

## THE RELATIONSHIP BETWEEN DRAMATIC CHANGES IN TEAM PERFORMANCE AND UNDERGRADUATE ADMISSIONS APPLICATIONS

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### ABSTRACT

This study examines the relationship between dramatic changes in NCAA Division I-A intercollegiate athletics team performance and undergraduate admissions applications. Major collegiate athletic teams with dramatic increases, decreases, or no change in winning percentage in four sports were identified as subjects. The number of undergraduate admissions applications received for the identified year and the subsequent year were compared for each of the randomly selected subjects. Football winning percentage ( $p=.0015$ ) was found to have a significant positive relationship with the number of applicants, while no such significance was found with men's or women's basketball or women's volleyball. Post-hoc testing revealed that a relationship did exist between the improvement in a school's football record and applications for undergraduate admissions.

### INTRODUCTION

One of the justifications for the existence of high-profile, big-budget NCAA Division I-A athletic programs is they provide advertising which can lead to increased alumni contributions and student applicants to universities (McCormick & Tinsley, 1987; Grimes & Chressanthis, 1994), the latter of which, number of student admission applications, is the focus of this study. According to Bremmer and Kesselring (1993), universities' "primary form of media exposure (and advertising) derives from a distinctly nonacademic enterprise – intercollegiate athletics" (p. 409). Bremmer and Kesselring also stated, "successful' athletic

programs provide a university with cost effective advertising which attracts more student applicants" (p. 409).

Stagnation in the number of traditional-age students matriculating to universities in recent years has resulted in increased competition for these students among universities and their admissions officers (Bouse & Hossler, 1991). As a result, there is a need for further examination of the relationship between intercollegiate athletic team performance and student applicants.

### COLLEGE CHOICE MODELS

A number of studies have been conducted to analyze college choice and to develop models explaining how students select a college or university to attend (Litten, 1991; Galotti & Mark, 1994; Hamrick & Hossler, 1996). According to Toma and Cross (1998), three major types of college choice models have emerged from these studies: economic models (Chapman, 1979; Young & Reyes, 1987), sociological models (Sewell & Shaw, 1978), and a model combining economic and sociological approaches (Hossler and Gallagher, 1987). Hossler and Gallagher's model has been adopted as the conceptual framework for this study. This model of college choice is a developmental process in which the potential college attendee progresses through three phases: (1) predisposition, in which the student determines whether to continue education beyond the high school level, (2) search, in which the student gathers information about colleges and universities and decides upon a group of

institutions for application purposes, and (3) choice, in which the student determines which college or university to attend. Toma and Cross (1998) suggested that the attention received by an institution through intercollegiate athletic success may impact all three of Hossler and Gallagher's phases of college choice, depending upon the background and values of each student, with the most influence likely occurring in the search and choice phases.

#### PREVIOUS STUDIES ON ATHLETICS AND ADMISSIONS

A relationship between athletic team performance and applications for undergraduate enrollment has been supported by anecdotal evidence. On November 23, 1984, Doug Flutie threw a 48-yard touchdown pass as time expired to lead lesser-known Boston College to an upset victory against the University of Miami, one of the nation's top college football programs. With that one pass, seen by millions across the United States on television, Flutie secured the Heisman Trophy, given each year to college football's best player, and brought the most significant national media attention ever experienced by the college. Over the next two years, applications for admission to Boston College rose 30%, potentially generating millions of dollars in additional tuition revenue for the school (Marklein, 2001). This apparent relationship between dramatic changes in athletic team performance and admissions applications has been labeled by the media as the "Flutie Factor" and is a focus of this study (Marklein, 2001; "Schools Ride," 1997). Similarly, admissions applications at Northwestern University increased 21% the year following the school's 1995 increase from three victories the previous year to ten victories and participation in the prestigious Rose Bowl (Dodd, 1997). Similarly, North Carolina State University received a 40% increase in applications after winning the 1983 NCAA Men's Basketball Championship. Even Penn State University, who has traditionally been successful in football, had a 15% increase in undergraduate applications after winning the 1995 Rose Bowl ("Schools Ride," 1997).

Several authors have attempted to substantiate the relationship between intercollegiate athletic team performance and an increase in undergraduate admissions applications and enrollment. Allen and Peters (1982), in studying the college choice decisions made by students and their parents, found that the success of the DePaul University men's basketball team positively influenced students in making their decision to attend the school. Chressanthi and Grimes (1993) found that while athletic postseason play and television coverage had no significant effect on the number of undergraduate applications, winning percentage in football did have a significant positive effect on the number of applications received by the university in a 30-year longitudinal study of success in college sports and enrollment demand at one major Division I-A university.

