control for unobserved school-specific effects. Furthermore the identification strategy will be developed to jointly estimate the impact of reasonable measures of *both* basketball and football success on the rates of incoming applications and the quality of those applications. Furthermore, we explicitly analyze the heterogeneous impact that sports success has on public and private schools.[11] In doing this it is our hope that a broader, more consistent picture of the relationship between athletics and academics will emerge.

3. Primary Data Sources

Students respond to several pieces of information when deciding where to go to college. Some types of information that have been shown to effect college choice include the costs of attending college (e.g. tuition, living costs, scholarships, etc. see Fuller, Manski, and Wise (1982); and Avery & Hoxby (2004)) and attributes of the school (e.g. college size, location, academic programs, reputation, etc. see Chapman (1981)).

Athletic success likely has two primary components that affect college choice decisions: historic athletic strength and episodic athletic strength. The datasets we use allow us to control for historic athletic strength and analyze episodic athletic strength.

We use three primary datasets to conduct our empirical analysis. Each of these datasets is compiled so that the unit of observation is an institution of higher education that participates in Division I basketball or Division I-A football. The first dataset is a compilation of sports rankings which are used to measure athletic success. The second dataset provides school characteristics including the number of applications, average SAT scores, and the enrollment size for each year's incoming class of students. The third dataset provides the number of SAT scores sent to each institution of higher education. The main features of these three datasets are discussed in more detail below.

Football and Basketball Success Indicators

Our indicator of football success is the Associated Press's college football poll. The Associated Press has produced their "AP College Football Poll" annually since 1936. They rank NCAA Division I-A football teams based on game performances throughout the year. We collected the end of season rankings for all teams finishing in the top twenty between the years of 1980 and 2003.[12] Although this indicator does not incorporate all measures of success (for example, big wins against key rivals, exciting individual players on a team, etc.) it is probably a reasonable proxy of football success each year. It also provides a consistent measure of success for all teams in our sample over the time frame of our data.

It is widely agreed that the greatest media exposure and indicator of success for a men's college basketball team (particularly on a national level) comes from the NCAA college basketball tournament. "March Madness" as it is often called, takes place at the end of the college basketball season during March and the beginning of April. It is a single elimination tournament that determines who wins the college basketball championship. Before 1985, 48-53 teams were invited to the tournament each year. Since 1985, 64 teams have been invited to play each year.[13] We collected information on all college basketball teams that were invited to the tournament between 1980 and 2003. From this data we created dummy variables that indicate the furthest round in which a team played. In our analysis we use the rounds of 64, 16, 4 and champion. We think that a team's progress in the NCAA tournament provides a good proxy of a basketball team's success in any given year during the time frame of our data.

To prepare for the identification strategy described in section 4, dummy variables were created for schools' football programs that were ranked in the AP top twenty, top 10, and for the football champion of each year. Similarly, dummy variables were created for schools' men's basketball programs that made it to the NCAA tournament, the sweet 16, the final four, and for the basketball champion of each year.[14] Although less parsimonious as continuous measures of athletic performance (i.e. the number of games played in the NCAA tournament), these dummy variables will allow for an analysis that provides a sense of the different marginal effects of various categories of football and basketball success. Certainly the marginal effect of winning 1 game in the NCAA tournament is much different than winning the sixth game. Furthermore, the lagged counterparts to the dummy variables will help us to better understand the persistence of any impact of college sports success on the quantity and quality of students at schools.

College Data

As discussed in section 2, a weakness of earlier studies on the impacts of athletic success was the limited number of observations across time and across schools. In an attempt to rectify this shortcoming, we purchased access to a licensed dataset from the Thomson Corporation that contains detailed college-level data. Thomson Corporation is the company that publishes the well known "Peterson's Guide to Four Year Colleges". In fact, most of the studies we outlined in the introduction actually culled applications and SAT data from the print versions of this guide. The dataset includes annual statistics on all major colleges and universities in the United States from 1983 to 2002. We restrict the dataset to the 332 schools that participated in NCAA Division I basketball or Division I-A football between 1983 and 2002.

We collected four other variables to use as controls that are not available for every year in our version of the Peterson's dataset. Average nine-month full time professor salary and total annual cost of attendance at each school were collected from the Integrated Post Secondary Education Survey that is conducted by the National Center of Education Statistics. The number of high school diplomas given out by state was also collected from the National Center of Education Statistics. The per capita income between 1984 and 2002 by state was collected from the Bureau of Labor Statistics. Both of these state level variables were then linked to all colleges within a state.

Table 2 displays summary statistics of the variables used in our analysis from the Peterson's dataset. The first three columns give the descriptive statistics for the approximately 330 schools in our sample for 1983, 2000, and all years combined. We report the percent of incoming students who scored above a certain threshold on the math and verbal sections of the SAT, along with total applications received and total freshman enrollment. We also report summary statistics of the four control variables that we merged into the college dataset. Looking at Table 2, it can be seen that over the 20 year period in our sample, schools have increased in size and quality of their incoming students. Columns (4)-(6) give the same summary statistics for the subset of schools in our sample that finished at least once in the top 8 teams of the NCAA basketball tournament or in the top ten teams of the Associated Press College Football Poll between 1980 and 2003. These schools are on average larger and have slightly higher quality of students than the other schools in the sample. Columns (7)-(8) give the same summary statistics for public and private schools in our sample. Private schools on average have smaller enrollments, higher quality students and are more expensive to attend. Columns (4)-(8) will be useful when interpreting the size of the effects presented in the results section.

SAT Test-Takers Database

The third dataset that we use is derived from the College Board's Test-Takers Database (referred to as SAT database in the remainder of the paper).[15] It includes individual-level data for a 25% random sample of all SAT test-takers nationwide with graduation cohorts between 1994 and 2001. It also includes a 100% sample of SAT test-takers that are Californians, Texans, African American, or Hispanic.[16] Since students can take the SAT several times, the College Board divided the data into cohorts according to the year in which the students are expected to graduate. For example, the 1994 cohort group contains students that took the SAT who are expected to graduate in the spring of 1994 and apply for college the following fall.[17] The SAT database provides demographic and other background information in the Student Descriptive Questionnaire component of the SAT.

After completing the test and questionnaire, students may indicate up to four colleges where their test scores will be sent for free. Students may also send their scores to additional schools at a cost of $6.50 per school. The dataset identifies up to 20 schools to which a student has requested his/her scores be sent.[18] The median number of schools to which a student requested his scores be sent, was 5 across all years in our sample. We restrict the dataset to students who sent their scores to at least one of the 332 schools that played NCAA Division I basketball or Division I-A football. We also weighted the observations so that the data are representative of all potential college applicants to each of these 332 schools.[19]

The SAT dataset will allow us to further explore how college applicants with different SAT exam scores are affected by football and basketball success. Unlike the self-reported data from sources such as Peterson's Guide, all the data in the SAT database are reported and inaccuracies are almost non-existent. This data also allows us to better analyze the impact of sports success on SAT score sending of students with high, middle, and low SAT scores. By aggregating this high quality individual level data to the school level, the impact of sports success on the quality of incoming SAT scores that a school receives can be analyzed. These results will compliment the analysis conducted with the applications database.[20]

4. Empirical Strategy

Many school characteristics cannot be observed by the econometrician, yet these unobservables are likely correlated with both indicators of sports success and the number of applications received by a school. The unobservable component is likely to include information about scholastic and athletic tradition, geographic advantages and other information on the true quality of the school. Without adequately controlling for these unobservables, they would likely confound the ability to detect the impact of athletic success on the quantity and quality of incoming students. The nature of the data we have compiled allows us to plausibly control for the unobservables associated with each school.

Even after including school fixed effects and linear trends for each school, it is always worrisome that schools that perform well in sports in a given year are schools that have recently improved academically as well. If this is the case, then the effects of sports success on application rates and student quality may be spurious. To try and deal with this issue, we include one year lead sports dummy variables in our regression to estimate the effect that having sports success next year has on this year's applications. If the results suggest that future sports success does not predict current admission figures, then this would lend credibility to our empirical strategy.

One concern that arises with the use of SAT scores over our sample period is that the SAT was re-centered in 1995. Our analysis includes fixed effects for academic years which properly control for any re-centering effects which simply cause a shift in the distribution of SAT scores. However, the re-centering that took place in 1995 not only shifted the distribution, but also changed its shape. This reshaping of the distribution could bias our results if the incoming students from schools that perform well in sports are clustered at a location in the distribution that was heavily skewed due to the re-centering. We are unable to rule out this bias due to the fact that we lack data on the entire distribution of SAT scores for incoming students. However, this bias (which could go in either direction) is likely to be small after controlling for year fixed effects and unlikely to cause the results that we find at several different cutoffs in the SAT distribution.[21]

Econometric Specification Using Peterson's Data

The econometric specification that we employ in conjunction with the Peterson's dataset takes advantage of the panel design of the data. We use a fixed effects model where the fixed effects control for year-specific and school-specific unobserved heterogeneity. We also include a linear trend for each school to try to control for heterogeneous trend rates. We include several additional variables on the right hand side of the equation to further control for quality characteristics of the schools. The econometric specification we use is the following,

$$Y_{i,t} = \alpha_{i,t} + S_{i,t+1} + S_{i,t}\beta + S_{i,t-1}\delta + S_{i,t-2}\gamma + S_{i,t-3}\theta + X_{i,t}\phi + \varepsilon_{i,t} \qquad (1)$$

where $Y_{i,t}$ represents either the log applications, log enrollments or log real tuition of school *i* during year *t* depending on the regression being run. We also run these same regressions separately for public and private schools to understand if sports success has a heterogeneous impact for schools that are funded and organized differently. $S_{i,t}$ is a set of dummy variables indicating the level of sports success that school *i* had during year *t*. We include lead and current year as well as up to three lags for each sports variable in our model. $X_{i,t}$ is a set of four control variables commonly used in the literature to control for the quality of the school– log total cost to attend school, log average professor salary (lagged one year), log average real income in the state in which the school is located, and the number of high school diplomas awarded in the state in which the school is located during year *t*. It is important to note that rather than using total applications as the dependent variable (which is the dependent variable used in other studies looking at the effect of sports success on applications), we use log applications. Failure to include the log of applications results in significantly overweighting large schools compared to small schools. Furthermore, our intuition suggests that sports success will increase applications by a given percent across schools rather than by a given level. If Equation (1) is correctly specified, we should then be able to identify the impact of athletic success on the number of applications received by a school.

