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The Role of Football Win Percentage on College Applications for Power Five and Group of Five Schools

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Abstract: Universities in the pursuit of maintaining or raising the number of enrollments are looking for ways to attract students. As demographics shift, government funding decreases, and the general sentiment around higher education changes, the competition between universities to attract prospective students will only become more intense. Investing in athletics to achieve more successful programs is one approach that universities have taken to better appeal to potential students. We analyze whether football success, as measured by win percentage, is correlated with a higher number of student applicants. We find that for schools in the major “Power-Five” conferences, win percentage does not significantly change the number of students who apply. However, in the smaller “Group-of-Five” conferences, win percentage is associated with an increase in the number of applications. This is a particularly relevant finding because smaller universities may often be the ones struggling to maintain the size of their student body. At the same time, back-of-the-envelope calculations suggest that the costs of increasing a schools win percentage may not be worth the benefits in terms of increased revenues from student enrollment.

JEL Codes: Z20, Z21, I20

Key Words: Sports, Football, NCAA, Collegiate Athletics, University, Freshman Application

*This is a modified version of Craig McFarland’s Senior Seminar Paper.

Introduction

Undergraduate college enrollment in the U.S. fell 8% from 2019 to 2022 (U.S. Bureau of Labor Statistics). This decline is can likely be attributed to shifts in the age distribution of the population, fear of student debt, and an improved labor market. Smaller, regional universities in particular are experiencing this decline and are looking for ways to maintain their pool of applications and enrollment (Gardner, 2023). Investing in athletic programs is one approach universities often take to help attract potential students. The key question, however, is whether college athletics is an effective investment towards attracting students.

In their article, “The National Collegiate Athletic Association Cartel: Why it Exists, How it Works, and What It Does,” Sanderson and Siegfried (2018) pose the question:

“How have over 100 of the top 128 athletics departments persuaded their university presidents and trustees to continue devoting scarce general funding to intercollegiate sports? When these institutions incur financial losses on athletics, universities seem to double down, spending even more on salaries for coaches and improving physical facilities, rather than viewing losses as a signal to redeploy assets and efforts.”

Sanderson and Siegfried (2018) offer three answers to the above question: (i) intercollegiate athletics might attract greater appropriations from state legislators; (ii) intercollegiate athletics may boost private donations; and (iii) high-profile sports programs, like other campus amenities, may attract more applicants and thus additional enrollment. Jacobs et al. (2018) arrive at a similar conclusion regarding high-profile sports programs serving as a campus amenity. They argue that universities serve as country clubs that not only provide academic services, but also consumption amenities to their students. When examining overall university spending, Jacobs et

al. find that for every dollar spent on academics, a university spends forty-five to eighty cents on consumption amenities.

The sport that is surrounded by the most controversy is football; it tends to require the most investment but is generally the most popular and thus often generates the most revenues. With a university's budget being a hotly debated topic, the investment of millions of dollars into a football program often gets called into question. Additionally, most football programs do not make a consistent monetary profit that goes back to the university (Baumer 2019).

Those in favor of collegiate football, as mentioned by McCormick and Tinsley (1987), propose that athletics functions as an "advertising effect" that can promote the school and increase applications and alumni donations. This idea seems plausible as an average of 1.8 million people tuned in to watch the 392 regular season football games that were broadcast in the 2019 season. Not to mention, the audience of the 2019 National Championship game reached 27.3 million viewers (National Football Foundation, 2020). There is no doubt that college football is a cultural phenomenon in the U.S., but it is unclear whether universities are reaping the benefits of the sport's popularity.

There has been a wide array of research done in this area. Our study focuses on the influence of football athletic success on the number of freshman applications at a university. We draw particular focus to NCAA universities that participate in the Football Bowl Series (FBS). As the name suggests, the FBS includes all universities with football programs that are eligible to compete for a postseason bowl game bid.

