

The Effects of College Basketball on Applications

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Abstract

This paper analyzes the effect of men's college basketball success on the number of applications for colleges that participated in March Madness during the 2017-'18 season. "Success" variables include win percentage, recruitment ranking, and March Madness rounds won, along with three other variables: average tuition, average income, and population of students, were used to run a linear regression. This model tests the hypothesis that men's basketball has a positive effect on applications. The results show no significant evidence for the hypothesis due to possibly having cross-sectional data. Though the results show significant evidence that avgtuition, avgincome, and population influence applications.

I. Introduction

The numbers for college men's basketball are at an all-time high. Just in 2017 alone, the NCAA brought in a record setting \$1.06 billion during March Madness. As well, it brought in 81 million views whether it be on TV or live stream (NCAA). This is a total of 58% increase in viewership (NCAA). So, we can see how March Madness affects the NCAA, but how does March Madness affect colleges? Are high-school recruits looking to join teams that do well in the March Madness tournaments? Are the teams participating in the National Tournament receiving more student applications? Following that, are students looking to apply to schools that do well in the March Madness tournament? All these inquiries thus lead to the research question, does college basketball success affect college applications? Specifically, the research question will look at the 2017-'18 season and teams that participated in the March Madness National Tournament. "Success" in this model is described as the following variables: win percentage of the school for that season, recruitment ranking, and the number of rounds won a team had in the National Tournament. The hypothesis of this model is that college men's basketball has a positive effect on the number of applications a college receives, and if that is true, colleges should spend more money on their teams, but if there is a negative effect on the number of applications, colleges should actually spend less money on college teams.

This paper will help colleges make better decisions about the way they spend their money based on knowing how college men's basketball success affects college applications. This is because colleges would be opted to spend more money on their men's basketball team, if there is a positive influence by basketball success on student applications. For example, in 2013 Wichita State got to the final four of the NCAA March Madness tournament, and this led to a 30% increase of applications the following year compared to the year below (atlantic). So, in this case

Wichita State may invest more in their basketball program the following year, to keep up the trend of an increase of applications.

II. Literature Review

There is some scholarly research already done on this topic, but one specific paper that was written by Devin Pope and Jaren Pope called, “The Impact of College Sports Success on the Quantity and Quality of Student Applications” describes how college sports affects student applications. This study was done in 2009 and what Pope and Pope tested was if making the NCAA tournament had an effect on the quantity of applications. What they found was that making it to the tournament a 1% increase in applications, “Sweet 16” had a 3% increase, “Final Four” had a 4-5% increase, and lastly winning the tournament had a 7-8% increase. This helps with my study because it is showing success in March Madness has a direct increase in quantity of applications. Finally, my paper will add more information on this study on not how only well a team does in March Madness, but how well they are during season (win percentage) as well as if their recruitment class for the following year has an impact on the number of applications.

III. Data

The data set being used is cross-sectional data from the years 2017-2018. First, to find out all the teams that participated in the 2017-2018 March Madness tournament, I looked up the bracket on ESPN, and found all 68 teams. Though, the NCAA tournament is a round of 64 team brackets, there are also 4 extra teams that have to compete to get into the final 2 spots.

Now, to calculate the win percentage, *winp*, for each team I went on the NCAA’s conference pages, for example, www.theacc.com, and found the “standings tab”. This helped me eliminate several teams at once instead of going on each individual team 68 times. But when it came to smaller teams from smaller conferences I went on each team’s page individually, like

www.gogriz.com. Once I got to the standings tab, I divided the number of wins by the total amount of games that specific team played so for example, if a team went 20-2, I would divide 20 by 22, the solution would then be that school's win percentage. Win percentage would help this model because, that's how most people define success for a college basketball team, by looking at the amount of wins they have compared to the amount of losses they have.

Moving onto Average Tuition, *avgtuition*, the process was found in the following way. A disclaimer, the average tuition was rounded to the nearest 1000. I found it was difficult to find out how much a school has available in financial aid, because that is sensitive information, so instead on google, I typed in "x university cost" and on the right-hand side, it provided information on average annual cost with financial aid, no financial aid, and out of state students from 1 school year. This is a reasonable source because the information is not coming from google or Wikipedia, but the information is coming from the school itself, but google makes the ease of access for this information easier. Average tuition will help with the model because it is another variable that can possibly describe what drives students to apply to more places, if a place is more expensive will people want to go there, or if is a place cheaper are there more applicants, and so on.

