

AN ANALYSIS OF THE RELATIONSHIP BETWEEN ATHLETIC EXPENDITURES
AND NATIONAL SUCCESS OF OLYMPIC SPORTS TEAMS
AT NCAA DIVISION I INSTITUTIONS

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ABSTRACT

SAMUEL J. ALBERT: An Analysis of the Relationship Between Athletic Expenditures and National Success of Olympic Sports Teams at NCAA Division I Institutions
(Under the direction of Nathan Tomasini)

As the costs associated with sponsoring NCAA Division I athletics increase, it is important that athletic administrators understand the role of money in intercollegiate athletics. The study investigated the relationship between team expenditures and national success in Olympic sports at NCAA Division I institutions. The study examined differences in median operating expenditures for teams at various levels of national success, defined by NCAA Championship tournament finish. It provides an empirical examination of the relationship in seven selected Olympic sports.

For each sport, Division I teams were divided into four groups based on national success. The study compared the median expenditures for teams at each level of success to determine whether differences existed. The most successful teams were found to have reported the greatest median operating expenditures. The findings support the existence of a relationship between athletic expenditures and national success in the seven sports examined. Although limited to one academic year (2003-2004) and seven sports, the study indicates that money may be an important factor in athletic success in NCAA Division I athletics.

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CHAPTER I

INTRODUCTION

In 1852, students from Yale University sent an invitation to their peers at Harvard University, challenging them to a boat race that would “test the superiority of the oarsman at the two colleges” (Veneziano, 2002, ¶ 2). Teams from the two schools agreed to meet at Lake Winnepesaukee in New Hampshire for a two-mile race, and on August 3 of that year, intercollegiate athletics was born in America. Even from this earliest inception of college athletics, it was intertwined with money. The inaugural Harvard-Yale race was sponsored by owners of the Boston & Maine Railroad Company, who hoped the race would draw people to Lake Winnepesaukee to stay at a waterfront resort (Suggs, 2005). Yet few spectators or participants could have predicted what college athletics has become in the 150 years since this inaugural “test of superiority.”

In 2005 the National Collegiate Athletic Association (NCAA), the major governing body for intercollegiate athletics, sponsors 88 championship events for 1274 member schools and approximately 375,000 student-athletes (NCAAsports.com, 2005). At Division I-A schools, which compete at the highest level of the NCAA, athletics spending represents approximately 3.8 percent of the total spending on higher education (Orszag & Orszag, 2005). Some critics contend that college athletics has become a major business enterprise (Knight Commission, 2001), at least for the universities at the highest levels of competition,

and most of the money flows through the high-profile sports of football and men's basketball (Fulks, 2004).

At the 2005 FedEx Orange Bowl, a crowd of 77,912 college football fans packed into Pro Player Stadium in Miami to watch Oklahoma and Southern California compete for the National Championship (Bowl Championship Series Web site, 2005). It was estimated that another 21.4 million viewers, or 13.7 percent of United States households, watched the game on television (Levin, 2005). Oklahoma and Southern California each earned over \$14 million for competing in the game (BCS Web site, 2005). Another 47,262 fans were at the 2005 NCAA Men's Basketball Championship to watch North Carolina and Illinois battle for the title, while 45.6 million viewers watched the game at home, for a Nielsen television rating of 15.0 (Wolfley, 2005). A survey commissioned by the NCAA and the 2005 Final Four Organizing Committee estimated that the event brought in revenues of almost \$72 million to the St. Louis area (Hancock, 2005).

In order to stay competitive in the high-stakes world of Division I college sports, many universities have made multi-million dollar investments in their athletics departments (Fulks, 2004). Salaries are on the rise, scholarship needs continue to increase along with yearly tuition hikes, and new facilities are under construction at universities across the country (Knight Commission, 2001). The costs associated with running a Division I intercollegiate athletics program are constantly growing, and the spending only increases as universities struggle to stay competitive and constantly remain one step ahead of their rivals (Fulks, 2004; Renfro, 2005).

Because football and men's basketball traditionally produce most of the revenue for an athletics department through television contracts and ticket sales, expenditures on these

two sports tend to comprise the largest portion of the annual athletics budget at most Division I universities (Fulks, 2003). The traditional thinking is that in order to remain competitive in these sports and continue to bring in steady revenues, athletics departments must allocate large amounts of money to football and basketball to attract the best coaches and the top recruits. According to NCAA President Myles Brand, “the popular theory is that you have to increase spending to increase wins and have to increase wins to increase revenues” (Brand, 2005, Myth No. 2, ¶ 25). Some observers have even suggested the existence of an “arms race” in college sports, where the fear of losing ground to competitors causes universities to spend irrationally on athletics (Knight Commission, 2001; Litan, Orszag & Orszag, 2003). Whether or not this arms race exists, most major athletics departments have devoted significant resources to increasing revenues, as evidenced by the development of athletics marketing departments and annual fundraising campaigns. And with the largest operating budgets, high priced coaching salaries, and the highest percentage of athletes on full grants-in-aid (Fulks, 2003), football and basketball are still the primary focus of these fundraising efforts at most athletics departments

With the focus on football and basketball, it could be easy to overlook that universities sponsor teams in many other sports. The NCAA sponsors Division I championship events in 23 sports (NCAAsports.com, 2005). Athletic departments have various titles for the category of sports besides football and basketball. Some institutions identify them as “non-revenue” sports, while others refer to them as “Olympic” sports. While the competitions are seldom seen on television and the athletes rarely play in front of throngs of screaming fans, universities continue to devote considerable resources to their Olympic sports teams. Some observers have asserted that Olympic sport athletes, while they

might not be as famous, are just as passionate and dedicated to their sports as their fellow student-athletes in football and basketball (Brown, 1998). Yet the budgets for most Olympic sports teams are miniscule when compared to expenditures on football and basketball (Fulks, 2003).

While it is a common belief spending more in athletics will lead to greater success (Blythe, 2005), few empirical studies have been conducted to examine this belief, particularly in the context of Olympic sports teams. This study will examine the relationship between athletic expenditures and national success of teams in seven Olympic sports at NCAA Division I institutions. The seven Olympic sports examined in this study are sponsored by a large number of Division I institutions and offer an annual NCAA championship tournament: baseball, softball, men's soccer, women's soccer, men's tennis, women's tennis, and women's volleyball.

Purpose

The purpose of this study is to examine the relationship between athletic expenditures and national success of Olympic sports teams at NCAA Division I institutions. This relationship will be analyzed in seven Olympic sports that are sponsored by the NCAA: baseball, softball, men's soccer, women's soccer, men's tennis, women's tennis, and women's volleyball. The study seeks to determine whether there are differences in spending between teams that achieve different levels of success ("Elite," "Successful," NCAA "Qualifying," and "Non-qualifying") in their respective NCAA championship competitions.

Research Questions

The study will examine the following questions:

1. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I baseball?
2. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I men’s soccer?
3. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I women’s soccer?
4. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I softball?
5. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I men’s tennis?
6. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I women’s tennis?
7. Are there differences in the median operating expenditures of “Elite” teams, “Successful” teams, NCAA “Qualifying” teams, and “Non-qualifying” teams in NCAA Division I women’s volleyball?

Hypotheses

1. Research Hypothesis: The largest median baseball operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I baseball.

2. Research Hypothesis: The largest median men's soccer operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I men's soccer.

3. Research Hypothesis: The largest median women's soccer operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I women's soccer.

4. Research Hypothesis: The largest median softball operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I softball.

5. Research Hypothesis: The largest median men's tennis operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I men's tennis.

6. Research Hypothesis: The largest median women's tennis operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I women's tennis.

7. Research Hypothesis: The largest median women's volleyball operating expenditures are found in Elite teams, followed by Successful teams, NCAA Qualifying teams, and Non-qualifying teams.

Alternate Hypothesis: There is no difference between median operating expenditures of Elite teams, Successful teams, NCAA Qualifying teams, and Non-qualifying teams in NCAA Division I women's volleyball.

Definition of Terms

1. National Success: The finish achieved by a particular team at its respective NCAA Championship event.
2. Elite teams: Teams that finished in the top 16 in their respective NCAA championships.
3. Successful teams: Teams that finished in positions 17 through 32 of their respective NCAA championships.
4. NCAA Qualifying teams: Teams that qualified for their respective NCAA championships, but lost in the first round of competition.
5. Non-qualifying teams: Teams that competed at the NCAA Division I level in a particular sport, but did not qualify for their respective NCAA championship tournament.
6. EADA: Equity in Athletics Disclosure Act; According to the U.S. Department of Education, “The Equity in Athletics Disclosure Act (EADA) requires the Secretary of Education to collect information and provide to Congress a report on financial and statistical information on men's and women's collegiate sports. Each coeducational institution of higher education that participates in a Student Financial Aid (SFA) Program and has an intercollegiate athletic program must prepare an EADA report each year. The EADA is designed to make prospective students aware of the school commitment to providing equitable athletic opportunities for its men and women students” (2004, ¶ 1).
7. Olympic Sport: any varsity sport sponsored by an NCAA Division I athletic department, excluding football and men’s basketball.
8. Revenue Sport: football and men’s basketball; sport that generate significant revenues for a university’s athletic department.

9. Operating Expenditures: As defined by the U.S. Department of Education; the amount of money an institution spends on the day-to-day operations of running an athletic team. Includes lodging, meals, transportation, officials, uniforms, and equipment for both home and away games. Does not include recruiting or coaching salaries.
10. NCAA: National Collegiate Athletic Association; a voluntary association of about 1,200 institutions that organizes and administers the athletics programs of many colleges and universities in the United States.
11. NCAA Division I: The highest level of intercollegiate competition sponsored by the NCAA. Members must meet minimum financial aid awards for their athletics program, and there are maximum financial aid awards for each sport as well. Members must sponsor a minimum of 14 sports (7 for men, 7 for women). These schools generally have the largest athletic budgets and most elaborate facilities.

Assumptions

1. Spending figures reported in the EADA reports are accurate.
2. A university's EADA figures are a true representation of actual athletic expenditures.
3. A team's finish at the NCAA Championships is an accurate reflection of the team's athletic success.

Limitations

The following are limitations of the study:

1. A team's finish at the NCAA Championships may not always be a valid reflection of team success. For example, a team could have a perfect regular season and be upset in the national championships, leading to a poor national finish.

2. The expenditure figures used in this study are team operating budgets. These numbers do not include funds spent on coaching salaries, athletic grants-in-aid, and recruiting. These additional expenditures potentially have an impact on team success, but are not itemized by team in the current EADA reporting format.
3. Other factors besides funding can affect a team's success. Factors such as tradition, quality of facilities, famous coaches or alumni, and other intangibles could help make a team more successful, but are difficult to quantify and not currently included in EADA reports.
4. Critics of the EADA reports argue there is still not a standard format for accounting and reporting athletic spending, and they are subject to errors (Upton and Brady, 2005). Each institution may have different methods for reporting spending, which could be misleading as figures from different schools are compared.
5. Capital expenditures represent a significant portion of athletic-related spending at many schools, but these figures are usually not included on EADA reports under the current format.
6. The data examined in this study are from one academic year (2003-2004).

Delimitations

The study was delimited to:

1. Three hundred thirty one (331) schools that compete at the NCAA Division I level in one or more of the following sports: baseball, softball, men's soccer, women's soccer, men's tennis, women's tennis, and women's volleyball.
2. Expenditures were determined by financial figures reported on EADA reports.
3. Success was measured by a team's finish at NCAA national championships.

4. The study was limited to spending figures and competitive results from the 2003-2004 academic year.

Significance of the Study

While observers often discuss the importance of increasing funding for athletics in order to be successful (Brand, 2005), a review of the literature shows little research that supports this common belief. Previous studies on this topic have focused on the relationship between overall athletic spending and overall athletic department success. This study is significant in that it looks specifically at non-revenue or Olympic sports and the influence of spending in these sports. The findings of this study may be important for athletic administrators and coaches as they make decisions concerning funding for Olympic sports teams, particularly if strong financial differences are found between the schools at different levels of success.

CHAPTER II

REVIEW OF LITERATURE

Financial concerns have always been central in the administration of college athletics. Over the 150 years that college athletics has existed, funding an intercollegiate athletic department has become an expensive endeavor, regardless of the level of competition, and the expenses only increase as athletic departments expand and increase their public exposure. At the highest level of intercollegiate athletics, NCAA Division I-A, the average member school's athletics department spent \$27.2 million during the 2002-2003 academic year (Fulks, 2003). Members of NCAA Division I-AA and Division I-AAA, the other two subdivisions of Division I, had mean athletics expenditures of \$7.53 million and \$6.53 million, respectively, during 2002-2003 (Fulks, 2003). The institution with the largest expenditures, Ohio State University, set the pace by reporting total athletic expenditures of \$90 million during 2003-2004 (U.S. Department of Education, 2004). Ohio State had sufficient funding to support such a large athletics budget, as the department also brought in nearly \$104 million in revenues during the same period.