Similarly, Murphy and Trandel (1994) presented evidence that success in football related positively to an increase in admissions applications at major Division I-A institutions. Murphy and Trandel's data showed that an increase in football winning percentage of .250 produced an average applicant increase of 1.3% the following year at Division I-A schools. Toma and Cross (1998) found that winning a national championship in either Division I-A football or Division I men's basketball resulted in an increase in undergraduate admission applications and that the applicant increase did not represent just a one-year increase, but tended to last for at least three years.

Furthermore, Zimbalist (2001) gathered a variety of data on 86 Division I-A institutions from 1980 to 1995 and found that "there was some tendency for athletic success to increase applications" (p. 171). However, Zimbalist noted that even though the number of applications increased, the quality of the applicants, as measured by SAT scores, did not. This latter result supported findings by McCormick and Tinsley (1990) and Bremmer and Kesselring (1993).

These studies' findings appear to support anecdotal evidence of a positive relationship between success in intercollegiate athletics, particularly football and men's basketball, and an increase in admissions applications at Division I-A institutions. The present study, in contrast with previous works, examined the relationship between intercollegiate athletics performance and undergraduate admissions applications relative to two men's sports, football and men's basketball, and two women's sports, volleyball and women's basketball. Additionally, this study specifically analyzed dramatic improvements and declines in athletic team performance, something other studies have not considered.

#### METHODS

Similar to the McCormick and Tinsley (1987) and Murphy and Trandel (1994) studies, this study examined athletic team performance at schools in six major NCAA Division I-A athletic conferences – the Atlantic Coast, Big East, Big Ten, Big 12/Big Eight, Pacific Ten, and Southeastern Conferences. Between 1994 and 1998, the period of years analyzed in this study due to data availability, a total of 62 schools competed in these six conferences.

#### INDEPENDENT VARIABLE AND PROCEDURE

Following McCormick and Tinsley (1987) and Murphy and Trandel (1994), athletic performance was defined as the change in winning percentage from year to year and was used as the independent variable. This variable was limited to contests played against other members of a school's own athletic conference in order to control for differences in the strength of a team's non-conference schedule. These annual within-conference winning percentages were collected from data obtained from the NCAA Statistics office. The change in winning percentage was calculated for four sports (football, men's basketball, volleyball, and women's basketball). These sports were examined because they represented the two female and two male sports receiving the most attendance and media exposure in intercollegiate athletics (NCAA, 2004). Following McCormick and Tinsley (1987) and Murphy and Trandel (1994), the winning

percentage variable was limited to contests played against other members of a school's own athletic conference in order to control for differences in the strength of a team's non-conference schedule. These annual within-conference winning percentages were collected from data obtained from the NCAA Statistics office.

The annual change in within-conference winning percentage for each of the four sports' teams was grouped into one of three categories – those whose winning percentage increased by .250 or greater (from .500 to .750 for example), those whose winning percentage showed no change, or those whose winning percentage decreased by .250 or greater (from .500 to .250 for example). Universities and athletic teams who did not meet these criteria were withdrawn from consideration in the study. It was possible for a team to qualify for more than one category depending on their year-to-year within-conference record. For instance, the 1994 Penn State University football team was grouped in to the increase of .250 or greater category based on their improvement from 6-2 (.750) in 1993 to 8-0 (1.000) in 1994, while the 1995 Penn State football team fit in the decrease of .250 or greater category as a result of their decline from 8-0 (1.000) in 1994 to 5-3 (.625) in 1995. Table 1 summarizes the results of this phase of the data collection.

#### DEPENDENT VARIABLE AND PROCEDURE

Stratified random sampling was used to select 30 subjects from each of the 12 strata – the three previously mentioned categories across each of the four sports being studied. For each of the 240 total sample situations, the number of total undergraduate applicants was obtained through the annually published College Handbook (1995-2001) produced by The College Board. In football and volleyball, both fall sports, the change in applicant numbers were compared from the year identified in the three categories of the won-loss percentage change data to applicant numbers from the following year. For example, the 1998 University of Texas football team was identified as having improved to .750 from .250 the previous year. University of Texas' undergraduate admissions applications data from 1998 and 1999

was then examined to see if a change occurred in the number of total undergraduate applicants from the year identified in the team performance data, in this case 1998, to the following year. In men's and women's basketball, both winter sports, a slightly different approach was utilized to account for admissions deadlines at many schools which occurred before the completion of that particular year's basketball seasons. In these cases, the change in applicant numbers would be compared from the academic year immediately following the year identified in the three categories of the won-loss percentage change data to applicant numbers from the following academic year. For instance, the 1996-97 Duke men's basketball team was identified as having improved from .500 the previous season to .750. In this case, because the Fall 1997 admissions class would have likely already submitted their applications for enrollment before the success of that year's Duke University men's basketball team would be known, data was collected and compared for the 1997-98 and 1998-99 academic years. In an attempt to control sample size across strata, three additional subjects, a ten percent over-run, were also randomly selected from each of the twelve strata to be used if applicant data could not be obtained on identified subjects in the respective strata.