Econometric Specification Using SAT Database

Our econometric specification in Equation (1) can be adapted for use in conjunction with the SAT data in the following manner,

$$Y^{j}{}_{i,t} = \alpha_{i,t} + S_{i,t+1} + S_{i,t}\beta + S_{i,t-1}\delta + S_{i,t-2}\gamma + S_{i,t-3}\theta + X_{i,t}\phi + \varepsilon_{i,t} \qquad (2)$$

This is the same specification as Equation (1) except that the dependent variable represents the log number of SAT scores received by school i in year t *from the j* *population group*. More specifically, we calculate the number of SAT scores sent to schools by SAT exam score groupings. This estimation allows us to compare the coefficients on the sports variables across groups to see if certain groups are more likely to respond to sports success than others. We again run these same regressions separately for public and private schools to understand if sports success has a heterogeneous impact on sent SAT scores for schools that are funded and organized differently.

Timing of the Impact of Athletic Success

Understanding when prospective students apply to college in relation to the football and basketball seasons is crucial in determining which lags of our athletic success variables should affect the left-hand side of equation (1). Fall admission application deadlines vary by school. They can occur any time between November and August before the expected fall enrollment period. Furthermore, students often must send letters of recommendation and SAT scores to the school well before the actual deadlines. The Figure illustrates the distribution of application deadlines in our sample in 2003 using the Peterson's college dataset. The label "continuous" in the Figure refers to those schools that have a rolling application period rather than a specific deadline. By 2003, nearly half of the schools in our sample have application deadlines in May or earlier.

The NCAA Division I-A football season finishes at the beginning of January. The NCAA basketball tournament finishes at the end of March or beginning of April. Therefore, if these sports influence the number of applicants a school receives, we would expect an effect on the current year variables. This means that a successful football team that finishes in January or a successful basketball team that finishes in March will affect application decisions for students enrolling that fall. However, given the timing of when applications were likely prepared and submitted and the football and basketball seasons, one would possibly expect an equally large impact of football and basketball to be on the first lag of an athletic success variable (especially for basketball which ends 3 months after football). The second and third lags will give an indication of the persistence of the athletic success which occurred 2-4 years earlier.

5. Results

Results Using Peterson's Data

Table 3 presents the results for our specification in Equation (1) using the Peterson's college dataset. The first column reports the results from a regression of log applications on the controls and the sports variables for *all* schools in our sample. Standard errors in this and all other tables presented below are computed using Eiker-White Robust standard errors. For basketball, the results suggest that being one of the 64 teams in the NCAA tournament yields approximately a 1% increase in applications the following year, making it to the "sweet sixteen" yields a 3% increase, the "final four" a 4-5% increase, and winning the tournament a 7-8% increase. The impact of the athletic lags, are as we expected. While there is an effect of winning on the current year's applications, the largest effect comes in the first lag. By the third lag, the effect has usually diminished substantially. Not all of the coefficients are significantly different than zero with conventional tests. However, almost all coefficients are suggestive and several are significant. For football, the results suggest that ending the season ranked in the top twenty in football yields approximately a 2.5% increase in applications the following year, ending in the top ten yields a 3% increase, and winning the football championship a 7-8% increase. The largest effect is on the current football sports variable along with a small effect on the first lag. Columns (2)-(3) of Table 3 report the results for log application regressions run separately for *public* and *private* schools. The results from these regressions suggest that for basketball, private schools receive 2-4 times as many additional applications than public schools as they advance through the NCAA tournament, while the results for football are less conclusive. Furthermore, the application impact for private schools appears to be more persistent. For example, when a private school advances to the sweet 16, it enjoys a 8-14% increase in applications for the next 4 years whereas a public school only sees a 4% increase for the next 3 years.

Besides being more selective, schools might react to increased applications by increasing their enrollment or tuition levels. Table 3 presents the impact of sports success on these two variables. Column (4) uses log enrollment as the dependent variable in the now familiar specification for all schools, and columns (5) and (6) use log enrollments of public and private schools as the dependent variable. The results indicate that teams that have basketball success do not enroll more students the following year. However, schools that perform well on the football field in a given year do increase enrollment that year. Teams that finish in the top twenty, top ten, and champion in football on average enroll 3.4%, 4.4%, and 10.1% more students respectively. These results are all significant at the 1% level. Columns (5) and (6) suggest that this is largely driven by public schools. This increased enrollment could come from the fact that many public schools give guaranteed admission for certain students. For example, a school that guarantees admission for in-state students with a certain class rank or test score may be required to enroll many more students if demand suddenly spikes. Another possible reason for the increased enrollment is that more of the students that a university admitted decide to actually attend that year (higher matriculation rate) which would increase enrollment.

Column (7) of table 3 uses the log of real tuition as the dependent variable for all schools and columns (8) and (9) use log of real tuition of public and private schools as the dependent variable. The results suggest that private schools increase tuition following trips to the final four (results are also suggestive for tuition increases by private schools after winning the basketball championship) but not for football success. There is no consistent evidence that public schools adjust tuition due to sports success. However, this is likely due to the fact that many public schools have political constraints on increasing tuition.

Table 4 presents results using SAT data in the Peterson's dataset on the incoming students to see how sports success enables schools to attract higher quality students. Columns (1)-(3) show results from specifications that use the percent of incoming students who scored above a 500 on the SAT in math as the dependent variable for all schools, public schools and private schools. Columns (4)-(12) show results for specifications where the dependent variable is percent of incoming students scoring above a 500 in the verbal, above 600 in the math, and above 600 in the verbal section of the SAT. Overall the coefficients in these specifications mirror to some degree the log applications results. The results are strongest for basketball. The coefficients on the football variables are suggestive but not significant. The coefficients on the basketball variables when all schools are included suggest that schools which do well in basketball are able to recruit an incoming class with 1-4% more students scoring above a 500 on the math and verbal SAT. Similarly, these schools could also expect 1-4% more of their incoming students to score above a 600 on the math and verbal SAT. As can be seen in Table 3 however, to examine the effect of sports success on SAT score categories in the Peterson's dataset, approximately 1,600 observations of the 5,335 are dropped due to missing SAT data. Therefore it is important to further examine the "quality" effect using the SAT dataset.

Results Using SAT Database

The results for the impact of sports success on different SAT score subgroups are presented in Table 5. These results stem from regressions using SAT-sending rates by SAT subgroup and by public and private schools as the dependent variables in Equation (2). The results indicate that sports success increases SAT-sending rates for all three SAT subgroups. However, the lower SAT scoring students (less than 900) respond to sports success by about twice as much as the higher SAT scoring students. For example, those schools that win the NCAA basketball tournament, see an 18% increase a year later in sent SAT scores less than 900, a 12% increase in scores between 900 and 1100, and a 8% increase in scores over 1100. Also, private schools tend to see a larger increase in sent SAT scores after sports success than for public schools (although this does not appear to be true for the basketball championship and high SAT scores). For example, it can be seen that when a private school reaches the sweet 16 in the NCAA basketball tournament, they have 2-3 times as many SAT scores sent to them as the pubic schools in the first and second periods after the basketball success. Furthermore, the effect tends to persist longer for the private schools than the public schools as can be seen on lags 2 and 3. A similar difference between public and private schools can be seen for football. Although the championship round cannot be compared as there were no private schools that won the football championship during this time period.

Overall, these results suggest that schools that have athletic success are not receiving extra SAT scores solely from low performing students. The results also greatly strengthen the SAT results derived from the Peterson's data. It appears that athletic success does indeed present an opportunity to schools to be either more selective in their admission standards or enroll more students while keeping a fixed level of student quality.

Specification and Robustness Checks

Although the specification described in 4.1 and 4.2 and used to produce the results presented in 5.1 and 5.2 is our *a priori* preferred specification given our data, there are other potential specifications that could be used to analyze the impact of sports success on the quantity and quality of student applications.[22] For example, because of the panel nature of our data, one could use the random effects model rather than the fixed effects model. Therefore we also ran a random effects model and compared it with the fixed effects model using a Hausman test. The Hausman test rejected the null hypothesis that the coefficients estimated by the random effects estimator were the same as the ones estimated by the fixed effects estimator (Prob> χ^2 = 0.0000). Thus the fixed effects model appears to be appropriate for our analysis. Nevertheless it is comforting that when comparing the random effects coefficients in column (2) of Table 6, with the fixed effects estimates in column (1), that the coefficients are similar in magnitude and significance.

