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Journal of Issues in **Intercollegiate Athletics**

Does Discontinuing Intercollegiate Football Correlate with Institutional Attractiveness to Potential Students? Evidence from Three Universities

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Recently a number of colleges and universities have made the decision to discontinue their intercollegiate football program (Olson, 2010; Springer, 2010). The impact of this decision on an institution's ability to recruit potential students, however, has been understudied. Using difference-in-differences estimation, this study examined freshmen application trends at three NCAA Football Championship Subdivision (FCS) institutions which dropped intercollegiate football in the spring of 2004, in comparison to freshmen application trends at peer institutions which retained their football program after 2004. The findings suggest that this change in institutional athletic policy may be largely uncorrelated with reductions in admissions applications received.

Over the past decade, federal and state financial support for higher education has seen a steady decline (Delaney & Doyle, 2007; Lauerman, 2011). This drop in financial support, in combination with rising costs in higher education (Archibald & Feldman, 2008), has forced colleges and universities to eliminate or reduce the size of programs in an effort to remain financially viable. Many of these cuts have been aimed at intercollegiate athletic programs. Between 2007 and 2009, the National Collegiate Athletic Association (NCAA) reported that more than 200 intercollegiate athletic teams were dropped by colleges and universities nationwide (Watson, 2009).

Often the victims of these athletic cuts are smaller, “non-revenue” producing sports such as wrestling or gymnastics (Watson, 2009). Recently, however, many colleges and universities, including Hofstra University after 69 years of play, Northeastern University after 74 years of play, and Western Washington University after 107 years of play, have decided to drop their most expensive and often most popular sport, intercollegiate football (Olson, 2010). The elimination of college football programs has been met with both support and skepticism within the higher education community. Some faculty and administrators believe reallocating money from non-mission critical activities,¹ such as football, towards areas student scholarships or campus infrastructure would make the institution stronger and would be a more legitimate use of funds (Sperber, 2000). Others argue that dropping college football can have an adverse effect on campus solidarity, alumni support, and student enrollment (Olson, 2010; Toma, 2003).

Many of the claims regarding the consequences of dropping intercollegiate football have not been empirically tested. This is especially true with regard to student enrollment. Only one published study to date has attempted to quantitatively examine whether a college or university’s student enrollment is adversely impacted by discontinuing intercollegiate football (Goff, 2000). This study, however, is limited by its estimation strategy which examined only the within-institution impact of eliminating football on institutional enrollment.

As a result, very little is known about the relationship between discontinuing intercollegiate football and an institution’s ability to attract potential students. When colleges and universities are faced with the decision of whether to discontinue their football program, there is often discussion about the role a football program plays in attracting students to an institution. Some administrators have been reluctant to drop football due to the negative impact it could have on undergraduate enrollment (Moltz, 2009; Olson, 2010; Springer, 2010). Administrators, however, have little empirical research which they can cite in reference to this issue. This lack of research makes it difficult for institutional leaders to make evidence-based policy decisions regarding the potential positive or negative impact of eliminating intercollegiate football.

Using difference-in-differences estimation, this study examined freshmen application trends at three institutions which dropped intercollegiate football after the 2003-2004 season (East Tennessee State University, Saint Mary’s College of California, and Siena College) in comparison to freshmen application trends at peer institutions which did not drop their football programs. Three research questions were asked: 1) Does discontinuing intercollegiate football negatively correlate with the total number of freshmen admissions applications received by an institution of higher education? 2) Does discontinuing intercollegiate football negatively correlate with the number of male freshmen admissions applications received by an institution of higher education? 3) Does discontinuing intercollegiate football negatively correlate with the

number of female freshmen admissions applications received by an institution of higher education?

Intercollegiate Football and Student Enrollment

Since 1990, most empirical research exploring the link between intercollegiate football and student enrollment has focused on exploring the impact of football success on admission applications received (Jones, 2009). Using data from 42 colleges and universities over a 10 year span, Murphy and Trandel (1994) found that a 25% increase in a football team's conference winning percentage was correlated to a 1.3% increase in the number of admission applications received the following year. Four years later, Toma and Cross (1998) also found a positive relationship between football team success and admission applications received. These researchers compared the number of admission applications received by institutions whose football team won an NCAA Division I-A National Championship between 1979 and 1992 to the number of applications received by peer institutions whose football team had not won a National Championship. Toma and Cross (1998) concluded that winning a national championship was positively correlated with the number of admission applications received by a university.

Additional studies from McEvoy (2005), Pope and Pope (2009), and Jones (2009) have found that fielding a successful college football team has a positive, statistically significant impact on the quantity of applications an institution receives. Using data from 62 institutions competing at the NCAA Division I-A level, McEvoy (2005) found that universities which fielded football teams whose conference winning percentage increased at least 25% in a given year saw a 6.1% increase in applications the following year. Pope and Pope (2009) used panel data from 1983 through 2000 on all NCAA Division I-A institutions with intercollegiate football programs to study the impact of football success on applications for admission. They found that having a football team finish a season in the Associated Press (AP) Top 20 was correlated with a 2.5% increase in applications received the following year and fielding a team that wins a football national championship correlated with a nearly 8% increase in applications received the following year. Jones (2009) found that having a football team participate in a more watched postseason bowl game correlated with a statistically significant increase in the number of applications received by an institution and an institution's admissions yield the following year.

Each of these studies provides empirical evidence suggesting that football success can have a positive impact on the number of students that apply to a particular institution. The relationship between team success and admissions applications received, however, is just one aspect of the relationship between football and institutional enrollment. By focusing exclusively on the impact of incremental changes in football team performance (which is for the most part out of the control of institutional administrators), researchers have failed to gain an understanding of how major changes in institutional athletic policy impact student enrollment (Goff, 2000). Therefore, it is important that existing scholarship on the link between football success and student applications be supplemented by research on how football related changes in intercollegiate athletic policy influence an institution's ability to attract potential students.