The NCAA and its Division I institutions, especially traditional athletic powers like Ohio State, are the focus of extensive coverage in national media outlets. In the present athletics climate, it is not uncommon for the most athletically successful schools to enter into comprehensive multi-media rights contracts worth millions of dollars (Hockaday, 2005; Price

2005). With multi-million dollar budgets and an extremely high level of visibility, many college athletics departments have come under scrutiny for their spending practices (Knight Commission, 2001; Renfro, 2005). Athletic administrators and supporters of athletics have typically responded to criticism by suggesting that spending increases are necessary if their athletics programs are to remain competitive (Brand, 2005). A review of the financial figures of major intercollegiate athletic programs illustrates that operating a successful athletics program often requires a major financial commitment from the sponsor institution. In 2003, the average Division I athletic program received more than \$3 million in institutional support in addition to the revenues that were generated by the department (Fulks, 2003). Colleges and universities are spending millions on athletics, yet very little empirical evidence exists to support or refute the common belief from media, coaches and administrators that increased spending leads to increase success in intercollegiate athletics. Few studies have been located that have investigated athletic expenditures and cost-benefit analysis in college athletics. The lack of research in this area supports the need for additional research and adds to the significance of this study.

This chapter will examine the existing studies, as well as information from secondary sources that are related to athletic expenditures and on-field success in intercollegiate athletics. These include several studies and reports commissioned by the NCAA, critiques and commentaries by popular media outlets, and masters and doctoral research conducted by graduate students in the fields of education and sport administration. The review of literature will focus on several key areas:

1. The finances of NCAA Division I athletic departments, including allocation of government funds, the impact of Title IX legislation and gender equity concerns on athletic spending, and the existence of an “arms race” in college athletics.
2. The role of Olympic sports programs in NCAA Division I athletic departments, and the finances of Olympic sports teams.
3. The relationship between athletic finances and success.

Finances of Division I Athletics

One of the stated goals of NCAA Division I is that its members operate athletics departments that are financially self-sufficient (Brand, 2005). However, according to a recent NCAA-commissioned report completed by Daniel Fulks (2003), 47 of 117 Division I-A members financially broke even or made a profit in 2003. In addition, the average Division I-A institution had a net loss of approximately \$600,000 when institutional support was not factored in. At the Division I-AA and I-AAA levels, the average net losses without institutional support were \$3.69 million and \$3.53 million, respectively. With institutional support included, Fulks (2003) reported that the average Division I-A member brought in \$29.4 million in athletics revenues while spending \$27.2 million, for an average net gain of \$2.2 million. These figures could be misleading, however, because they are skewed by a few programs that are extremely successful at generating athletic revenue. The athletic department at Ohio State University, for example, reported total revenues of \$103.8 million during 2003-2004 (Department of Education, 2005). The University of Texas had the second largest revenues with \$83 million in 2003-2004, followed by University of Florida (nearly \$73 million), University of Michigan (\$69 million), and University of Tennessee (approximately \$67 million).

While approximately 40 percent of Division I-A programs have revenues that exceed expenses, the other 60 percent fail to make a profit, or even operate a balanced budget (Fulks, 2003). At the Division I-AA and I-AAA levels, approximately 90 percent of athletic departments had expenditures that exceeded revenues during 2002-2003. Of these Division I schools that lose money on athletics, the average loss was more than \$4 million (Fulks, 2003). In the attempt to stay competitive, these institutions near the bottom financially will continue to spend more money than their athletic departments bring in. Analysts of higher education and college athletics have noted that the gap between the “haves” and “have-nots” is increasing in Division I athletics (Koskoski, 2004; Suggs, 2004). The data from Fulks (2003) supports this contention. While the majority of Division I programs struggle to balance athletic expenditures and revenues, the 47 most financially successful schools averaged approximately \$5 million in profits in 2002-2003 (Fulks, 2003). Financial concerns have become so prevalent that the NCAA has decided to address the problem. In his 2005 State of the Association speech, NCAA President Dr. Myles Brand identified fiscal responsibility as the next important area of concern for intercollegiate athletics, noting “This is where I expect to focus a good portion of my attention over the next several years” (Brand, 2005, Myth No. 2, ¶ 21).

College athletics departments at the NCAA Division I level are typically sub-divided into three unofficial components: football, men’s basketball, and all other sports. This division is based on the tendency for football and men’s basketball to be the major revenue-producing sports at most Division I institutions. With extensive media exposure, colossal stadiums and arenas, and devoted fan support at the highest profile schools, football and men’s basketball have become the marquee sports in NCAA Division I athletics. Sixty-eight

percent of Division I-A programs made a profit on football, at an average of \$9.2 million in 2002-2003 (Fulks, 2003). In addition, seventy percent of Division I-A members operated profitable basketball programs, with the average school earning \$3 million in 2002-003 (Fulks, 2003; Suggs, 2004). On average, football and men's basketball accounted for more than half of the athletics revenue at Division I-A institutions (Fulks, 2003). With the current focus on revenue generation and fiscal responsibility (Renfro, 2005; Brand, 2005), schools will likely continue devoting a large portion of their athletic department resources to their football and men's basketball programs.

In 2002, the average Division I-A athletic department spent approximately \$6.6 million on its football program, which accounted for more than 24 percent of total athletics spending (Fulks, 2003). Division I-A members also spent an average of \$2.1 million on basketball, which made up approximately 8 percent of athletics spending (Fulks, 2003). In total, football and men's basketball accounted for approximately one-third of the spending in an average Division I-A athletics department's budget. NCAA Division I-A members are required to sponsor at least 16 sports, and the average NCAA member sponsors 17 (NCAA, 2004). The operating budgets of all other sports teams, as well as all other general administrative costs of running an athletics department accounted for the other 68 percent of spending. This study will examine the finances of these other sports, labeled "Olympic" or "Non-revenue" sports. Although they are not a major source of revenues for institutions, Division I schools still devote substantial resources to sponsoring Olympic sports programs (Fulks, 2003). The following section will examine the finances of Division I Olympic sports teams.

Olympic/Non-revenue Sports and Intercollegiate Athletics

Despite the extensive media coverage and national popularity enjoyed by football and men's basketball, participation in Olympic sports is on the rise at NCAA institutions, particularly for female athletes (NCAA, 2004). According to figures in the 2003-2004 report on NCAA participation rates, the average NCAA institution sponsored approximately 17 teams, eight for men and nine for women (NCAA, 2004). The report also indicates that the average NCAA institution had approximately 366 student-athletes in 2003-2004, 209 males (57 percent) and 157 females (43 percent).

While the bulk of Division I athletic expenditures are concentrated in football and basketball, most Division I institutions continue to spend millions of dollars on Olympic sports teams (Fulks, 2003). In the 2003 analysis of revenues and expenditures, Fulks provides an analysis of revenues and expenditures by sport. It is important to note the expenditure figures reported by Fulks included all team-related spending, including operating expenses, recruiting, and coaching salaries. The "operating expenses" that will be examined later in this study do not include recruiting or salaries, because they are not provided on a sport-by-sport basis in the current EADA reporting format.

According to Fulks (2003), during 2002-2003 the average Division I-A baseball program had expenditures of \$760,000; in Division I-AA the mean expenditures were \$327,000; and the average Division I-AAA team spent approximately \$435,000. Baseball was one of the best-funded men's sports at Division I schools, ranking behind football, basketball, and ice hockey.

Average softball figures for 2002-2003 were as follows: Division I-A schools spent an average of \$545,000; Division I-AA programs spent \$264,000; and Division I-AAA

softball spending averaged \$301,000 (Fulks, 2003). Softball received modest financial support when compared to other women's sports. It ranked seventh among women's sports in average expenditures at Division I-A, eighth at Division I-AA, and sixth at Division I-AAA schools.

In men's soccer, Division I-A schools had average 2002-2003 expenditures of \$454,000; Division I-AA schools averaged \$286,000; and Division I-AAA programs averaged \$350,000 (Fulks, 2003). When compared to other men's sports, soccer also received average funding in 2002-2003. It ranked eighth among men's teams at Division I-A schools, sixth at Division I-AA institutions, and fourth at Division I-AAA schools.

In women's soccer, Division I-A programs spent an average of \$531,000 during 2002-2003; Division I-AA schools averaged \$277,000; and Division I-AAA schools spent an average of \$342,000 (Fulks, 2003). These numbers placed soccer near the middle of women's programs in terms of funding. Soccer ranked tenth among women's programs in Division I-A, sixth at Division I-AA schools, and fifth at Division I-AAA institutions.

Division I-A men's tennis programs averaged \$285,000 in spending during 2002-2003; Division I-AA teams spent an average of \$90,000; and Division I-AAA institutions had average expenditures of \$119,000 (Fulks, 2003). With average squad sizes of approximately nine student-athletes, tennis was one of the lowest-funded men's sports at the Division I level in 2002-2003.

Women's tennis figures were slightly higher than men's teams during the 2002-2003 season. Division I-A programs had average expenditures of \$317,000; Division I-AA programs spent \$116,000 on average; and Division I-AAA schools averaged \$140,000 (Fulks,

2003). Like their male counterparts, with an average of nine student-athletes per squad, women's tennis was among the lowest-funded women's sports at Division I institutions.

Women's volleyball programs had the highest expenditures of the women's sports examined in this study. In 2002-2003, the average Division I-A program spent \$597,000 on women's volleyball. Division I-AA schools spent an average of \$292,000, while their Division I-AAA competitors averaged \$353,000 (Fulks, 2003). Volleyball ranked fifth in expenditures among women's sports at Division I-A schools, third at Division I-AA institutions, and fourth among Division I-AAA members.

Relationship between Athletic Spending and Success

Despite prevailing beliefs concerning the relationship between finances and success in intercollegiate athletics (Brand, 2005), a review of the literature indicates few researchers have undertaken studies to examine this relationship empirically. One relevant study is a 2003 doctoral dissertation by Phillip Esten, Jr. of the University of Minnesota. Esten (2003) examined the relationship between budget allocations in Division I athletic departments and the on-field success of their athletic teams, as measured by standings in the former Sears Directors' Cup. The Directors' Cup is an annual competition that honors overall athletic success by schools that maintain a broad-based athletic program. Schools are awarded points for their national success in a pre-determined number of sports for men and women, and standings are released after each competitive season. The winner of the Directors' Cup is considered by some to be the "best overall collegiate athletics program" in the country (NACDA, 2005). Acknowledging the existence of an "arms race" in major college athletics, Esten examined the idea that improved fiscal management and resource allocation, rather than increased revenue generation and greater spending, could lead to on-field success of

intercollegiate sports teams. Through a multiple regression analysis, Esten identified six allocation variables (recruiting expenses, student aid, coaches' salaries, team operational expenses, and administrative operational expenses) that accounted for over 90 percent of variation in Sears Directors' Cup point totals. The study also found a significant relationship between gross athletic department expenditures and Sears Directors' Cup success.

In 2003, the NCAA released the results of a two-year study commissioned to examine the effects of spending in major college athletics. The report, entitled *Empirical Effects of Collegiate Athletics: An Interim Report*, was completed by three independent economic researchers: Robert Litan and Peter Orszag of the Brookings Institute and Jonathan Orszag of Sebago Associates. Litan, Orszag and Orszag (2003) compiled financial data from NCAA institutions to test the validity of 10 hypotheses regarding college athletics. The study was peer-reviewed by a number of experts in economics and higher education who supported its methodology and analysis. Most notably, the researchers found that increased spending on football and men's basketball did not lead to increases in winning percentages in those sports. The researchers also found no evidence to clearly support the idea of an arms race in intercollegiate athletics. The report did suggest the possibility of an arms race in capital expenditures, a factor that was not included in the study because reliable data was not readily available. The authors added that "although the data in this paper are more comprehensive than any other previous dataset, they are imperfect. Further efforts to improve and analyze the data are likely to provide additional insights into the effects of college athletics on institutions of higher education" (Litan, Orszag and Orszag, 2003, p. 33).

In 2005, Orszag and Orszag released an update to the study, which included two additional years of data, 2003 and 2004. Again, they concluded that "increased operating

expenditures on football or basketball are not associated with medium term increase in winning percentages” (p.4) and that “the hypothesis that football and basketball exhibit an ‘arms race’... is not proven” (p.4). In the conclusion of the 2005 report, the authors did suggest that further efforts were underway between the NCAA and the National Association of College and University Business Officers to better include capital expenditure data into future financial reports.

In 2000, Yow, Bowden, and Messenger conducted an analysis of the cost-effectiveness of major Division I athletic programs. Specifically, they examined the top 25 institutions from the 1999 Sears Directors’ Cup standings to determine whether the most successful schools spent the most on athletics. The study examined the number of sports offered by each school in the top 25 and calculated a cost per sport figure. Finally, the researchers calculated the average number of Directors’ Cup points scored in each sport offered by the schools. Stanford University, the overall Directors’ Cup winner in 1999, was also the leader in points per sport (Yow, Messenger & Bowden, 2000). The study also declared Duke University the most cost-effective athletics program in the top 25 of the Directors’ Cup standings, spending \$880,769 per sport sponsored in 1999 (Yow, Messenger & Bowden, 2000).

An examination of the existing literature suggests a need for more published research related to this topic. As intercollegiate athletics continues to expand and schools devote millions of dollars to their athletic departments, it may be useful to further examine athletic programs using cost-benefit analysis, a common principle used in the business world. This study should complement the published studies by Litan, Orszag & Orszag (2003) and the doctoral research by Philip Esten (2004), which examined the relationship between spending

and on-field success in more general terms. Based on the research that has been located, this study seems unique in its focus on Olympic sports, which are often overlooked by observers of intercollegiate athletics. With most Division I schools still looking to football and men's basketball to generate the majority of revenues for the athletic department, the success of Olympic sports teams is still typically measured by wins and losses. As a result, this study should provide an examination of the cost-effectiveness of Olympic sports teams and the relationship between expenditures and success in Division I athletics.