Another specification assumption we made was using the log-linear functional form for our regressions. Remember that we chose this functional form because it should help mitigate the problem of overweighting large schools relative to small schools. This assumption makes sense if applications tend to increase by a given percent across schools rather than by a given level due to sports success. However, despite this *a priori* intuition, we re-estimated our primary model using all schools but this time using the total applications as our dependent variable that were not scaled. As can be seen in column (3) of Table 6, the results closely mirror our log applications results. For example, the increase of 420 applications we see for the Final_4_lag1 variable, is approximately a 6% increase in applications for the average school in our sample whereas our original specification suggests a 5.5% increase. We also run a regression where the dependent variable is the total applications in a given year divided by the number of these applications that actually enrolled in the school. This specification, like the log of applications, scales applications to help account for the size of the school. Column (4) presents the results of this regression and shows that for basketball the results are similar to our original results (although somewhat larger in magnitude) whereas the football results are less significant (and smaller in magnitude). We think this reflects an issue of endogeneity, since we showed in table 3 that enrollments do increase after sports success especially for football schools. Thus as applications increase, so do enrollments so that the impact in our dependent variable is naturally dampened. Overall, these regressions do not suggest that using the log of applications was inappropriate.

Another potential concern is that our school fixed effects and linear trends do not fully capture changes in the quality of schools over time and therefore may confound the analysis. Although the original specification includes four additional school quality variables, it may be useful to include additional variables in the $X_{i,t}$ portion of the specification to better control for changes in school quality over time. The reason for not including these variables in the original specification is because they are typically not available for all of the schools or all of the time period of our analysis. Therefore, using additional control variables comes at the cost of statistical power. Nonetheless, we did acquire the following additional school quality variables for schools over time that have appeared in higher education literature to: publication and citation data, federal grant dollars acquired, percentage of students that go on to graduate school, faculty to student ratio, percentage of student body that are graduate students, per capita expenditure on instruction, number of national merit achievement scholars, percentage of faculty with a doctorate, and the number of volumes in the school library.[23]

We include these variables in $X_{i,t}$ as a robustness test. Column (5) of Table 6 presents the results from this regression. Although using these additional controls causes us to lose approximately 25% of our sample, these results also closely mirror our original specification. A final unreported specification check that was suggested by a referee was to add some geographic variables in case changes in application rates are somehow spatially correlated within regions. A specification that added census regions found virtually no change in the coefficients on our sports success variables. Therefore, as a whole these specification and robustness checks suggest that our original specification is a reasonably robust one for the task of identifying the impact of sports success on the quantity and quality of student applications.

6. Conclusion and Future Research

"How does playing major college football or men's basketball in a highly commercialized, profit-seeking, entertainment environment further the educational purpose of your member institutions?" Fully answering Representative Bill Thomas's question that he posed to the president of the NCAA is beyond the scope of this study. However, the analysis presented above does provide a set of estimates about the impact of sports success on the quantity and quality of student applications at schools participating in the premier divisions of NCAA basketball and football. These estimates reflect several indirect benefits from these high-profile college sports.

Using two unique and comprehensive datasets in conjunction with an econometric design that controls for the unobservable features of schools, we find that football and basketball success increase the quantity of applications to a school after that school achieves sports success, with estimates ranging from 2-8% for the top 20 football schools and the top 16 basketball schools each year.[24] We also provide evidence that the extra applications are composed of students with both low and high SAT scores. Additional evidence that we present suggests that schools use these extra applications to both increase student quality and increase enrollment size. There is some evidence that private schools adjust tuition levels in response to receiving extra applications from basketball success.

In a related paper, ---- and ---- (2007), we also show that sports success has a heterogeneous impact on various subgroups of the incoming student population. For example, we found that males, blacks, and students that played sports in high school are more likely to be influenced by sports success than their peers. This finding combined with the results of this paper provides a much broader picture of the impact of sports success on the composition of the incoming student body. We think that these results significantly extend the existing literature and provide important insights about the impact of sports success on college choice. Using identification strategies that exploit the temporal variation in our datasets and that control for unobserved school heterogeneity, it is increasingly clear that sports success does have an impact on the incoming freshman classes. It is also clear that this impact is often short-lived and that it differs by student type. This may reflect differences in the ability of various student subgroups to acquire quality information that would affect school choice, or it may simply reflect preferences for high quality athletics.

Whether or not the expenditures required to receive these short-run indirect benefits promote efficiency in higher education was not determined in the present analysis. Indeed, the raw summary data in Table 2 would suggest that athletically successful schools actually saw slightly slower long-run growth in applications and enrollments. Future work directed at understanding the arms-race nature of athletics within higher education and its relation to economic efficiency would certainly be valuable. Nonetheless, the results presented in this paper should be important to college administrators. Athletics is one instrument that institutions of higher education have at their disposal that can be used to directly affect reputation and the prominence of their schools. Hopefully these results provide information that can aid administrators in making decisions about athletic programs and help them to further understand the role of athletics within higher education.

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[1] For example, a history of the NCAA provided on the NCAA's official website states, "The 1905 college football season produced 18 deaths and 149 serious injuries, leading those in higher education to question the game's place on their campuses." The 1905 season led to the establishment of the Intercollegiate Athletic Association of the United States (IAAUS), which eventually became the NCAA in 1910.

[2] Bill Thomas is the republican congressman from California and previous chairman of the tax-writing House Ways and Means committee. The full letter was printed in an article entitled “Congress’ Letter to the NCAA” on October 5, 2006 in USA Today.

[3] A leading example of the anecdotal evidence has been dubbed "the Flutie effect", named after the Boston College quarterback Doug Flutie whose exciting football play and subsequent winning of the Heisman Trophy in 1984 allegedly increased applications at Boston College by 30% the following year. Furthermore, Zimbalist (1999) notes that Northwestern University’s applications jumped by 30 percent after they played in the 1995 Rose Bowl, and George Washington University’s applications rose by 23 percent after its basketball team advanced to the sweet 16 in the 1993 NCAA basketball tournament.

[4] The ACC, SEC, SWC, Big Ten, Big Eight, and the PAC Ten conferences were typically considered the "major" conferences in college basketball and football at that time. Today, the ACC, SEC, Big Ten, Big Twelve, Big East, PAC Ten and independent Notre Dame are considered the major conferences/teams.

[5] More detail about this literature is provided in the next section.

[6] In ---- and ---- (2007) we use this data to also show that sports success has a differentiated impact on various demographic subgroups of students and to illustrate the limited awareness that high school students may have with regards to the utility of attending different colleges.

[7] Reputation can be thought of as either academic reputation, as for social and recreational reputation.

[8] Other papers in this literature were pointed out by a referee include: Goidel and Hamilton (2006), Tucker and Amato (2006), McEvoy (2006), Mixon and Trevino (2005), Tucker (2004), Tucker (2005), and Mixon Trevino and Minto (2004). These papers adopt similar identification strategies for estimating the quantity and quality effects as those described in Table 1.

[9] Temporal variation typically enters the regression via a variable that reflects the aggregate sports success over the 10-15 years prior to the year of the school data.

[10] See for example the Stecklow's April 5, 1995 article in the Wall Street Journal entitled "Cheat Sheets: Colleges Inflate SATs and Graduation Rates In Popular Guidebooks."

[11] We are grateful to the referees of this paper who suggested that public and private schools should be treated differently in our analysis.

[12] Both football rankings and basketball tournament result data can be obtained at www.infoplease.com.

[13] 48 teams were invited in 1980, 1981, and 1982. In 1983, 52 teams were invited. In 1984, 53 teams were invited. Currently, 65 teams are invited, but 1 of 2 teams is required to win an additional game before entering the round of 64.

[14] These rounds are typically considered "special" rounds resulting in extra recognition to a team.

[15] We thank David Card, Alan Krueger, the Andrew Mellon Foundation, & the College Board for help in gaining access to this dataset.

[16] The reason for the over-sampling of two states and races is because the dataset was originally acquired to analyze the impact of changes in the affirmative action program in Texas and California.

[17] The data reports the SAT score and background characteristics of the most recent test and survey taken. For most students, this is at the beginning of their senior year in high school.

[18] Less than 1% of students sent their scores to more than 14 schools.

[19] The weight is 1 for observations from students who are included in the sample with probability 1 and 4 for those who are included in the sample with probability .25.

[20] Sending your SAT score to a school is not the same as applying to that school. However, it may be a good proxy. Card and Krueger (2004) (using this same SAT test-takers dataset) tested the validity of using sent SAT scores as a proxy for applications. They compared the number of SAT scores that students of different ethnicities sent with admissions records from California and Texas, to administrative data on the number of applications received by ethnicity. They conclude that "trends in the number of applicants to a particular campus are closely mirrored by trends in the number of students who send their SAT scores to that campus, and that use of the probability of sending SAT scores to a particular institution as a measure of the probability of applying to that institution would lead to relatively little attenuation bias."

[21] We are grateful to a referee for pointing this issue out. As a sensitivity check, we ran our analysis separately for the years prior to and after the re-centering that took place in 1995 and found the results to be stable between these two time periods.

[22] We are again grateful to the referees of this paper for bringing to our attention the need for some of these robustness checks.

[23] Publication and citation data came from Thomson's University Science Indicators database, federal grant dollars and per capita expenditure on instruction were derived from IPEDS, while all other additional variables were derived from the Peterson's data we had purchased. It should be noted that in an effort to reduce the number of observations that were dropped, some of the observations were interpolated or extrapolated from observations on a school level where data was not collected every year.