Dropping Intercollegiate Football and Institutional Enrollment

One major change in college/university athletic policy that some argue can adversely affect institutional attractiveness to potential students is the elimination of intercollegiate football (Olson, 2010; Toma, 2003). Only one published study, however, has attempted to explore this relationship. As part of his paper reviewing the effects of athletics on the university, Goff (2000) examined institutional enrollment at two schools which dropped college football in the mid-1980s: the University of Texas at Arlington (which dropped football in 1986) and Wichita State University (which dropped football in 1987). Using regression analysis to estimate enrollment changes at each institution between 1960 and 1993, along with controls for general higher education enrollment trends, Goff found that enrollment at both institutions in the years following the elimination of intercollegiate football was approximately 600 students lower relative to the years in which the institutions sponsored football. From this analysis, Goff concluded that dropping college football can have a measurable negative impact on institutional enrollment.

Conclusions drawn from the Goff (2000) study, however, should be tempered given the statistical methodology employed. Because only universities which dropped intercollegiate football were included in the study, the regression analyses only estimated the within-institution impact of eliminating football on institutional enrollment. This estimation strategy can lead to findings contaminated by temporal trends in the outcome variable or, the impact of non-treatment events that occurred in the pre- and/or post-treatment periods (Abadie, 2005). A more complete analysis of this relationship would examine not only within-institution enrollment before and after dropping college football, but would compare this to the enrollment trends at peer institutions which did not drop their intercollegiate football programs over the same time period.

Study Purpose

There is a clear knowledge void with regard to the relationship between the decision to drop intercollegiate football and the attractiveness of an institution to perspective students. This void has resulted in college and university administrators having to make decisions regarding whether to discontinue its football programs with little empirical evidence regarding the potential implications of this decision on institutional attractiveness. The purpose of this study was to determine if there is empirical evidence consistent with the claim that the presence of intercollegiate football plays a statistically significant role in the student admission process.

Conceptual Framework

The hypothesized relationship between dropping football and freshmen applications was informed by the work of Toma (2003). In his book *Football U: Spectator Sports in the Life of the American University*, Toma proposes an athletics framework which argues that football can play an important role in helping an institution attract resources from the external community. By underscoring and expressing the “college ideal” for external constituencies, football according to Toma can be an important strategic tool which helps a college or university attract attention and resources (such as new students). For Toma, “football is not about those competing, but about how institutions can use the broad and intense interest in teams and games

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to further their own goals of maximizing prestige, building identification, and generating resources” (p. 21).

An important element of Toma’s (2003) framework is the belief that only a subset of higher education institutions are able to use football in this way. These schools are described as Football U -“large universities where football, the quintessential spectator sport on American campuses, receives considerable attention” (Toma, 2003, p. 2). Institutions such as the University of Notre Dame, The Ohio State University, and the University of Texas would be included in this group. At smaller, lower profile football institutions, football is a less salient tool for enhancing relationships with external constituencies. Toma noted that football at smaller colleges is “rarely the window to understanding institutional life that football Saturdays are at flagship state or large private universities” (p. 23). Therefore, if these lower profile institutions were to eliminate football, it would have little impact on schools’ ability to attract new students.

None of the institutions examined in the study (East Tennessee State University, Saint Mary’s College of California, or Siena College) would be considered by Toma’s (2003) framework as a Football U. Therefore, this study tests the null hypothesis that dropping football at lower profile athletic institutions will result in no significant change in freshmen applications received.

The concept of status provides an additional theoretical lens for understanding how the presence of intercollegiate football can correlate with student applications. Status is defined as a sociological concept that captures differences in social rank among organizations based on non-performance based indicators (Washington & Zajac, 2005; Weber, 1978). An organization’s status is developed by the acquisition of social characteristics which are often unrelated to, and exist independent of, an organization’s product or service quality (Washington & Zajac, 2005).

It is likely that students examine indicators of institutional status when selecting colleges to which they will apply. Research has shown that students use many indicators of an institution’s product quality such as: graduation rates, the job quality of graduates, and the research productivity of faculty when engaging in the college choice process (Morse, 2011). Status indicators such as campus aesthetics, Greek culture, or institutional location are also likely to be factored into the college choice process. Another status indicator related to student applications, due to its national popularity, could be the presence of a football program. This study explored whether fielding an intercollegiate football program is a status variable which correlates with institutional attractiveness to potential students.

Methods

This study used panel data to exploit the quasi-experimental nature of institutions choosing to drop their intercollegiate football programs. In a true experiment, a subset of colleges and universities with intercollegiate football programs would be selected from the larger higher education community. This subset would then be randomly assigned to either drop or retain their football program. The number of freshmen applications received by the two groups of institutions in the years before and after dropping the football program would then be compared to explore whether the schools which were forced to drop football experienced a decrease in applications.

Given the infeasibility of this experimental design, an alternative estimation strategy is needed. One such strategy is difference-in-differences estimation. Difference-in-differences is a quasi-experimental technique which attempts to measure outcomes related to an event, treatment,

or intervention (Abadie, 2005; Meyer, 1995). The idea behind the difference-in-differences approach is that in order to examine the impact of a 'treatment' or 'event' on an outcome of interest, one should first examine the level of change in an outcome of interest for a treated group in the time before and after the administration of the treatment. This change in the treated group should be compared to the level of change in a control group over the same period of time. This design, in principle, creates a counterfactual which shows what happened to the treatment group as a result of the treatment, and what would have happened to the treatment group in the absence of any treatment². The difference-in-differences estimator is often utilized by many scholars studying higher education policy (Cornwell, Mustard, & Sridhar, 2006; Long, 2004; Zhang, 2011).

Utilizing this strategy to study the relationship between dropping intercollegiate football and freshmen applications, a researcher would first collect application data from institutions which discontinued their football program in the years before and after the elimination of football. Application information would also be collected on a set of peer institutions which maintained their football program over this time period. A statistical regression analysis would then calculate the difference-in-differences coefficient. This was the strategy utilized in this paper.