CHAPTER III

METHODOLOGY

This study investigated the relationship between athletic expenditures and national success of Olympic sports teams at NCAA Division I institutions. The study examined seven team sports that are sponsored by the NCAA: baseball, softball, men's & women's soccer, men's & women's tennis, and women's volleyball. For each of the seven sports examined, schools were classified into four groups: "Elite" teams, "Successful" teams, NCAA "Qualifying" teams, and "Non-qualifying" teams. The four groups were then compared to determine whether there were differences in operating budgets of teams at various levels of national success.

Subjects

This study examined the athletics programs at 331 colleges and universities in the United States. All subjects competed during 2003-2004 at the Division I level of the NCAA in at least one of the seven sports examined in the study: baseball, softball, men's soccer, women's soccer, men's tennis, women's tennis, and women's volleyball. Three hundred nineteen (319) of the subjects were full members of Division I, while the other twelve (12) subjects competed at the Division I level in one or more selected sports, but maintained membership in another level of the NCAA. Division I is considered the highest level of intercollegiate athletic competition in the NCAA. The study focused on these schools

because they typically have the largest athletic department budgets, the most elaborate facilities, and broad-based athletic programs that offer the largest number of sports in the NCAA. Division I members must meet minimum financial aid awards for their athletics programs and must sponsor a minimum of sixteen sports, including at least seven for men and seven for women. The team operating budgets and national success data collected in this study were taken from the 2003-2004 academic year.

Instrumentation

This study is based on archived data available from the NCAA and the United States Department of Education. As part of the Equity in Athletics Disclosure Act of 1998 (EADA), all coeducational institutions of higher education that participate in federal student financial aid programs and offer intercollegiate athletics must provide annual reports concerning their intercollegiate athletics programs. The U.S. Department of Education's Office of Postsecondary Education is responsible for collecting this financial and statistical data and must make it available to the public (Office of Postsecondary Education Web site, 2005). The EADA is designed to help prospective students and families research athletic opportunities at various colleges and universities. Institutions that receive any type of federal funding, including student financial aid, must make their annual EADA reports available to students, potential students, and the public.

EADA reports provide an itemization of an institution's athletics spending, including total revenues and expenditures for the athletic department, team operating expenses for each individual sport, and coaching salaries for men's and women's teams. Although critics have questioned the accuracy and scope of EADA data (Litan, Orszag, & Orszag, 2003), it is

currently the only uniform system for reporting institutional athletic spending. This study examined the EADA reports for each institution during the 2003-04 reporting year.

National success was determined by examining an institution's finish at the NCAA Championships in the respective seven sports. For each of the seven sports examined, the sponsoring institutions are divided into one of four groups based on their team's finish: "Elite" teams, "Successful" teams, NCAA "Qualifying" teams, and "Non-qualifying" teams. The NCAA Championship results were available from the NCAA Championships Web site at <http://www.ncaasports.com>.

Procedure

The relationship between athletics expenditures and Olympic sports success was examined by measuring two variables: each team's operating expenditures and the team's finish in its respective NCAA championship tournament. EADA reports were gathered for all 331 subjects for the 2003-2004 academic year. These reports were available from the Office of Postsecondary Education. From these reports, it was possible to gather information concerning team operating budgets for the seven selected sports (baseball, softball, men's & women's soccer, men's & women's tennis, and women's volleyball).

For the seven Olympic sports that were examined in the study, national ranking information was gathered based on a team's finish at its respective NCAA Championships. Teams that finished in the top 16 of the NCAA tournament were considered "Elite" teams. Teams that finished in the next 16 positions (17-32) were considered "Successful" teams. Teams that qualified for the NCAA tournament, but lost in the first round were labeled NCAA "Qualifying" teams. All other institutions that sponsor the sport but did not compete in the NCAA championships were labeled "Non-qualifying" teams.

Statistical Analysis

The study examined the relationship between spending and success by comparing descriptive parameters for the four groups within each sport. Specifically, mean and median operating expenditures for institutions in each group were compared. Since the data were collected from a population of teams rather than a sample, no inferential statistics tests were performed. Any differences between groups were interpreted as true differences that occurred in the population during 2003-2004.

In each sport, the four groups of teams were ranked in terms of average operating expenditures. If the athletic success ranks in a particular sport matched the ranks of median operating expenditures, the research hypothesis was supported. If lower-achieving groups were found to have greater median expenditures than higher-achieving groups, the data would fail to support the research hypothesis.

CHAPTER IV RESULTS

Three hundred thirty one institutions served as subjects for this investigation because they sponsored NCAA Division I competition in one or more of the seven sports examined in the study. The number of subjects examined in each sport varied because some institutions did not sponsor all seven sports examined in this study. One Division I institution, the United States Air Force Academy, was eliminated from this investigation because its athletic expenditure figures were not made available to the public. Table I demonstrates the number of subjects examined in each sport.

Table 1
Number of NCAA Division I Institutions Examined By Sport

Sport	n
Baseball	282
Men's Soccer	193
Women's Soccer	296
Softball	263
Men's Tennis	265
Women's Tennis	308
Women's Volleyball	308

All expenditure figures were collected from the Department of Education's EADA Web site, which publishes the information in accordance with EADA regulations. Two of the United States service academies, the Naval Academy and the Air Force Academy, did not have EADA figures available through the Web site. Copies of the reports were requested from athletic department officials at each academy via email and information was subsequently obtained from the Naval Academy. The Air Force Academy was eliminated

from the study, although none of its athletic teams qualified for the NCAA tournament and therefore the school would have been labeled Non-qualifying in each of the seven sports examined if it had been included in the study.

Results of the 2003-2004 NCAA championship events for each of the seven sports were collected from the NCAA Championships Web site. For every sport, each sponsoring institution was assigned to one of four groups based on its team's finish in its respective NCAA championship tournament. Schools that finished in the top sixteen were labeled "Elite." Teams ranking seventeenth through thirty second were labeled "Successful." Schools that competed in the NCAA tournament but did not advance past the first round were classified as "Qualifying" teams. Any institution that sponsored the sport but did not have a team qualify for the NCAA championship tournament was labeled "Non-qualifying." An institution's group membership in one sport was completely independent of its classification in other sports. For example, it is plausible that a particular school could have been labeled "Elite" in baseball, but "Non-qualifying" in men's tennis.

It should be reinforced that the subjects examined in this study comprised a population rather than a sample, since expenditure data was available for all NCAA Division I institutions, with the aforementioned exception of the Air Force Academy. The availability of population data made it possible to compare descriptive parameters of the population, rather than utilizing inferential statistics. Any variations found between groups in this study represented real differences in the population, rather than sampling differences that could potentially exist due to chance.

Baseball

Two hundred eighty two subjects reported expenditure figures for baseball during 2003-2004. Table 2 includes descriptive data for institutions at each level of success.

Table 2
Descriptives: Baseball Expenditures

Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$254,560	\$183,089	\$415,120	\$334,096	\$211,974	\$130,961	\$845,527	16
Successful	\$202,681	\$150,127	\$258,057	\$210,733	\$75,481	\$108,413	\$403,781	16
Qualifying	\$214,260	\$179,344	\$270,191	\$223,017	\$78,292	\$81,803	\$384,166	16
Non-qualifying	\$105,556	\$74,542	\$151,119	\$123,647	\$77,148	\$28,655	\$643,153	234
Total								282

The first research question examined for differences in the operating expenditures of baseball teams at the Elite, Successful, Qualifying, and Non-qualifying levels. An analysis of descriptive parameters demonstrated differences in baseball operating expenditures between the four groups. Elite teams had the largest operating expenditures of all four levels, as was demonstrated by the mean ($\mu = \$334,096$, $\sigma = \$211,974$) and the median ($\tilde{x} = \$254,560$, IQR = \$232,031) of the Elite group, which were greater than all other classifications. Further examination of the standard deviation and interquartile range for this group indicated a large amount of variation in the expenditures of Elite baseball programs.

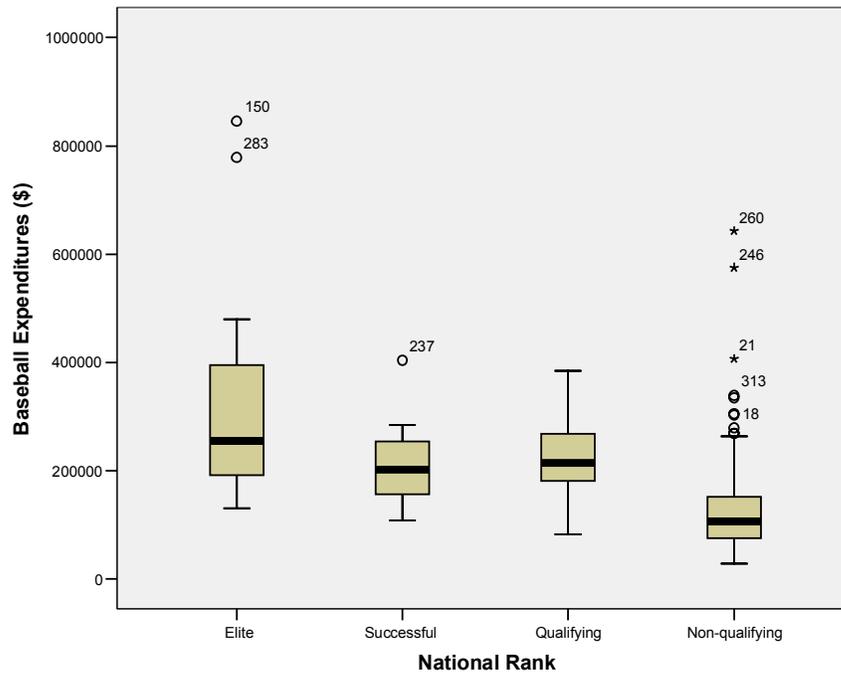
Although the Qualifying teams finished third in terms of on-field success, institutions in this group had the second largest mean ($\mu = \$223,017$, $\sigma = \$75,481$) and median ($\tilde{x} = \$214,260$, IQR = \$90,847) operating expenditures of the four groups. The Qualifying group surpassed the more winning Successful baseball programs, which had lower mean ($\mu = \$210,733$, $\sigma = \$75,841$) and median ($\tilde{x} = \$202,681$, IQR = \$107,930) expenditure values. An average gap of approximately \$12,000 existed between Qualifying and Successful programs.

The least winning group, composed of Non-qualifying institutions, also had the lowest mean ($\mu = \$105,556$, $\sigma = \$77,148$) and median ($\tilde{x} = \$123,647$, IQR = \$76,577)

baseball operating expenditures of the four groups examined. The difference in mean spending between Qualifying and Non-qualifying teams was more than \$110,000, while the median expenditures of these groups differed by more than \$90,000.

Box-plot distributions of baseball expenditure data for institutions at each level of success are found in Table 3.

Table 3
Distribution of Operating Expenditures by Group: Baseball



Men's Soccer

One hundred ninety three subjects sponsored men's soccer, making it the least-frequently sponsored sport examined in this study. The descriptive data for men's soccer teams at each level of success are shown in Table 4.

Table 4
Descriptives: Men's Soccer Expenditures

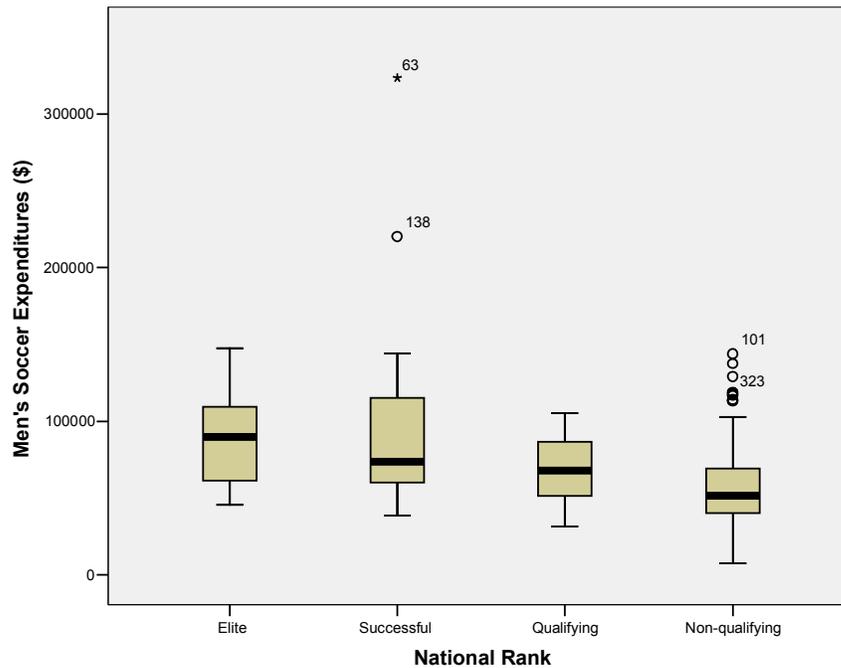
Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$89,871	\$61,199	\$109,762	\$88,536	\$31,805	\$45,401	\$147,435	16
Successful	\$73,625	\$60,069	\$118,965	\$102,484	\$74,450	\$38,673	\$323,444	16
Qualifying	\$67,924	\$50,309	\$89,701	\$68,714	\$21,507	\$31,588	\$105,312	16
Non-qualifying	\$51,197	\$39,817	\$69,307	\$57,429	\$25,720	\$7,440	\$143,852	145
Total								193

The second research question examined for differences in men's soccer operating expenditures between schools at various level of athletic achievement. An analysis of the data demonstrated the existence of differences in NCAA Division I men's soccer. A comparison of median expenditures for each group showed that as the level of success increased, so did the median operating expenditures of teams at each level. Elite men's soccer programs had the greatest median expenditures ($\tilde{x} = \$89,871$, IQR = \$48,563), followed in order by Successful teams ($\tilde{x} = \$73,625$, IQR = \$58,896), Qualifying teams ($\tilde{x} = \$67,924$, IQR = \$39,392), and Non-qualifying teams ($\tilde{x} = \$51,197$, IQR = \$29,490).