In our analysis, we split the FBS schools into two groups based on their conference. The first group includes what has become known as the Power-Five conferences. This group consists

of the Atlantic Coast (ACC), the Big Ten, the Big Twelve, the Southeastern (SEC) and the Pac-12 conferences. The universities in these conferences tend to be the largest universities, and often includes the flagship schools of many states. Due to fan interest, these universities have lucrative television contracts and receive significant revenues from their sports programs. The second group has become known as the Group-of-Five conferences, and consists of the American Athletic, the USA, the Mountain West, the Mid- American, and the Sun Belt conferences. Universities in these conferences are sometimes called the mid-majors, and generally tend to be more regional schools that do not have the same lucrative tv contracts as the Power Five Schools. Therefore, universities in the Group-of-Five conferences receive significantly less revenues. We demonstrate that the universities across these two groups are systematically different and believe that analyzing the universities in these two groups separately may provide additional insights that previous studies have not uncovered.

Such a split is particularly relevant in the current setting because smaller universities are generally suffering from greater losses in enrollment, compared to larger flagship universities, and are thus looking for ways to minimize losses in the size of their student body. From 2010 to 2021, 78 flagship universities across the country increased their enrollment by 12.3%. At the same time, 396 public regional universities saw decreases in enrollment by more than 4% (Gardner, 2023). Investing in athletics programs is a seemingly attractive option for regional universities, but does the resulting success of a program translate into increases in student applications? Focusing on football programs at NCAA FBS universities, that is what this study sets out to investigate.

The remainder of this paper includes a literature review, followed by a description of the data used, then a comparison between the Power Five and Group of Five schools, then the methodology and empirical results are examined. Lastly, concluding thoughts related to football success and the number of applications to universities is provided, as well as a back-of-the-envelope benefit-cost analysis on the use of the college's general fund to finance their football program.

Literature Review

The benefit of athletic success to universities has been a popular field of study for over three decades. The topic began with studies like "Athletics versus Academics? Evidence from SAT Scores" in 1987, by McCormick & Tinsley, to studies published as recently as 2021 (e.g., Eggers, Groothuis, and Redding, 2021). Although there is extensive research in this area, how athletic success and university benefit is defined and tested ranges widely.

Many studies have found that athletic success positively benefits universities. Murphy and Trandel (1994) found that there is a positive and statistically significant relationship between a university's football record and the number of applicants. When testing multiple different sports' win percentage effects on applications, McEvoy (2005) concluded that football is the only sport that had a positive and significant relationship. In terms of quality of students, McCormick and Tinsley (1987) affirmed that trend data of football win percentage had a positive and significant effect on the SAT scores of applying students. Eggers, Groothuis, and Redding (2021) observed football success by isolating noteworthy upsets and national championship victories. They found that upset and national championship wins positively affect the quantity of applying students. Similarly, Jones (2009) used the measure of appearance in post season bowl

games as a measure of football success and found that the appearance in a bowl game is associated with an increase in male applicants.

There are also studies that examine the negative effects of adverse athletic situations. Eggers et al. (2019) reported that schools that faced post-season bowl bans experienced a significant decrease in the number of students who apply to the university. Caudill, Hourican, and Mixon (2018) found that universities that decide to discontinue their football team experienced a reduction in the number of applications and the quality of students who apply. Comier et al. (forthcoming) find that national championship effects are positive: increasing peer rankings, alumni giving, and student academic quality. But at the same time, they find that schools who are sanctioned for athletic malfeasance with a post season bowl ban, also experience an increase in acceptance rate and decrease in academic quality. Schools with vacated games due to athletic malfeasance also see lower alumni giving.

Despite the near consensus that successful athletics programs benefit their university, not all studies come to such a clear conclusion. In a study that included multiple social variables, such as US News World Report rankings and party school ratings, along with football win percentage, Smith (2019) found that athletic success had little to no effect on enrollment yield. Baumer and Zimbalist (2019) added that football success only contributes to a “modest positive and short-lived impact on student applications”. They also pointed out that there is no significant correlation between athletic success and university donations or the quality of students who apply. Smith (2009) agreed with this sentiment and explained that the effect of athletic success is minimal compared to other factors related to a university.