A number of colleges and universities have recently discontinued intercollegiate football (National Collegiate Athletic Association, 2010). Due to data availability, three institutions which dropped their NCAA Football Championship Subdivision (FCS) level football program in 2004 were selected as the focus of this study³. East Tennessee State University (ETSU) is a public university located in Johnson City, Tennessee classified by the 2005 Carnegie Classification as a doctoral/research university. ETSU discontinued its football program in the spring of 2004 after nearly 80 years of competition. The administration cited a lack of funding and community support as the reasons for the decision. According to a 1999 Athletic Task Force created by the school, the program that was netting close to \$1 million in losses annually between 1999-2003 (Sterling, 2004). After attempts at soliciting private donations to keep the program alive failed, the decision was made that the school would no longer sponsor football.

Saint Mary's College of California, a private college located in Moraga, California classified as a master's college/university by the 2005 Carnegie Classification, dropped its football program in the spring of 2004 following a 1-11 season (Kroichick, 2004). The administration again cited the budget shortfalls as the primary motivating factor. Dropping the football program, according to then athletic director Carl Clapp, saved the institution \$1.2 million which was reallocated to other intercollegiate sports as well as recreational sports (Kroichick, 2004). An 18 member Athletic Review Task Force which included student-athletes, coaches, faculty, staff, alumni, and trustees recommended to the board of trustees that the institution discontinue football in order to focus resources on the schools other 14 sports.

The third institution of focus was Siena College, a private college in Londonville, New York with the 2005 Carnegie Classification of a baccalaureate college. Siena discontinued its program in 2004 after deliberations among administrators, senior staff, the president, and board of trustees. According to the university's athletic director, "In light of the College's Strategic Plan, enhancing the football program is not in line with the Athletic Department's or the College's strategic direction" ("Siena College discontinues football program.," 2004).

Once it was decided that these three institutions would serve as treatment schools for analyses, the next step was the selection of comparable control institutions which did not drop their intercollegiate football program. The selection of a proper comparable group is difficult but

critical when using difference-in-differences (Zhang, 2011; Zhang & Ness, 2010). Treatment and control institutions should have similar characteristics in order to properly construct the counterfactual of what potentially would have happened to the treatment institutions had a treatment not been administered (Meyer, 1995).

When colleges and universities are used as the unit of analysis, this suggests that treatment and control institutions should be similar in characteristics such as: type, control, and mission. To accomplish this, comparable institutions for the three treatment schools in this study were selected based on institutional control, Carnegie Classification, and level of football competition. For ETSU, the peer comparison group consisted of public colleges and universities with the Carnegie Classification of doctorate-granting universities which sponsored intercollegiate football programs that competed at the NCAA FCS level from 2001-2010. According to the 2005 Carnegie Classification of Institutions of Higher Education, doctorate-granting universities are institutions which awarded at least 20 research doctoral degrees during an academic year (Carnegie Foundation for the Advancement of Teaching, n.d.).

ETSU is one of 27 public, doctorate-granting institutions which competed in the FCS at least one year between 2001 and 2010. Two of these universities (University of Connecticut and Florida Atlantic University) moved into the NCAA Football Bowl Subdivision (FBS) during this time period and were excluded from analyses. Of the remaining 24 institutions, six were historically Black colleges and universities (HBCUs). Given the uniqueness of HBCUs in comparison to predominately White institutions (PWIs) (Brown & Dancy II, 2010) and the desire for the treatment institution (ETSU) to be as similar as possible to the comparison institutions, it was decided that HBCUs would be dropped from analyses. One additional institution (Northern Arizona University) was later dropped due to missing data. This left 17 institutions in the ETSU comparison group.

A similar strategy was used to select peer comparison institutions for St. Mary's College and Siena College. St. Mary's College is a private college classified by Carnegie as a master's college/university, which is defined as an institution which awards at least 50 master's degrees and fewer than 20 doctoral degrees during an academic year (Carnegie Foundation for the Advancement of Teaching, n.d.). St. Mary's is one of 21 private master's colleges/universities which fielded football programs that competed at the FCS level at least one year between 2001 and 2010. Two institutions (Fairfield University and Canisius College) dropped intercollegiate football in 2003 while an additional three (Saint Peter's College, La Salle University, and Iona College) dropped football after 2005. These schools were excluded from analyses. One of the remaining institutions was a HBCU and was again excluded from analyses. Two institutions (Liberty University and Jacksonville University) were dropped due to incomplete data. The remaining 12 colleges and universities were used as the peer comparison group for St. Mary's.

Siena College is classified by Carnegie as a baccalaureate college. These are defined as institutions where baccalaureate degrees represent at least 10 percent of all undergraduate degrees and where fewer than 50 master's degrees or 20 doctoral degrees are awarded in a given year (Carnegie Foundation for the Advancement of Teaching, n.d.). Ten colleges (including Siena College) which fielded football programs that competed at the FCS level at least one year between 2001 and 2010 were classified as baccalaureate colleges. One HBCU was removed from this group. The remaining eight institutions were used as the peer comparison group for Siena College.

In summary, three treatment/comparison group combinations were created in an effort to explore the relationship between dropping intercollegiate football and freshmen applications.

The first group examined freshmen applications at ETSU in comparison to the 17 public, doctorate-granting universities which sponsored FCS football from 2001-2010. The second estimation focused on freshmen applications St. Mary's College in comparison to the 12 private, master's colleges and universities with FCS football programs from 2001-2010. The final grouping looked at freshmen applications at Siena College in comparison to the eight private, baccalaureate colleges with FCS football programs from 2001-2010. The names of the colleges and universities included in each comparison group are listed in the appendix.

The next decision related to the use of difference-in-differences was the selection of pre- and post-intervention time periods (with the intervention being the discontinuation of football). Examining multiple pre- and post-intervention time periods in difference-in-differences analyses helps control for threats to validity from omitted variable bias and allows researchers to account for nonparallel trends among treatment and control groups (Meyer, 1995). Due to data availability, a three year pre-intervention period was used in this study. Institutional data on the number of admissions applications received by an institution are publicly available through the National Center for Education Statistics only dating back to 2001. Therefore, the pre-intervention period was defined as 2001 to 2003. A seven-year post-treatment period was defined as 2004 to 2010. The ten-year panel used in this study is similar to the pre- and post-periods used in other educational policy research using difference-in-differences (Cornwell et al., 2006; Long, 2004; Zhang, 2011).

