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**Paul Simon Public Policy Institute**

March 25, 2008

Dear Friend of the Paul Simon Public Policy Institute:

Attached you will find a paper entitled, "Ball Fair? A Quantitative Examination of Which Universities Succeed in the Men's NCAA Tournament." This paper was written by Mr. Wilfred T. Reilly who is a Ph.D. student in the Department of Political Science. This is the first paper we have published authored exclusively by a graduate student, and we hope there will be other student-authored papers to come. This is number ten in the institute's occasional paper series. You can also visit [www.paulsimoninstitute.siu.edu/publications.papers.htm](http://www.paulsimoninstitute.siu.edu/publications.papers.htm) to read it online.

This paper addresses public policy and university policy issues endemic to competitive sports in the 21<sup>st</sup> century academy – issues involving investment of collegiate and community resources. Reilly's thesis challenges conventional wisdom. His paper is carefully researched and written. It is well argued. It should not be construed as representing a policy position of our institute. However, we believe it merits consideration in an ongoing dialogue.

In the interest of balanced representation, we also are referring readers to an earlier paper that reaches different conclusions. You can visit [www.paulsimoninstitute.siu.edu/PDF/athletics.pdf](http://www.paulsimoninstitute.siu.edu/PDF/athletics.pdf) to read it online--with our thanks to the University of Chicago Press and the Journal of Political Economy.

We hope you enjoy this paper, and we look forward to hearing your reaction. I can be reached at [mlawrenc@siu.edu](mailto:mlawrenc@siu.edu). John Jackson, the editor of the occasional paper series, can be reached at [jsjacson@siu.edu](mailto:jsjacson@siu.edu). Mr. Reilly, the author, can be reached at [Wreilly2003@yahoo.com](mailto:Wreilly2003@yahoo.com).

Sincerely,

Mike Lawrence  
Director

Ball Fair?

A Quantitative Examination of Which Universities Succeed  
In the Men's NCAA Tournament

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## **Abstract**

Mid-major American universities spend a great deal of money on intercollegiate athletics. For example, the University of Buffalo recently spent \$10-20 million to join NCAA Division One, and Southern Illinois University plans to spend \$80 million to improve athletic facilities. Much of this money is spent because coaches and administrators see athletic success as a path to national recognition for their institutions. High-prestige competitions like the men's NCAA basketball tournament are perceived as fair games that all schools have a chance to win, and regional universities invest millions in attempts to win them. This paper tests the logic of this behavior, by examining the success rates of several categories of schools over the past 10 NCAA tournaments. In fact, when examined statistically, the tournament is not a fair game. The last 10 champions have been wealthy universities from elite football conferences, as have 131 of the past 160 Sweet Sixteen entrants. Only one mid-major program has made the Final Four during the past decade. Colleges and regional universities have little chance of winning the tournament, and should consider reevaluating how they spend their limited budgets.

## Introduction and Literatures

In Illinois and throughout the Midwest, mid-sized universities are making significant investments in intercollegiate athletics. After enjoying basketball and football success during the past decade, Southern Illinois University decided to commit \$80 million to the “Saluki Way” campus development plan (Southern Illinoisan, August 4, 2007). Although some Saluki Way funds are ear-marked for a classroom building, most will go toward the construction of new athletic facilities for the Salukis (Southern Illinoisan). Similarly, Northern Illinois University officials have declared that the university needs to focus on “post-season play” in sports like basketball, and are investing heavily in new coach Ricardo Patton in order to achieve this goal ([www.macsports.com](http://www.macsports.com)).<sup>1</sup> Other regional universities – notably the University of Buffalo– have made an even deeper commitment to athletics, spending tens of millions to move their sports programs from small conferences to the “big-time” of NCAA Division One (Sperber 2000: 65).<sup>2</sup>

These expenditures raise an obvious question: does the investment by mid-rank universities of millions of dollars in their athletic departments produce rewards? As one U-Buffalo professor pointed out, the decision to “spend a fortune on athletics” is a decision not to spend the same amount of money on tenured chairs or registered student organizations (65). It is reasonable to ask what benefits athletic investments confer upon universities willing to make them, and whether these benefits outweigh those accompanying other uses of the same amounts of money. In fact, the literature on the logic of athletic investment is quite mixed.

Advocates of collegiate athletic investment argue that success in marquee sports boosts the overall prestige of a university, resulting in greater national interest and an influx of student

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<sup>1</sup> This website, like all other websites noted in this paper, is cited fully in the bibliography.

<sup>2</sup> The First Division of the National Collegiate Athletic Association (NCAA D1) is the most competitive level of intercollegiate athletic competition. Most universities compete exclusively at one level of NCAA competition: Division One, Division Two, or Division Three

applications. There is some evidence for this. Following the 1984 heroics of quarterback Doug Flutie, mid-sized Boston College received 16,000 freshman applications – compared with approximately 12,000 the previous year (McCormick and Tinsley 1987: 1103). Similarly, North Carolina State witnessed a 40% uptick in applications in the wake of a 1983 NCAA basketball title (1103). Along the same lines, the University of South Carolina reported major increases in application rates after a successful 1985 football season (1103).

More broadly, McCormick and Tinsley find that consistently elite athletic performance by a university correlates strongly with high application rates and entering SAT scores. In every model run by the authors, the correlation between entering student quality and participation in elite athletic conferences like the ACC, Big Ten, Pac-Ten, was stronger than the correlations between student quality and tuition level, library size, or professorial quality (1105).