The differences in men's soccer programs were not as clear when comparing mean expenditures of each group. Successful teams had the greatest mean expenditures ($\mu = \$102,484$, $\sigma = \$74,450$), followed by their more athletically successful peers at the Elite level ($\mu = \$88,536$, $\sigma = \$31,805$). The difference that existed when comparing means and medians could be attributed to some extreme outliers in the Successful group, which caused a positive skew and an inflated mean for this level. The Qualifying ($\mu = \$68,714$, $\sigma = \$21,507$) and Non-qualifying groups had the third and fourth largest means, respectively.

Box-plot distributions of expenditure values for the four groups of men's soccer programs are found in Table 5.

Table 5
Distribution of Operating Expenditures by Group: Men's Soccer



Women's Soccer

Two hundred ninety six NCAA Division I institutions reported women's soccer operating expenditures in 2003-2004. The descriptive parameters for women's soccer teams at each level are shown in Table 6.

Table 6
Descriptives: Women's Soccer Expenditures

Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$163,542	\$121,543	\$189,359	\$157,012	\$59,463	\$57,308	\$283,331	16
Successful	\$103,961	\$64,094	\$144,414	\$109,521	\$42,960	\$40,034	\$169,843	16
Qualifying	\$74,434	\$62,282	\$107,113	\$88,691	\$41,802	\$29,103	\$171,073	32
Non-qualifying	\$53,605	\$40,201	\$79,338	\$62,969	\$33,912	\$6,380	\$206,566	232
Total								296

The third research question examined differences in women's soccer operating expenditures for schools at each level of success. Based on median and mean expenditures for each group, such differences were found to exist. As the level of athletic success

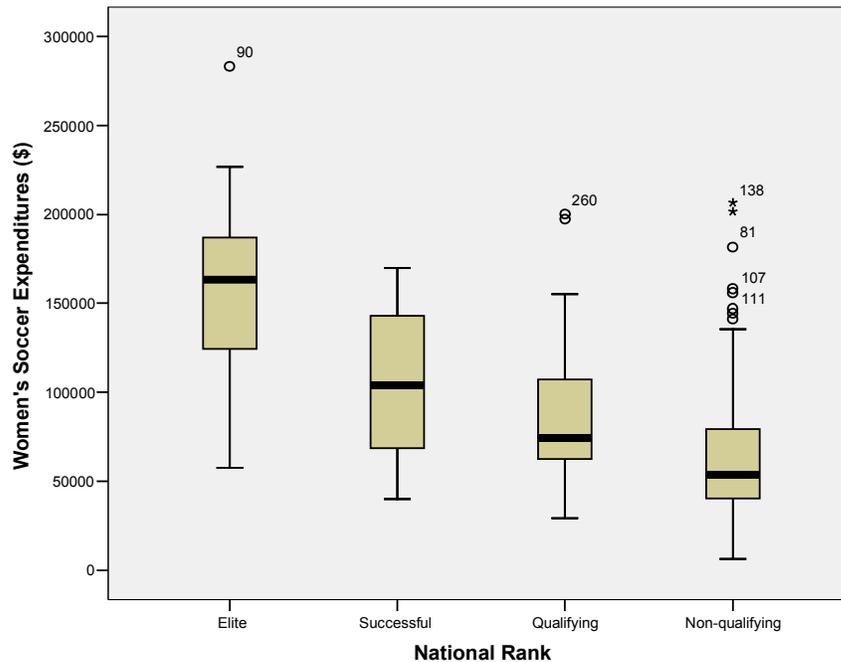
increased between groups of women's soccer teams, the mean and median operating expenditures were also found to increase.

Elite women's soccer programs had the greatest mean ($\mu = \$157,012$, $\sigma = \$59,463$) and median ($\tilde{x} = \$163,542$, IQR = \$67,816) operating expenditures of the four classifications. Successful programs reported the second largest mean ($\mu = \$109,521$, $\sigma = \$42,960$) and median ($\tilde{x} = \$103,961$, IQR = \$80,320) expenditures. The median of this second-tier group trailed the median of Elite teams by nearly \$60,000, while the mean difference was more than \$50,000.

Qualifying teams had the third-largest mean ($\mu = \$88,691$, $\sigma = \$41,802$) and median ($\tilde{x} = \$74,434$, IQR = \$44,831) expenditure figures. Non-qualifying institutions, least athletically successful, also had the lowest mean ($\mu = \$62,969$, $\sigma = \$33,912$) and median ($\tilde{x} = \$53,605$, IQR = \$39,137) operating budgets of all four groups of women's soccer teams.

Table 7 includes the box-plot distributions for women's soccer expenditures at each level of athletic success.

Table 7
Distribution of Operating Expenditures by Group: Women's Soccer



Softball

Two hundred sixty three Division I institutions reported softball operating expenditure figures in 2003-2004. The descriptive parameters for softball team expenditures at each level of athletic achievement are included in Table 8.

Table 8
Descriptives: Softball Expenditures

Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$175,282	\$141,352	\$205,480	\$170,991	\$40,354	\$70,002	\$218,320	16
Successful	\$108,357	\$88,272	\$146,223	\$133,298	\$75,018	\$59,259	\$329,823	16
Qualifying	\$94,839	\$70,076	\$143,527	\$115,268	\$60,143	\$41,947	\$302,080	32
Non-qualifying	\$64,832	\$47,986	\$91,161	\$74,771	\$41,485	\$8,520	\$234,981	199
Total								263

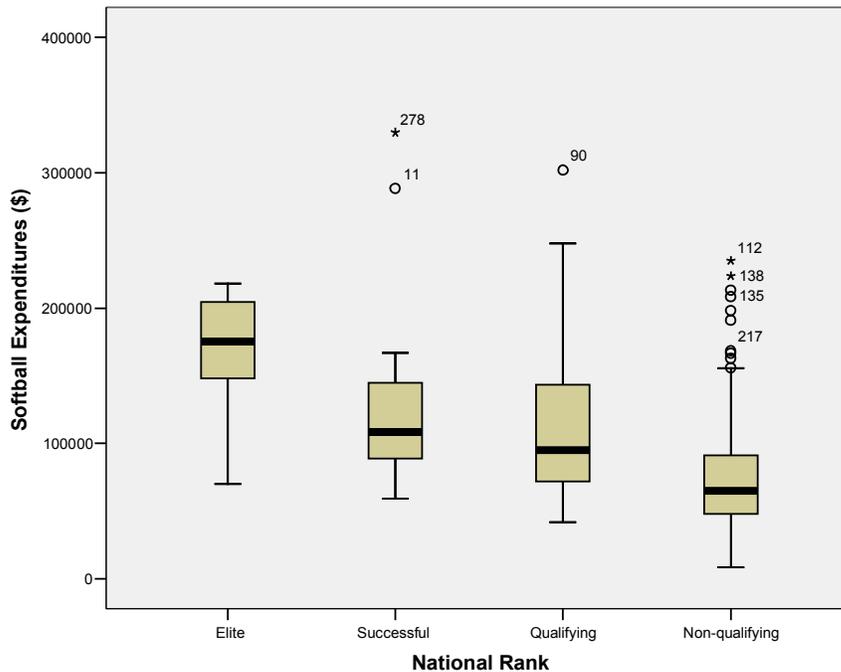
The fourth research question examined for differences in softball operating budgets for schools at various levels of on-field achievement. Differences existed in the mean and median operating budgets of schools at each level of success. As the level of athletic success increased, so did the mean and median operating expenditures.

Elite softball programs had the largest mean ($\mu = \$170,991$, $\sigma = \$40,354$) and median ($\tilde{x} = \$175,282$, IQR = $\$64,128$) operating expenditures of all groups examined. They were followed by the Successful teams, which reported mean ($\mu = \$133,298$, $\sigma = \$75,018$) and median ($\tilde{x} = \$108,357$, IQR = $\$57,951$) expenditures that trailed the Elite schools considerably.

Qualifying softball programs, in the third tier of the study in terms of athletic achievement, also reported the third largest operating expenditures. Mean ($\mu = \$115,268$, $\sigma = \$60,143$) and median ($\tilde{x} = \$94,839$, IQR = $\$73,451$) expenditures for this group were approximately $\$18,000$ and $\$14,000$ less than the Successful programs, respectively. Non-qualifying teams trailed all other groups in terms of mean ($\mu = \$74,771$, $\sigma = \$41,485$) and median ($\tilde{x} = \$64,832$, IQR = $\$43,175$) operating expenditures.

The box-plot distributions of softball expenditure figures are included in Table 9.

Table 9
Distribution of Operating Expenditures by Group: Softball



Men's Tennis

The study examined two hundred sixty five Division I men's tennis teams. Table 10 includes descriptive parameters associated with operating expenditures of men's tennis teams at the four levels of success examined in this study.

Table 10
Descriptives: Men's Tennis Expenditures

Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$120,097	\$74,999	\$165,939	\$119,543	\$44,333	\$59,239	\$197,012	16
Successful	\$105,147	\$55,727	\$126,225	\$98,113	\$45,613	\$28,685	\$189,261	16
Qualifying	\$47,063	\$24,491	\$93,981	\$57,614	\$37,544	\$12,200	\$143,075	32
Non-qualifying	\$22,685	\$14,483	\$36,571	\$28,263	\$20,079	\$2,890	\$97,138	201
Total								265

The fifth research question examined differences in the operating expenditures of men's tennis teams at four different levels of success. As the level of competitive success increased in men's tennis teams, the mean and median operating expenditures were found to increase for each group.

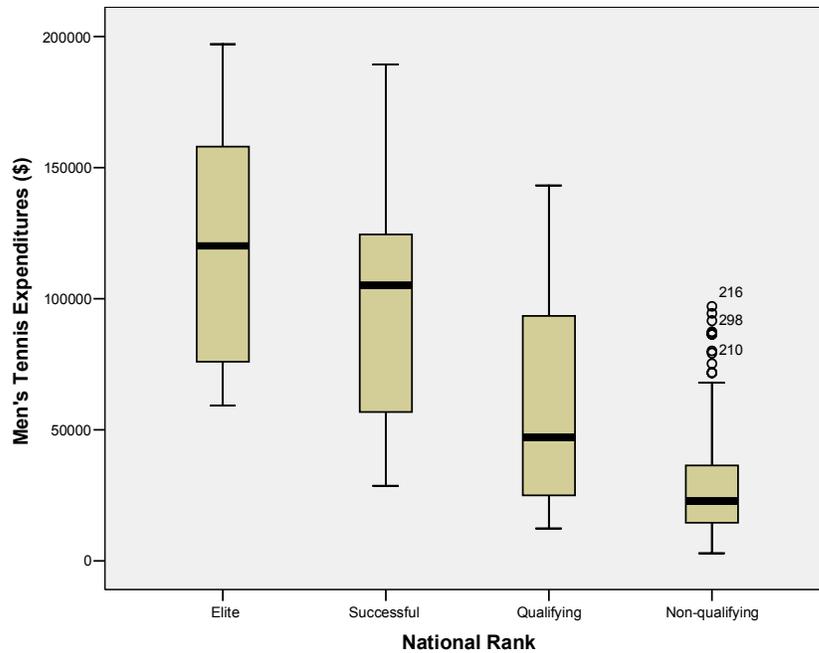
Elite men's tennis programs reported the greatest mean ($\mu = \$119,543$, $\sigma = \$44,333$) and median ($\tilde{x} = \$105,147$, IQR = \$90,940) operating expenditures of the four groups. Successful men's tennis teams had the next greatest mean ($\mu = \$98,113$, $\sigma = \$45,613$) and median ($\tilde{x} = \$105,147$, IQR = \$70,498) expenditures.

A large gap in expenditures existed between the Successful programs and the next level of success, labeled Qualifying. While Qualifying teams had the third-largest mean ($\mu = \$57,614$, $\sigma = \$37,544$) and median ($\tilde{x} = \$47,063$, IQR = \$69,490) operating expenditures, they trailed Successful teams by more than \$40,000 in mean expenditures. When median values were analyzed, the spending gap between Successful and Qualifying programs was nearly \$60,000.

Non-qualifying institutions, the least successful athletically, also had the lowest mean ($\mu = \$28,263$, $\sigma = \$20,079$) and median ($\tilde{x} = \$22,685$, IQR = \$22,088) operating expenditures of the four groups of men's tennis teams.

Table 11 includes the box-plot distributions for men's tennis operating expenditures.

Table 11
Distribution of Operating Expenditures by Group: Men's Tennis



Women's Tennis

Three hundred eight NCAA Division I women's tennis programs were examined in the study. The descriptive parameters for women's tennis team expenditures at each level of success are included in Table 12.