#### DATA ANALYSIS

ANOVA tests were conducted on applicant data collected for each of the four sports in order to test for significant differences between the three categories of annual change in within-conference won-loss percentage for each sport. The critical value for significance for each was set at alpha equal to .05 a priori. Because four separate ANOVA tests were conducted, a Bonferroni-type adjustment was made to this critical value in an attempt to account for inflated chances of committing Type I errors that are associated with conducting multiple ANOVA tests (Tabachnick & Fidell, 2001). The critical value for significance for each of the ANOVA tests was therefore adjusted to alpha equal to .0125 (.05 divided by four). Tukey post hoc tests were utilized in the event of significant findings in the ANOVA tests.

#### RESULTS

The results of each of the four ANOVA tests as well as the percent change in applicants for each of the increase, no change, and decrease winning percentage groups are displayed in Table 2. Among the four sports studied, only football had a significant relationship with number of applicants ( $p=.0015$ ). The data indicated that an institution's change in football winning percentage was related to the number of undergraduate applicants received by the university the following year. For the schools that had football teams whose conference winning percentage increased by .250 or greater realized a 6.1% gain in undergraduate applicants the following year. The schools whose football team's conference winning percentage did not change from one year to the next had a 2.5% applicant increase the following year and schools whose conference winning percentage decreased the by .250 or more had 0.4% less applicants the next year.

The post-hoc test showed that the schools whose football team had a conference winning percentage which increased by at least .250 was significantly different than the other two groups. However, the latter two groups did not differ from each other.

#### DISCUSSION

##### FOCUS OF THE STUDY

The purpose of this study was to determine whether change in winning percentage from one year to the next on any of four sports (football, men's basketball, women's basketball, and women's volleyball) had any relationship with number of applicants to the referent university. The results indicated that schools that had a football team which showed an increase in winning percentage of greater than .250 realized more academic applications than schools whose football teams did not improve or got worse. No other sport showed any significant relationship between change in winning percentage and number of applications.

##### SUPPORT FOR FINDINGS IN LITERATURE

The findings of this study support the conclusions of others (Chressanthi & Grimes, 1993; Murphy & Trandel, 1994) that a significant positive

relationship exists between success in NCAA Division I-A college football and undergraduate applications for admission at universities. However, previous findings (Toma & Cross, 1998) regarding a similar positive relationship between success in men’s basketball and applicants were not supported in this investigation.

### RELEVANCE TO ORGANIZATIONAL CONCERNS

Without question, there are many reasons why individuals select particular institutions, some of which may involve aspects of intercollegiate athletics, depending upon each individual. There are certain areas related to this issue which merit discussion here, such as levels of media exposure, regional and conference biases, memorable teams, and selectivity.

Sports such as football receive more media attention than do other college sports, which enhances the advertising effect of college sports discussed earlier (Bremmer & Kesselring, 1993). This increased media attention is likely a primary reason why the data in this study found differences in applicants relative to football, but not the other three sports investigated. The current trend toward increased exposure for women’s sports in the United States may warrant future study as to the advertising effect of sports such as women’s basketball should this trend continue.

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Sports receive varying levels of attention in different regions of the country, as well as within particular conferences. For example, basketball is generally regarded as being most popular in the Midwest and Northeast, while football is extremely popular in the South. Also, the Atlantic Coast and Big East conferences are respected as

excellent men’s basketball leagues, while the Big 12 and Southeastern conferences typically are strong in football. These regional and conference differences were not taken into account in this study. Future researchers may wish to examine the athletics advertising effect on an athletic conference-by-conference or region-by-region basis.

Toma and Cross (1998) suggested that, “one factor that might explain the large relative increases experienced by some schools and not by others may be the compelling stories that make for particularly memorable seasons in some cases” (p. 651). There does seem to be merit to this argument, and it is one that is worthy of future research. Examining athletic teams and universities based on the television ratings of their championship game appearances or the amount of national media attention received would be possible alternatives for studying this concept.