This finding is something of a statistical artifact. The conferences just named are composed of huge and elite universities, including schools like: Indiana, Michigan, Illinois, North Carolina, North Carolina State, UCLA, and Washington. These institutions play Division One football and basketball because they are very large, but were top universities before chartering their first athletic team (1105).<sup>3</sup> However, while McCormick and Tinsley do not prove that athletic investment boosts student quality, their findings certainly challenge any argument that “jock schools” do not attract top students.

Another claim made by supporters of athletic investment, at both collegiate and professional levels, is that the presence of a winning ball club confers intangible benefits on all members of the community in which it is located. Urban residents often describe top pro and college teams as the feature of their city of which they are most proud (Swindell and Rosentraub

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<sup>3</sup> The argument that elite athletic performance is partly causal for student quality is also challenged by the fact that small “D-Three” schools (Carleton, Brandeis, Mt. Holyoke) do not participate in big-time athletics at all, but consistently attract the nation’s best students.

1998: 15). Residents of Indianapolis view the football Colts and basketball Pacers as second only to the city's museums as a source of civic pride (15). Both teams, along with auto racing, college football and basketball, and minor league baseball, are considered more important than the National Black Exposition held annually downtown (15). Given these findings, it is not surprising that university administrators often view athletics as a simple way to boost student and alumni morale.

However, there are also strong arguments against university athletic investment. First, opponents of investment challenge the popular idea that sports spending leads to increased rates of alumni donation. After conducting several multivariate regressions, Sigelman and Carter conclude that there exists no connection between athletic success and alumni giving (1979: 290). Winning basketball seasons, success on the football field, and post-season bowl appearances are all unrelated to the size and frequency of alumni donations (290). In fact, an excessive emphasis on sports can result in institutions being viewed as "jock factories" –and *decrease* donation rates (287). In addition to noting this, the authors point out that alumni donations make up only 1.3% of the budget of a typical U.S. university (292). Even if such gifts do correlate with athletic strength, this quite arguably does not justify high athletic expenditures.

Taking a different tack, Purdy, Eitzen, and Hufnagel (1982) find that the presence of a large athletic department lowers the quality of a university because college athletes do much worse academically than non-athletes.<sup>4</sup> At a typical D-1 university, the average G.P.A. for non-athletes was 2.8 while that for athletes was under 2.5 (442). During the study period, the graduation rate for non-athletes was 46.8% while that for athletes was 34% (442). The most

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<sup>4</sup> This finding, again, calls into question the contention that athletic success is responsible for the academic performance of universities like Stanford and Michigan. At more typical Division One schools like North Texas and Colorado State, scholarship athletes dramatically underperform the larger student body and – given the huge number of athletes at these schools – this has a significant negative effect on mean student quality (Purdy, Eitzen, and Hufnagel 1982).

underperforming athletes were those playing on the largest and most high-profile teams; men's football players graduated at a 27% clip (444). Attracting 100 football players to a university, along with 1,000 other under-performing athletes, is arguably not the best way to improve it.

Another point made by critics of athletic investment is that, contrary to popular opinion, most Division One programs are money losers. Murray Sperber points out that the majority of major college athletic departments lost money throughout the 1980s and 1990s (220). Only a few athletic programs consistently turn a profit, and the majority of these are located within institutions like the Notre Dame or Michigan (221). Even these top departments make surprisingly little; in 2005 the Ohio State athletic office spent more than \$50,000,000 and netted \$120,000 ([www2.indystar.com](http://www2.indystar.com)). In more cases than not, sponsorship of big-time college athletics financially hurts a host campus.

This is not entirely surprising. Fielding the number of athletic teams necessary for a university to maintain D1 status is extraordinarily expensive.<sup>5</sup> On most campuses, almost all varsity athletic teams – such as swim squads - lose hundreds of thousands annually. Only football, men's basketball, and women's basketball often break even (227). Even those sports do not generate as much net revenue as might be expected; recruiting top athletes is costly, and housing and feeding a football team during a single bowl game costs roughly \$2,000,000 (223). The payouts made to universities for victory in the NCAA tournament or bowl success are large, but barely cover the expenses of top programs.<sup>6</sup>

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<sup>5</sup> A university must field at least 14 teams in a variety of sports to remain D1 (Sperber 2000). In addition to sports such as basketball, which often do make money for U.S. universities, almost all D1 schools compete in expensive non-revenue sports like wrestling, baseball, softball, tennis, and track.

<sup>6</sup> For example, the University of Wisconsin received \$1.8 million for winning the 1999 Rose Bowl. However, the University also spent \$2.1 million during Rose Bowl week. Much of this expense was unavoidable; Wisconsin was responsible for flying the school's football team, marching band, cheerleading squad, and coaching staff to Los Angeles – and housing them for 7 days in downtown hotels (Sperber 2000, 222).

The most potent point made by Sperber is that the advantages of athletic investment exist only for universities that consistently win, while the disadvantages affect D-1's losers as well. At the University of Buffalo, academic shortfalls caused by massive commitments to athletics caused students to rate their school as one of America's worst large universities (67). Unlike undergraduates at (say) Arkansas, U-Buffalo students received no compensating morale boost from this investment. Their basketball team went 1-17 during its first year of D-1 play, and has performed similarly since (67). Northern Illinois University provides a similar case study; the basketball team that bestowed a hefty contract on Ricardo Patton is currently 7-20 for 2008 ([www.sportsline.com](http://www.sportsline.com)).

