

**Match-Fixing Prevention in NCAA Sports Competitions: Analyzing Strategies
and Assessing Perceived Vulnerability**

A Thesis

Submitted to the Faculty of the University of Minnesota by

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In Partial Fulfillment of the Requirements for the Degree of
Master of Arts – Sport Management

Advised by

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2024

Acknowledgements

I would like to thank my advisor Dr. Kihl for helping me immensely throughout the process of this thesis. You have provided me great ideas, resources, and incredible feedback on every draft I created. I would not be able to develop this thesis without your help. I would also like to thank Dr. Bonney for taking time to meet with me and review the statistical components of my research. Additionally, I would like to thank Dr. Schull for also providing resources and allowing me to practice presenting to a larger audience. You have all been incredible in helping me prepare my work. Finally, I would like to thank my family. You have supported me throughout the entire process of graduate school, and I would not be able to chase my goals without your support.

Abstract

Match-fixing is an integrity violating phenomenon that affects sport competitions. While less prevalent in the U.S. compared to other countries, the recent legalization of sports betting and potentially increased risk of match-fixing the National Collegiate Athletic Association (NCAA) faces sparked interest in understanding the organization's match-fixing prevention strategies. This study aimed to assess the perceived opportunity-based vulnerability of the NCAA and its member schools to experience match-fixing based on the usage of different recommended match-fixing prevention strategies, also identifying differences between each NCAA division. A survey was constructed and disseminated by email to all NCAA member schools in order to identify their usage of the recommended prevention strategies, along with good practices. From the survey, a scoring system was constructed to analyze vulnerability for each division. A one-way ANOVA of the mean vulnerability score for each division was used to identify differences between divisions. Results found a low usage of match-fixing prevention strategies in the NCAA, with Division I scoring in the "at-risk" category, and Division II, III, and overall NCAA scoring in the "vulnerable" category. Significant differences were also found between Division I and Division II schools, and Division I and Division III schools in their vulnerability scores. These results should urge the NCAA and its member schools to implement more prevention strategies and good practices for match-fixing into their athletic department to better protect their sporting events and internal stakeholders from the phenomenon.

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Chapter I: Introduction

“They paid the refs!” or “That was rigged!” are two common excuses avid sports fans like to state about the outcome of competitions. The phenomenon these fans are referring to is match-fixing in sport. The most accepted definition of match-fixing is the Council of Europe’s Convention on the Manipulation of Sports Competitions (Marchetti et al., 2021; McNamee & Rubicsek, 2022; Visschers et al., 2020) which states:

Manipulation of sport competitions means an intentional arrangement, act or omission aimed at an improper alteration of the result or the course of a sport competition in order to remove all or part of the unpredictable nature of the aforementioned sport competition with a view to obtaining an undue advantage for oneself or for others (Council of Europe, n.d.)

The unpredictable nature of sports competitions is considered to be “very important” to many loyal sports fans because they trust that games are played with integrity (Hardyns et al., 2022).

Match-fixing is not a new concept in the sporting world (Peurala, 2013). The Black Sox scandal in the 1919 World Series provides historical proof, resulting in “baseball’s ‘loss of innocence,’ [and] the cause of fans’ diminished feelings for the game they once adored” (Thorn, 2019, para. 1). The phenomenon has been, and is currently, an issue in sports. A 2015 Netherlands survey of various sports stakeholders found that 27% believed there had been instances of match-fixing in each of their respective sports (Spapens & Olfers, 2015). Last year, Sportradar (2023), an integrity service, flagged 1,212 matches over 92 countries as suspicious. While only 24 matches were flagged in North America, it still provides evidence of its

occurrence (Sportradar, 2023). Hosmer-Henner (2010) describes the seriousness of the phenomenon best, match-fixing “is a significant threat to the integrity of sports” (p. 31).

There are two general types of match-fixing: non-betting-related and betting-related (Hill, 2010 as cited in Marchetti et al., 2021). Non-betting-related match-fixing involves manipulating a sporting event for reasons that do not include financial gain (Huggins, 2022). Non-betting-related match-fixing is typically carried out for strategic purposes, such as obtaining better circumstances for playoff competition or competing against a more favorable opponent (Blair, 2018). Other common reasons for non-betting-related match-fixing include avoiding relegation in soccer (Dudko, 2015) or “tanking” to secure better draft picks in professional sports (e.g. National Football League (NFL)) (Perez, 2022).