OLS regression models of the following form were used to derive difference-in-differences estimates:

$$\ln \text{ Apps}_{it} = \alpha + \delta (\text{Treatment School}_i * \text{post}_t) + X'_{it} + \gamma_i + \eta_t + \varepsilon_{it} \quad (1)$$

where $\ln \text{ Apps}_{it}$ is the natural log of the number admissions applications received from first-time, degree-seeking undergraduate students by institution i during the fall semester t , $\text{Treatment School}_i$ is a dummy variable set to one if the institution is in the treatment group and zero if it is in the control group, and post_t is a period indicator equal to zero in the years before the dropping of the football program and one in the years after dropping football. Delta (δ), the interaction between $\text{Treatment School}_i$ and post_t , represents the reduced-form effect of dropping college football on the dependent variable of interest (controlling for the impact of covariates). In order to explore whether dropping football would affect male applications differently than female applications, gender specific admissions applications data were also used as dependent variables.

Equation 1 includes a set of covariates (X_{it}) to help control for state and institutional characteristics that may be correlated with the number of applications an institution receives in a given year. The first covariate used was the number of public high school graduates in the state in which the college/university is located during year t . It would be expected that if the number of high school graduates in a state begins to decline, applications for the colleges and universities in that state would also decline (Cornwell et al., 2006).

Institutional cost was also controlled for in equation 1. For this study, institutional cost was defined as the average tuition and fees for full-time in-state undergraduates. Given that previous research has shown that student enrollment decisions are sensitive to changes in institutional cost (Heller, 1997; Hemelt & Marcotte, 2011), controlling for changes in tuition and fee charges can help obtain a more valid estimate of delta (δ).

Budgetary concerns are often cited as a key reason institutions make the decision to discontinue intercollegiate football (Olson, 2010). If institutional wealth is also related to an

institution's ability to recruit students, it could bias the difference-in-differences estimate. To account for this, total institutional assets (defined as current and noncurrent assets minus current and non-current liabilities) in year t was controlled for in model estimations.

The wealth and economic conditions of a state are likely to affect the applications received by institutions within that state (Cornwell et al., 2006). This study accounts for this by controlling for per-capita income and unemployment rates in the state in which an institution is located during year t .

Equation 1 includes year and institutional fixed effects. The year fixed effect (η_t) controls for national trends (e.g., national economic conditions or the opportunity cost of higher education) which could impact the number of applications received by all colleges and universities in a given year. The institutional fixed effect (γ_i) controls for any unchanging or very slowly changing institutional characteristic such as control (public/private), location, and institutional academic reputation, which could impact student recruitment from one year to the next.

Data for this study were collected primarily from the National Center for Education Statistics (NCES) and the Bureau of Labor Statistics. In instances where NCES data were not available, institutional webpages and college/university factbooks were consulted.

Descriptive Findings

Figure 1-A displays total application trends at ETSU in comparison to other public FCS doctoral-granting institutions which retained their football program from 2001-2010. The figure shows that in the first four years after football was dropped (2004 through 2007), ETSU experienced a decrease in freshmen applications. This was punctuated by a significant drop in total applications received in 2007. This initial drop in applications was followed by a steady increase in applications received from 2008 through 2010. These trends appear to be different than what took place at other public FCS doctoral-granting institutions which did not drop football. These schools experienced a steady increase in applications in the years after 2003. Figures 1-B and 1-C show that these general trends were similar for male and female applications.

Figure 1-A: Total Application Trends at ETSU & Comparison Institutions, 2001-2010

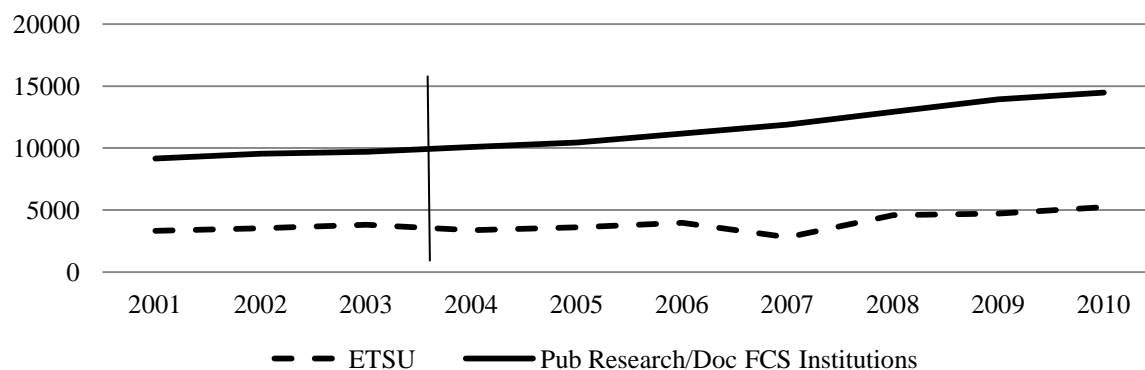


Figure 1-B: Male Application Trends at ETSU & Comparison Institutions, 2001-2010

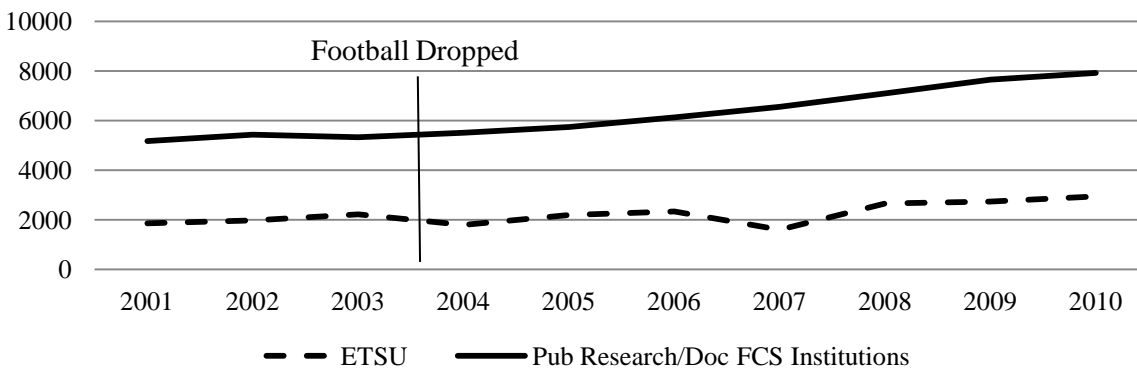


Figure 1-C: Female Application Trends at ETSU & Comparison Institutions, 2001-2010