Overall, athletic investment probably makes sense for universities that can expect to be successful in elite competition. Teams at these schools sometimes do make money; the athletic department of the University of Kentucky netted \$2,073,943 in 2005 ([www2.indystar.com](http://www2.indystar.com)). More broadly, the success resulting from athletic spending benefits universities like Notre Dame and South Carolina in numerous ways (McCormick and Tinsley 1987). However, most institutions investing in athletics – from North Texas to Buffalo to Evansville – receive little return on the millions they spend to field mediocre teams. The real question to be asked about the logic of athletic spending is: to what extent will a typical university experience meaningful success as a result of choosing to invest in Division One athletics?

This paper attempts to answer that question. To do so, I examine the success rates of universities in various size and income categories in the men's NCAA basketball tournament over the past decade (1998-2007). There are three reasons why analysis of the NCAA tournament is a reasonable way to test the logic of athletic spending. First, a university's performance in name sports like basketball correlates strongly with the performance of its non-

revenue athletic teams; analysis of NCAA results will provide strong clues about the overall success of major and mid-major athletic programs (Sperber 2000). Second, the NCAA Championship is an invitation tournament in which only the top squads in each size category play; analysis of the tournament will allow me to measure specifically how those mid-major schools that have chosen to invest heavily in athletics perform in top flight competitions.<sup>7</sup> Finally, the tournament is a contest that can be analyzed without any risk of statistical error; accurate data on 40 recent tournaments is accessible in public databases.<sup>8</sup>

This paper centers around three questions. First, I ask whether regional and mid-major universities that have made investments in Division One athletics experience success in the NCAA tournament – or alternatively whether the tournament is dominated by large “jock schools.” Second, I ask whether regional and mid-major schools have a serious shot at winning the NCAA championship, or alternatively whether disproportionate success by power programs increases with each tournament round. Finally, I ask what effect conference standing and school size have on NCAA success in linear regression models. The discovery that university status and size largely predict NCAA success would undercut the idea that athletic investment by mid-range universities is logical. On the other hand, the discovery that schools of all types are successful in the tournament would provide support for the claims of athletic boosters.

### **Theory and Hypotheses**

The basic theory of this paper is that non-elite universities will experience little success in the NCAA tournament. Small colleges and regional institutions investing in athletics may win

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<sup>7</sup> The majority of the universities invited to compete in the NCAA Championship Tournament are the champions of their athletic conferences, virtually all of whom invest more than \$10 million annually in athletics (Sperber 2000, 66). As some conferences are composed of small colleges, others of mid-sized universities, and others of large universities, the tournament provides an excellent opportunity to determine how much major success mid-range universities that have chosen to focus on athletics experience.

<sup>8</sup> ESPN.com and WikiSearch were used for this paper.

the Patriot League or Missouri Valley Conference, but will recoup few elite-level returns on their investment.<sup>9</sup> Stanford and Michigan State enjoy immense advantages of scale and tradition, and very few mid tier schools attempting to compete with these more entrenched universities will succeed.<sup>10</sup> Creighton and Southern Illinois may, or may not, be able to establish permanent regional reputations for athletic excellence. However, they are unlikely to compete well enough nationally to make money or sustain high rates of morale-based application.<sup>11</sup>

This skeptical position clashes with a popular position in American thought, which has variously been called Fair Game Theory and Horatio Alger Theory. Following the social revolutions of the 1960s, U.S. citizens accept that factors like race and class influence many life outcomes (Hacker 1992). However, a search for “Horatio Alger” on the JSTOR research website turns up 1,951 links, many to articles discussing the relatively fair nature of open-entry competitions in the U.S.A. Even professionals continue to see many competitive regimes – trials, athletic competitions, political races– as fair contests any skilled entrant can win (Burt-Way and Kelly 1992: 21).

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<sup>9</sup> It is not true that, as athletic directors of regional universities claim, simply making the NCAA tournament constitutes success for a basketball program. Tournament revenues are divided among athletic conferences based on how well each conference has done in the 6 most recent NCAA Championships (NCAA 2007). A university that consistently makes the tournament and loses in the first round earns its conference \$250,000 annually. This sum is divided up among all members of the conference, with the ‘successful’ university grossing about \$90,000 from NCAA play. On the other hand, a university that wins the NCAA championship game earns five times as much as a first round loser. It will also, almost certainly, belong to a conference that places 3-6 teams in each year’s NCAA field. Annually, it may gross millions from NCAA play (Sperber 2000, 219). There exists very little reward for just “making the Big Dance.”

<sup>10</sup> This is not simply true on the ball field. In addition to griping about college sports, Sperber notes that the desire of many regional universities to become elite research programs is unlikely to be fulfilled. Since measurement began in 1906, all top American research universities have fallen into one of three categories. Some are Ivy League schools with endowments equaled only by the great universities of Europe (72). Others are non-Ivies that draw students from the elites of huge cities, such as Johns Hopkins and the University of Chicago (72). Still others are the largest and richest U.S. public universities, among them Michigan, Berkeley, and Wisconsin (72). No university not in one of these three categories has ever made any top-20 list of U.S. research institutions (72).

<sup>11</sup> In these particular cases, athletic success has certainly not been followed by a surge in undergraduate applications. For example, Southern Illinois had a student body of roughly 25,000 prior to the Salukis’ basketball and football runs early this decade (Daily Egyptian, September 24, 2007). Today, there are 21,003 students enrolled at Southern (Daily Egyptian). There have been well under 20,000 in the recent past, including the fiscal years used for coding in this paper.

