

# Is the Punishment Fitting the Crime? Analyzing The On-Field Impact of NCAA Sanctions in College Football

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## Abstract

The NCAA aims to preserve the purity and amateurism of college athletics. However, each year several colleges and universities are sanctioned for breaking rules established by the NCAA. It is the duty of the NCAA Committee of Infractions to investigate and penalize these rule-breaking colleges and universities. Probation, scholarships limitations, and postseason bans are some of the common penalties that are handed down by the NCAA. But just how successful has the NCAA Committee of Infractions been in implementing penalties that hurt rule-breaking colleges and universities? This study aims to answer that question by analyzing the on-field effect of NCAA sanctions in college football over the past 30 years.

In recent years, there has been a significant transformation in college athletics. Celebrations of amateurism and the purity of student-athletes have been replaced with recruiting violations and university-wide scandals. Universities sever traditional rivalries and geographical logic to align themselves with conferences that have the most lucrative television contracts. The more money at stake for universities, in the form of postseason appearances and television contracts, the more of an incentive for universities to sidestep the rules and regulations to gain a competitive advantage on the playing field. Furthermore, the digital age has brought new ways for players to be recruited resulting in changing and growing recruiting guidelines imposed by the NCAA. Despite all of these changes, the NCAA Committee of Infractions attempts to guard the purity of college athletics. The Committee of Infractions guards the amateurism of college athletics by implementing sanctions on rule-breaking schools. Not surprisingly these significant changes in the college game have resulted in an increase in the number of sanctions imposed by the NCAA in recent years (Eckard [1998] 350). But just how effective are these sanctions in penalizing rule-breaking teams and institutions? This study will specifically analyze the on-field impact of NCAA sanctions in college football.

## **Significance**

Recently, there have been a number of high profile scandals in college athletics that have resulted in severe sanctions imposed by the NCAA's Committee of Infractions. Several recent cases include Ohio State, Southern California and Penn State. All three of these schools have had serious infractions imposed on their football teams since 2008. From afar,

it appears that NCAA sanctions have had a varying effect on on-field performance at these universities. For example, in 2008 Ohio State was placed on a postseason ban following a scandal involving impermissible benefits. However, they went on to finish 2012 with an unblemished record and the #3 ranking in the Associated Press Poll. This is not always the case. If NCAA sanctions imposed against the university are severe enough, they can greatly cripple on-field performance. In the case of SMU and the “death penalty” imposed on its football team in 1986, the team did not appear in another bowl game for twenty years. Furthermore, the financial impacts of severe sanctions could be great to the university. A less-competitive team could yield fewer fans and severely decrease a university’s athletic revenue. The bottom line is that as more and more money flows into big-time college athletics, the more of an incentive exists for teams to gain a competitive advantage. If the NCAA is to continue to protect the purity and amateurism of college athletics, they need to impose sanctions on rule-breaking universities that deter future behavior and punish the responsible parties.

### **Background on NCAA Sanctions**

The NCAA has a long history in regulating college athletics dating back to its inception in 1906. The NCAA aims to preserve and promote the amateurism and purity of college athletics (Depken and Wilson [2006] 828-829). However before the 1940’s the NCAA had more of an advisory and less of an enforcement role (Depken and Wilson [2006] 828). While the NCAA wrote guidelines to standardize recruiting and eligibility, among other things, the actual enforcement of these rules and regulations were left to the

individual schools and conferences (Eckard [1998] 348). This all changed in 1948 with the adoption of the Sanity Code by the NCAA. This first step of regulated NCAA enforcement was very limited in scope and was never carried out. In 1953, the NCAA expanded its regulatory prowess by giving the committee of infractions the power to penalize rule breakers as they deem fit (Depken and Wilson [2006] 828). The first penalties carried out by the NCAA committee of infractions included sanctions against the football teams at Notre Dame and Arizona State in 1953 (Eckard [1998] 349). During this process it is important to note the great autonomy the NCAA has in the sanction process. The NCAA is solely responsible for investigating potential rule-breaking schools as well as punishing the particular schools. The five major sanctions involved in this particular study are probation, postseason bans, television bans, limits on recruiting and limits on financial aid, all of which will be explained in the explanation of variables section. When penalizing schools, the NCAA is not limited to any particular sanction as they have great freedom to mix and match sanctions to penalize schools. For example, in the wake of the Jerry Sandusky scandal at Penn State, the university's football team was given a four-year postseason ban, 4 years of recruiting and scholarship limitations, and a \$60 Million fine (Thamel 2012). Also, consistent with the current legal system, more egregious violations carry more severe penalties. As a result, many sanctions levied by the NCAA are very minor in nature and will not be considered in this particular study. The most severe sanction that could be imposed by the NCAA is the "death penalty". This action was most famously carried out against the SMU football program in the wake of a "pay for play scandal". With the financial expansion of college athletics, the NCAA has taken a more active role in enforcement of its regulations.

This has resulted in an uptick of sanctions imposed in college athletics over the years (Eckard [1998] 350).

## **Literature Review**

While literature on the topic of NCAA sanctions is minimal, there are a few studies that are similar to the question of interest. Beyond economics, there have been legal studies questioning the current effectiveness of sanctions. In one such study Weston (2011) shows that it is too often that the players and coaches who are responsible for bringing about the sanctions are not the one's penalized by the NCAA. Within economics, there have been some studies that analyze the empirical effect of NCAA sanctions on particular universities and college athletics as a whole. Fleisher, Goff and Tollison (1988) use probation data from the NCAA to show institutions on probation lose more games than non-sanctioned teams. Fleisher, Goff and Tollison (1992) again use data from the NCAA to study which particular teams the NCAA is more likely to investigate. Fleisher et al. found that the NCAA is more likely to investigate programs showing recent improvement rather than teams that have previously established themselves as college football's elite; a finding that is consistent with cartel behavior. This particular study of the effectiveness of NCAA sanctions will largely expand on the work of Eckard (1988), Winfree and McCluskey (2008), Depken and Wilson (2004) and Depken and Wilson (2006).