Table 12
Descriptives: Women's Tennis Expenditures

Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$87,927	\$72,120	\$143,626	\$102,926	\$37,806	\$57,509	\$168,052	16
Successful	\$87,812	\$55,765	\$107,101	\$82,363	\$32,250	\$26,898	\$134,147	16
Qualifying	\$44,045	\$27,717	\$79,213	\$52,604	\$30,613	\$5,474	\$116,797	32
Non-qualifying	\$23,936	\$16,370	\$37,910	\$30,360	\$21,671	\$4,445	\$158,427	244
Total								308

The sixth research question investigated differences in the operating expenditures of Division I women's tennis teams at varying levels of success. Data analysis indicates while such differences did exist between groups, similarities were present as well.

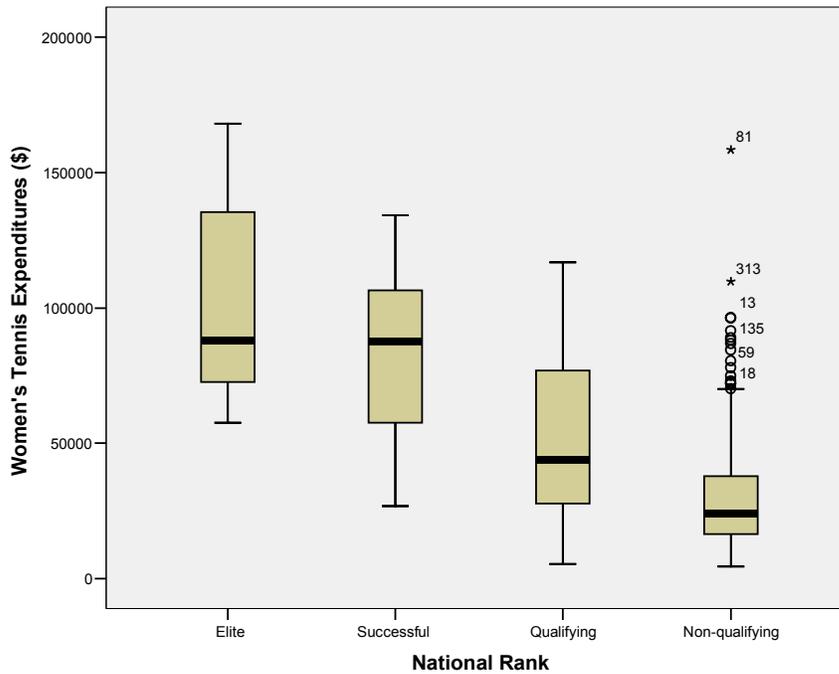
A notable difference was not found between the expenditures of Elite women's tennis programs and teams at the Successful level. While the mean expenditures for Elite teams ($\mu = \$102,926$, $\sigma = \$37,806$) and Successful teams ($\mu = \$82,363$, $\sigma = \$32,250$) seemed to demonstrate a difference between the groups, a comparison of median values shows that expenditures for Elite ($\tilde{x} = \$87,927$, IQR = \$71,506) and Successful ($\tilde{x} = \$87,812$, IQR = \$19,289) women's tennis programs were similar.

The differences between groups were more pronounced when comparing expenditures of Successful and Qualifying women's tennis programs. Institutions at the Qualifying level reported considerably lower mean ($\mu = \$52,604$, $\sigma = \$30,613$) and median ($\tilde{x} = \$44,045$, IQR = \$51,496) operating expenditures than the Elite and Successful teams. Mean expenditures for Qualifying women's tennis teams were almost \$30,000 less than expenditures for Successful teams and when medians were compared, the spending gap was nearly \$40,000.

Non-qualifying women's tennis programs reported mean ($\mu = \$30,360$, $\sigma = \$21,671$) and median ($\tilde{x} = \$23,936$, IQR = \$21,540) operating expenditures that trailed Qualifying programs by approximately \$20,000.

Table 13 includes the box-plot distributions of NCAA Division I women's tennis expenditures for institutions at different levels of success.

Table 13
Distribution of Operating Expenditures by Group: Women's Tennis



Women's Volleyball

The study examined three hundred eight NCAA Division I institutions sponsoring women's volleyball. The descriptive parameters for women's volleyball teams at each level of success are included in Table 14.

Table 14
Descriptives: Women's Volleyball Expenditures

Success	Median	Q1	Q3	Mean	Std. Deviation	Minimum	Maximum	N
Elite	\$184,230	\$153,844	\$271,825	\$224,059	\$124,577	\$62,081	\$607,211	16
Successful	\$108,156	\$71,744	\$127,581	\$109,791	\$44,916	\$50,253	\$214,800	16
Qualifying	\$75,563	\$47,893	\$120,654	\$84,006	\$49,659	\$11,171	\$206,502	32
Non-qualifying	\$55,818	\$36,267	\$88,682	\$67,985	\$43,159	\$9,782	\$281,399	244
Total								308

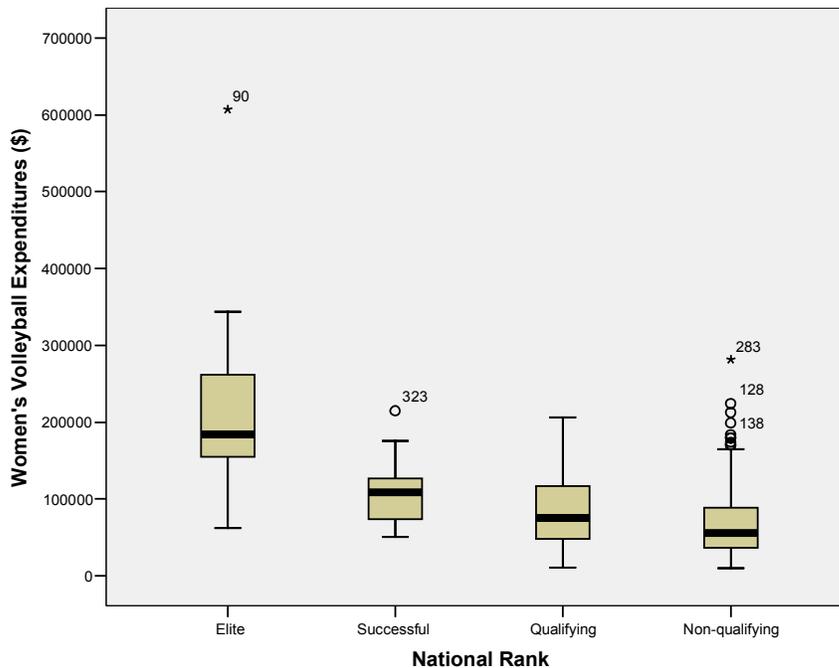
The seventh research question examined differences in women's volleyball expenditures between schools at each of four levels of success. The median values for each group indicated the existence of differences in NCAA Division I women's volleyball expenditures during 2003-2004.

Elite programs had the greatest mean ($\mu = \$224,059$, $\sigma = \$124,577$) and median ($\tilde{x} = \$184,230$, IQR = $\$117,981$) expenditures of the four groups examined. Although Successful women's volleyball teams reported the second largest mean ($\mu = \$109,791$, $\sigma = \$44,916$) and median ($\tilde{x} = \$108,156$, IQR = $\$55,837$) expenditures, these Successful mean and median values trailed the Elite group by approximately $\$114,000$ and $\$76,000$, respectively.

Qualifying teams had the third highest expenditures in women's volleyball, reporting mean expenditures of $\$84,006$ ($\sigma = \$49,659$) and a median value of $\$75,563$ (IQR = $\$72,761$). Non-qualifying women's volleyball programs had the lowest mean ($\mu = \$67,985$, $\sigma = \$43,159$) and median ($\tilde{x} = \$55,818$, IQR = $\$52,415$) operating expenditures of all four levels.

The box-plot distributions for women's volleyball expenditures for institutions at various levels of success are included in Table 15.

Table 15
Distribution of Operating Expenditures by Group: Women's Volleyball



CHAPTER V

DISCUSSION

The purpose of this study was to investigate the relationship between athletic expenditures and national success in NCAA Division I Olympic sports programs. Specifically, the investigation sought to determine whether Olympic sports teams at various levels of national success had notable differences in operating expenditures. If such differences were found to exist in selected Olympic sports, the findings could enable athletic directors and coaches to make informed decisions about how to more effectively allocate athletic department funds.

This investigation examined seven Olympic sports contested at the NCAA Division I level: baseball, men's soccer, women's soccer, softball, men's tennis, women's tennis, and women's volleyball. In each sport, every competing institution was classified into one of four groups based on the school's national achievement in the respective sport. Median expenditures for each group were examined and differences were noted. Data analysis indicated that, in nearly every case in all sports examined, median expenditures increased as the level of athletic success increased.

Baseball

The highest achieving baseball programs, labeled Elite, reported the greatest mean and median operating expenditures. The Elite group exhibited great variation, with the two top-spending programs, Louisiana State University (\$845,527) and the University of Texas

(\$778,589), spending more than five times as much as the lowest-spending team in the Elite group (\$130,961). Teams in the two middle groups, Successful and Qualifying, reported nearly identical median expenditures, with the Qualifying schools' expenditures slightly greater than the higher-achieving Successful group. The most notable difference existed at the lowest level. The 234 schools that composed the Non-qualifying group reported median expenditures (\$105,556) that trailed the Qualifying group by approximately \$100,000. This large gap represented the difference between the average team that did not qualify for the NCAA tournament and the average team that qualified for the tournament and was eliminated in the first round of play.

In baseball, the highest achieving and lowest achieving programs were clearly defined in terms of spending, while differences were not as definite among the mid-level programs. A financial threshold for baseball existed around \$100,000. Only one school with operating expenditures less than \$100,000 qualified for the NCAA tournament. It may be important to note, however, that schools with the highest expenditures were not guaranteed national success in Division I baseball. Seven of the 18 baseball programs that spent more than \$300,000 in 2003-2004 failed to qualify for the NCAA tournament. The data seems to indicate that in addition to funding, other factors may influence national success in Division I baseball.

Men's Soccer

The differences between groups were the least pronounced in men's soccer in comparison to the six other sports examined in this study. The high athletic achieving Elite group reported the greatest median expenditures, but trailed the Successful group in mean expenditures. The mean expenditures of the Successful group were skewed, however, by two

outlier programs, the University of Connecticut (\$323,444) and the University of Kentucky (\$220, 239). As a basis of comparison, the third and fourth highest expenditures in NCAA Division I men's soccer were \$144,043 and \$143,852, respectively.

Qualifying and Non-qualifying teams reported the third and fourth greatest mean and median expenditures, supporting the research hypothesis. There were not clear distinctions between all groups in men's soccer, as was the case in other sports examined in this study. Elite teams had expenditures as low as \$45,000, while one team qualified for the NCAA tournament with expenditures of \$31,588. While average spending tended to increase with athletic achievement in men's soccer, lower-spending teams were still able to achieve victory and sizeable expenditures did not always lead to high national rankings.

Women's Soccer

Achievement groups in women's soccer were clearly defined in terms of operating expenditures, as the median expenditures increased with the level of success. Elite teams reported the greatest median expenditures, followed in order by Successful, Qualifying, and Non-qualifying programs. The largest gap in expenditures existed between Elite and Successful teams, as the median expenditures for Elite programs (\$163,542) were \$60,000 greater than the median expenditures for Successful programs (\$103,961). Thirteen of the 16 Elite women's soccer programs reported operating expenditures exceeding \$100,000. The data seemed to support the idea that money is an important factor in separating Elite women's soccer programs from teams at the lower levels of achievement.

Median expenditures for Successful programs were nearly \$30,000 greater than the median for Qualifying programs (\$74,434). The median expenditures for Non-qualifying teams (\$53,605) trailed the median of Qualifying programs by more than \$20,000. Also

noteworthy is that no team qualified for the 2003 NCAA women's soccer tournament with expenditures less than \$29,000.

Softball

The relationship between expenditures and athletic achievement was apparent in NCAA Division I softball. Elite programs reported the greatest mean and median expenditures, and 15 of 16 Elite softball programs spent more than \$100,000 in 2003-2004. The University of Louisiana – Lafayette was the only Elite team below \$100,000, with reported expenditures of \$70,002 in 2003-2004. The median difference between Elite teams and Successful teams was nearly \$70,000, a figure that should interest any softball coach or athletic administrator.

Successful and Qualifying programs reported a \$15,000 difference in median expenditures, although all that separated these groups athletically was a single NCAA tournament victory. Non-qualifying teams trailed the median Qualifying teams by more than \$30,000.

No softball team qualified for the NCAA tournament with expenditures below \$40,000. This figure should also be noted by Division I softball coaches and administrators. It may be that athletic departments that allocate less than \$40,000 to softball have little to no chance to have their teams in NCAA tournament contention. The data also indicates that in softball, increased funding may increase a team's likelihood of national success.

Men's Tennis

A relationship between expenditures and national success was found to exist in men's tennis. The median and mean expenditures of teams increased with the level of national success. While a considerable gap was found to exist in men's tennis expenditures, the sport

was unique in that the most substantial divide occurred between the Successful and Qualifying groups.

Elite teams led all groups in mean and median operating expenditures. Successful men's tennis programs were second in spending, trailing the median of Elite teams by approximately \$15,000.