Our research focuses specifically on heterogeneity across conference groupings; and whether application numbers at smaller universities in the Group of Five conferences are

affected differently by football success compared to larger universities in the Power Five conferences. This focus is particularly relevant because many studies, such as McEvoy (2005) and Baumer and Zimbalist (2019), chose to completely disregard the Group of Five conferences, and focused exclusively on the more prominent football universities. Overall, the literature concerning athletic success and university benefit is insightful, but a focus on the differences between the schools with access to more revenues compared to the group with less revenues may provide insights to the athletic funding debate. This focus is timely given the current atmosphere of declining college enrollment, especially among smaller universities who may be looking for ways to attract potential students, and ultimately maintain their pool of applications and student enrollment.

Data Description

We developed a panel dataset consisting of annual observations for 121 universities over a 5-year period. The sample includes all universities that participated in the Division I FBS from 2014 to 2018, minus a few exceptions.¹

The compiled dataset consists of information from four different sources. Most of the data, such as the number of applicants each year (in total, and separated by gender), faculty salary, average in-state tuition, and the private or public status of a school, come from the Integrated Postsecondary Education Data System (IPEDS)². IPEDS is a government database

¹ To maintain a balanced panel, five schools that did not participate in all 5 years from 2014 to 2018 were dropped. Charlotte, Coastal Carolina, and Liberty made the move from a smaller division into the FBS in 2015, 2017, and 2018 respectively. Idaho University dropped to a lower division in 2017. The University of Alabama-Birmingham had their program shutdown for the 2015 and 2016 season.

Five more schools that played in the FBS from 2014 to 2018 were dropped because of their independent conference status: University of Notre Dame, University of Connecticut, Brigham Young University, Army West Point, and University of Massachusetts. Because this study chooses to focus heavily on heterogeneity across the Group of 5 and Power 5 conference designations, these universities were excluded.

² Integrated Postsecondary Education Data System- Compare Institutions, Accessed Nov 19, 2022, <https://nces.ed.gov/ipeds/datacenter/InstitutionByName.aspx>

that contains and continuously collects data related to postsecondary education. Additionally, this source includes football conference ID numbers as well as state ID numbers. The conference ID numbers are used to categorize universities into the Group of Five and Power Five conferences. The State IDs are used to link universities with corresponding state-level data (discussed below). All data from IPEDS spans from 2015 to 2019.

A common way to measure a university football team's success is win percentage. A team that has a higher win rate is more likely to be looked at in a better light by applying students who value an athletic amenity. Data relating to football success is from the NCAA Statistics website.³ Win percentage is a preferable measure of football success, over measures such as the number of wins, because every team does not play the same number of games every year. The football win percentage data is taken from 2014 to 2018. The one-year lag of football win percentage is then linked with the university dataset that spans from 2015 to 2019. The football season takes place during the application period for the following year. The season would not yet be complete when a potential student decides to apply, and so the previous year's football success rate is a more complete measure.

The final component of the dataset includes state-level information. In previous studies, such as Murphy and Trandel (1994), average real personal income per capita and the estimated number of public high school graduates in each state were included as explanatory variables. The data containing the average real personal income per capita originates from the US Bureau of Economic Analysis (BEA).⁴ State average real personal income per capita also enters the model in lagged form. Since students apply to a university as early as a year in advance, it is theorized

³ NCAA Statistics- Winning Percentage, Accessed Nov 1, 2022, <https://stats.ncaa.org/rankings>

⁴ Bureau of Economic Analysis- Interactive Data, Accessed Nov 20, 2022, <https://www.bea.gov/tools/>

that using income data from the previous year is more accurate. Another state level variable is the estimated number of public high school graduates, which we gather from the National Center for Education Statistics (NCES).⁵ In theory, the number of high school graduates in a state effects how many students apply to universities in that state.