Expanding on Fleisher et al. (1992) findings, Eckard (1998) accuses the NCAA, and its practice of sanctioning schools, of acting as a cartel that protects perennial powerhouses while restricting weaker teams from joining their ranks. In Eckard's opinion this sort of

behavior does not promote competitive balance across college athletics but rather protects college sport's elite teams. In his study Eckard analyzes competitive balance in college football using performance stability measures before and after NCAA enforcement began in 1952. In his model, Eckard solely uses win loss data and top 20 polls to measure competitive balance in college football before and after 1952. Eckard's results provide consistency with the behavior of a cartel. After NCAA regulations began in 1952, fewer teams enter the top 20 polls. Also, there is less variation in a team's win-loss record and fewer teams win championships. However, Eckard's study does not fully account for other factors besides the beginning of NCAA regulation that might affect competitive balance. Factors such as unequal television contracts and changes to the rules of the game itself could also affect competitive balance.

Since an NCAA institution has the option to self-police their rule-breaking program by imposing self-sanctions, Winfree and McCluskey (2008) study the incentives for NCAA institutions to self impose sanctions before the NCAA imposes their punishment. Winfree and McCluskey argue in their model that an institution's optimal punishment is to punish itself up to the point where the NCAA accepts the penalty and imposes no further sanctions against the school. In order to test their hypothesis, Winfree and McCluskey analyze 192 major infractions, in all sports, from NCAA Division 1 schools between 1987 and 2006. Winfree and McCluskey then test across three major sanctions; television bans, post-season bans and probation, to see if self-imposing one or more of these sanctions reduces the likelihood of further punishment by the NCAA.

Another closely related paper in this topic is Depken and Wilson's (2006) study on NCAA sanctions and the effect on competitive balance in College Football. The study uses

the Herfindahl-Hirschman Index (HHI) as a measure of competitive balance to gauge how teams being placed on probation effects competitive balance within a conference. The HHI method employed by Depken and Wilson differs from Eckard (1998) who uses variance of relative team rankings to gauge competitive balance. Unlike Winfree and McCluskey, Depken and Wilson do not consider additional penalties such as loss of scholarships, postseason bans and television bans in their model due to lack of statistical relevance. Depken and Wilson's results directly contradict that of Eckard as Depken and Wilson found that NCAA enforcement largely increases competitive balance among institutions. This difference could be accounted for by analyzing Depken and Wilson's behavioral model. The HHI is regressed over the previous year's HHI, the number of teams in a conference, and Enforcement and Punishment variables that consider the number of NCAA investigations and the number of institutions on probation within a given conference.

While the on-field effects of NCAA sanctions have not been specifically modeled before, Depken and Wilson (2004) consider the fiscal impacts of probationary measures in college athletics. To analyze this topic, Depken and Wilson use revenue and expenditure data for Division 1A football teams between 1996 and 2000. In their study, Depken and Wilson find that probation alone has very little impact on football revenue and expenditures. On the other hand, scholarship reduction and postseason bans had a slightly negative impact on football revenues and a more significant negative impact on football expenditures. Depken and Wilson expand on this result and analyze the financial effects of football probations on other sports within a specific university. Here, Depken and Wilson find that the expenditures for specifically non-revenue sports decrease when the football team is placed on probation. This result is significant for this particular study because

based on Depken and Wilson's results, the fiscal impact of probationary measures in college football extend to other athletic teams on campus.

## Data

The primary source for data on NCAA sanctions was the NCAA Major Infractions Database (LSDBi).<sup>1</sup> Between the 1983 and 2012 seasons, there were 109 cases in football alone where NCAA member schools were sanctioned for violating rules. The majority of these sanctions involved impermissible benefits to student athletes or breaches in recruiting policies. As previously described, an assortment of penalties is associated with each individual sanction implemented by the NCAA. Out of the 109 cases, 72 came from institutions affiliated with BCS conference while 27 came from non-BCS schools. In our study, there were 252 seasons where an institution was on probation, 45 seasons where an institution was on a postseason ban and 29 seasons where an institution was on television ban. The television ban was effective when used however it is not commonly used anymore. Since the Supreme Court Case *NCAA vs. Board of Regents of the University of Oklahoma* (1984), the NCAA has diminished power in controlling television contracts and implementing postseason bans. As a result, the television ban sanction has been used less frequently over the years and only in severe situations. Sanctions levied by the NCAA vastly differ in severity. Penalties range from one year of probation, to the two-year "death penalty" received by Southern Methodist University in 1987. It is also important to note the timing of the sanctions. Because a sanction mid-season will not drastically affect winning in

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<sup>1</sup> <https://web1.ncaa.org/LSDBi/exec/miSearch>



that particular season, sanctions are modeled starting with the first full season after the NCAA's report. For example if a team is put on probation in October 2011, the 2012 season will be the first season the team is listed as being on probation in the data.

The data for the season-by-season records and conference affiliation was taken from a variety of sources. Similar to Winfree and McCluskey (2008) data for these variables collected from the 1983 season to the 2012 season. The number of Division I NCAA football teams ranges from 112 in 1983 to 118 in the 2012 season. While the standard length for a college football season today is 12 games, in 1983 teams played 10 or 11 games in a season. Also, before the introduction of overtime in 1996, teams often played to a tie. Because our dependent variable is winning percentage, ties are effectively counted the same as a loss meaning that the pre-1996 winning percentages could be slightly negatively skewed.<sup>2</sup>The data for bowl and BCS bowl games was collected from NCAA.com and the Bowl Championship Series website.<sup>3</sup> In order to be eligible for a bowl game, a team must finish the regular season with a winning record or an equal number of wins and losses. In this study, the number of bowl games per season ranges from 16 in the 1983 season to 35 in the 2012 season. Therefore, it is more likely that a team with a winning record participated in a bowl game in 2012 than the 1983 season. The Bowl Championship Series (BCS) was introduced in 1998 as a way to better determine the national champion. BCS games are the most prestigious bowl games and can mean big payoffs for universities and major dividends for college football programs. Because of the prestigious nature of these bowl games, in this study participation in a BCS bowl game is marked by its own variable. Data

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<sup>2</sup> To test this theory, ties were excluded from winning percentage calculation, however no observable difference was found

<sup>3</sup> <http://www.bcsfootball.org/>

for BCS bowl appearances in this study range from the 1998 to 2012 seasons. Ohio State has the most appearances with 10 BCS bowl games in 15 seasons.