Horatio Alger, like Cinderella, is frequently invoked in the context of the NCAA tournament. The idea that anyone can win the national basketball championship, and thus that investment in athletics by small colleges makes sense, is the most consistent meme in media and scholarly discussions of the tournament. Writing about the NAAs, reporter Daniel Kiel argues that “hard work and a little luck” can bring any competitor team success (U.S.A. Today, March 20, 2006). Kiel specifically compares the open-entry tournament to the American Dream, and argues poetically that all teams are equal “on this level playing field – and each controls its own destiny” (U.S.A. Today). Similarly, citing past upsets, Doug Haller has argued each NCAA school has a real chance to be “the last standing” (The Arizona Republic, March 11, 2007). Perhaps inspired by prose of this kind, Espn.com – America’s most accessed sports website – runs a feature called ‘Cinderella Watch’ in the weeks leading up to each year’s tournament. In 2001, webmaster Ron Buck straight-facedly argued that Butler, Creighton, Gonzaga, and Hofstra stood an excellent chance of making runs deep into the NAAs ([www.espn.com](http://www.espn.com)). Even academics get into the act; economics articles on how to bet the NAAs describe the tournament as an “inherently unpredictable competition” (Schwenk 2000: 141).

However, there actually exists little reason to assume that the NCAA tournament is a fair game – or indeed that fair games are particularly common. In a number of open-entry competitions, such as court cases, the resources and experience of participants have long been known to predict winners (Galanter 1975). The education, income, social class, and majority group status of competitors are deciding factors in other “fair games” (Fussell 1983, Hacker 1992). In the specific case of the tournament, the few in-depth mathematical analyses that have been conducted do not support the thesis that NCAA victories are unpredictable or evenly distributed (Smith and Schwertman 1999).

The hypotheses of this paper reflect that reality. I hypothesize that: 1.) *University status and size will be the major determinants of NCAA success; schools that compete in a major college (BCS) athletic conference and have enrollments over 20,000 will dominate the tournament;* 2.) *This dominance will increase with each of 6 successive rounds;* 3.) *In statistical models, BCS status and size will have a more significant effect upon the dependent tournament success variable than any other independent variables.*

### **Data and Methodology**

The data utilized in this paper were collected using the two search engines cited earlier. I employed these to obtain a complete listing of the nation's Division One athletic conferences. There are, in all, 34 of these. This listing, along with a description of my coding scheme, is attached as Appendix C.

Once in possession of this list, I coded each U.S. athletic conference as a first tier major conference (Major One), a second tier major conference (Major Two), or a mid-major conference. First tier major conferences were defined as conferences whose football champions receive automatic berths in Bowl Championship Series (BCS) events.<sup>12</sup> Second tier major conferences were defined as conferences whose members play football at the higher of two Division One levels, but do not receive automatic BCS invitations. Mid-major conferences were defined as conferences whose members play football at the lower of two Division One levels or do not play football.<sup>13</sup>

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<sup>12</sup> The Bowl Championship Series is the set of title events ("bowl games") to which elite teams are invited at the end of each year's football season. The champions of top conferences, such as the Southeastern Conference, receive automatic berths in BCS games. Conferences in this privileged position – almost all of which are composed of large and wealthy universities – are known as 'BCS conferences.' These conferences are universally considered to be the most elite American athletic conferences, and are treated as such in this paper.

<sup>13</sup> Division One universities play football either in the elite Bowl Championship Subdivision, which contains the Bowl Championship Series conferences, or the smaller Football Championship Subdivision. Football Subdivision schools participate in a playoff after the college season, while Bowl Subdivision universities play in high-dollar bowl games. As the distinction between BCS and other Bowl Subdivision institutions is a logical dividing point

Overall, six conferences were coded as Major One. These were the Atlantic Coast Conference (ACC), the Big East Conference, the Big Ten Conference, the Big 12 Conference, the Pacific Ten Conference (Pac-10), and the South-Eastern Conference (SEC). There are currently 73 Major One universities in the United States. An additional five conferences were coded as Major Two. These were Conference USA, the Mid American Conference, the Mountain West Conference, the Sun Belt Conference, and the Western Athletic Conference. There are currently 55 Major Two universities in the United States. All other American athletic conferences were coded as mid-major. There are currently 183 mid-major universities in the United States.

After completing this coding process, I further classified each school within each conference on the basis of student body size. All Division One universities were placed into one of six categories: Major One (20,000+ students), Major One (less than 20,000), Major Two (20,000+), Major Two (-20,000), mid-major (20,000+), or mid-major (-20,000). NCAA results were then used to determine the number of schools in each category active in the last 10 NCAA tournaments and the percentage surviving into later rounds.

Next, I constructed a linear regression model to test the paper's final hypothesis. The dependent variable in the model was success in the NCAA tournament. Each of the 200 schools active in one or more tournaments during the period under review was awarded one point for each game played in the tournament, with an additional point awarded for a championship. The focal independent variables were BCS status and university size; control variables in the model included region, status as a historically Black college or university (HBCU), and the presence or

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between high major and low major athletic programs, the break between Bowl and Football Subdivision schools is a logical dividing point between major and mid-major programs.

absence of varsity football at a university. This model allowed analysis of the effect of “status” variables and other variables on tournament success.