[24] To put this quantity effect into perspective, the application elasticity of changes in the price of attending college found in the literature, typically range from -.25 on the low end to -1.0 on the high end (See for example Curs and Singell (2002) and Savoca (1990) . These elasticities suggest that tuition/financial aid would have to be adjusted somewhere in the range of 2-24% to obtain a similar increase in applications.

Table 1: Summary of Previous Literature

Study	Years	Schools	Source of Data	Identification Strategy	Primary Results
Panel A: Sports Success and the "Quantity" Question					
Mixon and Hsing (1994)	**1 year** (1990)	**220 schools**. 70% participated in division I of the NCAA, 8% in division II, 12% in division III and 10% participated in the NAIA.	**Peterson's Guide** to America's Colleges and Universities	**Cross-Sectional** tobit model. LHS: % enrollment of out-of-state students. RHS: school quality control variables and variable from 1-4 where 1 is NCAA division I and 4 is NAIA.	Some evidence that Out-of-state students appear to favor **higher division sports**.
Mixon and Ressler (1995)	**1 year** (1993)	**156 schools** that participate in Division I-A Collegiate Basketball.	**Peterson's Guide** to America's Colleges and Universities	**Cross-Sectional** OLS model. LHS: % enrollment of out-of-state students. RHS: school quality control variables and a variable equal to the total # of rounds a school participated in NCAA basketball tournament from 1978-1992.	100% increase in the # of **basketball** tournament rounds results in 6% increase in out of state enrollment.
Murphy and Trandel (1994)	**10 years** (1978-1987)	**42 schools** that participate in 6 major college football conferences	**Peterson's Guide** to America's Colleges and Universities	**Fixed-Effects** OLS with school-level fixed effects. LHS: number of applications of potential incoming freshman. RHS: control variables and a variable denoting within-conference winning percentage of the football team lagged one year.	Increasing within-conference **football** winning percentage by 25% results in a 1.3% increase in applications.
Panel B: Sports Success and the "Quality" Question					
McCormick and Tinsley (1987)	**1 year** (1971)	*Analysis 1*: Approximately **150 schools**.	**American Universities and Colleges** (1971)	**Cross-Sectional** OLS model. LHS: average SAT scores of entering freshman. RHS: school quality control variables and a dummy variable equal to 1 if the school is in one of 63 "big-time" athletic schools.	Schools with **"Big-time" athletics** have a 3 percent increase in SAT scores
	1 trend (1981-1984)	*Analysis 2*: **44 schools** that participate in 7 major athletic conferences	**Peterson's Guide** to America's Colleges and Universities	**Cross-Sectional** OLS model. LHS: change in average SAT scores between 1981-1984 of entering freshman. RHS: control variables and the trend of in-conference football winning percentage.	upward trend of in-conference **football** winning percentage marginally increases average incoming SAT scores.
Bremmer and Kesselring (1993)	Analysis 1: **1 year** (1989) Analysis 2 uses **1 trend** (1981-1989)	Re-analysis of McCormick and Tinsley. Analysis 1 uses **132 schools** and Analysis 2 uses **53 schools**.	**Barron's Profiles** of American Colleges	**Cross-Sectional** OLS model. LHS: change in average SAT scores between 1981-1989 of entering freshman. RHS: school quality control variables and the the number of basketball tournament appearances and football bowl games in the preceeding 10 years were used as athletic success indicators.	found no evidence that **basketball or football** success impacted average SAT scores
Tucker and Amato (1993)	Analysis 1: **1 year** (1989) Analysis 2 uses **1 trend** (1980-1989)	Re-analysis of McCormick and Tinsley. Analysis 1 uses **63 schools** for **1 year** (1989) and Analysis 2 uses the same **63 schools** for **1 trend** (1980-1989).	**Peterson's Guide** to America's Colleges and Universities	**Cross-Sectional** OLS model. LHS: change in average SAT scores between 1980-1989 of entering freshman. RHS: school quality control variables and the the sum of end of year AP top 20 rankings over the previous 10 years for basketball and football were used as athletic success indicators.	**football** success (accumulating 31 points over the 10 yrs) resulted in a 3% increase in SAT scores by 1989. Found no evidence for link to **basketball** success.
Mixon (1995)	**1 year** (1993)	Re-analysis of McCormick and Tinsley's Analysis 1 using **217 schools.**	**Peterson's Guide** to America's Colleges and Universities	**Cross-Sectional** OLS model. LHS: change in average SAT scores between 1980-1989 of entering freshman. RHS: school quality control variables and the the number of rounds the basketball team played in the NCAA tournament in the 15 years prior to 1993	Playing more rounds in the NCAA **basketball** tournament over the previous 15 years lead to higher average incoming SAT scores.

Table 2. Summary Statistics of College Data

	All Division I-A Sports Schools			Schools with Top Sports Programs			Public Schools	Private Schools
	Fall 1983	Fall 2000	All Years	Fall 1983	Fall 2000	All Years	All Years	All Years
Number of Applicants	4878	7821	6501	7793	12261	10265	7123	5337
	(3725)	(6177)	(5223)	(3753)	(7105)	(5719)	(5308)	(4852)
Number Enrolled	1771	2122	1856	2914	3388	3009	2262	1076
	(1355)	(1427)	(1321)	(1499)	(1680)	(1542)	(1359)	(792)
%MathSAT > 400	86.3	95.1	91.2	92	98.6	95.8	89.5	93.4
	(14.8)	(8.7)	(12.5)	(10.1)	(2.2)	(6.6)	(12.7)	(11.6)
%MathSAT > 500	59.4	73.4	67	70.1	85.2	78.4	63.0	72.5
	(22.8)	(20.6)	(22.8)	(16.6)	(12.2)	(16.2)	(22.3)	(22.4)
%MathSAT > 600	26.8	37.2	33	35.5	52	44.8	28.4	39.1
	(20.8)	(24.8)	(23.8)	(19.6)	(22.6)	(22.7)	(20.4)	(26.4)
%VerbalSAT > 400	78.1	94.4	86	84.9	97.8	91.5	83.1	89.9
	(17.5)	(8.4)	(16.3)	(13.2)	(2.9)	(10.3)	(16.8)	(14.8)
%VerbalSAT > 500	41.3	71.2	55	49.3	82.4	64.6	49.4	62.4
	(21.8)	(20.2)	(26.2)	(18.7)	(12.9)	(23.0)	(24.7)	(26.3)
%VerbalSAT > 600	12.9	33.2	22.1	16	45.1	28.7	17.4	28.3
	(13.7)	(22.7)	(20.8)	(12.7)	(21.3)	(21.7)	(15.9)	(24.6)
State HS diplomas	86128	90911	85096	75563	80262	74837	78067	98799
	(63242)	(79641)	(70060)	(58671)	(74675)	(65414)	(68403)	(71231)
Avg. Professor Salary	45213	54909	50594	49485	62005	56250	48947	53106
	(7204)	(11236)	(9802)	(5767)	(8982)	(8117)	(8019)	(12225)
Avg. State Real Income	12971	16944	15063	12810	16637	14796	14439	16277
	(1807)	(2625)	(2571)	(1624)	(2410)	(2356)	(2235)	(16277)
Cost of Attendance	4973	8731	6852	4958	8713	6774	4535	11899
	(2956)	(5280)	(4421)	(2809)	(5324)	(4351)	(2101)	(4018)
N	329	331	6615	86	86	1720	4367	2248

Notes: The table uses Peterson's data for all 330 schools that participate in Division I basketball or football. Columns (1)-(3) provide summary statistics for all schools while Columns (4)-(6) only includes data for the 86 schools that at some point between 1980 and 2002 finished in the top 10 in football or the top 8 in basketball. Columns (7) and (8) show summary statistics for Public and Private Schools.

Table 3: The Effect of Sports Success on Applications, Enrollment Rates, and Tuition