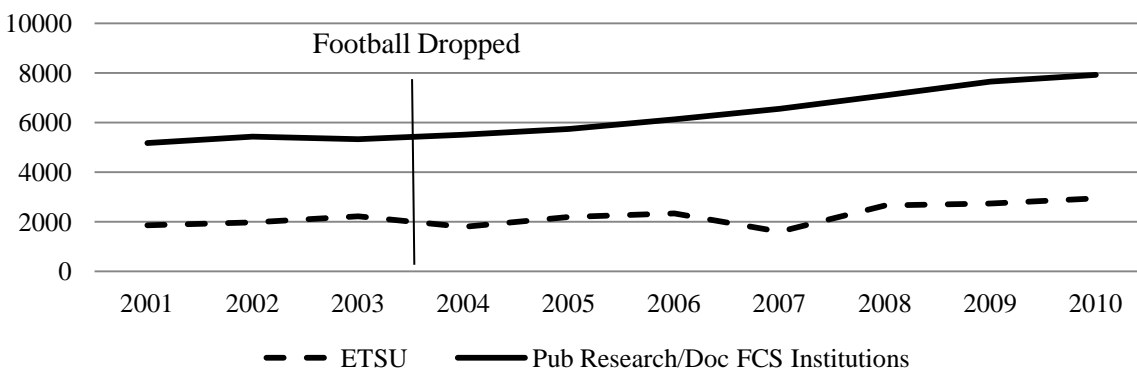


Figure 2-A displays application trends at St. Mary's College in comparison to other private FCS master's colleges and universities with football programs. The trends suggest that in the years immediately after football was discontinued, St. Mary's experienced an increase in freshmen applications similar to that of peer institutions. After a spike in applications in 2006, however, applications to St. Mary's appeared to decrease relative to other FCS master's institutions with football programs. Male application trends (in Figure 2-B) and female applications trends (in Figure 2-C) followed a similar pattern to that of overall applications.

Figure 2-A: Total Application Trends at St. Mary's & Comparison Institutions, 2001-2010

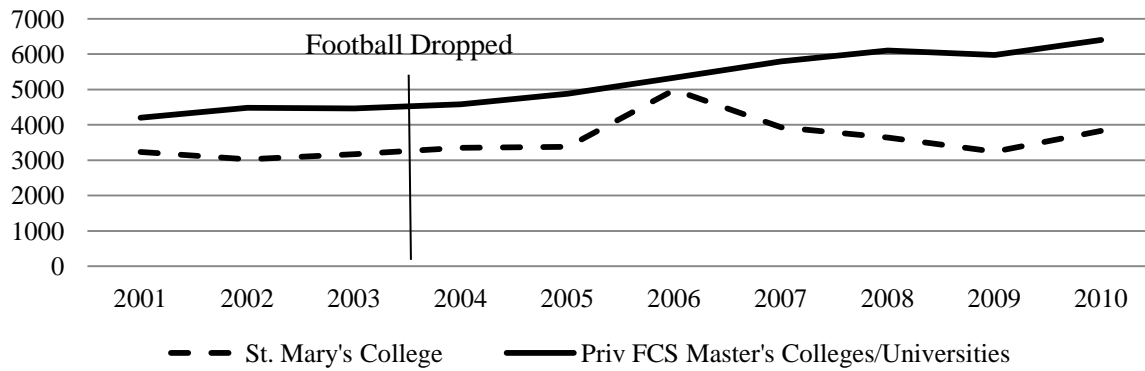


Figure 2-B: Male Application Trends at St. Mary's & Comparison Institutions, 2001-2010

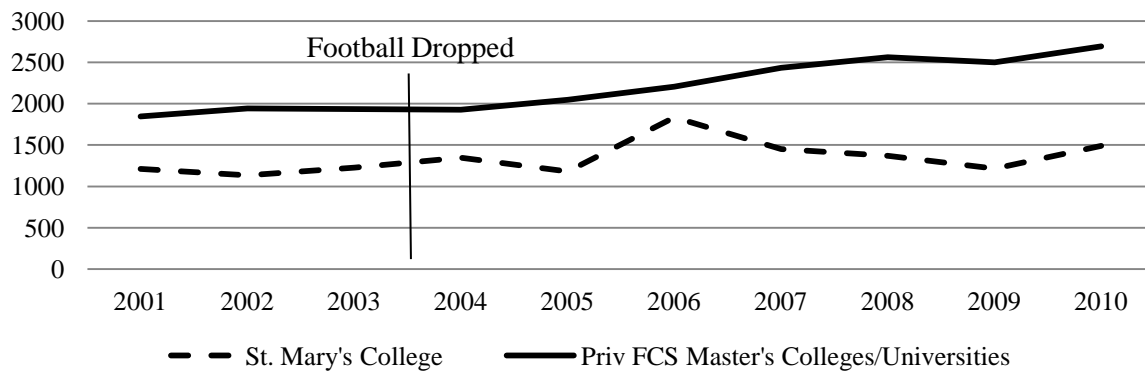


Figure 2-C: Female Application Trends at St. Mary's & Comparison Institutions, 2001-2010