Another issue raised by Toma and Cross (1998) is the influence of universities’ admissions criteria, or selectivity, on the number of applicants. Toma and Cross found that universities winning championships were seemingly more likely to realize applicant increases if they were schools, such as Duke University and Georgetown University, which had highly selective admissions criteria. Less selective schools experienced applicant declines following their championship seasons. The relationship between admissions selectivity, athletic team performance, and changes in admissions applications received by universities should be studied further, perhaps by stratifying universities based on the percentage of applicants admitted, figures which are typically reported in university guidebooks, such as the previously mentioned *College Handbook* (The College Board, 1995-2001).

### IMPLICATIONS FOR ORGANIZATIONS

These findings are quite important for universities and their respective administrators. For example, just a 5 percent increase in undergraduate admissions applications could result in millions of dollars in increased tuition revenue over several years for large university if the additional applicants had qualifications similar to the

university norm and the university chose to admit the additional qualified applicants. Such a revenue increase would allow a university to improve itself by funding a number of scholarships, important research projects, faculty hires, and so on.

The issue of gender effect is also raised by this study. While a significant relationship between women's sport performance and the total number of undergraduate applicants received by a university was not found in this study, the relationships between male sports and male applicants and female sports and female applicants should be examined, however, based on this author's own experiences in this study, collecting this data may prove to be problematic for future researchers.

#### STUDY LIMITATIONS

One of the limitations of this study was in the way that the subjects were stratified. All winning percentage increases and decreases are not necessarily the same. For example, a winning percentage increase of .250 is quite important for a football team going from seven victories and perhaps a bowl bid to ten victories and a chance to compete for a national championship, while the same winning percentage increase is not likely to make a dramatic difference for a team with zero wins one year and three wins the next. Additionally, the magnitude of dramatic winning percentage change is not accounted for here. A school with a change in winning percentage of .500 or more would be assigned to the same category/group as others with just a winning percentage change of .250. Another limitation of this study is the collecting of data from secondary sources. While data collection from primary sources may be methodologically preferable, it was deemed to be both time and cost prohibitive for this study.

#### SUGGESTIONS FOR FUTURE RESEARCH

As stated previously, there is a need in the literature to learn more about the relationships between success, and the lack thereof, in male and female sports and with male and female applicants. Understanding the relationships between these variables using secondary data, as

this study and most previous ones have done, may be problematic. A future course in this area might entail primary data collection with current, or recent, applicants.

Further research is also needed to examine the relationship between athletic performance and applicants to institutions in different regions of the United States, as the popularity of different sports tends to vary across regions. Additionally, investigation into the relationship between elite individual athletic performance and applicants, rather than team performance studied here and in most previous studies, may shed light on the impact of individual "star" athletes on applicants if team success and other related variables can be controlled for.

#### CONCLUSION

This study supports previous findings that a significant positive relationship exists between college football success and applications for undergraduate enrollment at NCAA Division I-A universities. Additionally, this study examined a similar relationship with college men's basketball, women's basketball, and women's volleyball, the latter two of which had received little previous study, and found no significant relationship to exist between success in those sports and applicants. The relationship between a dramatic decrease in team performance and applicants was also examined and significance was not found with any of the four sports studied.

[Tables 1 & 2 on page 24]

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Table 1

Subjects Identified in the Three Annual Team Performance Categories Across Sports

Conference	Football			Volleyball			Men’s Basketball			Women’s Basketball		
	+ .250	None	- .250	+ .250	None	- .250	+ .250	None	- .250	+ .250	None	- .250
ACC	11	12	6	7	7	4	6	3	7	7	4	4
Big East	5	14	6	6	5	9	7	6	7	8	4	8
Big 10	10	12	10	7	5	5	4	6	6	8	3	9
Big 12/Big 8	6	12	5	4	8	6	5	4	6	5	3	6
Pac 10	12	8	10	2	8	1	6	8	5	4	6	6
SEC	11	11	11	8	11	7	6	3	7	7	8	6
Totals	59	74	52	34	44	32	34	30	38	39	28	39

Note. Annual team performance categories designated as follows: +.250 = conference winning percentage increased by .250 or greater from one year to the next; None = conference winning percentage did not change from one year to the next; -.250 = conference winning percentage decreased by .250 or greater from one year to the next.

Table 2

P-Values and Percent Change in Applicants Across Sports

Percent Change in Applicants

Sport	p-value	+ .250	None	- .250
Football	.0015*	+6.11%*	+2.47%	-0.04%
Men’s Basketball	.3337	+9.83%	+5.88%	+4.40%
Women’s Basketball	.4790	+3.83%	+2.98%	+1.82%
Women’s Volleyball	.4816	+4.14%	+2.78%	+1.76%

Notes. \* represents a significant finding at alpha=.0125. Column headings under Percent Change in Applicants denote the three groups of subjects as defined in Table 1.