Comparison of NCAA Power Five and Group of Five Schools

The Power-Five conferences consist of the ACC, the Big Ten, the Big Twelve, the SEC and the Pac-12 conferences. Universities in these conferences tend to be the largest universities for the states of the various regions. For instance, the Big Ten conference consist primarily of the flagship universities of the midwestern part of the U.S., including schools like the University of Michigan, the Ohio State University, Pennsylvania State University, as well as large private universities such as Northwestern in Illinois. All other conferences in the power five follow the same pattern where the flagship schools are organized by regions of the country. Given that these conferences consist of the largest, most well-known schools, they generate the greatest athletic interest from the public. Given the fan interest, all Power five conferences have lucrative media contracts, their football teams generate high revenues by ticket sales, and the universities generate high revenues from licensing fees.

The Group of Five conferences consist of smaller regional universities sometimes called the mid-majors. The five conferences are the American Athletic, Conference USA, the Mountain West, Mid-American, and the Sun Belt conferences. The Mid-American conference, for example, overlaps the same region as the Big Ten but consists of smaller, less known schools such as Central Michigan, Western Michigan, Ohio University, and Bowling Green University in

⁵ NCES- Public high school graduates, by region, state, and jurisdiction, Accessed Nov 20, 2022, https://nces.ed.gov/programs/digest/d16/tables/dt16_219.20.asp

Ohio. There are twelve mid-major schools in the Mid-American Conference, primarily from Michigan and Ohio. Given that the schools are smaller and more regional, they generate less fan interest than the flagship schools, and do not have conference media contracts, and generate much less in licensing fees and ticket sales.

In Table 1, we provide a comparison of means between the Power Five and Group of Five universities. Power Five schools have larger enrollments with a mean of 32,000 students, while Group of Five schools have average enrollments of 21,000 students. Faculty salaries at Power Five schools are about \$20,000 higher on average than Group of Five salaries. The average tuition costs at Power Five Schools are also about \$6,000 more than the Group of Five schools. Power Five universities receive about double the total applications each year, and more than double the number of applications for men. The number of female applicants is slightly less than double at the Power Five schools, on average. All mean differences are both economically and statistically significant, suggesting these two groups of schools represent different types of colleges even though they are organized in the same NCAA division. Lastly, the average win percentages between the groups notably shows that the Power Five schools tend to win more than Group of Five schools.

Table 1: Means by Power Five and Group of Five Universities

	Power Five Mean (Standard deviation)	Group of Five Mean (Standard deviation)	Two-tailed t-test p-value
Total Applications	32,157 (16,924)	17,076 (10,749)	0.000
Women Applications	16,861 (8,793)	9,588 (6,236)	0.000
Men Application	15,292 (8,520)	7,479 (4,228)	0.000
University Enrollment	32,059 (12,447)	21,439 (10,420)	0.000
Tuition (In State)	\$16,358 (14,986)	\$9,896 (10,191)	0.000
Faculty Salary	\$104,124 (21,021)	\$83,568 (14,806)	0.000
Private Dummy	0.170 (0.376)	0.071 (0.258)	0.000
Lag Win Percentage	55.937 (20.389)	48.155 (21.676)	0.000

Observations: Power Five n=324, Group of Five n=281.

Focusing on the financial differences between the Power Five and Group of Five conferences, the data shows that the revenues generated, and the money spent on athletics by Power Five conferences is much greater than the Group of Five conferences. For instance, the Power Five Conferences' 65 schools combined generated approximately \$8.3 billion in athletic revenue in 2020 – or \$130 million on average per school. Football is the major driver of these revenues (Broughton 2020). The revenue difference does vary between schools in the Power Five, with a maximum of \$224 million generated by the University of Texas and a minimum of \$71 million generated by Washington State University (Broughton 2020). In the Group of Five conferences, revenues per year ranged from the MAC at \$21.9 million per school to Conference USA at \$13.9 million per school (Russo 2020). Surprisingly, an average of twenty-six percent of

Group of Five athletic revenues come from student fees and additional university and governmental support (Knight Commission 2020).