## **Theoretical Model**

Like Depken and Wilson, the main theoretical model for this paper is Becker (1968). Since it is extremely inefficient and costly for law enforcement to put all of its resources in enforcement, Becker studies the optimal level of enforcement in economic terms, taking into account both the costs and benefits of enforcement. In his study, Becker concludes that the optimal level of enforcement will depend on the cost of catching offenders, the severity of the punishments and the response by potential offenders to the changes in enforcement (Becker [1968] 170). Applying this model to college athletics, the NCAA as an investigatory body has an optimal level to pursue and punish violators of its rules and regulations, based on the costs of investigation, the severity of punishments handed out and the deterrence effects of other universities in response to sanctions levied by the NCAA. Furthermore, if the tangible costs of a university being sanctioned are large enough then it will likely decrease the probability of future sanctions. For example, if a team's performance suffers greatly on the field or the impact is felt financially, then teams are less likely to violate rules and regulations in the future. In this process it is important to note that the costs of investigating particular member schools can be extremely large to both the NCAA and member schools. While the NCAA does not specifically document its expenses, certain member schools have made public the financial strains of investigations. For example, the University of North Carolina at Chapel Hill racked up nearly \$467,000 in legal fees and

expenses in football scandal in 2010 (Curliss). These fees are usually related to the compliance of a university during an investigation as well as the significant legal fees adhered by the institution during the hearing process (National Collegiate Athletic Association).

## **Empirical Model**

In order to test the effectiveness of NCAA sanctions, this study runs several regressions that consider the on-field implications of NCAA sanctions. As previously mentioned, data in this study comes from the NCAA major infraction database. Furthermore, in accordance with the previous literature the data is restricted to NCAA football. The empirical models for this study are adapted from Depken and Wilson (2004). While Depken and Wilson use the Herfindahl-Hirschman Index (HHI), a measure of competitive balance within a conference, as their dependent variable, this study uses winning percentage in a particular year as the dependent variable. Like Depken and Wilson, this study also includes a lagged winning percentage variable in the baseline model. However it is important to note the potential problems with lagged variables. As mentioned by Depken and Wilson, the introduction of lagged variables can prove to be problematic and introduce inconsistency amongst error terms. Since lagged variables are good indicators of future behavior, lagged variables have a tendency to remove significance from other test variables. Therefore, the models are also be tested without any lagged variables to better observe the impact different sanctions have on winning percentage. When modeling NCAA sanctions, it is important to note that each sanction is unique largely

because each university that is being sanctioned is inherently different. Each university and each football program have intangible characteristics that are unique, such as tradition and marketability, and fan base. Therefore if random effects are used, one of these intangible characteristics could bias the predictor. To correct for this, a fixed effect model is used as a way to account for these intangible qualities that could possibly impact winning percentage in a particular year.

Because of the discrepancy between sanctions, each sanction will be modeled in a slightly different way. Information on exactly how each sanction is modeled is provided in the explanation of variables section. For the purpose of this study, only major sanctions are included. Again, these major sanctions as defined by the NCAA include probation, scholarship reductions, recruiting limitations, post-season bans and television bans. The first model in the study is a baseline model that uses factors such as previous years winning percentage, bowl appearances and conference affiliation as a method to predict winning percentage in the current year.

$$\text{Model 1: } \text{Winning Percentage}_t = \text{Winning Percentage}_{t-1} + \text{Winning Percentage}_{t-2} + \text{Bowl}_{t-1} + \text{Bowl}_{t-2} + \text{BCSBowl}_{t-1} + \text{DConference}_t + \varepsilon$$

As mentioned above, lagged variables can take some of the significance away from independent variables. Therefore, when considering the impact of sanctions, it is necessary to test our models without lagged variables. Models 2-7 solely examines the impact of sanctions in the current year and previous years on winning percentage in the current year.

*Models 2-7:*

$$\text{Winning Percentage}_t = \text{Sanction}_t + \text{Sanction}_{t-1} + \text{Sanction}_{t-2} + \varepsilon$$

For these models, the sanction variables in the model will rotate between each of the five major NCAA sanctions as well as an “any sanction” variable in order to demonstrate the effect each particular sanction has on winning percentage. By excluding lagged variables, some of the explanatory power in the models will unquestionably be lost, however these models should give us a better understanding of how these sanctions effect on-field performance.

This study also attempts to analyze if there is an observable difference between sanctions on BCS member universities and sanctions on non-BCS member universities. In order to effectively answer this question, the population models are repeated for the BCS school sample and the non-BCS school sample. Then these approximations are used to analyze the difference between the two samples.

*Models 7-12 (BCS Member Schools only)*

$$\text{Winning Percentage}_t = \text{Sanction}_t + \text{Sanction}_{t-1} + \text{Sanction}_{t-2} + \varepsilon$$

Just as in models 2-7, each of the five individual sanctions plus an “any sanction” variable is tested. Finally, these models are repeated for non-BCS member institutions. These results are given in models 13-18.

*Models 13-18 (non-BCS Member Schools only)*

$$\text{Winning Percentage}_t = \text{Sanction}_t + \text{Sanction}_{t-1} + \text{Sanction}_{t-2} + \varepsilon$$

By testing the on-field impact of sanctions alone, these models leave many questions unanswered. Additional independent variables such as endowment, coaching tenure and

athletic budget could be analyzed. All of these factors could contribute to on-field performance, however this information is very difficult to obtain for private universities. This study could also include men's basketball in the dataset since it is also a large revenue sport. In short, the models being used in the study are chosen because they use very accessible data that yields a result. If the preliminary results are promising, then the models can be expanded to consider some of the questions listed above.

### **Explanation of Variables**

*Winning Percentage* is the winning percentage of a specific year,  $t$ . The same calculation is made for the variable *Winning Percentage*  $t-1$  over the year  $t-1$ .

*DConference* is a dummy variable that is given a value of 1 if a team plays in a "power conference" or BCS conference in year  $t$  and a 0 otherwise. The six BCS conferences in college football are the Atlantic Coast Conference, Big East, Big Ten, Big Twelve, Southeastern Conference and the Pacific-12. Therefore institutions that are members of these conferences in a given year,  $t$ , have a value of 1 while all other institutions will have a value of 0. This variable could change over years as teams move from non-BCS conferences to BCS conferences or vice versa.