	Log Applications			Log Enrollment			Log Real Tuition		
	All	Public	Private	All	Public	Private	All	Public	Private
Basketball									
Final_64_lead1	-0.008	-0.016*	0.006	-0.008	-0.006	-0.010	0.016*	0.011	0.019
	(0.007)	(0.009)	(0.012)	(0.006)	(0.007)	(0.009)	(0.008)	(0.009)	(0.018)
Final_64	-0.005	-0.007	-0.003	-0.001	0.004	-0.010	0.005	0.004	0.012
	(0.006)	(0.008)	(0.011)	(0.005)	(0.007)	(0.008)	(0.007)	(0.008)	(0.012)
Final_64_lag1	0.006	0.002	0.013	-0.004	-0.002	-0.007	-0.001	-0.006	0.010
	(0.006)	(0.008)	(0.010)	(0.006)	(0.008)	(0.009)	(0.007)	(0.008)	(0.011)
Final_64_lag2	0.010	0.005	0.019*	-0.003	-0.002	-0.007	0.002	-0.005	0.012
	(0.007)	(0.008)	(0.010)	(0.006)	(0.008)	(0.008)	(0.006)	(0.008)	(0.009)
Final_64_lag3	0.004	-0.010	0.029***	0.001	0.000	0.004	-0.000	-0.009	0.015
	(0.007)	(0.009)	(0.011)	(0.006)	(0.008)	(0.009)	(0.007)	(0.009)	(0.010)
Final_16_lead1	0.015	0.011	0.015	0.007	0.013	-0.004	0.025**	0.025**	0.013
	(0.010)	(0.012)	(0.021)	(0.009)	(0.011)	(0.014)	(0.010)	(0.012)	(0.010)
Final_16	0.027***	0.023*	0.043**	0.015*	0.018	0.013	0.027***	0.028**	0.011*
	(0.010)	(0.012)	(0.017)	(0.009)	(0.011)	(0.012)	(0.009)	(0.011)	(0.007)
Final_16_lag1	0.032***	0.019	0.062***	0.011	0.016	0.008	0.018*	0.014	0.006
	(0.010)	(0.013)	(0.017)	(0.009)	(0.011)	(0.014)	(0.009)	(0.012)	(0.008)
Final_16_lag2	0.032***	0.024*	0.049***	0.011	0.015	-0.004	0.015	0.009	0.010
	(0.010)	(0.013)	(0.017)	(0.010)	(0.013)	(0.016)	(0.009)	(0.012)	(0.007)
Final_16_lag3	0.015	0.007	0.017	0.007	0.005	0.004	0.015	0.020	0.012*
	(0.011)	(0.013)	(0.019)	(0.009)	(0.012)	(0.013)	(0.010)	(0.012)	(0.007)
Final_4_lead1	0.029	0.018	0.032	0.011	0.017	-0.013	0.027	0.028	0.002
	(0.019)	(0.023)	(0.029)	(0.020)	(0.024)	(0.024)	(0.019)	(0.020)	(0.022)
Final_4	0.037**	0.023	0.081**	-0.001	0.001	-0.008	0.040**	0.025	0.063*
	(0.018)	(0.020)	(0.035)	(0.019)	(0.023)	(0.020)	(0.019)	(0.022)	(0.037)
Final_4_lag1	0.044**	0.028	0.138***	0.000	0.011	-0.008	0.027	0.012	0.041**
	(0.017)	(0.019)	(0.037)	(0.018)	(0.022)	(0.024)	(0.019)	(0.021)	(0.019)
Final_4_lag2	0.041**	0.042**	0.090***	0.003	0.009	-0.008	0.003	-0.012	0.048**
	(0.017)	(0.019)	(0.030)	(0.019)	(0.024)	(0.028)	(0.015)	(0.017)	(0.021)
Final_4_lag3	0.027	0.022	0.079***	0.016	0.031	-0.007	-0.012	-0.028	0.038**
	(0.020)	(0.025)	(0.030)	(0.020)	(0.025)	(0.021)	(0.021)	(0.026)	(0.015)
Champ_lead1	-0.004	0.004	-0.106**	0.034	0.042	0.005	-0.004	0.012	-0.024
	(0.031)	(0.037)	(0.044)	(0.030)	(0.035)	(0.050)	(0.021)	(0.028)	(0.027)
Champ	0.039	0.047	0.020	0.009	-0.003	0.031	0.008	0.030	-0.022
	(0.030)	(0.039)	(0.042)	(0.023)	(0.029)	(0.034)	(0.027)	(0.038)	(0.026)
Champ_lag1	0.074***	0.063***	0.092**	0.023	0.017	0.033	0.019	0.014	0.012
	(0.017)	(0.023)	(0.037)	(0.027)	(0.035)	(0.032)	(0.018)	(0.025)	(0.025)
Champ_lag2	0.077***	0.045	0.149***	0.036	0.047	0.001	0.003	-0.003	0.038
	(0.025)	(0.028)	(0.032)	(0.025)	(0.030)	(0.040)	(0.020)	(0.030)	(0.024)
Champ_lag3	0.051**	0.016	0.129***	0.056*	0.051	0.053	0.010	0.017	0.012
	(0.022)	(0.023)	(0.030)	(0.032)	(0.041)	(0.044)	(0.017)	(0.023)	(0.024)

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Table 3: The Effect of Sports Success on Applications, Enrollment Rates, and Tuition

	Log Applications			Log Enrollment			Log Real Tuition		
	All	Public	Private	All	Public	Private	All	Public	Private
Football									
Top_20_lead1	0.008	0.011	-0.034	0.013	0.022**	-0.047***	0.001	0.006	-0.015
	(0.010)	(0.011)	(0.039)	(0.009)	(0.010)	(0.018)	(0.009)	(0.011)	(0.010)
Top_20	0.025**	0.032***	-0.052	0.032***	0.035***	0.012	0.008	0.011	0.001
	(0.011)	(0.011)	(0.045)	(0.009)	(0.010)	(0.031)	(0.010)	(0.011)	(0.012)
Top_20_lag1	0.013	0.015	-0.014	0.011	0.015	-0.032	-0.000	0.003	-0.006
	(0.011)	(0.011)	(0.045)	(0.010)	(0.010)	(0.026)	(0.009)	(0.010)	(0.011)
Top_20_lag2	0.001	-0.006	0.026	-0.005	-0.007	0.003	0.000	0.001	0.014
	(0.010)	(0.011)	(0.034)	(0.009)	(0.010)	(0.025)	(0.010)	(0.010)	(0.014)
Top_10_lead1	0.002	0.009	-0.022	0.027**	0.030**	0.035	-0.026**	-0.016	-0.010
	(0.013)	(0.014)	(0.031)	(0.013)	(0.015)	(0.024)	(0.011)	(0.011)	(0.018)
Top_10	0.032**	0.033**	0.047	0.044***	0.038***	0.091*	-0.015	-0.013	-0.001
	(0.013)	(0.013)	(0.038)	(0.012)	(0.012)	(0.048)	(0.011)	(0.012)	(0.015)
Top_10_lag1	0.019	0.029**	-0.006	-0.009	-0.010	-0.008	-0.013	-0.008	-0.006
	(0.013)	(0.014)	(0.038)	(0.011)	(0.013)	(0.028)	(0.010)	(0.011)	(0.011)
Top_10_lag2	-0.006	-0.003	-0.004	-0.009	-0.008	-0.017	-0.001	0.000	0.011
	(0.013)	(0.013)	(0.038)	(0.011)	(0.012)	(0.021)	(0.010)	(0.012)	(0.012)
Champ_lead1	-0.007	-0.008	0.208***	0.005	0.017	-0.049	0.015	0.017	----
	(0.033)	(0.035)	(0.061)	(0.029)	(0.032)	(0.048)	(0.029)	(0.031)	----
Champ	0.076**	0.065*	0.227***	0.101***	0.111***	-0.002	-0.009	-0.000	----
	(0.032)	(0.035)	(0.066)	(0.028)	(0.030)	(0.049)	(0.023)	(0.022)	----
Champ_lag1	-0.011	-0.014	0.119**	0.003	0.013	-0.122**	-0.071	-0.023	----
	(0.047)	(0.049)	(0.059)	(0.028)	(0.030)	(0.053)	(0.054)	(0.023)	----
Champ_lag2	-0.038	-0.042	0.063	-0.020	-0.018	0.029	0.008	-0.001	----
	(0.031)	(0.034)	(0.060)	(0.025)	(0.025)	(0.054)	(0.020)	(0.021)	----
Year F.E.	X	X	X	X	X	X	X	X	X
School F.E.	X	X	X	X	X	X	X	X	X
Linear Trends	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X
N	5335	3428	1907	5272	3398	1874	4649	3048	1601
R2	0.969	0.96	0.97	0.971	0.958	0.964	0.983	0.927	0.949

Notes: The table uses Peterson's data for all 330 schools that participate in Division I basketball or football. All regressions include year and school fixed effects, school-specific linear trends, and controls for average nine-month fulltime professor salary, total annual cost of attendance, then number of high school diplomas given out by the school's state, and per capita income in the school's state. Robust standard errors are presented in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: The Effect of Sports Success on SAT Scores by Public and Private