Spending on football programs also varies by the Power Five and Group of Five Conferences, with a median athletic budget of \$123 million for a Power Five school and a median budget of \$37 million for a Group of Five school. Focusing on football head coaches' salaries shows the median Power Five football coach's salary was \$3.4 million, with the lowest paid Power Five coach making \$2.1 million. The Group of Five football coaches, on the other hand, make quite a bit less. The highest paid Group of Five coach was paid \$2.1 million, which is the same as the lowest paid Power Five head coach. The median salary for a Group of Five head coach was \$800,000, less than one-fourth the median among Power Five coaches (Leeds and Pham 2019).

Given the differences between the Power Five and Group of Five schools in both athletic budgets, school size, and fan interest, we analyze the two groups separately. Additionally, it is of policy interest to observe if investments in athletics, such as football, will be beneficial for smaller schools to combat the decrease in student enrollment. These differences in athletic funding – sometimes called the difference between the “haves and have nots” – leads to our key research question: Does winning more games influence student applications more at Power Five schools or Group of Five schools?

Methodology

The dependent variable is the natural logarithm of the overall total number of students who apply to university i in state s , and in year t ($\ln(apps_{ist})$). In subsequent models we divide this up by the total number of women who apply, and the total number of men who apply, and examine enrollment separately by gender. We use the natural log of applications as the dependent variable in order to better account for differences in size between the universities

focus on percentage changes. Our independent variable of primary interest is the football win percentage of a university from the previous year ($\%wins_{ist-1}$).

Other control variables are denoted by the vector \mathbf{x}_{ist} . This vector includes the average in-state tuition of a university, as well as the average salary of full-time faculty. As described by Murphy and Trandel (1994), the salary variable is a “proxy variable for the qualification of faculty at a given school”. The idea is that higher paid faculty are more qualified, and thus it can be speculated that the quality of education services from the university is also higher.

State-level variables (\mathbf{z}_{st}) are also added in the model, including average personal income per capita in the previous year. This variable is predicted to capture business cycle related influences on a prospective student’s university decisions (Murphy and Trandel, 1994). Additionally, we include the estimated number of public high school graduates in each state. Accounting for high school graduates is a rough measure of the population of prospective in-state students that could apply for college.

The overall model to be estimated is displayed in equation (1). As described above, we estimate this model separately for Power Five and Group of Five universities. In subsequent models we further split the sample to only consider male versus female applicants.

$$\ln(apps_{ist}) = \beta_0 + \beta_1 \%wins_{ist-1} + \mathbf{x}_{ist}\boldsymbol{\beta}_2 + \mathbf{z}_{st}\boldsymbol{\beta}_3 + \boldsymbol{\varphi}_t + \varepsilon_{ist} \quad (1)$$

The coefficients to be estimated are denoted by $\boldsymbol{\beta}$, and of primary interest is β_1 , which describes the association between how successful a university’s football team is and the number of student applications the subsequent year. The vector $\boldsymbol{\varphi}_t$ denotes year-specific fixed effects, and is also a parameter to be estimated. The disturbance term ε_{ist} is assumed to be normally distributed.

Results

In Table 2, we report the specifications on the log of total enrollment. We find that for Power Five schools the lag of win percentage has no economically nor statistically significant effect on applications. In contrast, for the Group of Five schools we do find evidence that win percentage positively influences applications, an effect that is both statistically and economically significant. To provide insight on the magnitude of the effect, when a Group of Five football team increase their winning percent by ten percent for instance from forty percent wins (.400) to fifty percent wins (.500), their total applications rise by 2.1%. This corresponds to an average increase in applications of about 358 students, when evaluated at the mean total enrollment among Group of Five schools.

The coefficient estimates corresponding to the control variables that are not of primary interest do generally align with expectations. Higher tuition and faculty salaries, which likely proxy for higher quality and/or more desirable universities, are associated with an increase in applications. Private universities tend to see smaller application numbers, and universities in states with greater numbers of high school graduates tend to also see larger application numbers, all else constant.