*Bowl* is a dummy variable that represents if a particular team participated in a bowl game in a given year,  $t$ . Teams that play in a bowl game are given a value of 1 while all other teams are given a value of 0. To be eligible to participate in a bowl game at the end of the season, a school must have a winning record or an equal number of wins and losses.

*BCS Bowl* is a dummy that represents if a particular team played in a Bowl Championship Series (BCS) bowl game in a given year,  $t$ . Since the inaugural season of the BCS was 1998, we have no observations before the 1998 season. The five BCS bowl games are the Rose Bowl, Sugar Bowl, Fiesta Bowl, Orange Bowl and finally the BCS National Championship Game.

*DSanction* is the dummy variable that measures the effects of major NCAA sanctions on a university in a year. The five major NCAA sanctions; probation, postseason ban, television ban, limits on recruiting and limits on scholarships, are all tested individually as the sanction variable. Also, the sanctions are grouped into an “any sanction” variable. This tests the on-field impact of being placed under any major sanction by the Committee of Infractions. Since each of the major sanctions is inherently different, they must be modeled in different ways. For probation, postseason ban and television ban, the variable is coded 1 if team is on probation or under a postseason or television ban in a given year,  $t$ . Likewise the  $DSanction_{t-1}$  variable captures if a specific team is under these bans in a specific year,  $t-1$ . Because of the difficulty quantifying limits on recruiting, the recruiting sanction is modeled as a 1 if the NCAA levied any sort of recruiting penalty in year,  $t$ . Finally the loss of scholarships penalty is coded a 1 if a program was docked any scholarships by the NCAA in year,  $t$ .

## Results

Overall, there is selected evidence that NCAA sanctions negatively affect on-field performance of rule breaking institutions. The magnitude of the on-field effect greatly depends on which particular sanction the NCAA decides to levy, as some sanctions carry more adverse effects than others. While the models were successful in showing the on-field impact of different sanctions, the models have very little explanatory power. Finally, no observable difference is found by analyzing BCS member schools and non-BCS member schools separately.

Using Model 1 as the baseline regression, this study finds the previous two years winning percentages, the presence in a bowl game, and the presence in a BCS bowl game to be significant on all levels. This is intuitive, as winning in previous years is a good indicator of winning in future years. The conference variable was also significant on all levels. This indicates that teams from BCS conferences (Big 12, Big 10, SEC, PAC-12, ACC and Big East), win more games than teams from other conferences. Since the spread of records within a given conference cannot differ greatly from conference to conference, this advantage must come in non-conference games. This result implies that schools from power conferences are more successful outside of their conference than schools from non-BCS conferences. This result is logical as teams from BCS conferences are generally regarded as the better teams in college football and therefore would have a better record year-to-year. By looking at the samples of BCS schools and non-BCS schools individually, one finds that winning percentages in previous years is a better estimator for winning percentages in future years for BCS schools than non-BCS schools. This difference could be attributed to the stability



associated with being a bigger school. BCS member schools have larger profiles, superior television contracts and attract the nations top recruits. Therefore, these schools have more stability in their records year-to-year than non-BCS member schools.

The most interesting findings in the study were found in analysis of Models 2-7. By removing the lagged variables from the baseline model, one can observe the true impact of NCAA sanctions on on-field performance. Preliminary analysis shows that NCAA sanctions negatively affect on-field performance. Also the timing of this impact is very interesting as analysis shows that sanctions imposed two years prior have the greatest effect on the winning in the current year.

Starting with Model 2, this study tests the impact of an institution being penalized by any one of the five major sanctions. While the coefficients for an institution being sanctioned one-year prior and two years prior are negative, neither is significant on any level. Looking at the sanctions individually, the results become clearer. Starting with probation, the most commonly used sanction, this study observes that probation two years prior has a negative on-field effect in the current year significant on the 10% level. This result signals that probation alone is a significant penalty for institutions. As shown by Winfree and McCluskey, being on probation results in a heightened regulatory presence within the program and puts the program at further risk for severe penalties in the future. The riskiness of a program on probation could deter potential recruits from joining the team. Since it is abnormal to see freshman or even sophomores log substantial playing time, the effect of a diminished recruiting class in the current year is not fully felt until one or two years down the road. Therefore, it is intuitive that the full weight of probation and the other sanctions are not felt until two years after the NCAA levies the sanction.

Looking at the impact of a postseason ban, the results are similar. The effect of being placed on a postseason ban two years prior is negative and significant on the 5 percent level. Also the coefficients of being placed on a postseason ban in the current year as well as the year prior are negative albeit not significant. Once again, this observable decline in winning percentage is most likely a result of the decline in recruiting. The glamour of a bowl game is a major attraction for potential recruits. Since postseason bans are largely regarded as a more serious penalty than probations, the same logic used in the probation analysis could be used to explain the 2-year lag in significance. Therefore, the possibility of being ineligible to play in a bowl game would be a major deterrent for recruits making their college decision and negatively impacts the program a few years down the road.

While the NCAA has not used the television ban sanction since 1994, the results show that when the NCAA used this particular sanction it was an effective deterrent on on-field performance. Like postseason bans, television ban two years prior is negative and significant on the 10% level, while television bans one-year prior and in the current year are negative but not significant. Even though this sanction was used very infrequently, it was very effective when it was used. Televised games add great visibility to programs vying for the attention of promising recruits. Currently, all games for major programs are televised, expanding recruiting pipelines nationwide. On the other side of the table, players want to play on television to increase their own exposure and enhance their chances of playing in the National Football League.

Similarly, limits on recruiting two years prior has a negative and significant effect on winning percentage in the current year on the 5% level. The negative impact of diminished recruiting was discussed in the explanation of the other sanctions. Using the

same logic, limits on recruiting obviously hinders the recruiting efforts in a current year, which negatively affects the on-field performance one or two years in the future.

The results of Model 7 show that the NCAA sanction of losing scholarships has no significant impact on winning percentage, making it the only of the five major sanctions without a significant effect. Why the loss of scholarships has no effect on winning is a result of the enterprise of college football. Since NCAA rules permit 85 athletes on scholarship, a majority will not see substantial playing time in particular game. In comparison, the NFL uses a 53 man active roster, meaning the NFL plays with 38% less players than a college team. Assuming a particular institution is docked 5 athletic scholarships in a given season, the team is losing the 81<sup>st</sup>-85<sup>th</sup> most talented players on the roster. In all likelihood, these players will not play a significant role on the team; therefore their loss will not be felt on the field. Thus, the NCAA should not use the loss of scholarships as the exclusive method to penalize a rule-breaking institution, as the on-field effect will not be that severe.