Betting-related match-fixing is more concerning because it involves the manipulation of a sporting event with the intent of some group of individuals to receive financial gain, specifically crime syndicates to fund their organizations (Manoli & Antonopoulos, 2015; Marchetti et al., 2021; Tzeng & Lee, 2021; Tzeng & Ohl, 2023). Additionally, betting-related match-fixing typically occurs in the underground betting market (Tzeng & Ohl, 2023), which can make it difficult to detect. Criminals seemingly use match-fixing and illegal gambling as means to fund their operations due to the low risks associated with the phenomenon and the rewards being high (UNODC, n.d.). Betting-related match-fixing is the focus of the study.

Match-fixing typically occurs with three main actors who initiate a fix. The first involves crime syndicates. Many high-level crime syndicates utilize previously established connections to fix matches, but some lower-level criminals still randomly approach people to request a fixed match (Caneppele et al., 2020). In other cases, the mafia may even support younger athletes

throughout their careers, hoping the athletes will repay them by fixing matches at a later stage of their careers (Tzeng & Lee, 2021). The second corrupter is upper management. In a European study, board members (first) and coaches (third) were among the individuals who had most approached athletes to fix a match (Van Der Hoeven et al., 2023). Other match-fixing events also found that club presidents initiated fixed matches (Manoli & Antonopoulos, 2015; Yilmaz et al., 2019). Despite fixing for non-betting-related reasons, the presidents had other stakeholders place wagers on the matches on their behalf (Manoli & Antonopoulos, 2015). The final actors that will initiate a fixed match are athletes. Athletes feel they are obliged to help fix matches for their teammates due to the common norm being that teammates need to help each other out (Tzeng & Lee, 2021).

In the context of the National Collegiate Athletic Association (NCAA) competitions several risk factors make them more susceptible to match-fixing compared to other U.S. sports organizations. The first is the financial structure of the NCAA. The NCAA in theory does not pay student-athletes a salary for their role in collegiate athletics. While student-athletes receive compensation in the form of scholarships, it can be argued that scholarships are insufficient alone or deemed a living wage (Baker et al., 2011). Additionally, Division I and II athletes can receive athletic scholarships, however, Division III athletes cannot due to bylaw restrictions (NCAA, n.d.).¹

¹ The NCAA consists of three divisions. Division I is the highest level of competition in which the best athletes compete. Division I schools are typically larger and more well-known and provide full athletic scholarships for athletes. Division II is the second highest level of competition. Division II schools are smaller than Division I schools, but usually larger than Division III schools. Division II athletes can receive partial athletic scholarships. Division III is the lowest level of competition. Division III schools are generally smaller colleges, in which athletes focus their time on athletics and academics equally. Division III schools do not offer athletic scholarships. (NCAA, n.d., NCSA, n.d.)

More recently in 2021, athletes have been afforded the right to profit of their name, image, and likeness (NIL) (Blinder, 2021). However, only the most well-known and popular college athletes profit from their NIL as evidenced by the median NIL deal standing at \$53 and the mean ranging upwards of \$1,815 based on the first year of NIL deals being allowed (Hunzinger, 2022), indicating a right-skewed data distribution and extreme outliers influencing the data. Despite NIL policies, \$53 is probably not a sufficient living wage for student-athletes, which would equate to \$19,345 a year if an athlete were to receive one NIL deal per day for a full year. Although there is no evidence of this, the combination of insufficient financial resources for most collegiate athletes and one of the leading causes of athlete agreeance to match-fixing being financial gain (Frenger et al., 2019; Hill, 2015; Huggins, 2022; Tak et al., 2018), many college athletes could possibly be vulnerable to match-fixing bribery. Division III college athletes could be even more vulnerable to bribery due to them not receiving the athletic scholarships as noted above.

Another risk factor that increases the likelihood of match-fixing is lower broadcasting of events (Marchetti et al., 2021). Athletes who know they will not be watched as heavily compared to a major broadcast will likely be more open to fixing a match as they understand that the chances of being caught are reduced (Marchetti et al., 2021). Lewis' (2023) viewership analysis shows that while NCAA Division I sport events like football and basketball have high viewership, many other sports do not. For example, the 2023 women's NCAA Division I soccer national championship had approximately 53,000 viewers, in comparison, 17+ million viewers watched the 2023 NCAA College Football Playoff Championship game between Georgia and Texas Christian University (TCU) (Lewis, 2023). Both men's and women's tennis did not even

have viewership totals listed for their national championships, likely indicating how incredibly low viewership was for those events. What makes this even more problematic is the fact that in 2022, soccer (most) and tennis (third most) were two sports most flagged by Sportradar for fixed matches worldwide (Sportradar, 2023). The continued growth of sports gambling in the U.S. could lead to more sports betting at all levels of the NCAA, potentially resulting in more wagers on less viewed and monitored sporting events and leading to more cases of match-fixing (Spapens & Olfers, 2015).