	% Math SAT >500			% Verbal SAT >500			% Math SAT >600			% Verbal SAT >600		
	All	Public	Private	All	Public	Private	All	Public	Private	All	Public	Private
Basketball												
Final_64_lead1	-0.096	-0.349	0.242	-0.244	-0.842*	0.555	-0.373	-0.360	-0.445	-0.445	-0.845***	0.077
	(0.270)	(0.372)	(0.399)	(0.386)	(0.486)	(0.623)	(0.238)	(0.300)	(0.401)	(0.297)	(0.323)	(0.539)
Final_64	-0.138	-0.480	0.465	0.336	-0.012	1.160*	-0.078	-0.111	0.142	-0.038	-0.169	0.254
	(0.262)	(0.359)	(0.389)	(0.361)	(0.439)	(0.599)	(0.250)	(0.344)	(0.384)	(0.285)	(0.322)	(0.503)
Final_64_lag1	0.220	0.011	0.569	0.659	0.618	0.605	0.230	0.213	0.372	0.182	0.160	0.196
	(0.281)	(0.407)	(0.396)	(0.435)	(0.627)	(0.590)	(0.230)	(0.316)	(0.363)	(0.316)	(0.440)	(0.447)
Final_64_lag2	0.833***	0.583	1.199***	0.662*	0.037	1.552**	0.613***	0.726**	0.535	-0.008	-0.161	0.267
	(0.276)	(0.370)	(0.423)	(0.367)	(0.425)	(0.612)	(0.237)	(0.310)	(0.379)	(0.282)	(0.300)	(0.506)
Final_64_lag3	0.298	-0.290	1.052**	0.906**	0.625	1.455**	0.110	0.091	0.303	-0.397	-0.394	-0.274
	(0.292)	(0.365)	(0.479)	(0.387)	(0.464)	(0.630)	(0.248)	(0.291)	(0.427)	(0.307)	(0.323)	(0.552)
Final_16_lead1	0.499	0.454	0.425	0.520	-0.272	2.050*	0.304	0.325	0.065	-0.030	-0.342	0.301
	(0.451)	(0.579)	(0.778)	(0.641)	(0.761)	(1.166)	(0.436)	(0.486)	(0.938)	(0.528)	(0.642)	(0.932)
Final_16	0.056	0.157	-0.199	0.923	1.444*	0.061	0.476	0.494	0.635	1.159**	1.474**	0.312
	(0.462)	(0.567)	(0.828)	(0.657)	(0.752)	(1.212)	(0.415)	(0.452)	(0.854)	(0.561)	(0.606)	(1.084)
Final_16_lag1	0.474	1.076*	-0.606	0.732	1.877**	-0.813	1.124**	1.341***	1.060	1.170**	1.536**	0.757
	(0.469)	(0.625)	(0.711)	(0.686)	(0.752)	(1.363)	(0.471)	(0.516)	(0.939)	(0.553)	(0.614)	(1.111)
Final_16_lag2	0.526	1.170**	-0.628	0.234	0.719	-0.664	0.774	1.354**	0.041	0.837	0.794	1.032
	(0.435)	(0.537)	(0.751)	(0.650)	(0.801)	(1.129)	(0.476)	(0.621)	(0.803)	(0.585)	(0.636)	(1.216)
Final_16_lag3	-0.274	0.016	-1.432	-0.200	0.472	-1.841	-0.332	0.195	-1.719*	0.278	0.261	-0.432
	(0.488)	(0.569)	(0.893)	(0.635)	(0.675)	(1.255)	(0.437)	(0.460)	(0.912)	(0.466)	(0.554)	(0.908)
Final_4_lead1	0.840	1.017	1.614	0.109	0.982	-0.805	0.582	1.116	-1.516	0.318	0.363	0.021
	(0.708)	(0.791)	(1.596)	(1.106)	(1.090)	(2.463)	(0.698)	(0.750)	(1.346)	(0.966)	(0.945)	(2.079)
Final_4	1.517**	1.478**	1.930	0.872	1.147	0.769	0.992*	0.910	0.751	1.380*	0.857	2.435*
	(0.744)	(0.703)	(1.635)	(0.925)	(0.951)	(1.875)	(0.594)	(0.731)	(0.929)	(0.793)	(0.864)	(1.420)
Final_4_lag1	1.528**	0.833	3.153**	1.667	1.957*	0.878	1.223*	0.358	2.876***	2.917***	2.022*	4.920**
	(0.760)	(0.794)	(1.500)	(1.070)	(1.168)	(2.246)	(0.685)	(0.859)	(1.076)	(0.926)	(1.081)	(1.973)
Final_4_lag2	2.172***	1.439*	3.707***	0.872	1.156	-0.944	2.030***	1.501*	3.446***	2.229**	1.472	3.145*
	(0.660)	(0.807)	(1.374)	(1.058)	(1.176)	(2.414)	(0.672)	(0.889)	(1.149)	(0.996)	(1.309)	(1.791)
Final_4_lag3	0.427	-0.644	2.483**	-0.581	-0.470	-1.785	1.469**	1.054	1.587	0.954	0.704	1.571
	(0.683)	(0.834)	(1.133)	(1.233)	(1.791)	(1.625)	(0.649)	(0.764)	(1.020)	(1.104)	(1.530)	(1.433)
Champ_lead1	0.370	0.354	0.403	1.347	0.909	3.370	0.341	0.103	-0.487	-2.145	-2.380	-2.804
	(0.960)	(1.157)	(1.703)	(1.364)	(1.607)	(2.632)	(0.815)	(0.806)	(2.102)	(1.346)	(1.833)	(2.487)
Champ	-0.664	-0.286	-1.391	1.295	0.169	4.130*	-1.892	-0.687	-4.275**	-3.014	-4.592	-1.342
	(1.071)	(1.277)	(1.606)	(2.063)	(3.165)	(2.401)	(1.373)	(1.450)	(1.949)	(2.423)	(3.825)	(2.033)
Champ_lag1	1.160	1.891	0.191	4.148***	4.055***	5.078***	2.000*	1.797	3.818**	1.502	1.625	2.580
	(0.901)	(1.334)	(1.268)	(1.242)	(1.507)	(1.814)	(1.064)	(1.162)	(1.584)	(1.791)	(2.589)	(2.520)
Champ_lag2	0.944	1.476	0.224	3.399*	1.539	3.576**	1.454	1.883*	0.699	2.846	4.174*	1.294
	(0.909)	(1.316)	(1.321)	(1.801)	(2.546)	(1.819)	(1.096)	(1.144)	(1.668)	(2.029)	(2.506)	(2.762)
Champ_lag3	-0.650	-1.900	1.738	1.279	-0.611	4.049**	-0.067	-0.131	0.085	0.826	1.430	1.862
	(1.030)	(1.451)	(1.247)	(1.253)	(1.321)	(2.015)	(1.171)	(1.565)	(1.553)	(1.631)	(1.962)	(3.004)

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Table 4: The Effect of Sports Success on SAT Scores by Public and Private

	% Math SAT >500			% Verbal SAT >500			% Math SAT >600			% Verbal SAT >600		
	All	Public	Private	All	Public	Private	All	Public	Private	All	Public	Private
Football												
Top_20_lead1	0.099	-0.135	0.553	-0.226	-0.012	-3.644	0.131	0.275	-1.770	0.595	1.086*	-4.411**
	[0.446]	(0.483)	(1.266)	(0.687)	(0.669)	(2.359)	(0.477)	(0.501)	(1.583)	(0.609)	(0.598)	(2.019)
Top_20	0.379	0.428	-1.088	-0.080	0.246	-5.107	-0.245	0.076	-4.500**	0.591	1.085*	-7.536***
	[0.491]	(0.507)	(2.059)	(0.761)	(0.717)	(3.565)	(0.535)	(0.546)	(2.202)	(0.605)	(0.610)	(2.208)
Top_20_lag1	0.317	0.229	0.822	0.629	0.661	-0.056	-0.234	-0.200	-0.863	0.952	0.929	-1.336
	[0.443]	(0.488)	(1.442)	(0.671)	(0.693)	(2.467)	(0.452)	(0.485)	(1.691)	(0.610)	(0.592)	(3.388)
Top_20_lag2	0.547	0.485	0.487	0.879	1.091	-2.055	0.009	0.199	-3.105*	0.880	1.054*	-2.579
	[0.474]	(0.505)	(1.430)	(0.770)	(0.789)	(2.179)	(0.496)	(0.523)	(1.782)	(0.565)	(0.588)	(1.756)
Top_10_lead1	-0.879	-1.055	1.256	-0.185	-0.359	3.459	-1.221*	-1.127	0.008	0.515	0.222	5.478**
	[0.590]	(0.643)	(1.698)	(0.812)	(0.857)	(2.386)	(0.625)	(0.701)	(1.556)	(0.631)	(0.647)	(2.402)
Top_10	0.054	-0.076	1.778	0.304	0.159	2.781	-0.441	-0.351	-1.314	0.924	0.894	3.331
	[0.506]	(0.554)	(1.337)	(0.818)	(0.829)	(2.772)	(0.549)	(0.605)	(1.351)	(0.619)	(0.677)	(2.103)
Top_10_lag1	-0.251	-0.276	0.798	0.682	0.369	3.708	-0.254	-0.061	-0.292	0.989*	0.989	4.829**
	[0.649]	(0.707)	(1.848)	(0.887)	(0.898)	(3.494)	(0.639)	(0.700)	(1.935)	(0.592)	(0.656)	(2.170)
Top_10_lag2	0.074	0.218	-1.016	0.429	1.091	-3.942*	-0.192	0.247	-2.708	0.502	1.189*	-2.148
	[0.537]	(0.600)	(1.521)	(0.769)	(0.807)	(2.140)	(0.602)	(0.626)	(2.044)	(0.662)	(0.665)	(3.026)
Champ_lead1	1.359	1.636	0.778	1.791	2.004	6.200	3.460*	4.038*	3.762	1.465	1.493	9.001**
	[1.221]	(1.273)	(2.738)	(1.758)	(1.948)	(4.557)	(1.961)	(2.161)	(3.176)	(1.770)	(2.160)	(3.540)
Champ	2.47	2.510	-2.000	1.490	1.597	-2.834	1.984	1.985	0.489	1.300	1.058	-0.038
	[1.692]	(1.852)	(2.280)	(2.052)	(2.249)	(3.785)	(2.136)	(2.410)	(2.899)	(1.781)	(2.076)	(4.397)
Champ_lag1	0.934	0.627	-1.087	1.616	0.782	0.428	0.708	0.422	4.534	2.458	2.047	0.774
	[1.081]	(1.257)	(2.436)	(2.061)	(2.237)	(4.166)	(1.708)	(1.933)	(2.980)	(1.654)	(1.923)	(3.505)
Champ_lag2	0.926	0.864	-3.096	1.268	1.276	0.095	1.366	1.405	2.717	0.077	0.093	0.716
	[1.124]	(1.240)	(2.281)	(1.767)	(1.885)	(4.037)	(1.549)	(1.710)	(2.930)	(1.686)	(1.931)	(3.268)
Year F.E.	X	X	X	X	X	X	X	X	X	X	X	X
School F.E.	X	X	X	X	X	X	X	X	X	X	X	X
Linear Trends	X	X	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X	X	X
N	3725	2068	1657	3724	2068	1656	3711	2059	1652	3697	2046	1651
R2	0.963	0.965	0.957	0.948	0.947	0.944	0.977	0.970	0.979	0.960	0.944	0.964