Comparison of the expenditures for Successful and Qualifying teams indicated the median expenditures for Successful teams (\$105,147) were more than double those of Qualifying teams (\$47,063). These groups differed by only one win in the NCAA tournament, yet their median expenditures differed considerably. Since Qualifying teams were eliminated in the first round of the NCAA tournament, it is possible that many of them were small-conference teams that were under-funded and over-matched by their opponents from major conferences. For example, 10 of the 32 Qualifying teams were from Bowl Championship Series (BCS) conferences. The other 22 Qualifying schools were from mid-major and minor Division I conferences, which tend to have lower average revenue and expenditures than members of BCS conferences. In comparison, 12 of 16 Successful men's tennis programs came from BCS conferences in 2004.

As was the case in other sports, the Non-qualifying men's tennis teams trailed the expenditures of Qualifying teams, with the median expenditures for Non-qualifying men's tennis programs (\$22,685) at less than half the median expenditures of Qualifying programs (\$47,063).

Having meager operating expenditures did not necessarily exclude teams from NCAA competition in men's tennis during 2003-2004. One men's tennis program, Binghamton University, qualified for the NCAA tournament with reported expenditures of \$12,200.

Another team, Virginia Commonwealth University, claimed a first-round victory in the NCAA tournament and reported expenditures of \$28,655. These teams are unusual, however, and may have special circumstances that allowed them to succeed despite small operating budgets. Both programs have experienced head coaches with an established tradition of success. They also competed locally and regionally during 2003-2004, which may have kept travel costs low. It should be noted that most teams with small operating expenditures were unable to achieve national prominence in men's tennis.

Women's Tennis

The findings in women's tennis were very similar to the results for men's tennis, as the most substantial gap in expenditures existed between the Successful and Qualifying groups. These findings suggest some unique set of circumstances may exist in NCAA Division I tennis that does not apply to other sports examined in the study.

Teams at the two highest levels of athletic achievement, Elite and Successful, reported similar average expenditures. Median expenditures for the two groups were nearly identical, approximately \$88,000. Although mean expenditures for the Elite group were slightly higher, the expenditure figures of teams in the two groups were very similar overall.

The median expenditures for Qualifying women's tennis teams trailed the Successful group by more than \$40,000. This could be explained by the same phenomenon previously described in men's tennis. Seven of 32 Qualifying women's tennis teams were from major BCS conferences, while the other 25 were schools from mid-major or minor conferences. In comparison, 13 of 16 Successful women's tennis teams came from major conferences.

Non-qualifying teams reported the lowest median expenditures of all groups of women's tennis programs. These results were similar to the findings in all other sports examined. As in men's tennis, low-spending women's tennis teams were not necessarily excluded from achieving national prominence. One institution, Indiana University-Purdue University-Indianapolis, qualified for the NCAA tournament with operating expenditures of \$5,474 in 2003-2004. Two additional institutions, Pepperdine University and Southern Methodist University, claimed first round NCAA victories with operating expenditures below \$30,000.

Volleyball

Median operating expenditures in women's volleyball were found to increase as the level of athletic success increased. The median operating expenditures were distinctly different for teams at each level, indicating a relationship between expenditures and athletic success.

Elite women's volleyball programs reported the greatest median expenditures of all groups examined, followed in order by Successful teams, Qualifying teams, and Non-qualifying teams. While the median gap between Elite and Successful teams was quite large at approximately \$76,000, the differences between other groups were generally much more modest.

A number of teams were able to qualify for the 2003 NCAA volleyball tournament with relatively small expenditures. Valparaiso University, for example, reported expenditures of \$11,171 and competed in the NCAA tournament. Murray State and Nichols State both qualified for NCAA post-season play with operating expenditures less than \$30,000. While large expenditures may not have been required to qualify for the NCAA

tournament, it appears that a substantial amount of money was a requisite for achieving post-season victory. No women's volleyball program qualified for the Elite or Successful levels in 2003-2004 with an operating budget below \$50,000. Administrators may want to consider this trend when allocating funds to volleyball, and women's volleyball coaches should be aware of these figures when advocating for budgetary increases.

Summary and Implications

The results in all seven sports examined indicated there may be important differences in median expenditures among teams at different levels of success. With few exceptions, athletic teams at the highest levels of national success also reported the greatest median expenditures. In all seven sports, the Non-qualifying schools had the lowest median operating expenditures and trailed the median expenditures of all other groups by a significant margin. These findings support the existence of a relationship between athletic expenditures and athletic success in NCAA Division I Olympic sports. Esten (2003) reported similar findings for the overall athletic program, identifying specific allocation variables that accounted for most of the differences in athletic success among NCAA Division I athletic departments. A number of factors could help explain this trend.

One explanation may be that teams and institutions with the greatest financial resources are able to attract the most talented recruits and therefore develop the most successful teams. Certainly a program that has high-quality equipment, facilities, travel accommodations, and scheduling would be very attractive to many high school student-athletes. The appeal of such an institution may grow even stronger if the team competes for a major university that can offer a wide range of academic, social, and professional opportunities.

Another explanation involves conference membership and the financial structure of intercollegiate athletics and the NCAA. The popularity of high-profile college sports like football and men's basketball has led to increased prosperity for many NCAA member institutions. A large amount of revenue is generated through multimedia contracts associated with football bowl games and the NCAA men's basketball tournament. The existing financial structure of college athletics is such that much of this revenue is distributed to the major conferences and their members. Schools that have traditionally powerful football and basketball programs have access to the most substantial resources, while remaining schools are left to share a small portion of the revenue. This could potentially lead to a situation whereby the "rich" schools have increased revenues in comparison mid-majors, and the gap between major conference schools and all other Division I members gets larger. While much of the money distributed to traditional powers is re-invested into football and basketball, their Olympic sports programs stand to benefit as well.

Whatever the explanation for this trend may be, most successful Olympic sports teams also reported the largest athletic expenditures during 2003-2004. This is a phenomenon that should interest Olympic sports coaches and Division I athletic directors. Based on the findings of this study, a baseball coach with an operating budget of \$75,000 could make a strong case for an increase in funding if he is expected to achieve national prominence. After all, every baseball team that qualified for the NCAA tournament spent more than \$100,000 during 2003-2004. Similarly, a Division I women's volleyball coach may not be expected to compete for the national championship with an operating budget of \$50,000, based on the results of this investigation. The mean and median expenditures

presented for the seven sports included in this study may potentially give Division I Olympic sports coaches a set of guidelines when advocating for increases in funding.

NCAA Division I athletic administrators should also take notice of the results of this investigation. While funding may only be one component of building a successful intercollegiate athletic program, the data presented here indicates that it is likely an important component. Most Division I athletic administrators have acknowledged the importance of effective fundraising in the current landscape of college athletics, although most Division I athletic programs tend to allocate large portions of their funds to football and basketball programs. The findings presented in this study demonstrate that adequate funding is also very important in Olympic sports programs. If fans and administrators expect their school to achieve overall athletic excellence, both revenue and Olympic sports should be sufficiently funded.

Suggestions for Future Research

One of the major limitations of this investigation is that it examines data from one academic year and as a result, serves as a “snapshot” of a phenomenon in Division I intercollegiate athletics. Further research could be conducted to examine this relationship over several years to determine if trends exist or new findings emerge. The study could also extend to other levels of intercollegiate athletics, such as NCAA Division II and Division III. Since Division II and Division III athletic departments do not typically generate significant revenues, it would be interesting to determine whether different trends exist for Olympic sports programs at these levels.

This investigation examined the relationship between expenditures and national success in individual Olympic sports, but it may also be interesting to compare overall

athletic department success to overall athletic expenditures. While overall athletic success may be difficult to define, the National Associate of College Directors of Athletics (NACDA) has developed an annual competition known as the Director's Cup that could be used for this purpose. First awarded in 1993-1994, the Director's Cup competition awards each institution a score based on its national finish in a number of intercollegiate sports. A future study could examine the relationship between total Director's Cup points and total athletic expenditures, which are available from EADA reports.

Finally, it is the hope of this researcher that in the future, changes to the EADA reporting methods will create a situation in which figures reported in the EADA report truly represent the expenditures associated with athletic programs and individual teams. As was noted in earlier chapters, the current system of EADA reporting is such that some figures that may involve the athletic department indirectly, such as capital expenditures, are not always included in an institution's EADA report. Additionally, in the current EADA format, the team operating expenditures figures examined in this study do not include athletic grants-in-aid, recruiting, or coaching salaries. These figures are only reported for the entire athletic department, rather than on a team-by-team basis. Significant reforms to the EADA and a commitment to fiscal integrity by NCAA member institutions will potentially strengthen the credibility and significance of future studies like this one.

**Appendix A:
Institutions Sponsoring NCAA Division I Baseball**

Akron	Cincinnati	Hartford
Alabama	Citadel	Harvard
Alabama A&M	Clemson	Hawaii
Alabama Birmingham	Cleveland State	Hawaii Hilo
Alabama State	Coastal Carolina	High Point
Albany	Coll of Charleston	Hofstra
Alcorn State	Columbia	Holy Cross
Appalachian State	Connecticut	Houston
Arizona	Coppin State	Illinois
Arizona State	Cornell	Illinois Chicago
Arkansas	Creighton	Illinois State
Arkansas Little Rock	Dallas Baptist	Indiana
Arkansas Pine Bluff	Dartmouth	Indiana State
Arkansas State	Davidson	Iona
Army	Dayton	Iowa
Auburn	Delaware	IUPUI
Austin Peay	Delaware State	Jackson State
Ball State	Detroit Mercy	Jacksonville
Baylor	Duke	Jacksonville State (AL)
Belmont	Duquesne	James Madison
Bethune Cookman	East Carolina	Kansas
Binghamton	East Tennessee State	Kansas State
Birmingham Southern	Eastern Illinois	Kent State
Boston College	Eastern Kentucky	Kentucky
Bowling Green	Eastern Michigan	Lafayette
Brigham Young	Elon	Lamar
Brown	Evansville	LaSalle
Bucknell	Fairfield	Lehigh
Buffalo	Fairleigh Dickinson	Lemoyne
Butler	Florida	Liberty
Cal Poly	Florida A&M	Lipscomb
Cal State - Sacramento	Florida Atlantic	Long Beach State
Cal State Fullerton	Florida International	Long Island
Cal State Northridge	Florida State	Louisiana Lafayette
California	Fordham	Louisiana Monroe
California - Irvine	Fresno State	Louisiana State
California - Riverside	Furman	Louisiana Tech
Cal. - Santa Barbara	Gardner Webb	Louisville
California Los Angeles	George Mason	Loyola Marymount
Campbell	George Washington	Maine
Canisius	Georgetown	Manhattan
Cent Connecticut State	Georgia	Marist
Centenary (LA)	Georgia Southern	Marshall
Central Florida	Georgia State	Maryland
Central Michigan	Georgia Tech	Maryland Baltimore Cnty.
Charleston Southern	Gonzaga	Maryland Eastern Shore
Chicago State	Grambling State	Massachusetts

McNeese State
Memphis
Mercer
Miami (FL)
Miami (OH)
Michigan
Michigan State
Middle Tennessee St.
Minnesota
Mississippi
Mississippi State
Mississippi Valley St.
Missouri
Missouri State
Monmouth
Morehead State
Mount St. Mary's
Murray State
Navy
Nebraska
Nevada
Nevada Las Vegas
New Mexico
New Mexico State
New York Tech
Niagara
Nicholls State
Norfolk State
North Carolina
North Carolina A&T
North Carolina Asheville
North Carolina Charlotte
No. Carolina Greensboro
North Carolina State
No. Carolina Wilmington
Northeastern
Northern Illinois
Northern Iowa
Northwestern
Northwestern State
Notre Dame
Oakland
Ohio
Ohio State
Oklahoma
Oklahoma State
Old Dominion
Oral Roberts
Oregon State
Pacific

Penn State
Pennsylvania
Pepperdine
Pittsburgh
Portland
Prairie View A&M
Princeton
Purdue
Quinnipiac
Radford
Rhode Island
Rice
Richmond
Rider
Rutgers
Sacred Hart
Sam Houston State
Samford
San Diego
San Diego State
San Francisco
San Jose State
Santa Clara
Savannah State
Seton Hall
Siena
South Alabama
South Carolina
South Florida
Southeast Missouri State
Southeastern Louisiana
Southern (LA)
Southern California
Southern Illinois
Southern Mississippi
Southern Utah
St. Bonaventure
St. John's
St. Joseph's
St. Louis
St. Mary's (CA)
St. Peter's
Stanford
Stetson
Stony Brook
Temple
Tennessee
Tennessee Martin
Tennessee Tech
Texas

Texas A&M
Texas A&M Corpus
Christi
Texas Arlington
Texas Christian
Texas Pan American
Texas San Antonio
Texas Southern
Texas State - San
Marcos
Texas Tech
Toledo
Towson
Troy
Tulane
Utah
Utah Valley State
Valparaiso
Vanderbilt
Vermont
Villanova
Virginia
Virginia Commonwealth
Virginia Military Institute
Virginia Tech
Wagner
Wake Forest
Washington
Washington State
West Virginia
Western Carolina
Western Illinois
Western Kentucky
Western Michigan
Wichita State
William & Mary
Winthrop
Wisconsin Milwaukee
Wofford
Wright State
Xavier
Yale
Youngstown State