Table 2: Determinants of Total Applications

	Power Five Log Total Applications	Group of Five Log Total Applications
Previous Year's Football Win Percentage	0.0008 (0.0009)	0.0021* (0.0012)
Average In-State Tuition	0.027** (0.006)	0.044** (0.009)
Average Faculty Salary	0.011** (0.001)	0.016** (0.008)

Private University Dummy	-1.415** (0.238)	-2.132** (0.337)
Previous Year's Average Real State Personal Income	0.005 (0.004)	0.009 (0.008)
State High School Graduates	0.002** (0.000)	0.002** (0.000)
Constant	8.455** (0.225)	7.192** (0.088)
Year fixed effects	Yes	Yes
Adjusted R- Squared	0.547	0.448

Observations: Power Five n=324, Group of Five n=281.

*significant at the 90% level **significant at the 95% level

In Table 3, we repeat these same regression models, but examine the number of applications separately by gender. We again find that for Power Five schools that win percentage has no economically nor statistically significant effect on male nor female applications. These results suggest that for Power Five flagship universities that increasing athletic success measured by improved win percentage provides no benefits in terms of increased applications. Previous research (Eggers et al. 2021 and Comier et al. forthcoming), however, found that athletic the success of winning a championship does improve the quantity and quality of students. One interpretation is that incremental improvement of athletic success has no effect on students, but the “all-or-nothing success” of winning a championship does.

When focusing on the Group of Five schools, we find that win percentage does positively influence the number of applications from male students, but not for female students. To provide insight on the magnitude of the effect, when a Group of Five football team increases their winning percent by ten percent – from forty percent wins (.400) to fifty percent wins (.500) –

their total applications rise by 3.1%. When evaluated at the mean total male enrollment for Group of Five schools, this corresponds to an average increase of about 232 students.

Our results suggest that for the smaller regional schools who are members of the Group of Five conferences, incremental improvements in athletic success may lead to more interest, and thus increased applications, particularly from male students.

Table 3: Determinants of Female and Male Applications.

	Power Five Female Log Applications	Group of Five Female Log Applications	Power Five Male Log Applications	Group of Five Male Log Applications
Previous Year's Football Win Percentage	0.0007 (0.0009)	0.0012 (0.0009)	0.0003 (0.0009)	0.0031** (0.0012)
Average In-State Tuition	0.028** (0.006)	0.067** (0.009)	0.028** (0.006)	0.027** (0.009)
Average Faculty Salary	0.008** (0.001)	0.012** (0.003)	0.012** (0.001)	0.018** (0.003)
Private University Dummy	-1.343** (0.238)	-2.903** (0.356)	-1.55** (0.251)	-1.463** (0.334)
Previous Year's Average Real State Personal Income	0.003 (0.005)	-0.006 (0.008)	0.008 (0.005)	0.026** (0.008)
State High School Graduates	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)
Constant	8.01** (0.236)	7.417** (0.373)	7.451** (0.236)	5.540** (0.087)
Year fixed effects	Yes	Yes	Yes	Yes
Adjusted R- Squared	0.547	0.448	0.561	0.431

Observations: Power Five n=324, Group of Five n=281.

*significant at the 90% level **significant at the 95% level

Conclusion

We find little evidence that incremental increases in football win percentages is associated with an increase in applications for larger universities in the Power Five conferences. In contrast, football win percentage appears to have a positive and significant effect on the number of applications received by Group of Five universities, particularly from male applicants. This result suggests that increased football win percentage could be more effective in increasing application rates among the smaller Group of Five conference universities. A possible explanation for this is that Group of Five schools are not as commonly known as the already popular schools in the Power Five. Thus, more advertising by way of football success is more valuable for these Group of Five universities. For example, Group of Five football games are less frequently televised on national stations. For a Group of Five team to be on TV, they must be generally having a successful season. Breakout, successful football seasons for Group of Five universities can be particularly valuable. To take the analysis a step further, TV coverage could possibly be the reason incremental success is valuable to Group of Five universities, because one to two more wins in a season may be the difference between a Group of Five team getting televised or not. The same could not be said about flagship universities that will be more often featured either way due to their widespread appeal. Our results are consistent with the notion that successful football teams at smaller universities may help attract potential students and minimize losses due to broader declines in enrollment.