Along with tarnished sport integrity (Hosmer-Henner, 2010), various other consequences can result from match-fixing. Players and organizations can both experience severe reputational damage (Robinson & Parry, 2018). NCAA student-athletes are subject to permanent loss of eligibility if found to have fixed matches (Wright, 2023), and may face legal repercussions as match-fixing is illegal under 18 U.S. Code § 224 (1964). Furthermore, the vital characteristic of trust in sports (Ondráčková & Verschuuren, 2021; Tzeng & Lee, 2021) is lost (Szymanski, 2001, as cited in Hosmer-Henner, 2010). The loss of trust can impact the viewership of sporting events (Mackie, 2005, as cited in Hosmer-Henner, 2010), which would likely result in lost revenue. However, viewership could also be unaffected as sports viewership can be resilient after scandals (Hardyns et al., 2022). Based on these consequences, and the NCAA's notable higher risk for match-fixing compared to other North American sports (Hill et al., 2020), further research should be conducted to analyze vulnerable aspects of the NCAA to experience match-fixing.

Donald Cressey's "Fraud Triangle" created in 1953 is one of the most commonly used tools to analyze fraud vulnerabilities within organizations (Abdullahi & Mansor, 2015; Schuchter & Levi, 2016; Sujewa et al., 2018; Tickner & Button, 2021). Three aspects are included in

Cressey's fraud triangle: rationalization, pressure, and opportunity. The fraud triangle has been previously used to assess vulnerabilities in a variety of sports settings including community sports (Wicker et al., 2023; Kihl et al., 2021) and international-level sports (Souvenir et al., 2023; Caneppele, 2021). Considering match-fixing is fraudulent activity, the fraud triangle is a good starting point for analyzing the NCAA's vulnerability to the phenomenon.

Pressure is the first aspect of the fraud triangle. It is also the most common reason why people commit fraud (Schuchter & Levi, 2016). Pressures can arise from financial stress, unrealistic or problematic work environments, or personal reasons (Kassem & Higson, 2012; Omar & Mohamad Din, 2010; Schuchter & Levi, 2016; Sujeewa et al., 2018). Frenger et al. (2019), Huggins (2022), Hill (2015), and Tak et al. (2018) found that financial pressures are one of the main reasons why athletes fix matches. As noted above, NCAA student-athletes may feel financially pressured to commit match-fixing since they receive no salary, may feel scholarships are insufficient in covering expenses (White v. NCAA, 2008), and recently had to fight for the right to earn profits from their NIL. The NCAA has already been found to be more at risk compared to their professional counterparts based on betting handles and the median salary or scholarships of the athletes (Hill et al., 2020). The financial stress athletes likely face may direct them towards match-fixing.

The second component of the fraud triangle is rationalization. Numerous authors have used the rational choice theory to explain why athletes and other internal stakeholders have fixed matches in various sports settings (Hill, 2015; Tak et al., 2018; Tzeng & Lee, 2021). The rational choice theory explains that individuals will weigh their expected benefits against their expected consequences when making decisions, looking to receive the most benefit possible (Herrnstein,

1990; Lastra et al., 2016 as cited in Tak et al., 2018). Herrnstein (1990) also notes that rational choice theory does lack in explaining true behavior, however, it is a good predictor of how an individual should act to maximize their benefits. In terms of match-fixing, if the expected benefits outweigh the expected costs, the individual would theoretically fix a match (Forrest, 2012 as cited in Tak et al., 2018).