## **Results and Analysis**

Results strongly supported the skeptical hypotheses of this paper. The first hypothesis to be tested was that large and wealthy schools will dominate the NCAA tournament. Analysis confirmed that this has been the case to an extraordinary degree during the past decade. Over the past ten years, 640 distinct school-entrants have participated in the tournament.<sup>14</sup> Of these, 330 came from six BCS conferences containing 74 universities.<sup>15</sup> On average, 33 entrants in each year’s tournament field – well over half – were members of these conferences. The mean Major One university participated in 4.46 NCAA tournaments during the period under review.

Big-school dominance becomes even more striking when Major One universities are analyzed by size category. Fully 250 of 640 recent tournament entrants were BCS schools with student body populations larger than 20,000. There are only 51 such institutions, but they supplied 39% of the NCAA field.<sup>16</sup> On average, large BCS universities competed in 4.9 tournaments between 1998 and 2007. Smaller Major One schools did slightly worse; 23 such universities provided 80 recent tournament entrants. The mean college in this category competed in 3.48 NCAA Championships.

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<sup>14</sup> This number excludes the loser of the annual “play-in” game that has been held in recent years between the two lowest-ranked universities in the tournament field.

<sup>15</sup> This number includes Notre Dame, a technical independent.

<sup>16</sup> For purposes of comparison, universities in this category make up 14% of the total pool of D-1 institutions in the United States.

{Figure A about Here}

Major Two universities did not experience NCAA success comparable to that of Major Ones. Eighty entrants in the past ten tournaments were Major Two institutions; universities in this category made up 12.5% of the tournament field. Of these entrants, 51 were large Major Two schools and 29 were small Major Twos. On average, large Major Two institutions competed in 1.6 NCAA Championships. Smaller Major Two institutions competed in 1.26 Championships.

These results for Major Two universities are somewhat surprising, in light of the fact that Major Twos spend heavily on athletics. In 2005, for example, the athletic department of the University of Houston spent \$22,677,457 ([www2.indystar.com](http://www2.indystar.com)). San Diego State spent \$25,177,993 ([indystar.com](http://indystar.com)). Topping even these figures, the budget for New Mexico's athletic program was \$26,216,020 ([indystar.com](http://indystar.com)). While these budgets don't approach those of Tennessee or Florida, they are certainly on par with those of many Major Ones ([indystar.com](http://indystar.com)). However, such expenditures translate only intermittently into success for "small major" universities. East Carolina University (\$21,763,041) is not a frequent Elite Eight participant.

Mid-major universities experienced even less tournament success than Major Two schools. Between 1998 and 2007, 41 NCAA participants were mid-majors with student bodies larger than 20,000; 191 were smaller mid-majors. Large mid-majors made up 6.4% of the tournament field; smaller mid-majors made up 29.7% of the field. While this second number seems respectable, it should be recalled that a significant plurality of D-1 institutions (183) are non-major schools with small student bodies. In fact, the average small mid-major participated in

only 1.04 tournaments during the study period. Large mid-major schools performed reasonably well, playing in 1.95 tournaments on average.<sup>17</sup>

Major One dominance grew even more pronounced in the Sweet Sixteen. Over the past decade, there have been 160 distinct school-entrants in this round of the tournament. Of these, 102 (64%) were large Major One universities. The average large Major One played in 1.4 Sweet Sixteens during this period. An additional 29 participants (18%) were small Major Ones. Only 29 participants in the last ten Sweet Sixteens were non-elite universities. Of this group, seven were large Major Two schools, three were small Major Twos, three were large mid-major colleges, and 16 were small mid-majors. The average small mid-major played in .084 Sweet Sixteens during the study period. Obviously, a small number of elite universities dominate the NCAA Championships.

The second hypothesis to be tested was that Major One dominance will increase with each successive round, leaving most schools with no chance of winning the NCAA tournament. The later columns of Figure A help make this point. Another method of analysis makes it even more strongly. Percentage comparison, which involves looking at the percentage of schools in each category to make each round of the tournament during an average year, clearly illustrates how rare Cinderella Final Four entrants actually are.

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<sup>17</sup> This figure is more impressive than it sounds, and does not alter the conclusion that mid-major performance in the NCAA tournament tends to be poor. First, almost all recent success by large mid-majors can be attributed to a handful of schools in conferences like the Atlantic Ten. Such conferences are “mid-major” in that they do not play BCS football, but contain hoops powerhouses like Temple. Most mid-majors, to a greater extent than Major 2 schools, never catch a glimpse of NCAA ball. Second, the runs of big mid-major programs end earlier than those of Major 1 and Major 2 programs. During the study period, only three large mid-majors (George Mason, Kent State, and Temple) made the Sweet Sixteen.

{Figure B about Here}

This sounds like a complex technique, but it is not. This paper examines the last decade of NCAA tournament play. Over that period, 250 large Major One universities competed in the tournament. Dividing that number by ten reveals that 25 large Major Ones play in an average NCAA field. This is not an arbitrary figure; roughly that number of large Major Ones did compete in the NCAA Championships during each year of the study period. Thus, approximately 50% of large Major Ones – nearly half of truly big-time schools - participate in the first round of a typical year's tournament.

Dramatically smaller percentages of schools in other categories compete in the mean NCAA tournament. For example, only 35% of small Major Ones do so. 16% of large Major Twos, 13% of small Major Twos, 19.5% of large mid-majors, and 10% of small mid-majors make the typical NCAA field. By the Sweet Sixteen - the third round of the tournament - 20% of large Major Ones and 12.6% of small Major Ones remain in contention. However, only 2.2% of large Major Twos, 1.3% of small Major Twos, 1.4% of large mid-majors, and .9% of small mid-majors are still alive.