To provide insights on how an increase in football win percentage may benefit the university, we perform a back-of-the-envelope illustrative calculation focusing on the value of winning one more game during a season. If a university football team wins one more game in a twelve-game season, the increase in win percentage is calculated as 8.3%. This increase in win

percentage increases total applications by 1.74% or 298 students. If the enrollment yield (i.e., the percentage of applicants who enroll) is about 0.25 or so, then freshman enrollment would increase by about 75 students⁶. If these students pay the average full tuition rate of \$9,896 (see Table 1), then the school would raise an additional \$736,348 in in tuition revenue per year, for each additional win.

This back-of-the-envelope calculation suggests that smaller, Group of Five universities in the pursuit of students and tuition revenues should not necessarily view financial investments into football programs as viable way to increase enrollment, at least not at the margin. Additionally, this “race to the bottom” could be a zero-sum game. For every win there is a loss, and if all schools provide financial support to increase wins, then an arms race develops leading to a prisoner’s dilemma where all schools are worse off by overspending on athletics.

The implications of this study are that having a successful football team increases the volume of student applications the following year for Group of Five universities. Thus, one could conclude that having a successful football team provides benefits to a university, but it should not necessarily be prioritized over other important university practices. And there may be more cost-effective approaches if attracting potential students is a primary objective.

⁶ The average yield (enrollment rate) is 18.6% for Mid-American Conference University and 29.3% for a Sun Belt Conference University. The average enrollment at a Group of Five university is 17,076 from Table 1.

References

- “Amazing College Football Popularity Highlighted by Impressive Ratings and Attendance Data.” *National Football Foundation*, National Football Foundation, 4 June 2020.
- Baumer, B., & Zimbalist, A. (2019). The impact of college athletic success on donations and applicant quality. *International Journal of Financial Studies*, 7(2), 19.
- Caudill, S. B., Hourican, S., & Mixon, F. G. (2018). Does college football impact the size of university applicant pools and the quality of entering students? *Applied Economics*, 50(17), 1885–1890.
- Comier, A., Eggers A. F., Groothuis P. A., & Rotthoff K. W., (forthcoming) “The Flutie and Anti-Flutie Effect: The Impact of Football Championships and Athletic Malfeasance on the University” *Journal of Sports Economics*.
- Eggers, A. F., Groothuis, P. A., & Redding, P. T. (2021). The Flutie Effect: The Influence of College Football Upsets and National Championships on the Quantity and Quality of Students at a University. *International Journal of Sport Finance*, 16(2), 59–68.
- Eggers, A. F., Groothuis, P. A., Redding, P., Rotthoff, K. W., & Solimini, M. (2019). The negative effect of NCAA football bowl bans on university enrolment and applications. *Applied Economics*, 51(54), 5870–5877.
- Jones, A. (2009). Athletics, applications, & yields. *College and University*, 85(2), 10.
- Gardner, L. (2023, February 14). *Flagships Across the Country are Prospering While Regionals Suffer*. *The Chronicle of Higher Education*.

McCormick, R. E., & Tinsley, M. (1987). Athletics versus Academics? Evidence from SAT Scores. *Journal of Political Economy*, 95(5), 1103–1116.

McEvoy, C. (2005). The relationship between dramatic changes in team performance and undergraduate admissions applications. *The SMART Journal*, 2(1), 17-24.

Murphy, R. G., & Trandel, G. A. (1994). The Relation between a University's Football Record and the Size of Its Applicant Pool. *Economics of Education Review*, 13(3), 265–270.

Russo, R. D. Russo (2020). Growing gap between Power 5 and Group of 5. *Chicago Tribune*, 1-3

Smith, D. R. (2009). College Football and Student Quality: An Advertising Effect or Culture and Tradition? *The American Journal of Economics and Sociology*, 68(2), 553–580.

Smith, D. R. (2019). The lure of academic and social reputations versus athletic success: Influences on enrollment yield at NCAA Division I institutions. *Research in Higher Education*, 60(6), 870-904.