Notes: The table uses Peterson's data for all 330 schools that participate in Division I basketball or football. All regressions include year and school fixed effects, school-specific linear trends, and controls for average nine-month fulltime professor salary, total annual cost of attendance, then number of high school diplomas given out by the school's state, and per capita income in the school's state. Robust standard errors are presented in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: The Effect of Sports Success on # of SAT scores sent by SAT Group

	Log SAT scores where SAT <= 900			Log SAT scores where 900 < SAT < 1100			Log SAT scores where SAT >= 1100		
	All	**Public**	**Private**	**All**	**Public**	**Private**	**All**	**Public**	**Private**
Basketball									
Final_64_lead1	0.014	0.012	0.007	0.007	0.011	-0.005	-0.013	-0.016	-0.014
	(0.009)	(0.010)	(0.016)	(0.008)	(0.011)	(0.015)	(0.010)	(0.014)	(0.014)
Final_64	0.021**	0.028**	0.007	0.009	0.014	-0.007	-0.003	0.005	-0.017
	(0.009)	(0.012)	(0.016)	(0.008)	(0.010)	(0.014)	(0.010)	(0.015)	(0.014)
Final_64_lag1	0.045***	0.043***	0.039**	0.030***	0.025**	0.031*	0.012	0.011	0.017
	(0.010)	(0.012)	(0.018)	(0.009)	(0.011)	(0.016)	(0.011)	(0.015)	(0.017)
Final_64_lag2	0.033***	0.022*	0.046**	0.022**	0.013	0.033**	-0.001	-0.004	0.002
	(0.010)	(0.011)	(0.018)	(0.010)	(0.013)	(0.015)	(0.010)	(0.013)	(0.014)
Final_64_lag3	0.007	-0.008	0.031*	0.011	-0.002	0.034**	-0.021	-0.030	-0.004
	(0.009)	(0.011)	(0.016)	(0.009)	(0.010)	(0.015)	(0.013)	(0.020)	(0.014)
Final_16_lead1	-0.017	-0.012	-0.031	-0.002	0.015	-0.037	-0.005	0.000	-0.014
	(0.016)	(0.015)	(0.047)	(0.016)	(0.014)	(0.051)	(0.012)	(0.014)	(0.027)
Final_16	0.028*	0.015	0.070*	0.017	0.012	0.038	0.001	0.005	-0.006
	(0.016)	(0.018)	(0.038)	(0.013)	(0.014)	(0.031)	(0.013)	(0.017)	(0.025)
Final_16_lag1	0.076***	0.039**	0.158***	0.052***	0.045***	0.067**	0.035***	0.029*	0.049*
	(0.017)	(0.018)	(0.035)	(0.013)	(0.014)	(0.029)	(0.013)	(0.016)	(0.026)
Final_16_lag2	0.051***	0.030**	0.098***	0.054***	0.025*	0.126***	0.029**	0.019	0.058**
	(0.015)	(0.015)	(0.037)	(0.013)	(0.013)	(0.031)	(0.012)	(0.014)	(0.026)
Final_16_lag3	0.025*	-0.001	0.084**	0.027**	0.016	0.048*	-0.005	-0.005	-0.005
	(0.015)	(0.014)	(0.038)	(0.012)	(0.013)	(0.027)	(0.014)	(0.017)	(0.023)
Final_4_lead1	0.036*	0.053**	0.022	0.013	0.022	0.012	-0.014	-0.006	-0.013
	(0.021)	(0.024)	(0.050)	(0.016)	(0.019)	(0.047)	(0.018)	(0.021)	(0.037)
Final_4	0.051**	0.080***	-0.011	0.014	0.015	0.050	0.026	0.050**	-0.011
	(0.022)	(0.024)	(0.058)	(0.021)	(0.024)	(0.071)	(0.021)	(0.021)	(0.063)
Final_4_lag1	0.116***	0.112***	0.122**	0.059***	0.066***	0.061	0.044**	0.052**	-0.001
	(0.021)	(0.024)	(0.057)	(0.018)	(0.021)	(0.054)	(0.020)	(0.023)	(0.042)
Final_4_lag2	0.088***	0.084***	0.153***	0.016	0.010	0.086*	0.020	0.024	-0.003
	(0.020)	(0.024)	(0.050)	(0.018)	(0.020)	(0.049)	(0.022)	(0.027)	(0.040)
Final_4_lag3	0.041*	0.017	0.171***	0.015	-0.001	0.154***	-0.006	-0.002	-0.020
	(0.021)	(0.022)	(0.055)	(0.024)	(0.025)	(0.057)	(0.020)	(0.024)	(0.052)
Champ_lead1	0.008	-0.002	-0.069	-0.032	-0.011	-0.137	-0.079***	-0.063**	-0.096
	(0.028)	(0.037)	(0.104)	(0.024)	(0.028)	(0.122)	(0.027)	(0.032)	(0.093)
Champ	0.025	0.042	-0.176	-0.001	0.015	-0.085	-0.047	-0.027	-0.026
	(0.026)	(0.033)	(0.108)	(0.021)	(0.026)	(0.136)	(0.033)	(0.036)	(0.118)
Champ_lag1	0.178***	0.172***	0.000	0.112***	0.131***	0.000	0.085***	0.109***	0.000
	(0.032)	(0.030)	(0.000)	(0.025)	(0.025)	(0.000)	(0.031)	(0.034)	(0.000)
Champ_lag2	0.179***	0.186***	0.205***	0.092***	0.094***	0.073	0.055*	0.091***	-0.068
	(0.029)	(0.032)	(0.068)	(0.025)	(0.032)	(0.096)	(0.030)	(0.030)	(0.083)
Champ_lag3	0.099***	0.093***	0.220***	0.053**	0.065**	0.061	-0.023	0.008	-0.007
	(0.026)	(0.033)	(0.072)	(0.025)	(0.030)	(0.074)	(0.034)	(0.042)	(0.061)

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Table 5: The Effect of Sports Success on # of SAT scores sent by SAT Group

	Log SAT scores where SAT <= 900			Log SAT scores where 900 < SAT < 1100			Log SAT scores where SAT >= 1100		
	All	Public	Private	All	Public	Private	All	Public	Private
Football									
Top_20_lead1	0.001	-0.001	-0.040	0.004	0.005	0.003	0.010	0.011	0.004
	(0.015)	(0.016)	(0.031)	(0.014)	(0.016)	(0.030)	(0.014)	(0.015)	(0.029)
Top_20	0.010	0.002	0.063	0.025**	0.018	0.052	0.011	0.011	-0.012
	(0.016)	(0.017)	(0.044)	(0.012)	(0.012)	(0.034)	(0.014)	(0.015)	(0.035)
Top_20_lag1	0.032**	0.026	0.065***	0.042***	0.038***	0.069***	0.027**	0.026*	0.043
	(0.014)	(0.016)	(0.024)	(0.012)	(0.014)	(0.024)	(0.013)	(0.015)	(0.029)
Top_20_lag2	0.032**	0.026*	0.031	0.039***	0.036***	0.037*	0.019*	0.010	0.050**
	(0.012)	(0.014)	(0.032)	(0.010)	(0.012)	(0.023)	(0.011)	(0.012)	(0.022)
Top_10_lead1	0.007	0.006	-0.037	-0.000	0.002	-0.063**	-0.000	0.003	-0.059
	(0.015)	(0.015)	(0.043)	(0.012)	(0.013)	(0.030)	(0.014)	(0.014)	(0.054)
Top_10	0.033**	0.016	0.127***	0.027**	0.026**	0.007	0.011	0.004	0.039
	(0.015)	(0.015)	(0.039)	(0.011)	(0.012)	(0.033)	(0.012)	(0.014)	(0.027)
Top_10_lag1	0.081***	0.059***	0.179***	0.059***	0.055***	0.077*	0.052***	0.045***	0.092**
	(0.016)	(0.015)	(0.059)	(0.011)	(0.011)	(0.044)	(0.012)	(0.013)	(0.041)
Top_10_lag2	0.040***	0.027*	0.116***	0.031***	0.022*	0.095***	0.023**	0.012	0.058
	(0.014)	(0.015)	(0.033)	(0.011)	(0.012)	(0.034)	(0.011)	(0.013)	(0.042)
Champ_lead1	-0.102***	-0.077**	0.000	-0.013	-0.003	0.000	-0.009	0.012	0.000
	(0.039)	(0.038)	(0.000)	(0.022)	(0.023)	(0.000)	(0.028)	(0.029)	(0.000)
Champ	0.056*	0.061*	0.000	0.082***	0.092***	0.000	0.103***	0.109***	0.000
	(0.032)	(0.032)	(0.000)	(0.024)	(0.023)	(0.000)	(0.033)	(0.034)	(0.000)
Champ_lag1	0.119***	0.124***	0.000	0.112***	0.117***	0.000	0.126***	0.130***	0.000
	(0.041)	(0.040)	(0.000)	(0.024)	(0.024)	(0.000)	(0.036)	(0.038)	(0.000)
Champ_lag2	0.028	0.029	0.000	0.025	0.018	0.000	0.000	-0.004	0.000
	(0.048)	(0.046)	(0.000)	(0.033)	(0.034)	(0.000)	(0.038)	(0.039)	(0.000)
Year F.E.	X	X	X	X	X	X	X	X	X
School F.E.	X	X	X	X	X	X	X	X	X
Linear Trends	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X
N	2429	1563	866	2428	1562	866	2430	1564	866
R2	0.995	0.996	0.992	0.996	0.997	0.992	0.996	0.995	0.996