The next independent variable is average income, *avgincome*, and this was found by using the website deptofnumbers.com. There is a "dataset" tab where you can click the "income" hyperlink, and once this was done in the search bar I typed in every college's state and placed it into the search bar. The way I found the state of which the college was in, was provided with the information when finding average tuition for the schools. I then inputted the state, though there are some schools that are in the same state, so there will be average incomes that are repeated. The reason why this is so important is because if the average tuition of state is higher it means

there are people that are able to afford school. The lower it is, people may not be willing to attend the bigger schools for example a big school like University of Alabama, with a low average income. Those who live in Alabama, the average person would not be able to afford to go to University of Alabama but most likely a state school, and knowing this we can see what states would have more applications from their state because the average person would be able to go apply to these bigger schools that participated in March Madness.

Next is the explanatory variable population of school, *population*. For this I used the website collegedata.com which is the same website where I got the number of applications for the school. The reason why *population* is an important variable in this model because it measures the capacity of the school. What this means is that schools with lower population probably means that will accept as many students compared to a school with a higher population of students. Also, those with higher population of students means more students are willing to apply because they believe they have a higher chance of getting into the school where on the other hand schools with lower population may be harder to get into.

The next variable is *rankedteam*, which describes how strong a college's recruitment class was for the season 2018-2019. The website I used to understand the college recruitment rank was Rivals.com. To locate the rankings, I clicked on the tab "BB Recruiting" and then "Team Rankings". Though the default year was 2019 I changed the year to "Class of 2018" and went down the list and placed the rank of each team that was able to receive a ranking. The variable rank is a driving variable in this model, because it can also show success for college basketball teams. This is because, good players want to go to college programs that had success in the past, or are successful now.

The next variable, *tourneywins*, NCAA tournament wins, the data for this variable was found by looking at the official NCAA March Madness bracket on ESPN.com, and counting up the wins that each team had in the tournament. The variable, *tourneywins*, is another independent variable that is being used to measure the success of college basketball programs, essentially the more wins a program has in the NCAA tournament, their program is usually more successful than others, all things equal.

The last variable, also the dependent variable was *Applicantss*, and the website I used was collegedata.com. I then went to the “overview” tab, and scrolled down and it showed how many applicants applied and a percentage of how many were accepted. To compare if the numbers were accurate, I individually took certain schools and looked on their admissions website and check for the statistics, like UCLA, and the numbers were the same. So, based on my small sample size of 5, I made the decision that collegedata.com was accurate enough to show the number of applications.

Now, below is the model that will be used to run the regression, as well as table 1, which outlines all the variables that will be used in the model. In *Description Table 1*, it is showing the unit of observation for each variable, the duration of observation, the frequency of observation, the units of measurement, and lastly the coding of each variable.

Model:

$$Applicants = \beta_0 + \beta_1 avgtuition + \beta_2 avgincome + \beta_3 population + \beta_4 winp + \beta_5 rankedteam + \beta_6 tourneywins + e$$

Description Table 1

Variables	Unit of Observation	Duration of Observation	Frequency of Observation	Units of Measurement	Coding
Applicants	school	1 year	annual	applicants	dependent variable

AvgTuition	school	1 year	annual	dollars	explanatory variable
AvgIncome	state	1 year	annual	dollars	explanatory variable
Population	school	1 year	annual	people	explanatory variable
Winp	team	1 year	annual	win percentage	explanatory variable
RankedTeam	team	1 year	annual	ranked or not ranked	explanatory variable
Tournywins	team	1 year	annual	wins	explanatory variable

Now in *Summary Statistics Table 2*, each variable will show the descriptive stats of each variable, which will include: the number of observations, mean, standard deviation, minimum, and maximum.