Finally, teams from BCS conferences and non-BCS conferences were analyzed separately to determine if there is any difference between the two samples. For a majority of the sanctions tested, there was no observable difference between the BCS and non-BCS schools. This result indicates that sanctions hit smaller non-BCS schools just as hard as prestigious BCS member schools. However regarding the sanction of probation, there was a significant difference in the on-field effect between BCS member schools and non-BCS member schools. The results show that probation is a more severe penalty for non-BCS schools, than BCS member schools. For non-BCS schools, the penalty of probation is negative and significant on the 95% level. This difference is most likely attributed to the perceived difference in stability between bigger programs and smaller programs. In our

study probation was the most common sanction levied by the NCAA. As previously explained, probation results in a heightened awareness into the program and regulation by the NCAA. Therefore, being on probation is a signal of weakness and vulnerability for a program. While bigger BCS programs have the luxury of years of tradition and success to counterweigh probationary measures, smaller programs do not have the same luxury. Therefore, the perceived difference in the on-field impact of probation is most likely a result of the intangible differences that separate BCS member schools and non-BCS member schools.

## **Conclusion**

This study finds several interesting results regarding the on-field effects of NCAA sanctions in college football. First and foremost, while NCAA sanctions do penalize rule-breaking institutions on the field, the magnitude of the on-field decline is greatly dependent on the particular sanction the NCAA committee of infractions decides to levy. Postseason Bans, Television Bans, and limits on recruiting are shown to significantly hurt on-field performance. However, the same cannot be said regarding the loss of scholarships penalty. Due to the excessive number of players on the active roster of a given college football team, the loss of scholarships does not significantly hurt on-field performance. The findings for the most widely used sanction, probation, is also convoluted. Results show that probation is a much more significant penalty for smaller non-BCS member schools than larger BCS schools. This difference is most likely due to the perceived stability in BCS schools, a luxury that the smaller non-BCS schools do not have. Finally, a common theme in the results was a

two-year delay in the on-field impact of these sanctions. Because of recruiting and other intangible factors in college football, these sanctions do not hurt member institutions right away; rather there is a two-year delay after the sanction until an observable on-field decline. The most likely path for further research would be to apply this model to a different college sport such as basketball. Also, non-revenue sports, like volleyball and softball, could be analyzed. Furthermore additional factors could be added to the model. Information like endowment, athletic budget, and coaching tenure could better model the intangible factors that makeup college football and adds explanatory power to the model.

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*Appendix*

*I.) List of NCAA major infractions from 1982-2012*

<i>School</i>	<i>Date</i>	<i>Probation</i>	<i>Postseason Ban</i>	<i>Television Ban</i>	<i>Recruiting</i>	<i>Financial Aid</i>
<i>University of Central Florida</i>	<i>7/31/12</i>	<i>5 (Yrs.)</i>	<i>1 (Yr.)</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of South Carolina</i>	<i>4/27/12</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of North Carolina</i>	<i>3/12/12</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Ohio State University</i>	<i>12/20/11</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Cincinnati</i>	<i>9/29/11</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>Boise State University</i>	<i>9/13/11</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Louisiana State University</i>	<i>7/19/11</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Georgia Tech University</i>	<i>7/14/11</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>West Virginia University</i>	<i>7/8/11</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Arkansas State University</i>	<i>3/11/11</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Texas Tech University</i>	<i>1/7/11</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Michigan</i>	<i>11/4/10</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of Southern California</i>	<i>6/10/10</i>	<i>4</i>	<i>2</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Central Florida</i>	<i>2/11/10</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>University of Alabama</i>	<i>6/11/09</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>



<i>Florida State University</i>	<i>3/6/09</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of New Mexico</i>	<i>8/20/08</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Florida International University</i>	<i>5/7/08</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Ball State University</i>	<i>10/16/07</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Oklahoma</i>	<i>7/11/07</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Colorado</i>	<i>6/21/07</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Kansas</i>	<i>10/12/06</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Ohio State University</i>	<i>3/10/06</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Georgia Tech</i>	<i>11/17/05</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of South Carolina</i>	<i>11/16/05</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Arizona State University</i>	<i>11/10/05</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of Illinois</i>	<i>10/27/05</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Florida International University</i>	<i>8/25/05</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Baylor University</i>	<i>10/23/05</i>	<i>5</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Mississippi State University</i>	<i>10/27/04</i>	<i>4</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Washington</i>	<i>10/20/04</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>University of Oregon</i>	<i>6/23/04</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>University of Maryland College Park</i>	<i>8/11/03</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Rutgers, State University of New Jersey</i>	<i>6/17/03</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>

<i>University of Arkansas</i>	<i>4/17/03</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>San Diego State University</i>	<i>2/25/03</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of Colorado</i>	<i>10/8/02</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of California Berkley</i>	<i>6/26/02</i>	<i>5</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Alabama</i>	<i>2/1/02</i>	<i>5</i>	<i>2</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Kentucky</i>	<i>1/31/02</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Marshall University</i>	<i>12/21/01</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Wisconsin Madison</i>	<i>10/1/01</i>	<i>5</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Southern California</i>	<i>8/23/01</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Southern Methodist University</i>	<i>12/13/00</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>University of Notre Dame</i>	<i>12/17/99</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Kansas State University</i>	<i>2/18/99</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>Texas Tech University</i>	<i>8/4/98</i>	<i>4</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Texas at El Paso</i>	<i>4/1/97</i>	<i>5</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Georgia</i>	<i>3/5/97</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Michigan State University</i>	<i>9/16/96</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Florida State University</i>	<i>3/19/96</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Mississippi State University</i>	<i>3/7/96</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>