**Appendix B:
Institutions Sponsoring NCAA Division I Men's Soccer**

Akron	Detroit Mercy	Loyola Marymount
Alabama A&M	Drake	Maine
Alabama Birmingham	Drexel	Manhattan
Albany	Duke	Marist
American	Duquesne	Marquette
Appalachian State	East Carolina	Marshall
Army	Eastern Illinois	Maryland
Belmont	Elon	Maryland Baltimore Cnty.
Binghamton	Evansville	Massachusetts
Birmingham Southern	Fairfield	Memphis
Boston College	Fairleigh Dickinson	Mercer
Boston U	Florida Atlantic	Michigan
Bowling Green	Florida International	Michigan State
Brown	Fordham	Missouri Kansas City
Bucknell	Fresno State	Missouri State
Buffalo	Furman	Monmouth
Butler	Gardner Webb	Mount St. Mary's
Cal Poly	George Mason	Navy
Cal State - Sacramento	George Washington	Nevada Las Vegas
Cal State Fullerton	Georgetown	New Hampshire
Cal State Northridge	Georgia Southern	New Mexico
California	Georgia State	Niagara
California - Irvine	Gonzaga	North Carolina
California - Riverside	Hartford	North Carolina Asheville
Cal. - Santa Barbara	Hartwick	North Carolina Charlotte
California Los Angeles	Harvard	No. Carolina Greensboro
Campbell	High Point	North Carolina State
Canisius	Hofstra	No. Carolina Wilmington
Cent Connecticut State	Holy Cross	Northeastern
Centenary	Howard	Northern Illinois
Central Florida	Illinois Chicago	Northwestern
Cincinnati	Indiana	Notre Dame
Clemson	Iona	Oakland
Cleveland State	IUPUI	Ohio State
Coastal Carolina	IUPUI	Old Dominion
Colgate	Jacksonville	Oneonta
Coll. of Charleston	James Madison	Oral Roberts
Columbia	Kentucky	Oregon State
Connecticut	Lafayette	Penn State
Cornell	LaSalle	Pennsylvania
Creighton	Lehigh	Pittsburgh
Dartmouth	Liberty	Portland
Davidson	Lipscomb	Princeton
Dayton	Long Island	Providence
Delaware	Louisville	Quinnipiac
Denver	Loyola (IL)	Radford
DePaul	Loyola (MD)	Rhode Island

Richmond
Rider
Robert Morris
Rutgers
Sacred Hart
San Diego
San Diego State
San Francisco
San Jose State
Santa Clara
Seton Hall
Siena
South Carolina
South Florida
Southern Methodist
St. Bonaventure
St. Francis
St. John's
St. Joseph's
St. Louis
St. Mary's (CA)
St. Peter's
Stanford
Stetson
Stony Brook
Syracuse
Temple
Towson
Tulsa
Valparaiso
Vanderbilt
Vermont
Villanova
Virginia
Virginia Commonwealth
Virginia Military Institute
Virginia Tech
Wake Forest
Washington
West Virginia
Western Illinois
Western Kentucky
Western Michigan
William & Mary
Winthrop
Wisconsin
Wisconsin Green Bay
Wisconsin Milwaukee
Wofford
Wright State

Xavier
Yale

**Appendix C:
Institutions Sponsoring NCAA Division I Women's Soccer**

Akron	Colgate	Howard
Alabama	Coll of Charleston	Idaho
Alabama A&M	Colorado	Idaho State
Alabama Birmingham	Colorado College	Illinois
Albany	Columbia	Illinois State
Alcorn State	Connecticut	Indiana
American	Cornell	Indiana State
Appalachian State	Creighton	Iona
Arizona	Dartmouth	Iowa
Arizona State	Davidson	Iowa State
Arkansas	Dayton	IUPUI
Arkansas Little Rock	Delaware	IUPUI
Arkansas Pine Bluff	Delaware State	Jackson State
Arkansas State	Denver	Jacksonville
Army	DePaul	Jacksonville State
Auburn	Detroit Mercy	James Madison
Austin Peay	Drake	Kansas
Ball State	Drexel	Kent State
Baylor	Duke	Kentucky
Belmont	Duquesne	Lafayette
Binghamton	East Carolina	LaSalle
Birmingham Southern	East Tennessee State	Lehigh
Boise State	Eastern Illinois	Liberty
Boston College	Eastern Michigan	Lipscomb
Boston U	Eastern Washington	Long Beach State
Bowling Green	Elon	Long Island
Brigham Young	Evansville	Louisiana Lafayette
Brown	Fairfield	Louisiana Monroe
Bucknell	Fairleigh Dickinson	Louisiana State
Buffalo	Florida	Louisville
Butler	Florida Atlantic	Loyola (IL)
Cal Poly	Florida International	Loyola (MD)
Cal State - Sacramento	Florida State	Loyola Marymount
Cal State Fullerton	Fordham	Maine
Cal State Northridge	Fresno State	Manhattan
California	Furman	Marist
California - Irvine	Gardner Webb	Marquette
California - Riverside	George Mason	Marshall
Calif. - Santa Barbara	George Washington	Maryland
California Los Angeles	Georgetown	Maryland Baltimore Cnty.
Campbell	Georgia	Massachusetts
Canisius	Georgia Southern	McNeese State
Cent Connecticut State	Georgia State	Memphis
Centenary	Gonzaga	Mercer
Central Florida	Grambling State	Miami (FL)
Central Michigan	Hartford	Miami (OH)
Charleston Southern	Harvard	Michigan
Cincinnati	Hawaii	Michigan State
Citadel	High Point	Middle Tennessee St.
Clemson	Hofstra	Minnesota
Cleveland State	Holy Cross	Mississippi
Coastal Carolina	Houston	Mississippi State

Mississippi Valley St.
Missouri
Missouri State
Monmouth
Montana
Morehead State
Mount St. Mary's
Murray State
Navy
Nebraska
Nevada
Nevada Las Vegas
New Hampshire
New Mexico
Niagara
Nicholls State
North Carolina
North Carolina Asheville
North Carolina Charlotte
No. Carolina Greensboro
North Carolina State
No. Carolina Wilmington
North Texas
Northeastern
Northern Arizona
Northern Illinois
Northern Iowa
Northwestern
Northwestern State
Notre Dame
Oakland
Ohio
Ohio State
Oklahoma
Oklahoma State
Old Dominion
Oral Roberts
Oregon
Oregon State
Pacific
Penn State
Pennsylvania
Pepperdine
Pittsburgh
Portland
Portland State
Prairie View A&M
Princeton
Providence
Purdue
Quinnipiac
Radford
Rhode Island
Rice
Richmond
Rider

Robert Morris
Rutgers
Sacred Hart
Sam Houston State
Samford
San Diego
San Diego State
San Francisco
San Jose State
Santa Clara
Seton Hall
Siena
South Alabama
South Carolina
South Carolina State
South Florida
Southeast Missouri State
Southeastern Louisiana
Southern (LA)
Southern California
Southern Methodist
Southern Mississippi
Southern Utah
St. Bonaventure
St. Francis
St. John's
St. Joseph's
St. Louis
St. Mary's (CA)
St. Peter's
Stanford
Stephen F. Austin
Stetson
Stony Brook
Syracuse
Temple
Tennessee
Tennessee Chattanooga
Tennessee Martin
Tennessee Tech
Texas
Texas A&M
Texas Christian
Texas El Paso
Texas Southern
Texas St. - San Marcos
Texas Tech
Toledo
Towson
Troy
Tulane
Tulsa
Utah
Utah State
Utah Valley State
Valparaiso

Vanderbilt
Vermont
Villanova
Virginia
Virginia Commonwealth
Virginia Military Institute
Virginia Tech
Wagner
Wake Forest
Washington
Washington State
Weber State
West Virginia
Western Carolina
Western Illinois
Western Kentucky
Western Michigan
William & Mary
Winthrop
Wisconsin
Wisconsin Green Bay
Wisconsin Milwaukee
Wofford
Wright State
Wyoming
Xavier
Yale
Youngstown State

**Appendix D:
Institutions Sponsoring NCAA Division I Softball**

Akron	Coll. of Charleston	Howard
Alabama	Colorado State	Illinois
Alabama A&M	Columbia	Illinois Chicago
Alabama Birmingham	Connecticut	Illinois State
Alabama State	Coppin State	Indiana
Albany	Cornell	Indiana State
Alcorn State	Creighton	Iona
Appalachian State	Dartmouth	Iowa
Arizona	Dayton	Iowa State
Arizona State	Delaware	IUPUI
Arkansas	Delaware State	IUPUI
Arkansas Pine Bluff	DePaul	Jackson State
Army	Detroit Mercy	Jacksonville
Auburn	Drake	Jacksonville State
Austin Peay	Drexel	James Madison
Ball State	East Carolina	Kansas
Baylor	East Tennessee State	Kent State
Belmont	Eastern Illinois	Kentucky
Bethune Cookman	Eastern Kentucky	Lafayette
Binghamton	Eastern Michigan	LaSalle
Birmingham Southern	Elon	Lehigh
Boston College	Evansville	Liberty
Boston U	Fairfield	Lipscomb
Bowling Green	Fairleigh Dickinson	Long Beach State
Brigham Young	Florida	Long Island
Brown	Florida A&M	Louisiana Lafayette
Bucknell	Florida Atlantic	Louisiana Monroe
Buffalo	Florida International	Louisiana State
Butler	Florida State	Louisiana Tech
Cal Poly	Fordham	Louisville
Cal State - Sacramento	Fresno State	Loyola (IL)
Cal State Fullerton	Furman	Loyola Marymount
Cal State Northridge	Gardner Webb	Maine
California	George Mason	Manhattan
California - Riverside	George Washington	Marist
Calif. - Santa Barbara	Georgia	Marshall
California Los Angeles	Georgia Southern	Maryland
Campbell	Georgia State	Maryland Baltimore Cnty.
Canisius	Georgia Tech	Maryland Eastern Shore
Cent Connecticut State	Grambling State	Massachusetts
Centenary	Hampton	McNeese State
Central Florida	Hartford	Mercer
Central Michigan	Harvard	Miami (OH)
Charleston Southern	Hawaii	Michigan
Cleveland State	Hofstra	Michigan State
Coastal Carolina	Holy Cross	Middle Tennessee St.
Colgate	Houston	Minnesota

Mississippi
Mississippi State
Mississippi Valley St.
Missouri
Missouri Kansas City
Missouri State
Monmouth
Morehead State
Morgan State
Mount St. Mary's
Nebraska
Nevada
Nevada Las Vegas
New Mexico
New Mexico State
Niagara
Nicholls State
Norfolk State
North Carolina
North Carolina A&T
North Carolina Charlotte
No. Carolina Greensboro
North Carolina State
No. Carolina Wilmington
North Texas
Northern Illinois
Northern Iowa
Northwestern
Northwestern State
Notre Dame
Oakland
Ohio
Ohio State
Oklahoma
Oklahoma State
Oregon
Oregon State
Pacific
Penn State
Pennsylvania
Pittsburgh
Portland State
Prairie View A&M
Princeton
Providence
Purdue
Quinnipiac
Radford
Rhode Island
Rider

Robert Morris
Rutgers
Sacred Hart
Sam Houston State
Samford
San Diego
San Diego State
San Jose State
Santa Clara
Savannah State
Seton Hall
Siena
South Carolina
South Carolina State
South Florida
Southeast Missouri State
Southeastern Louisiana
Southern (LA)
Southern Illinois
Southern Mississippi
Southern Utah
St. Bonaventure
St. Francis
St. John's
St. Joseph's
St. Louis
St. Mary's (CA)
St. Peter's
Stanford
Stephen F. Austin
Stetson
Stony Brook
Syracuse
Temple
Tennessee
Tennessee Chattanooga
Tennessee Martin
Tennessee State
Tennessee Tech
Texas
Texas A&M
Texas A&M CC
Texas Arlington
Texas El Paso
Texas San Antonio
Texas Southern
Texas St. - San Marcos
Texas Tech
Toledo
Towson

Troy
Tulsa
Utah
Utah State
Utah Valley State
Valparaiso
Vermont
Villanova
Virginia
Virginia Tech
Wagner
Washington
Western Illinois
Western Kentucky
Western Michigan
Wichita State
Winthrop
Wisconsin
Wisconsin Green Bay
Wright State
Yale
Youngstown State

**Appendix E:
Institutions Sponsoring NCAA Division I Men's Tennis**

Alabama	Colorado	High Point
Alabama A&M	Columbia	Hofstra
Alabama Birmingham	Connecticut	Holy Cross
Alabama State	Coppin State	Howard
Alcorn State	Cornell	Idaho
American	Creighton	Idaho State
Appalachian State	Dartmouth	Illinois
Arizona	Davidson	Illinois Chicago
Arizona State	Dayton	Illinois State
Arkansas	Delaware	Indiana
Arkansas Little Rock	Delaware State	Indiana State
Arkansas Pine Bluff	Denver	Iowa
Army	DePaul	IUPUI
Auburn	Drake	IUPUI
Austin Peay	Drexel	Jackson State
Ball State	Duke	Jacksonville
Baylor	Duquesne	Jacksonville State
Belmont	East Carolina	James Madison
Bethune Cookman	East Tennessee State	Kentucky
Binghamton	Eastern Illinois	Lafayette
Birmingham Southern	Eastern Kentucky	Lamar
Boise State	Eastern Washington	LaSalle
Boston College	Elon	Lehigh
Boston U	Evansville	Liberty
Brigham Young	Fairfield	Lipscomb
Brown	Fairleigh Dickinson	Louisiana Lafayette
Bucknell	Florida	Louisiana State
Buffalo	Florida A&M	Louisville
Butler	Florida Atlantic	Loyola (MD)
Cal Poly	Florida State	Loyola Marymount
Cal State - Sacramento	Fordham	Manhattan
California	Fresno State	Marist
California - Irvine	Furman	Marquette
California - Riverside	Gardner Webb	Maryland
Calif. - Santa Barbara	George Mason	Maryland Baltimore Cnty.
California Los Angeles	George Washington	Maryland Eastern Shore
Campbell	Georgetown	Memphis
Centenary	Georgia	Mercer
Central Florida	Georgia Southern	Miami (FL)
Charleston Southern	Georgia State	Michigan
Chicago State	Georgia Tech	Michigan State
Citadel	Gonzaga	Middle Tennessee St.
Clemson	Grambling State	Minnesota
Cleveland State	Hampton	Mississippi
Coastal Carolina	Hartford	Mississippi State
Colgate	Harvard	Mississippi Valley St.
Coll. of Charleston	Hawaii	Missouri Kansas City