In the later rounds of the tournament, virtually no non-BCS programs remain in contention. During the Final Four in a typical year, 5.3% of the nation's large Major Ones are still competing. This means that the average Final Four will contain roughly 3 of the 51 American universities with BCS standing and student bodies larger than 20,000. Similarly, 4.7% of the nation's small Major Ones remain alive. The fourth team in a typical Final Four will be a BCS university with a student body slightly smaller than 20,000. In recent history, only one large Major Two university (Memphis) and one large mid-major (George Mason) have made the Final

Four. Not a single small Major Two university, or small mid-major, has survived to this level of NCAA competition.

Given this, it is unsurprising that every recent NCAA champion has been a wealthy BCS university. Seven of the past ten tournament winners were large Major Ones, including Michigan State and Florida. The other three winners were powerful smaller Major Ones like Duke. Although often treated as though it were quantum physics, predicting the later rounds of the NCAA Championship is actually easy. Six of the ten tournaments analyzed were won by a number one seed, the top team in the field. Two teams (Connecticut and Florida) won the tournament twice. Non-elite teams achieved no late round success in the NAAs.

Several other interesting trends can be discerned from the data in Figures A and B. First, despite being discussed ad infinitum at tournament time, upsets are rare in NCAA competition. As noted, every recent champion came from the highest tier of schools to compete in the tournament. More strikingly, 82% (131/160) of the schools that survive into the *third round* are BCS universities. While it is not unusual for a highly seeded team to lose to a squad with lower initial seeding, few such defeats are real surprises. In fact, this occurs most frequently when the lower seed (Arizona) is a larger and wealthier school than the higher seed (Gonzaga). As Appendix B shows, virtually no NCAA upsets involve a mid-major team toppling a BCS squad to make the Elite Eight.

Second, the data illuminate the glass ceiling confronting perpetual “Cinderella” teams. There are several mid-major universities, including Gonzaga and Southern Illinois, which win consistently in the tournament. For example, S.I.U. has played in eight NCAA games during the past five years. The Salukis have beaten Virginia Tech and come within three points of Kansas; they have been described as legitimate potential champions. However, Figures A and B make it

very clear that elite mid-majors like Southern dance their last in the Sweet Sixteen. S.I.U. has never advanced past that round, and doing so in 2007 would have required the Salukis to beat Kansas, UCLA, Florida, and Ohio State in succession. Given how the tournament is seeded, they would have had to do so in packed, unfriendly arenas. This is unlikely. Southern's success indicates that the best regional universities are good enough to beat two opponents, not that they have a chance of winning a national championship.

To say the least, these findings do not confirm the thesis that mid-rank universities experience NCAA success, and that athletic investment is a logical policy for them to adopt. Regression results support this realist position. As noted in the methodology section of this paper, I constructed a multivariate regression model to measure the effect of several variables on NCAA wins. The dependent variable in the model was a metric ('Tournament Score') in which universities were awarded one point for each game played in the tournament during the past decade, and an additional point for each tournament championship. Michigan State boasted the highest overall score (34); Appalachian State was tied with several other universities for the lowest score (1).

Independent variables in the model included the BCS status of a university, university size, status as a historically Black college, Southern location, and status as a member of a Division One football conference. All of these things have been hypothesized as likely causes of institutional success in athletics (Sperber 2000)(Yetman and Eitzen). For this paper, I hypothesized that BCS status, size, Southern location, and D-1 football status would have significant positive effects on tournament success. Status as a historically Black college was predicted, largely for budgetary reasons, to have a significant negative effect on tournament success.

{Figure C about Here}

Running my model supported the hypotheses of this paper to a greater degree than expected. In the model, the most significant predictor of tournament wins was BCS status; this variable was significant at the .000 level with a t-value of 7.568. BCS universities are far more likely to win, at every level of NCAA competition, than non-BCS universities. The coefficient for this variable was eight times larger than the relevant error term; there is literally no chance that this finding is inaccurate.

The only other predictor variable to approach significance, with coefficients in the expected direction, was university size. With BCS standing controlled for, size had a definite but non-significant effect on tournament performance. Other variables had little impact; status as a historically Black college and the absence of football from a campus had (surprisingly) no effect on NCAA success rates.<sup>18</sup> A region measure had some influence, but in the opposite direction from that anticipated. The South has long been considered an athletic hotbed, but Southern location makes a program less likely to secure tournament victories. The only real predictor of how well a university will perform in elite athletic competition is Major One status.

### **Conclusion and Discussion**

Several conclusions can be drawn from the analyses conducted for this paper. First, contrary to media presentation and public opinion, the NCAA basketball tournament is not a fair game. The tournament is dominated at every level by large and wealthy BCS universities. Every recent tournament champion has come from this group of schools, as have more than four fifths of Sweet Sixteen participants. Upsets are rarer than expected in the tournament, and hardly occur

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<sup>18</sup> Bluntly, all non-major universities win so rarely in the tournament that status as a small Black or intellectual campus makes little difference to one's win chances. Neither Alcorn State nor Evansville has much chance of beating Duke.

after the third or fourth round. Statistical models reflect this reality; BCS status is the only significant predictor of tournament success.