Summary Statistics Table 2

Variable	Obs	Mean	Std. Dev.	Min	Max
applicants	68	22671.84	18015.78	2986	113761
avgtuition	68	33720.59	15242.17	17000	67000
avgincome	68	57601.41	8242.821	43469	80776
population	68	24568.82	16598.94	1950	71946
winp	68	.7232353	.0968218	.44	.94
rankedteam	68	.5882353	.4958121	0	1
tournywins	68	.9264706	1.330651	0	6

IV. Empirical Analysis

Applicants is the dependent variable being estimated in this model because we want to see how college basketball “success” affects the number of applicants to apply to a school. Now, there are two parts of this equation, one part answering the question how “success” affects applicants and the second part answering what other variables explain the number of applicants, which will help reduce the error term for the model and act of controls. The explanatory

variables for reducing the error term are avgtuition, avgincome, and population. Avgtuition, is the average tuition for students in-state and out-of-state and this can affect the number of applicants because the more expensive a school is, people may be convinced not to apply to that school. Secondly, avgincome is the average income of the state where the school is located, so for example UCLA, we would look at the average income of California. The average income of the state is helpful to determine where people would apply to because if the average income is higher than the median income of the nation, the average person in that state could afford apply to either in-state schools or out-of-state schools. The income of other states is important because, it can help determine where you will receive applications depending on the average tuition of a school. For example, the average income in Alabama is the lowest out of all states, so you would not see the average person applying to big schools in California where the average tuition for schools are much higher than the average tuition in places such as Alabama. Thus, if the average income is equal to or lower than the median national income the average person of that state may apply to cheaper schools, such as a state school as well as shying away from private universities or big/expensive universities. The next variable, population, is the total number of students at the school. This can be a factor in the number of applicants because it measures the capacity of the school. Possibly the more students there are at a school, students looking to go to college would want to go to that school as well. Now, the first variable that define college basketball “success”, winp, is the win percentage of that school for the 2017-18 season. Win percentage is an important factor in success because it just means that the more wins a school has, they are better than the rest of the competition. Next, rankedteam, is a dummy variable for colleges being ranked through their recruitment class or not. This can be defined as “success” because the more successful basketball schools, they will attract the better players. Thus, the better players at a

school means most likely the school will do well and succeed more. Lastly, tourneywins, the amount of March Madness tournament wins a college had in the 2017-18 season, is another factor of “success” because the colleges in the March Madness tournament are the best teams in nation. So technically the more wins you get against these teams, shows you more “successful” team because you are better.

After running an OLS regression, the expectations of the empirical model were not met. The results of the regression can be seen in *Regression Results Table 3* below in the appendix. The expectations that basketball “success” would have a positive effect on applicants were disproven by the OLS regression. Two of the three “success” variables had negative coefficients, winp and tourneywins. Also, by looking at *Residual Plot Graph 4* in the appendix, it can be seen that there is heteroscedasticity being shown because the residuals are all close to 0, which means the residuals are correlated to the fitted values.

Moving onto the OLS regression, I estimated only a linear specification, and this was performed by the Stata software. I considered using a log-lin model in the beginning, to capture the number of applicants as a percentage, but in the end, it was better to capture the results of the linear form to see the results as a whole number rather than a percentage. The results of the linear specification again are shown in *Regression Results Table 3*. As applicants is the dependent variable, the only significant variables in this model are avgtuition, avgincome, and population. This indicates that these variables affect whether people want to apply to the school. The results thus conclude that the “success” variables, winp, rankedteam, and tourneywins, were not statistically significant, which refutes the hypothesis and that college basketball success negatively affects the number of applicants. So, in reality as tuition increases by 1 dollar, there will be $\frac{1}{4}$ applicants and thus this is associated with the violation of the law of demand. The law

of demand states that as price increases quantity demanded should decrease, but instead its showing that quantity demanded is increasing. Now as average income increases by 1 dollar, there will be almost half a unit of applicants increase. These results make sense because it means more people are able to afford college and this will lead to more applications for colleges. Finally, a one person increase in population leads to an increase of 0.77 units of applicants which is associated with the rational choice theory, which states that people are rational and will make decisions that will maximize their utility. So, this means that people will apply to the higher populated schools rather than the lower populated schools because they might have a higher chance of getting in, and getting into college provides a rational individual more utility than getting rejected from college.