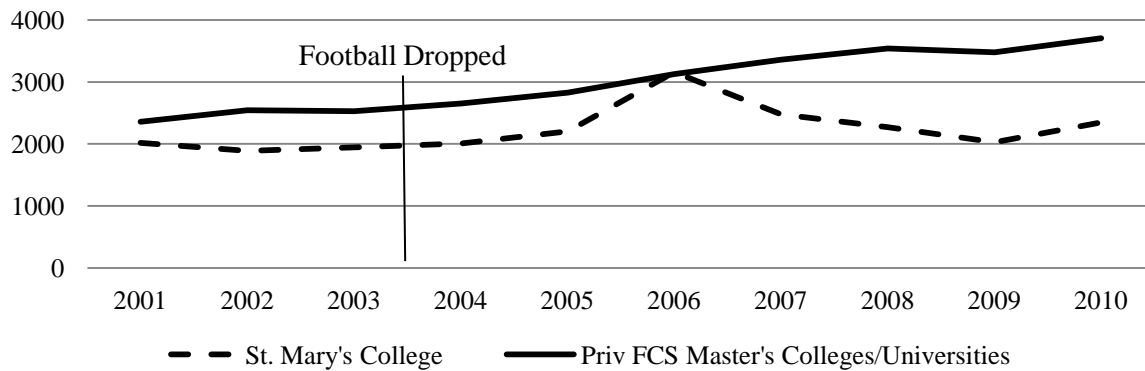


Figure 3-A displays total application trends at Siena College relative to private FCS baccalaureate colleges with football programs. The data show that freshmen applications to Siena increased consistently in the years after football was discontinued. Male applications trends, displayed in Figure 3-B, show that male applications to Siena did drop in the first two years after football was discontinued (2004 and 2005). From 2006 to 2010, however, male applications to Siena increased sharply both in absolute terms and relative to other private FCS baccalaureate colleges. Female applications to Siena, displayed in Figure 3-C, increased steadily in the years after football was dropped.

Figure 3-A: Total Application Trends at Siena College & Comparison Institutions, 2001-2010

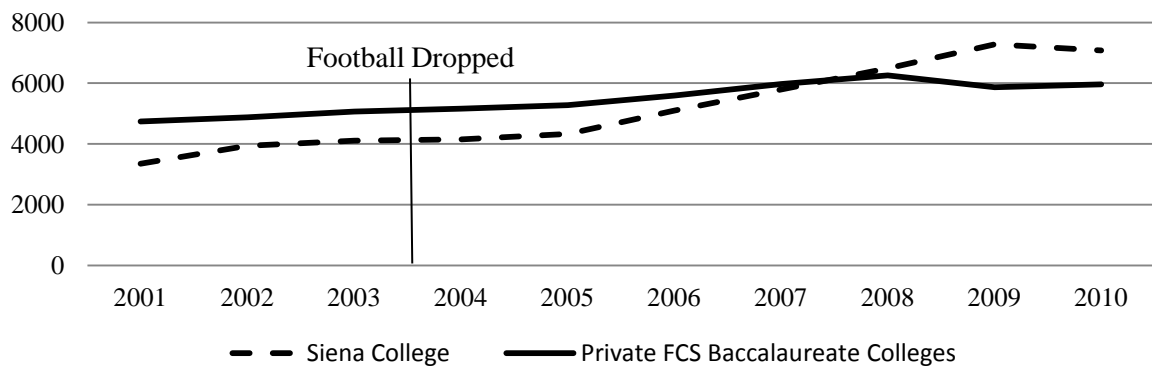


Figure 3-B: Male Application Trends at Siena College & Comparison Institutions, 2001-2010

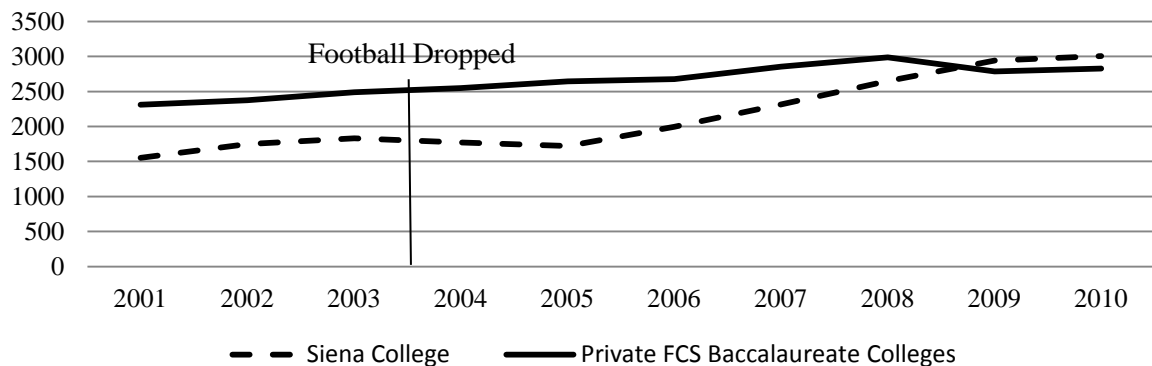
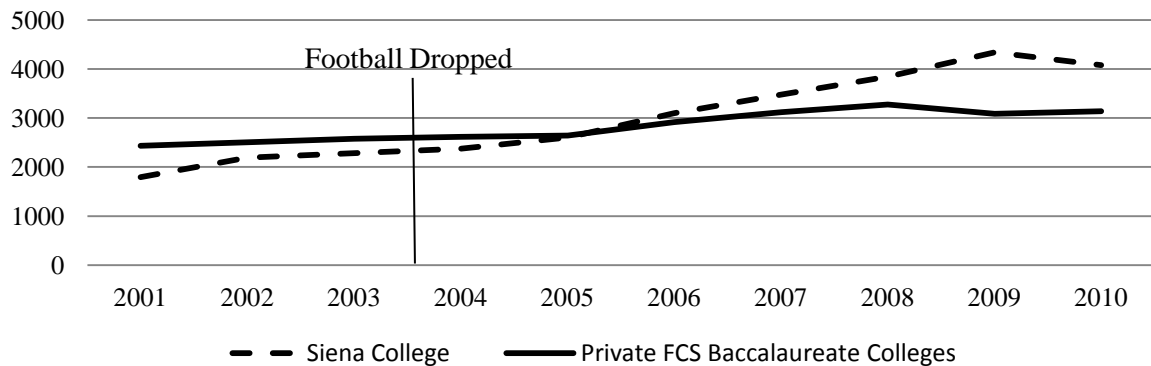


Figure 3-C: Female Application Trends at Siena College & Comparison Institutions, 2001-2010



Tables 1, 2, and 3 quantify the changes in freshmen applications received by institutions which dropped football and comparison institutions which did not drop football during the time period studied. Table 1 shows that ETSU experienced a 14% increase in total applications, a 12% increase in male applications, and a 15% increase in female applications in the seven years after football was discontinued. Other public FCS doctoral-granting institutions, however, experienced a 28% increase in overall applications, a 25% increase in male applications, and a 25% increase in female applications over that same time period. These numbers, which do not control for covariates, suggest that applications to ETSU increased at a slower rate than other public FCS doctoral-granting institutions with football programs.