Second, it can be concluded that mid-rank universities investing heavily in athletics generally do not receive the fiscal and social rewards they desire. Few Major Two or mid-major programs experienced NCAA success during the study period. No smaller mid-major or Major Two university made the Final Four. Only one large mid-major and one large Major Two did, and they lost. Even more strikingly, 175 of 191 small programs entering the tournament were eliminated after the second round. A school that reaches the NCAA Championship and loses early takes home a five-figure annual paycheck. However, playing a basketball season or traveling to a single bowl game costs millions (Sperber 2000: 222). As moderate athletic success does not boost application rates, such investments are difficult to logically justify (Daily Egyptian, September 24, 2007).

Murray Sperber and other critics of athletic investment argue that many mid-rank universities are making a risky gamble. Pursuing national prestige, they are focusing attention on athletics and other highly visible aspects of the college experience, often at the expense of undergraduate education (2000: 73). This is a gamble that can pay off. Boston College is an example of a mid-sized university that experienced upticks in application and donation rates following a successful football season (McCormick and Tinsley 1987: 1103). Hawaii, Gonzaga, and Utah are other Major Two and mid-major universities that have recently experienced elite athletic success. And - although this is hardly the focus of this paper - it must be assumed that university pursuits of research prestige, individual star scholars, and the like sometimes succeed.

However, the data collected here illustrate the more common flip side of such hyped performances. The large majority of Major Twos and mid-majors that invest in D-1 athletics

never win a high profile tournament. Two of the schools analyzed for this paper, Northern Illinois and Buffalo, are institutions that consistently lose despite high athletic expenditures. In fact, 90% of mid-major colleges do not make the NCAA tournament in a given year. Those that do are often humiliated by genuine athletic powerhouses. Even top mid-majors like Southern Illinois stand no chance of beating Duke and winning a national championship.

Rather than using athletics in an attempt to secure national or international attention, which they are unlikely to receive, colleges and regional universities would be better served to return their focus to traditional goals. Such educational institutions have historically been committed to providing quality education to undergraduate students, training and educating diverse populations, researching problems of particular interest to the region in which they are located, and serving as the hub of “town/gown” geographic areas. Unlike winning the NCAA Championship (or becoming the next Harvard), these are things that a good mid-rank institution can do. Many Major Twos and large mid-majors, and virtually all small mid-majors, should consider demoting their athletic teams to D-2 and focusing on doing them.

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## Appendix A: Tables and Figures

Figure A: NCAA Tournament by Program Type

University Type	Round of 64	Sweet Sixteen	Final Four	Champion
Large Major One	250 (.39)	102 (.64)	27(.68)	7(.70)
Small Major One	80(.13)	29(.18)	11(.28)	3(.30)
Large Major Two	51(.08)	7(.04)	1(.03)	0
Small Major Two	29(.05)	3(.02)	0	0
Large mid-major	41(.06)	3(.02)	1(.03)	0
Small mid-major	191(.30)	16(.10)	0	0

Figure B: NCAA Tournament by Mean Survival Rate

University Type	Round of 64	Sweet Sixteen	Final Four	Champion
Large Major One	49%(25)	20%(10.2)	5.3%(2.7)	1.4%(.7)
Small Major One	35%(8)	13%(2.9)	4.7%(1.1)	1.3%(.3)
Large Major Two	16%(5)	2.2%(.7)	.3%(.1)	0%
Small Major Two	13%(2.9)	1.3%(.3)	0%	0%
Large mid-major	19.5%(4.1)	1.4%(.3)	.4%(.1)	0%
Small mid-major	10.4%(19.1)	.9%(1.6)	0%	0%

Figure C: Effect of Variables on Tournament Success

Variable	Coefficient (S.E)
BCS or BCS Conference Standing***	8.381 (1.107)
Student Body Size	1.203 (1.105)
Historically Black University Status	-.692 (1.762)
Southern Location	-1.366 (.940)
Absence of Varsity Football	-.657 (1.307)
Constant Term	-2.736 (3.125)

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R Squared = 0.324  
Number of Observations = 200

## **Appendix B: NCAA Top Eight Finishers during Study Period**

### *2007 NCAA Men's Tournament*

Champion: University of Florida (large Major One)

Final Four: University of Florida (large Major One), Georgetown University (small Major One), Ohio State (large Major One), UCLA (large Major One)

Elite Eight: University of Florida (large Major One), Georgetown University (small Major One), University of Kansas (large Major One), University of Memphis (large Major Two), University of North Carolina (small Major One), Ohio State (large Major One), University of Oregon (large Major One), UCLA (large Major One)

Total: large Major One (6); small Major One (2)

### *2006 NCAA Men's Tournament*

Champion: University of Florida (large Major One)

Final Four: George Mason (large mid-major), University of Florida (large Major One), Louisiana State University (large Major One), UCLA (large Major One)

Elite Eight: University of Connecticut (large Major One), George Mason (large mid-major), University of Florida (large Major One), Louisiana State University (large Major One), University of Memphis (large Major Two), University of Texas (large Major One), UCLA (large Major One), Villanova University (small Major One)

Total: large Major One (6); small Major One (1); large mid-major (1)

*2005 NCAA Men's Tournament*

Champion: University of North Carolina (small Major One)

Final Four: University of Illinois (large Major One), University of Louisville (large Major One), Michigan State University (large Major One), University of North Carolina (small Major One)

Elite Eight: University of Arizona (large Major One), University of Illinois (large Major One), University of Kentucky (large Major One), University of Louisville (large Major One), Michigan State University (large Major One), University of North Carolina (small Major One), University of West Virginia (large Major One), University of Wisconsin (large Major One)

Total: large Major One (7); small Major One (1)