Regression Results Table 3

VARIABLES	(1) Linear Model
avgtuition	0.254* (0.127)
avgincome	0.471** (0.203)
population	0.775*** (0.122)
winp	-2,860 (17,471)
rankedteam	4,083 (3,749)
tournywins	-149.9 (1,372)
Constant	-32,247* (18,438)
Observations	68
R-squared	0.515

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

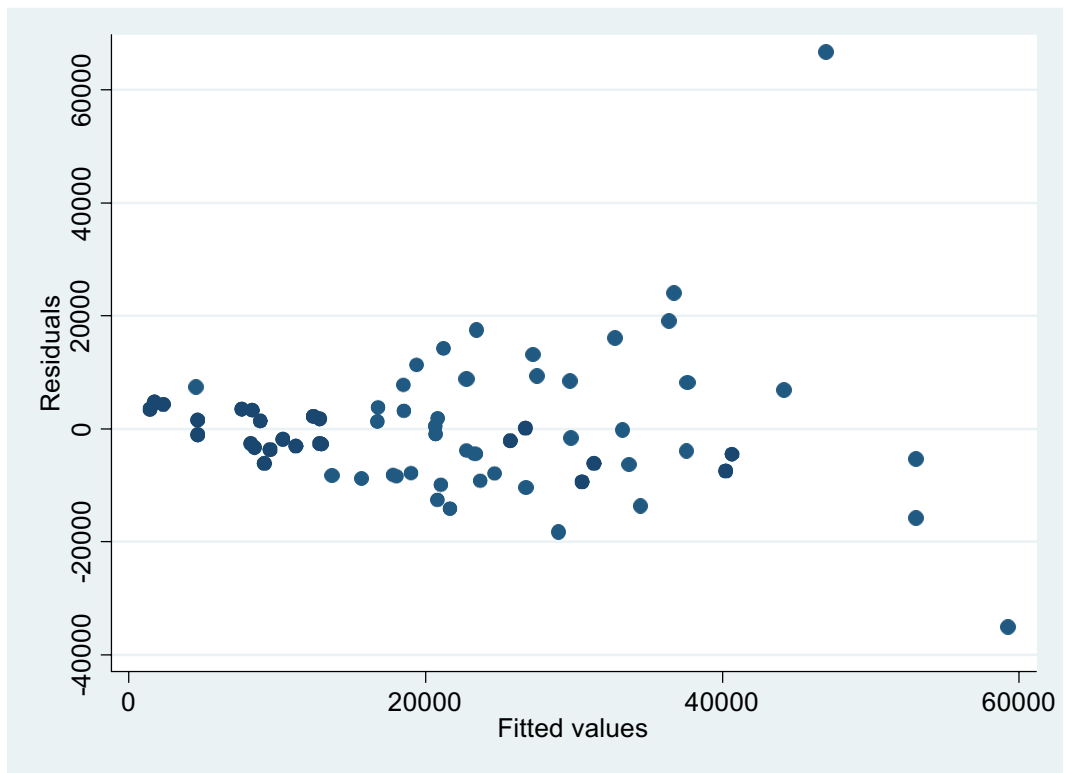
V. Conclusion

In conclusion, based on this cross-sectional data it seems that men's college basketball success has no statistical significance when it comes to the quantity demanded of applicants. The hypothesis that men's college basketball has a positive effect on the number of applications was rejected thus concluding that men's college basketball actually had a negative effect on the number of applications. The controlling variables did a better job showing their explanatory power towards the quantity demanded of applications than the "success" variables. The study could have been conducted better if more data was being used. The limitation to using cross sectional data was that it gave me a small sample size, and this one year could have just been a drop-in number of *applicants* due to other things, as well as the schools in the March Madness tournament could have been much smaller "population wise" compared to years past. Possibly using panel data could have been more useful to see if basketball success had a positive effect on the number of applicants because it would give us more information and a bigger snapshot of what was really going on with the data.

Knowing the effects of men's basketball success on applications can help solve a lot of problems when making budget decisions. Spending too much on a program that does not give back to the school, can be redistributed to either better the school or better different programs. Thus, hopefully putting colleges in higher tiers than they were before, making them more prestigious and successful.

Appendix:

Residual Plot Graph 4



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** = (example of websites) used 68 different websites for schools' tuition, 32 different conference websites