Along with the pressures, the main benefit and reason why internal stakeholders decide to match-fix is to profit financially (Frenger et al., 2019; Hill, 2015; Huggins, 2022; Tak et al., 2018). Hill (2015) found two major reasons why athletes rationalized their decisions to fix matches, which involved financial gain. First, to support their families, as stated directly by an interviewed player. These players receive very little, or no pay at all, allowing them to rationalize their choice to fix matches to take care of themselves and their families (Hill, 2015). Criminal organizations are more than capable of offering these athletes the desired money they are looking for (Aquilina & Chetcuti, 2014; Tzeng & Lee, 2021). Hill (2015) notes a second rationalization for match fixing by older players who will have “no career, [are] relatively uneducated and [have] little opportunity to maintain both the status and pay that they enjoyed as players” (p. 226). Hill (2015) further mentions that these athletes are trying to cash out on the remaining time they have as players. This rationalization may apply to NCAA student-athletes as the majority of them do not advance to the professional level of their respective sport (NCAA, 2014).

In addition to financial gain, Tzeng and Lee (2021), as noted above, found that social capital is another reason why athletes match-fix where a sense of athlete comradery facilitates match-fixing. Notably, athletes “supporting each other and helping those in need without asking for money are considered obligations by players” (p. 567). Athletes operate under the belief that

they must help their teammates no matter what, and if they do not, they run the risk of ruining relationships. Tzeng and Lee (2021) further note that comradeship is also evident in a coach-player relationship, but not as much in a referee-player relationship. Social capital provides another rationale for athletes to match-fix. While the player-player relationship would not be as applicable to individual sports like tennis, there is still comradeship between coaches and players, which could fulfill the rationale of maintaining relationships in those individual sports. On an additional note, once the stakeholders have justified their decision to match-fix, they turn off self-regulation, allowing themselves to partake in unethical actions (Robertson & Constandt, 2021).

Forrest (2012, as cited in Tak et al., 2018) also noted three main costs for match-fixing. First, the loss of money for winning. Second, the athlete's inability to earn prestige for their performance. Third, athletes feeling embarrassed for participating in fixing.

Opportunity to commit fraud is the final component of the fraud triangle framework. To commit fraud/match-fixing, an internal stakeholder in sport would need to “perceive that he has an opportunity to commit the crime without being caught” (Sujeewa et al., 2018, p. 53). Opportunities to commit fraud can arise out of improper internal controls in the organization (Abdullahi & Manson, 2015; Tickner & Button, 2021). While pressures and rationalization have been looked at concerning match-fixing, the opportunity portion has been neglected, especially in the NCAA. With the currently evolving landscape of sports wagering in the U.S., the recent sports wagering scandals in the state of Iowa (Rittenberg, 2023), Temple University’s match-fixing investigation (Aiken 2024), and Vanderbilt’s backup quarterback’s alleged match-fixing

bribe offer (Salvador, 2024), it is important to look into the strategies NCAA member schools have in place to minimize the opportunity for stakeholders to fix matches.

While it is less prevalent in North America than in other areas in the world, the recent legalization of sports betting in the U.S. could provide opportunities and/or incentives to match-fix. Especially due to the recent sports gambling cases involving student-athletes at both the University of Iowa and Iowa State University, which did see multiple athletes place wagers in events they were directly involved with (Rittenberg, 2023), however, it was also stated that none had any match-fixing occur in them (Olson, 2023). Additionally, student-athletes were also found to gamble more compared to regular students (Nelson et al., 2007). Since the number of college-aged students participating in sports betting has increased, there are likely more student-athletes gambling on sporting events than just those in the state of Iowa, further emphasizing the need to develop proper match-fixing prevention strategies to protect not only the integrity of the sports but also the student-athletes themselves (Heath, 2023). Given the recent legalization of sports gambling, it is important to understand the extent to which NCAA sports competitions are vulnerable to match-fixing. Financial vulnerabilities have been found by Hill et al. (2020), noting that Division I NCAA football, basketball, and baseball are more at risk compared to their professional counterparts based on betting handles and the median salary or scholarships of the athletes, and the pressures to match-fix in the NCAA can be implied. However, the opportunity to match-fix in the NCAA remains a mystery.

There are two main practical contributions that could result from this study. The first is dependent on the results of the vulnerability analysis. If NCAA member schools are found to be vulnerable to match-fixing, the results can help create more and better developed resources and

tools to help combat/prevent match-fixing in NCAA athletics events in the areas that member schools are deficient. The results from the attitudes and beliefs section will also provide the NCAA with a general understanding of how NCAA member schools feel in regard to preventing match-fixing. Second, another goal of the survey was to get NCAA member schools thinking more about match-fixing possibilities in NCAA athletic events as sports gambling continues to grow in the U.S. Since 2018, there have been 175 reported sports gambling infractions (Anderson, 2023). In March of 2024, there were two reports involving match-fixing in the NCAA, a basketball game played by Temple University was flagged as suspicious by U.S. Integrity (now IC360) (Aiken, 2024), and a backup quarterback for Vanderbilt University was allegedly offered \$300k by the mafia to fix Southeastern Conference (SEC) football games (Salvador, 2024). It may only be a matter of time until more reports of match-fixing begin to emerge involving the NCAA.