*2004 NCAA Men's Tournament*

Champion: University of Connecticut (large Major One)

Final Four: University of Connecticut (large Major One), Duke University (small Major One), Georgia Tech (small Major One), Oklahoma State University (large Major One)

Elite Eight: University of Alabama (large Major One), University of Connecticut (large Major One), Duke University (small Major One), Georgia Tech (small Major One), University of Kansas (large Major One), Oklahoma State University (large Major One), St's Joseph's (small mid-major), Xavier University (small mid-major)

Totals: large Major One (4); small Major One (2); small mid-major (2)

*2003 NCAA Men's Tournament*

Champion: Syracuse (small Major One)

Final Four: University of Kansas (large Major One), Marquette (small Major One), Syracuse (small Major One) University of Texas (large Major One)

Elite Eight: University of Arizona (large Major One), University of Kansas (large Major One), University of Kentucky (large Major One), Marquette (small Major One), Michigan State University (large Major One), University of Oklahoma (large Major One), Syracuse (small Major One) University of Texas (large Major One)

Total: large Major One (6); small Major One (2)

*2002 NCAA Men's Tournament*

Champion: University of Maryland (large Major One)

Final Four: University of Indiana (large Major One), University of Kansas (large Major One), University of Oklahoma (large Major One), University of Maryland (large Major One)

Elite Eight: University of Connecticut (large Major One), University of Indiana (large Major One), University of Kansas (large Major One), Kent State (large mid-major), University of Oklahoma (large Major One), University of Oregon (large Major One), University of Maryland (large Major One), University of Missouri (large Major One)

Total: large Major One (7); large mid-major (1)

*2001 NCAA Men's Tournament*

Champion: Duke University (small Major One)

Final Four: University of Arizona (large Major One), Duke University (small Major One), University of Maryland (large Major One), Michigan State University (large Major One)

Elite Eight: University of Arizona (large Major One), Duke University (small Major One), University of Illinois (large Major One), University of Maryland (large Major One), Michigan State University (large Major One), University of Southern California (large Major One), Stanford University (small Major One), Temple University (large mid-major)

Total: large Major One (5); small Major One (2); large mid-major (1)

*2000 NCAA Men's Tournament*

Champion: Michigan State University (large Major One)

Final Four: University of Florida (large Major One), Michigan State University (large Major One), University of North Carolina (small Major One), University of Wisconsin (large Major One)

Elite Eight: University of Florida (large Major One), Iowa State University (large Major One), Michigan State University (large Major One), University of North Carolina (small Major One), Oklahoma State University (large Major One), Purdue University (large Major One), University of Tulsa (small Major Two), University of Wisconsin (large Major One)

Total: large Major One (6); small Major One (1); large Major Two (1)

*1999 NCAA Men's Tournament*

Champion: University of Connecticut (large Major One)

Final Four: University of Connecticut (large Major One), Duke University (small Major One), Michigan State University (large Major One), Ohio State University (large Major One)

Elite Eight: University of Connecticut (large Major One), Duke University (small Major One), Gonzaga University (small mid-major), University of Kentucky (large Major One), Michigan State University (large Major One), Ohio State University (large Major One), St. John's University (small Major One), Temple University (large mid-major)

Total: large Major One (4); small Major One (2); large mid-major (1); small mid-major (1)

*1998 NCAA Men's Tournament*

Champion: University of Kentucky (large Major One)

Final Four: University of Kentucky (large Major One), University of North Carolina (small Major One), Stanford University (small Major One), University of Utah (large Major Two)

Elite Eight: University of Arizona (large Major One), University of Connecticut (large Major One), Duke University (small Major One), University of Kentucky (large Major One), University of North Carolina (small Major One), University of Rhode Island (small mid-major), Stanford University (small Major One), University of Utah (large Major Two)

Total: large Major One (3); small Major One (3); large Major Two (1); small mid-major (1)

## **Appendix C: Breakdown of U.S. Athletic Conferences**

Major One Conferences: Atlantic Coast Conference (ACC), Big East Conference, Big Ten Conference, Big 12 Conference, Pacific Ten Conference (Pac-10), Southeastern Conference (SEC).

Major Two Conferences: Conference USA, Mid-American Conference, Mountain West Conference, Sun Belt Conference, Western Athletic Conference (WAC).

Mid-major Conferences: America East Conference, Atlantic Sun Conference, Atlantic 10 Conference, Big Sky Conference, Big South Conference, Big West Conference, Colonial Athletic Association (CAA), Horizon League, Ivy League, Metro Atlantic Athletic Conference (MAAC), Mid-Eastern Athletic Conference (MEAC), Missouri Valley Conference (MVC), Northeast Conference (NEC), Ohio Valley Conference (OVC), Patriot League, Pioneer Football League (PFL), Southern Conference, Southland Conference, Southwestern Athletic Conference (SWAC), The Summit League, West Coast Conference (WCC).

Football Only Conferences (Not Analyzed): Gateway Football Conference, Great West Football Conference, Pioneer Football League

## **Appendix D: Coding for Linear Regression Model**

Region: Southern Location = 1, Non-Southern Location = 2.

HBCU Status: Non-Historically Black College = 1, HBCU = 2.

Football Variable: Varsity Football Team = 1, No Varsity Football = 2.

University Size: Student Body Under 20,000 = 1, Student Body Over 20,000 = 2.

BCS Status: Non-BCS University = 1, BCS University = 2.

NCAA Success: One point awarded for each tournament game played, with an additional point awarded for winning an NCAA championship.