Notes: The table uses Peterson's data for all 330 schools that participate in Division I basketball or football. All regressions include year and school fixed effects, school-specific linear trends, and controls for average nine-month fulltime professor salary, total annual cost of attendance, then number of high school diplomas given out by the school's state, and per capita income in the school's state. Robust standard errors are presented in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Specification and Robustness Checks

	Log Applications w/ Original Controls	Log Applications Using Random Effects	Applications	Applications Scaled by Enrollments	Log Applications w/ Additional Controls
Basketball					
Final_64_lead1	-0.008	-0.005	-28.407	0.019	-0.004
	(0.007)	(0.008)	(57.018)	(0.027)	(0.007)
Final_64	-0.005	-0.002	-74.437	-0.008	-0.005
	(0.006)	(0.008)	(49.962)	(0.025)	(0.007)
Final_64_lag1	0.006	0.013	-48.063	0.049**	0.002
	(0.006)	(0.008)	(48.495)	(0.024)	(0.006)
Final_64_lag2	0.010	0.017**	60.406	0.058**	0.008
	(0.007)	(0.008)	(53.262)	(0.024)	(0.007)
Final_64_lag3	0.004	0.012	6.132	0.011	0.001
	(0.007)	(0.008)	(52.930)	(0.026)	(0.007)
Final_16_lead1	0.015	0.005	140.705	0.038	0.020**
	(0.010)	(0.013)	(104.637)	(0.039)	(0.010)
Final_16	0.027***	0.017	182.112*	0.050	0.023**
	(0.010)	(0.012)	(107.101)	(0.040)	(0.010)
Final_16_lag1	0.032***	0.025**	164.942	0.114***	0.025**
	(0.010)	(0.013)	(111.833)	(0.040)	(0.011)
Final_16_lag2	0.032***	0.022	217.242**	0.106**	0.033***
	(0.010)	(0.013)	(107.261)	(0.043)	(0.011)
Final_16_lag3	0.015	0.007	117.029	0.054	0.019*
	(0.011)	(0.013)	(106.079)	(0.046)	(0.010)
Final_4_lead1	0.029	0.027	282.445	0.080	0.056***
	(0.019)	(0.022)	(197.845)	(0.061)	(0.020)
Final_4	0.037**	0.041*	399.343**	0.150*	0.059***
	(0.018)	(0.022)	(187.624)	(0.078)	(0.018)
Final_4_lag1	0.044**	0.055**	419.682**	0.213**	0.064***
	(0.017)	(0.024)	(194.402)	(0.088)	(0.018)
Final_4_lag2	0.041**	0.051**	317.387**	0.186**	0.060***
	(0.017)	(0.024)	(158.052)	(0.073)	(0.017)
Final_4_lag3	0.027	0.029	162.676	0.118	0.045**
	(0.020)	(0.024)	(184.903)	(0.082)	(0.021)
Champ_lead1	-0.004	0.013	-319.290	-0.233	-0.010
	(0.031)	(0.044)	(385.772)	(0.168)	(0.034)
Champ	0.039	0.060	-116.119	-0.054	0.051
	(0.030)	(0.044)	(315.222)	(0.109)	(0.031)
Champ_lag1	0.074***	0.077**	413.731*	0.157	0.062***
	(0.017)	(0.031)	(211.601)	(0.126)	(0.018)
Champ_lag2	0.077***	0.083**	373.573	0.270*	0.066***
	(0.025)	(0.033)	(325.704)	(0.164)	(0.025)
Champ_lag3	0.051**	0.047*	209.856	0.098	0.037
	(0.022)	(0.027)	(266.961)	(0.124)	(0.024)

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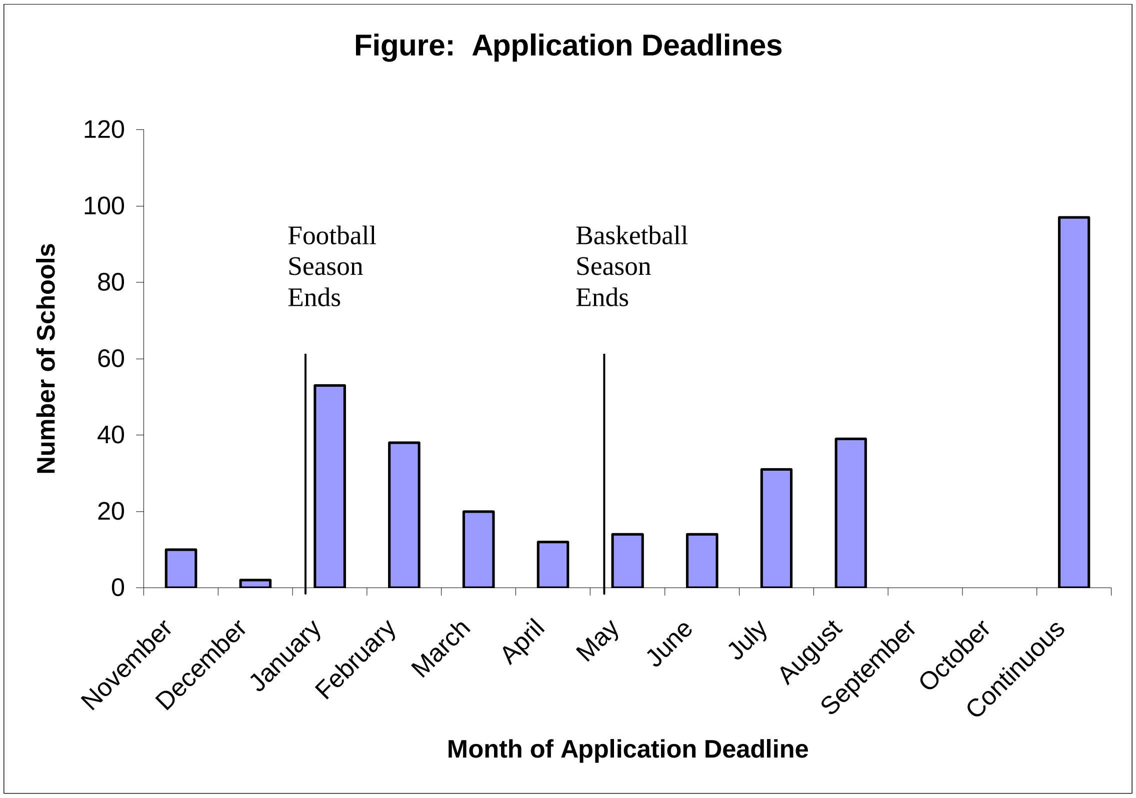
Table 6: Specification and Robustness Checks

	Log Applications w/ Original Controls	Log Applications Using Random Effects	Applications	Applications Scaled by Enrollments	Log Applications w/ Additional Controls
Football					
Top_20_lead1	0.008	0.002	24.879	-0.021	0.013
	(0.010)	(0.012)	(137.639)	(0.041)	(0.011)
Top_20	0.025**	0.018	240.797*	-0.015	0.030***
	(0.011)	(0.013)	(139.887)	(0.047)	(0.011)
Top_20_lag1	0.013	0.003	97.064	0.021	0.019*
	(0.011)	(0.012)	(138.090)	(0.043)	(0.010)
Top_20_lag2	0.001	-0.008	84.961	0.030	0.003
	(0.010)	(0.012)	(134.192)	(0.038)	(0.010)
Top_10_lead1	0.002	-0.010	-89.370	-0.059	0.012
	(0.013)	(0.016)	(176.871)	(0.052)	(0.013)
Top_10	0.032**	0.029*	260.194	-0.018	0.043***
	(0.013)	(0.016)	(176.847)	(0.060)	(0.013)
Top_10_lag1	0.019	0.012	159.405	0.103*	0.028**
	(0.013)	(0.017)	(170.504)	(0.053)	(0.013)
Top_10_lag2	-0.006	-0.005	-101.202	0.018	0.000
	(0.013)	(0.014)	(174.112)	(0.050)	(0.013)
Champ_lead1	-0.007	-0.004	-124.825	0.000	-0.006
	(0.033)	(0.038)	(441.554)	(0.120)	(0.030)
Champ	0.076**	0.094**	1,015.863*	0.017	0.079***
	(0.032)	(0.039)	(538.129)	(0.127)	(0.028)
Champ_lag1	-0.011	0.006	-135.378	0.014	0.002
	(0.047)	(0.056)	(800.892)	(0.147)	(0.040)
Champ_lag2	-0.038	-0.041	-399.336	-0.004	-0.039
	(0.031)	(0.037)	(483.546)	(0.104)	(0.030)
Year F.E.	X	X	X	X	X
School F.E.	X		X	X	X
School R.E.		X			
Linear Trends	X	X	X	X	X
Original Controls	X	X	X	X	X
Add. Controls					X
N	5335	5335	5335	5197	4082
R2	0.969	0.947	0.963	0.920	0.976

Notes: The table uses Peterson's data for all 330 schools that participate in Division I basketball or football. All regressions include year and school fixed effects, school-specific linear trends. Robust standard errors are presented in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%



Notes: Using Peterson's data on all 330 schools that participate in Division I basketball or football, the histogram indicates the number of schools whose application deadline falls in month. Schools that indicated that they had no application deadline were included in the "continuous" category.