<i>University of Miami (FL)</i>	<i>12/1/95</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Alabama</i>	<i>8/2/95</i>	<i>2</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Washington State University</i>	<i>3/28/95</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Mississippi</i>	<i>11/17/94</i>	<i>4</i>	<i>2</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Washington</i>	<i>7/12/94</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>Texas A&amp;M University</i>	<i>1/5/94</i>	<i>5</i>	<i>1</i>	<i>1</i>	<i>-</i>	<i>-</i>
<i>University of Pittsburgh</i>	<i>11/16/93</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Auburn University</i>	<i>8/18/93</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>-</i>	<i>Yes</i>
<i>University of Virginia</i>	<i>5/6/93</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Syracuse University</i>	<i>10/1/92</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Tennessee</i>	<i>9/18/91</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Minnesota</i>	<i>3/27/91</i>	<i>2</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Florida</i>	<i>9/20/90</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Clemson University</i>	<i>5/31/90</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of Memphis</i>	<i>8/3/89</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>Oklahoma State University</i>	<i>1/6/89</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Oklahoma</i>	<i>12/19/88</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Houston</i>	<i>12/16/88</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>-</i>	<i>Yes</i>
<i>University of Cincinnati</i>	<i>11/3/88</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of California Berkley</i>	<i>9/29/88</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>

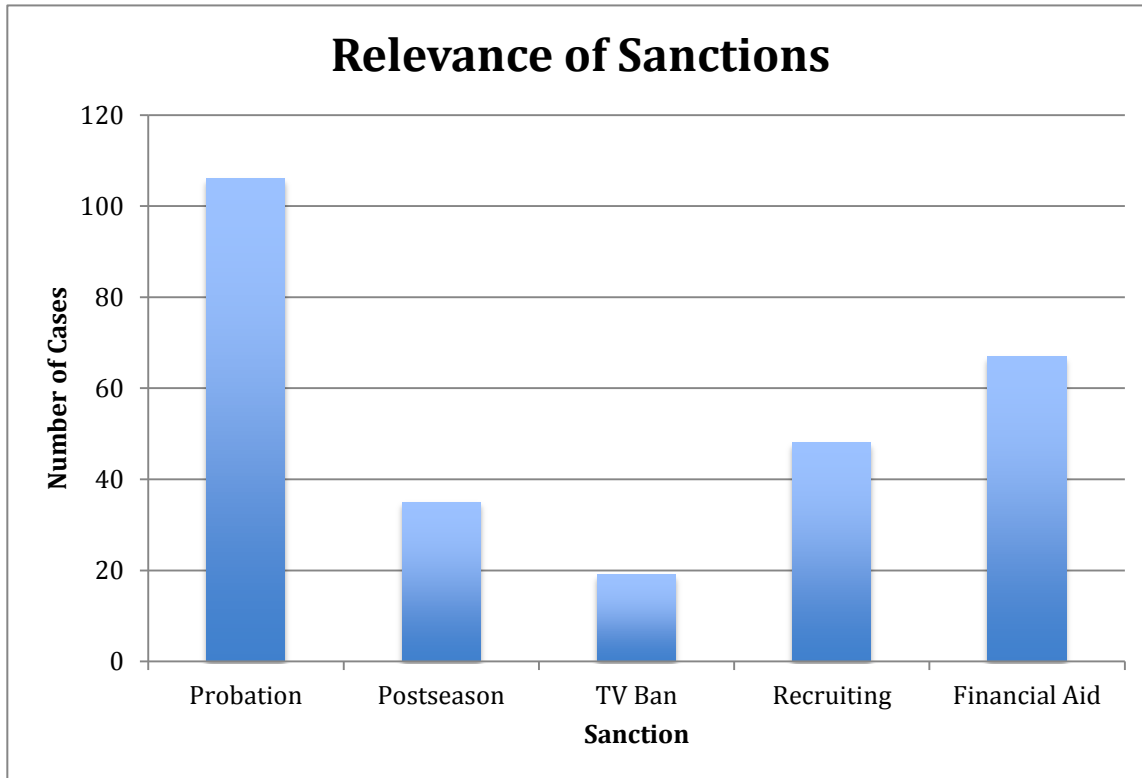
<i>Texas A&amp;M University</i>	<i>9/9/88</i>	<i>2</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Minnesota</i>	<i>3/7/88</i>	<i>2</i>	<i>1</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>University of Illinois</i>	<i>2/11/88</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Virginia Tech University</i>	<i>10/26/87</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Utah</i>	<i>6/18/87</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>-</i>
<i>University of Texas</i>	<i>6/17/87</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>Texas Tech University</i>	<i>3/3/87</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Southern Methodist University</i>	<i>2/25/87</i>	<i>4</i>	<i>2</i>	<i>2</i>	<i>Yes</i>	<i>Yes</i>
<i>Iowa State University</i>	<i>12/19/86</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>University of Mississippi</i>	<i>12/12/86</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Nebraska Lincoln</i>	<i>10/20/86</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>Louisiana State University</i>	<i>10/15/86</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Tennessee</i>	<i>10/9/86</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>East Carolina University</i>	<i>9/3/86</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of Memphis</i>	<i>5/29/86</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>Yes</i>
<i>Texas Christian University</i>	<i>5/9/86</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>
<i>University of Southern California</i>	<i>4/10/86</i>	<i>2</i>	<i>-</i>	<i>-</i>	<i>Yes</i>	<i>Yes</i>

<i>University of Nevada Las Vegas</i>	<i>2/12/86</i>	-	-	-	-	-
<i>Southern Methodist University</i>	<i>8/16/85</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>University of Southern Mississippi</i>	<i>2/8/85</i>	<i>1</i>	-	-	<i>Yes</i>	-
<i>University of Florida</i>	<i>1/13/85</i>	<i>2</i>	<i>2</i>	<i>2</i>	-	<i>Yes</i>
<i>University of Georgia</i>	<i>1/4/85</i>	<i>1</i>	-	-	<i>Yes</i>	<i>Yes</i>
<i>University of Akron</i>	<i>9/27/84</i>	<i>2</i>	<i>1</i>	-	<i>Yes</i>	<i>Yes</i>
<i>University of Illinois</i>	<i>7/27/84</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>Yes</i>	<i>Yes</i>
<i>Florida State University</i>	<i>6/12/84</i>	-	-	-	-	-
<i>University of Kansas</i>	<i>11/30/83</i>	<i>2</i>	<i>1</i>	<i>1</i>	-	-
<i>University of Wisconsin</i>	<i>11/22/83</i>	<i>1</i>	-	<i>1</i>	<i>Yes</i>	-
<i>Fresno State University</i>	<i>8/29/83</i>	<i>1</i>	-	-	<i>Yes</i>	<i>Yes</i>
<i>Virginia Tech University</i>	<i>5/23/83</i>	<i>1</i>	-	-	-	-
<i>University of Arizona</i>	<i>5/20/83</i>	<i>2</i>	<i>2</i>	<i>2</i>	-	-
<i>North Carolina State University</i>	<i>3/21/83</i>	<i>1</i>	-	-	-	-
<i>Clemson University</i>	<i>11/22/82</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>Yes</i>	-
<i>University of Southern Mississippi</i>	<i>11/8/82</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>Yes</i>	-
<i>University of Texas</i>	<i>10/12/82</i>	<i>1</i>	-	-	-	-
<i>University of Georgia</i>	<i>9/20/82</i>	<i>1</i>	-	-	-	<i>Yes</i>