Table 1: Average Freshmen Applications Received at ETSU and Comparison Institutions

	Pre-Dropping Football (2001-2003)		Post-Dropping Football (2004-2010)	
	ETSU	Publ FCS Res-Doc Institutions	ETSU	Publ FCS Res- Doc Institutions
Total Freshmen Applications	3557	9471	4048	12132
Male Freshmen Applications	1540	4383	1724	5474
Female Freshmen Applications	2017	5313	2323	6657

At St. Mary's (which is highlighted in Table 2), total applications increased 20% after football was dropped, in comparison to other private FCS master's colleges and universities with football programs which saw a 27% increase in applications during this time frame. Much of this difference in the relative increase of total applications was driven by female applicants. Male applications to St. Mary's increased 19% after football was dropped, which is relatively similar

to the increase experienced by comparison institutions (23%). Female applications to St. Mary's increased 20% after football was dropped. This was a much slower increase in female applications than that seen at comparison institutions, which experienced a 31% increase in female applications.

Table 2: Average Freshmen Applications Received at St. Mary's and Comparison Institutions

	Pre-Dropping Football (2001-2003)		Post-Dropping Football (2004-2010)	
	St. Mary's College	Priv FCS Master's Institutions	St. Mary's College	Priv FCS Master's Institutions
Total Freshmen Applications	3141	4382	3766	5579
Male Freshmen Applications	1190	1907	1411	2338
Female Freshmen Applications	1950	2475	2355	3241

Table 3 shows that total applications to Siena College increased 51% in the years after football was dropped. Total applications at other private FCS baccalaureate colleges increased only 17% during this time frame. This substantial difference in relative applications received after football was dropped is evident for both male and female applications. Siena experienced a 37% increase in male applications after football was dropped while comparison institutions experienced only a 15% increase in male applications during that time frame. Female applications to Siena increased 63% after football was dropped in comparison to a 19% increase experienced by the comparison institutions.

Table 3: Average Freshmen Applications Received at Siena and Comparison Institutions

	Pre-Dropping Football (2001-2003)		Post-Dropping Football (2004-2010)	
	Siena College	Priv FCS Bac Colleges	Siena College	Priv FCS Bac Colleges
Total Freshmen Applications	3798	4897	5744	5739
Male Freshmen Applications	1710	2392	2342	2761
Female Freshmen Applications	2088	2504	3401	2976

Regression Findings

Table 4 presents results from the series of difference-in-differences regressions run to explore the correlation between dropping football and freshmen applications received. Because of space limitations, only the difference-in-differences coefficients (the interaction between treatment school_i and post_t), standard errors, and total observations are presented in the table. Column one displays findings using data from ETSU in comparison to public FCS doctoral-granting colleges and universities with football programs. These results suggest that, controlling for other factors, ETSU saw a 5.8% decrease in total applications, a 5.4% decrease in male applications, and a 2.4% decrease in female applications after dropping its football program relative to comparison institutions which kept their football programs. Neither of these findings were statistically significant using conventional thresholds. So while applications to ETSU grew at a slightly slower rate than other public doctoral granting institutions in the seven years after football was dropped, one cannot be sufficiently confident that this finding is not due to chance.

Table 4: *Estimated Relationship between Dropping Football and Freshmen Applications*

	ETSU vs Public FCS Doctoral-Granting Universities	St Mary's vs Private FCS Master's Colleges & Universities	Siena vs Private FCS Baccalaureate Colleges
Log Total Applications	-0.058 (0.06) n-180	-0.187 (0.11) n-127	0.140** (0.04) n-90
Log Male Applications	-0.054 (0.05) n-178	-0.151 (0.08) n-127	0.068 (0.05) n-89
Log Female Applications	-0.024 (0.06) n-178	-0.234 (0.14) n-127	0.174** (0.04) n-89
Institutional Effects Included	Yes	Yes	Yes
Year Effects Included	Yes	Yes	Yes
Covariates Included	Yes	Yes	Yes

Clustered standard errors in parentheses; number of observations below the standard errors. Because of fixed effects, each model explained over 90% of the variance in the dependent variables.

Abbreviated regression table presented due to space limitations. Full regression tables for the nine estimations are available upon request.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Column 2 shows findings using St. Mary's College in comparison to other FCS master's institutions with football programs. After dropping football, St. Mary's received 18.7% fewer overall applications, 15.1% fewer male applications, and 23.4% fewer female applications relative to comparison institutions, controlling for other factors. Again, neither of these coefficients were statistically significant. The researcher lacks confidence that the slower rate of applications received by St. Mary's is actually correlated with the discontinuation of intercollegiate football.

While the findings from ETSU and St. Mary's showed a statistically insignificant drop in relative freshmen applications after dropping football, findings from Siena College tell a different story. Column 3 shows that after dropping football, Siena experienced a statistically significant 13.2% increase in total applications relative to comparison institutions, controlling for other factors. This increase was driven largely by growth in female applications. Siena received 17.4% more female applications relative to peer institutions after football was discontinued. This coefficient was statistically significant. Male applications were 6.8% higher relative to comparison institutions after football was discontinued. This coefficient, however, was not statistically significant.

Study Limitations

While panel difference-in-differences studies, such as the one presented here, offer a number of advantages, they also have limitations. One such limitation relates to generalizability. Given that this study focuses on only three "changers" (schools with dropped football) to calculate a treatment effect, it is not possible to generalize the findings of this study from a positivist perspective (Remler & Van Ryzin, 2011). From a constructionist point of view, however, these findings may be transferable to other institutional contexts (Mayring, 2007).