Missouri State
Monmouth
Montana
Montana State
Morehead State
Morgan State
Mount St. Mary's
Murray State
Navy
Nebraska
Nevada
Nevada Las Vegas
New Hampshire
New Mexico
New Mexico State
Niagara
Nicholls State
Norfolk State
North Carolina
North Carolina A&T
North Carolina Asheville
North Carolina Charlotte
No. Carolina Greensboro
North Carolina State
No. Carolina Wilmington
Northern Arizona
Northern Illinois
Northwestern
Notre Dame
Ohio State
Oklahoma
Oklahoma State
Old Dominion
Oral Roberts
Oregon
Pacific
Penn State
Pennsylvania
Pepperdine
Portland
Prairie View A&M
Princeton
Purdue
Quinnipiac
Radford
Rhode Island
Rice
Richmond
Rider
Robert Morris

Rutgers
Sacred Hart
Samford
San Diego
San Diego State
San Francisco
Santa Clara
Siena
South Alabama
South Carolina
South Carolina State
South Florida
Southeastern Louisiana
Southern (LA)
Southern California
Southern Illinois
Southern Methodist
Southern Mississippi
St. Bonaventure
St. Francis
St. John's
St. Joseph's
St. Louis
St. Mary's (CA)
St. Peter's
Stanford
Stetson
Stony Brook
Temple
Tennessee
Tennessee Chattanooga
Tennessee Martin
Tennessee State
Tennessee Tech
Texas
Texas A&M
Texas A&M CC
Texas Arlington
Texas Christian
Texas Pan American
Texas San Antonio
Texas Southern
Texas Tech
Toledo
Towson
Troy
Tulane
Tulsa
Utah
Utah State

Valparaiso
Vanderbilt
Vermont
Villanova
Virginia
Virginia Commonwealth
Virginia Tech
Wagner
Wake Forest
Washington
Weber State
Western Illinois
Western Kentucky
Western Michigan
Wichita State
William & Mary
Winthrop
Wisconsin
Wisconsin Green Bay
Wofford
Wright State
Xavier
Yale
Youngstown State

**Appendix F:
Institutions Sponsoring NCAA Division I Women's Tennis**

Akron	Colorado State	Howard
Alabama	Columbia	Idaho
Alabama A&M	Connecticut	Idaho State
Alabama Birmingham	Coppin State	Illinois
Alabama State	Cornell	Illinois Chicago
Albany	Creighton	Illinois State
Alcorn State	Dartmouth	Indiana
American	Davidson	Indiana State
Appalachian State	Dayton	Iowa
Arizona	Delaware	Iowa State
Arizona State	Delaware State	IUPUI
Arkansas	Denver	IUPUI
Arkansas Little Rock	DePaul	Jackson State
Arkansas Pine Bluff	Detroit Mercy	Jacksonville
Arkansas State	Drake	Jacksonville State
Army	Drexel	James Madison
Auburn	Duke	Kansas
Austin Peay	Duquesne	Kansas State
Ball State	East Carolina	Kentucky
Baylor	East Tennessee State	Lafayette
Belmont	Eastern Illinois	Lamar
Bethune Cookman	Eastern Kentucky	LaSalle
Binghamton	Eastern Michigan	Lehigh
Birmingham Southern	Eastern Washington	Liberty
Boise State	Elon	Lipscomb
Boston College	Evansville	Long Beach State
Boston U	Fairfield	Long Island
Bowling Green	Fairleigh Dickinson	Louisiana Lafayette
Brigham Young	Florida	Louisiana Monroe
Brown	Florida A&M	Louisiana State
Bucknell	Florida Atlantic	Louisiana Tech
Buffalo	Florida International	Louisville
Butler	Florida State	Loyola (MD)
Cal Poly	Fordham	Loyola Marymount
Cal State - Sacramento	Fresno State	Manhattan
Cal State Fullerton	Furman	Marist
Cal State Northridge	Gardner Webb	Marquette
California	George Mason	Marshall
California - Irvine	George Washington	Maryland
California - Riverside	Georgetown	Maryland Baltimore County
California - Santa Barbara	Georgia	Maryland Eastern Shore
California Los Angeles	Georgia Southern	Massachusetts
Campbell	Georgia State	McNeese State
Centenary	Georgia Tech	Memphis
Central Florida	Gonzaga	Mercer
Charleston Southern	Grambling State	Miami (FL)
Chicago State	Hampton	Miami (OH)
Cincinnati	Hartford	Michigan
Clemson	Harvard	Michigan State
Cleveland State	Hawaii	Middle Tennessee St.
Coastal Carolina	High Point	Minnesota
Colgate	Hofstra	Mississippi
Coll. of Charleston	Holy Cross	Mississippi State
Colorado	Houston	Mississippi Valley St.

Missouri	Sacred Hart	Utah State
Missouri Kansas City	Sam Houston State	Valparaiso
Missouri State	Samford	Vanderbilt
Monmouth	San Diego	Vermont
Montana	San Diego State	Villanova
Montana State	San Francisco	Virginia
Morehead State	San Jose State	Virginia Commonwealth
Morgan State	Santa Clara	Virginia Tech
Mount St. Mary's	Savannah State	Wagner
Murray State	Seton Hall	Wake Forest
Nebraska	Siena	Washington
Nevada	South Alabama	Washington State
Nevada Las Vegas	South Carolina	Weber State
New Hampshire	South Carolina State	West Virginia
New Mexico	South Florida	Western Carolina
New Mexico State	Southeast Missouri State	Western Illinois
Niagara	Southeastern Louisiana	Western Kentucky
Nicholls State	Southern (LA)	Western Michigan
Norfolk State	Southern California	Wichita State
North Carolina	Southern Illinois	William & Mary
North Carolina A&T	Southern Methodist	Winthrop
North Carolina Asheville	Southern Mississippi	Wisconsin
North Carolina Charlotte	Southern Utah	Wisconsin Green Bay
North Carolina Greensboro	St. Bonaventure	Wisconsin Milwaukee
North Carolina State	St. Francis	Wofford
North Carolina Wilmington	St. John's	Wright State
North Texas	St. Joseph's	Wyoming
Northern Arizona	St. Louis	Xavier
Northern Illinois	St. Mary's (CA)	Yale
Northern Iowa	St. Peter's	Youngstown State
Northwestern	Stanford	
Northwestern State	Stephen F. Austin	
Notre Dame	Stetson	
Oakland	Stony Brook	
Ohio State	Syracuse	
Oklahoma	Temple	
Oklahoma State	Tennessee	
Old Dominion	Tennessee Chattanooga	
Oral Roberts	Tennessee Martin	
Oregon	Tennessee State	
Pacific	Tennessee Tech	
Penn State	Texas	
Pennsylvania	Texas A&M	
Pepperdine	Texas A&M Corpus Christi	
Pittsburgh	Texas Arlington	
Portland	Texas Christian	
Prairie View A&M	Texas El Paso	
Princeton	Texas Pan American	
Providence	Texas San Antonio	
Purdue	Texas Southern	
Quinnipiac	Texas State - San Marcos	
Radford	Texas Tech	
Rhode Island	Toledo	
Rice	Towson	
Richmond	Troy	
Rider	Tulane	
Robert Morris	Tulsa	
Rutgers	Utah	

**Appendix G:
Institutions Sponsoring NCAA Division I Women's Volleyball**

Akron	Cleveland State	Hawaii
Alabama	Coastal Carolina	High Point
Alabama A&M	Colgate	Hofstra
Alabama Birmingham	Coll. of Charleston	Holy Cross
Alabama State	Colorado	Houston
Albany	Colorado State	Howard
Alcorn State	Columbia	Idaho
American	Connecticut	Idaho State
Appalachian State	Coppin State	Illinois
Arizona	Cornell	Illinois Chicago
Arizona State	Creighton	Illinois State
Arkansas	Dartmouth	Indiana
Arkansas Little Rock	Davidson	Indiana State
Arkansas Pine Bluff	Dayton	Iona
Arkansas State	Delaware	Iowa
Army	Delaware State	Iowa State
Auburn	Denver	IUPUI
Austin Peay	DePaul	IUPUI
Ball State	Drake	Jackson State
Baylor	Duke	Jacksonville
Belmont	Duquesne	Jacksonville State
Bethune Cookman	East Carolina	James Madison
Binghamton	East Tennessee State	Kansas
Birmingham Southern	Eastern Illinois	Kansas State
Boise State	Eastern Kentucky	Kent State
Boston College	Eastern Michigan	Kentucky
Bowling Green	Eastern Washington	Lafayette
Brigham Young	Elon	Lamar
Brown	Evansville	LaSalle
Bucknell	Fairfield	Lehigh
Buffalo	Fairleigh Dickinson	Liberty
Butler	Florida	Lipscomb
Cal Poly	Florida A&M	Long Beach State
Cal State - Sacramento	Florida Atlantic	Long Island
Cal State Fullerton	Florida International	Louisiana Lafayette
Cal State Northridge	Florida State	Louisiana Monroe
California	Fordham	Louisiana State
California - Irvine	Fresno State	Louisiana Tech
California - Riverside	Furman	Louisville
California - Santa Barbara	Gardner Webb	Loyola (IL)
California Los Angeles	George Mason	Loyola (MD)
Campbell	George Washington	Loyola Marymount
Canisius	Georgetown	Maine
Cent Connecticut State	Georgia	Manhattan
Centenary	Georgia Southern	Marist
Central Florida	Georgia State	Marquette
Central Michigan	Georgia Tech	Marshall
Charleston Southern	Gonzaga	Maryland
Chicago State	Grambling State	Maryland Baltimore County
Cincinnati	Hampton	Maryland Eastern Shore
Citadel	Hartford	McNeese State
Clemson	Harvard	Memphis

Mercer	Portland State	Texas Pan American
Miami (FL)	Prairie View A&M	Texas San Antonio
Miami (OH)	Princeton	Texas Southern
Michigan	Providence	Texas State - San Marcos
Michigan State	Purdue	Texas Tech
Middle Tennessee St.	Quinnipiac	Toledo
Minnesota	Radford	Towson
Mississippi	Rhode Island	Troy
Mississippi State	Rice	Tulane
Mississippi Valley St.	Rider	Tulsa
Missouri	Robert Morris	Utah
Missouri Kansas City	Rutgers	Utah State
Missouri State	Sacred Hart	Utah Valley State
Montana	Sam Houston State	Valparaiso
Montana State	Samford	Villanova
Morehead State	San Diego	Virginia
Morgan State	San Diego State	Virginia Commonwealth
Murray State	San Francisco	Virginia Tech
Navy	San Jose State	Wagner
Nebraska	Santa Clara	Wake Forest
Nevada	Savannah State	Washington
Nevada Las Vegas	Seton Hall	Washington State
New Hampshire	Siena	Weber State
New Mexico	South Alabama	West Virginia
New Mexico State	South Carolina	Western Carolina
Niagara	South Carolina State	Western Illinois
Nicholls State	South Florida	Western Kentucky
Norfolk State	Southeast Missouri State	Western Michigan
North Carolina	Southeastern Louisiana	Wichita State
North Carolina A&T	Southern (LA)	William & Mary
North Carolina Asheville	Southern California	Winthrop
North Carolina Charlotte	Southern Illinois	Wisconsin
North Carolina Greensboro	Southern Methodist	Wisconsin Green Bay
North Carolina State	Southern Mississippi	Wisconsin Milwaukee
North Carolina Wilmington	St. Francis	Wofford
North Texas	St. John's	Wright State
Northeastern	St. Louis	Wyoming
Northern Arizona	St. Mary's (CA)	Xavier
Northern Illinois	St. Peter's	Yale
Northern Iowa	Stanford	Youngstown State
Northwestern	Stephen F. Austin	
Northwestern State (LA)	Stetson	
Notre Dame	Stony Brook	
Oakland	Syracuse	
Ohio	Temple	
Ohio State	Tennessee	
Oklahoma	Tennessee Chattanooga	
Oral Roberts	Tennessee Martin	
Oregon	Tennessee State	
Oregon State	Tennessee Tech	
Pacific	Texas	
Penn State	Texas A&M	
Pennsylvania	Texas A&M Corpus Christi	
Pepperdine	Texas Arlington	
Pittsburgh	Texas Christian	
Portland	Texas El Paso	

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