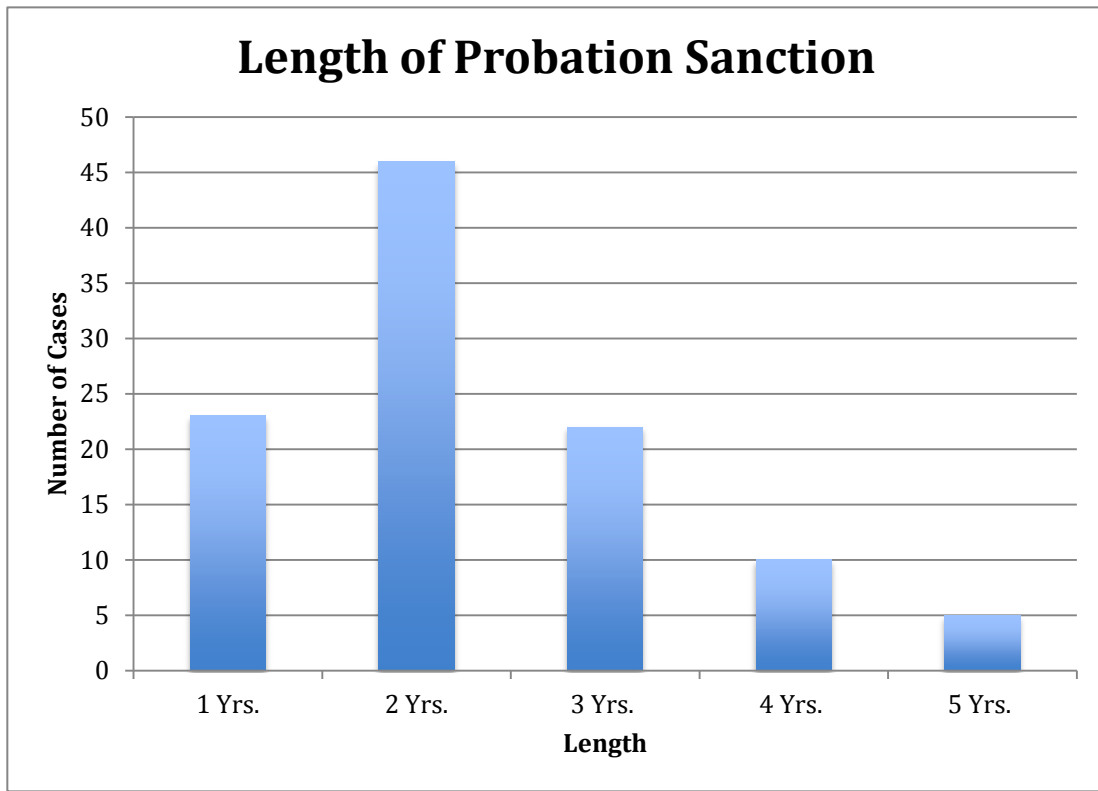
<i>University of Southern California</i>	<i>4/23/82</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>Yes</i>	<i>-</i>
<i>University of Wisconsin</i>	<i>1/5/82</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>