Difference-in-differences estimations can suffer from omitted variable bias in situations where important time-varying factors are not fully controlled for in regression equations (Zhang, 2010). While statistical controls were included in model estimations to help reduce the potential of this, not all state or institutional policies correlated with the freshmen applications can be accounted for. As a result, causal claims based on these findings should be made with caution.

A third limitation is that this study relies on self-reported data from colleges and universities to the federal government. In recent years, a number of institutions have admitted to reporting inaccurate data to external groups often in an effort to improve their rankings in national publications or federal reports (Jaschik, 2013; Lederman, 2009). The validity of the findings presented here is influenced by the truthfulness of the data reported to the NCES by institutions of higher education.

Discussion and Conclusion

The goal of this study was to quantitatively explore whether discontinuing intercollegiate football correlated with the number of freshmen admissions applications received by an institution of higher education. Sponsoring intercollegiate football can be very expensive. The process of outfitting 60 to 150 players, providing scholarships, paying coaches, and purchasing equipment for training facilities can cost even small universities hundreds of thousands of dollars (Suggs, 2003). As the costs of football continue to rise, some administrators are considering

whether the expense of football outweighs the benefits of fielding a team. The direct savings from discontinuing football, many administrators argue, frees financial resources which can be used to serve other campus goals such as increasing student financial aid, building maintenance, and supporting important academic programs (Sperber, 2000; Springer, 2010; Suggs, 2003).

Others in the higher education community argue that these direct cost savings from dropping football are offset by several indirect consequences. Without a football program, some believe an institution loses an important humanizing agent which catalyzes school spirit, creates institutional identity, and creates points of attachment for current and future students (Olson, 2010). Without this point of attachment, the belief is that an institution becomes less attractive to potential students, which could result in a significant decline student applications.

The findings from this project failed to support this speculation regarding the adverse impact of discontinuing football. Evidence from this study of three institutions of higher education which dropped intercollegiate football after the 2003-2004 season suggest that not fielding a football program does not correlate with a statistically significant drop in freshmen admissions applications. One institution, Siena College, experienced a statistically significant increase in total applications relative to other private FCS baccalaureate colleges which kept their football programs. This suggests that in some institutional contexts, dropping football could help boost institutional attractiveness to potential students. At ETSU and St. Mary's College, freshmen applications after dropping football were lower than those of comparison institutions. This relative decrease, however, was not statistically significant.

With regard to male and female applications, study findings told a similar story. Freshmen male applications in each instance was uncorrelated with the policy decision to discontinue football. Freshmen female applications at Siena significantly increased after football was dropped, but at ETSU and St. Mary's no statistically significant correlations were found between dropping football and female applications.

These findings support an important element of Toma's (1999) theoretical framework regarding the role of spectator sports, particularly football, in higher education. Football programs are present on the campuses of many colleges and universities. The role football plays in institutional life, however, differs for schools with high profile programs and those with lower profile programs. Toma (1999) theorized that discontinuing football at "Football U" would have a significant impact on undergraduate student recruitment efforts. Dropping football at lower profile football institutions, on the other hand, would likely have little impact on recruitment. The second part of this theory is supported by the findings here. As scholars and other observers seek to better understand the place of football in American higher education, it is important that institutional context be strongly considered.

This study is the first to offer empirical evidence of the relationship between the policy decision to drop intercollegiate football and institutional attractiveness as measured by freshmen applications. As noted earlier, given the nature of this study and its focus on just three colleges and universities, generalizing the findings of this study to the larger universe of postsecondary institutions cannot be done. Institutional administrators in the process of deciding the future of their football programs, however, could assess the transferability of these findings to their institution (Lincoln & Guba, 1985). Colleges and universities with similar contextual variables to the three institutions studied here may use these findings as evidence in the debate regarding the role and utility of football. Readers should interpret this study as three independent, quantitative case studies of the treatment effect of dropping football on student admissions applications.

Whether discontinuing football has an adverse impact on other levers of institutional health should be the focus of future research. Is institutional enrollment or student quality correlated with dropping football? Is student body racial diversity correlated with the decision to drop football? Is institutional culture and student engagement impacted once institutions drop football? Are alumni contributions impacted by the decision to drop football? How do colleges and universities reallocate money saved from dropping football? These and related questions could be part of a larger research agenda on intercollegiate athletic policy.

Deciding whether to drop intercollegiate football can be a complicated policy decision with a variety of consequences for a college or university. As with any other institutional policy decision, this decision should be evidence based. It is hoped that this study offers some evidence to institutions in the process of considering if they should continue to sponsor intercollegiate football.

Notes

¹ Mission crucial activities would be defined as those activities which directly relate to a college or university's core missions of teaching and research.

² See Meyer (1995) for a detailed overview of difference-in-differences estimation.

³ The University of New Haven also dropped their football program in 2004. The school restarted the program six years later which made them ineligible for this study.

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Appendix

Comparison Institutions for Difference-in-Differences Estimations

ETSU Comparison Group: Public FCS Doctoral-Granting Universities

University of Delaware	Montana State University
Georgia Southern University	University of Montana
Idaho State University	University of New Hampshire
Illinois State University	SUNY at Albany
Southern Illinois University-Carbondale	SUNY at Stony Brook
Indiana State University	Portland State University
University of Maine	University of Rhode Island
University of Massachusetts-Amherst	Sam Houston State University
College of William and Mary	

St. Mary's College Comparison Group: Private FCS Master's Colleges & Universities

Butler University	Valparaiso University
Drake University	Robert Morris University
Marist College	Monmouth University
Elon University	Saint Francis University
Jacksonville University	Sacred Heart University
Villanova University	Charleston Southern University
Wagner College	

Siena College Comparison Group: Private FCS Baccalaureate Colleges

College of the Holy Cross

Lafayette College

Colgate University

Furman University

Davidson College

Wofford College

Bucknell University

University of Richmond