II.) Figures

i.) Figure 1: Relevance of Each Sanction

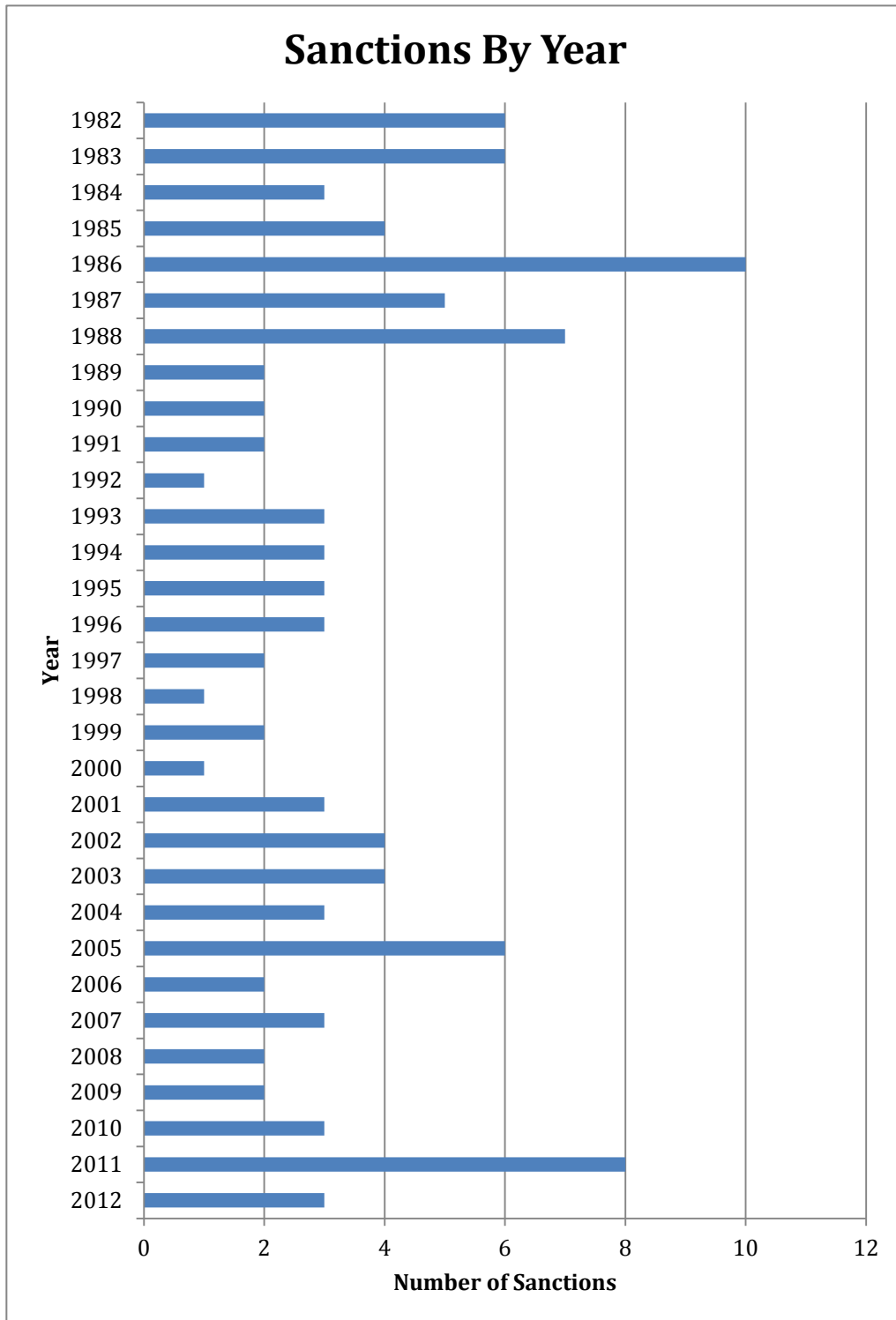


ii.) Figure 2: Breakdown of Probation Sanction





iii.) Figure 3: Sanctions Per Year



### III.) Tables of Results

#### i.) Model 1: Baseline Regression

	(1.)
Constant	.3220 (.0119) [0.000]***
Winning Percentage (t-1)	.3474 (.0240) [0.000]***
Winning Percentage (t-2)	-.0139 (.0234) [.555]
Bowl (t-1)	.0049 (.0100) [.626]
Bowl (t-2)	.0373 (.0100) [0.00]***
BCS Bowl (t-1)	-.0030 (.0176) [.862]
R-Squared	.3378

Standard Error in parentheses, p-value in brackets

ii.) Models 2-7, Winning percentage on lagged sanction variables

	(2.) Any Sanction	(3.) Probation	(4.) Postseason Ban
Constant	.5097 (.0037) [0.00]***	.5097 (.0037) [0.00]***	.5103 (.0035) [0.00]***
Sanction (t)	.0097 (.0167) [.58]	.0109 (.0169) [.64]	-.0073 (.0319) [.817]
Sanction (t-1)	-.0020 (.0196) [.917]	.0025 (.0196) [.13]	-.0167 (.0332) [.605]
Sanction (t-2)	-.0192 (.0169) [.255]	-.0248 (.0171) [.147]	-.0626 (.0303) [-2.07]***
R-Squared	.0000	.0002	.0001

	(5.) Television	(6.) Recruiting	(7.) Financial Aid
Constant	.5097 (.0034) [0.00]***	.5101 (.0035) [0.00]***	.5102 (.0036) [0.00]***
Sanction (t)	-.0182 (.0514) [.722]	-.0199 (.0329) [.545]	-.0162 (.2266) [.475]
Sanction (t-1)	-.0055 (.0443) [.901]	-.0214 (.0329) [.513]	-.0138 (.0250) [.58]
Sanction (t-2)	-.0805 (.0404) [.047]**	-.0612 (.0328) [.062]*	-.0117 (.0238) [.622]
R-Squared	.0003	.0002	.0008

iii.) Models 7-12, Winning percentage on lagged sanction variables (BCS Conference Schools Only)

	(7.) Any Sanction	(8.) Probation	(9.) Postseason Ban
Constant	.5509 (.0049) [0.00]***	.5505 (.0049) [0.00]***	.5535 (.0046) [0.00]***
Sanction (t)	.0056 (.0187) [.761]	.0089 (.0189) [.638]	-.0107 (.0367) [.77]
Sanction (t-1)	.0002 (.0216) [.991]	.0054 (.0217) [.801]	-.0294 (.0369) [.426]
Sanction (t-2)	-.0002 (.0187) [-.02]	-.0048 (.0190) [.798]	-.0645 (.0349) [.064]*
R-Squared	.0033	.0033	.0001

	(5.) Television	(6.) Recruiting	(7.) Financial Aid
Constant	.5526 (.0045) [0.00]***	.5533 (.0046) [0.00]***	.5533 (.0047) [0.00]***
Sanction (t)	-.0049 (.0613) [.935]	-.0401 (.0383) [.295]	-.0334 (.0257) [.194]
Sanction (t-1)	-.0433 (.0509) [.395]	-.0166 (.0375) [.659]	-.0141 (.0283) [.618]
Sanction (t-2)	-.0681 (.0463) [.142]	-.0657 (.0376) [.081]*	.0011 (.0269) [.967]
R-Squared	.0003	.0001	.0002

*iv.) Models 13-18, Winning percentage on lagged sanction variables (non-BCS Conference Schools Only)*

	(13.) Any Sanction	(14.) Probation	(15.) Postseason Ban
Constant	.4581 (.0055) [0.00]***	.4584 (.0056) [0.00]***	.4560 (.0054) [0.00]***
Sanction (t)	.0251 (.0357) [.482]	.0198 (.0358) [.581]	-.0049 (.0631) [.938]
Sanction (t-1)	-.0075 (.0428) [.860]	-.0039 (.0431) [.927]	-.0148 (.0639) [.817]
Sanction (t-2)	-.0806 (.0363) [.027]**	-.0876 (.0366) [.017]**	-.0619 (.0594) [.298]
R-Squared	.0062	.0067	.0013

	(16.) Television	(17.) Recruiting	(18.) Financial Aid
Constant	.4558 (.0053) [0.00]***	.4559 (.0054) [0.00]***	.4559 (.0054) [0.00]***
Sanction (t)	-.0046 (.0927) [.661]	.0284 (.0630) [.652]	.0354 (.0428) [.860]
Sanction (t-1)	.0926 (.0867) [.286]	-.0388 (.0646) [.548]	-.0134 (.0508) [.792]
Sanction (t-2)	-.1147 (.0804) [.154]	-.0597 (.0651) [.359]	-.0534 (.0481) [.267]
R-Squared	.0021	.0016	.0024