Purpose and Research Questions

The purpose of this study is to assess the perceived vulnerability of the NCAA to experience match-fixing based on the prevention strategies in place that reduce the opportunity for stakeholders to fix matches. The following research questions were posed:

1. What are the current preventative strategies utilized by NCAA member institutions to help combat match-fixing in intercollegiate athletic events?
2. What is the vulnerability of NCAA member institutions to experience instances of match-fixing in intercollegiate athletic events based on their current utilized preventative strategies?

3. What is the difference in vulnerability between NCAA Division I, II, and III member institutions?

Significance of Study

This study of match-fixing prevention measures in collegiate sport is significant for many reasons. First, it attempts to analyze the current opportunity-based vulnerability of match-fixing to occur in NCAA athletic events. Again, Hill et al. (2020) identified that NCAA Division I football, basketball, and baseball were three vulnerable U.S. sports for match-fixing from a financial standpoint. While financial reasons are the major driver of match-fixing for both crime syndicates (Manoli & Antonopoulos, 2015; Marchetti et al., 2021; Tzeng & Lee, 2021; Tzeng & Ohl, 2023) and athletes (Frenger et al., 2019; Huggins, 2022; Hill, 2015; Tak et al., 2018), and one of the three categories of Cressey's fraud triangle, there is no current study that looks into the opportunity portion of the fraud triangle and its relationship to match-fixing in the NCAA. The NCAA has also conducted survey research regarding different areas of sports gambling in NCAA institutions (NCAA Research, 2023), but it does not address match-fixing. If match-fixing scandals were to begin popping up throughout NCAA athletics, the measures used to prevent match-fixing could be used to help identify a potential contributor to the scandals. Second, the methods of preventing match-fixing in the NCAA is relatively unknown in academic literature. This study would ideally help provide a more detailed understanding of the match-fixing prevention methods used by NCAA member schools, along with the good practices of those prevention methods. A third contribution this study would offer is a look at the differences between Division I, II, and III institutions usage of the recommended match-fixing prevention methods used in sport, along with the differences in vulnerability. A final empirical contribution

of this study would be a general understanding of the current attitudes and beliefs surrounding the NCAA and match-fixing possibilities and the ability to prevent it.

Chapter II: Literature Review

The purpose of this literature review is to develop a better understanding of the prevention strategies that help minimize the opportunity portion of stakeholders to match-fix, according to Cressey's (1953) fraud triangle framework (Abdullahi & Mansor, 2015; Schuchter & Levi, 2016; Sujeewa et al., 2018; Tickner & Button, 2021). As noted by Harvey (2020), the basis of providing educational resources, and detection and prevention measures for match-fixing is "to improve the structural environment of professional [sport] so that the conditions that lead to match-fixing are reduced" (p. 425). While this research would not necessarily focus on the rationalization and pressures portions of the fraud triangle, the opportunity to match-fix is a major condition involved in preventing match-fixing.

Specifically, the literature review examines the four major prevention strategies utilized by sporting and third-party organizations to protect the integrity of sports. First, the match-fixing education literature is reviewed. Second, it discusses whistleblowing mechanisms and reporting procedures. Third, an overview of current regulations and their effectiveness, as well as partnerships in enforcing these regulations is analyzed. Lastly, the review examines the monitoring of suspicious betting patterns or underperformance in sporting events.

Introduction (Institutionalism)

Rationalization is one way to theorize why individuals partake in match-fixing (Hill, 2015; Tak et al., 2018; Tzeng & Lee, 2021). However, Marchetti et al., (2021) and Tak et al., (2018) both assert that sociological institutionalism should also be included to examine structural reasons why individuals fix matches. Through this lens, match-fixing behavior would be shaped by the institution of sport and sports betting (Immergut, 1998) and not just on the individuals'

rational choices when participating in sport (Marchetti et al., 2021; Tak et al., 2018). Where rational choice focuses primarily on individuals making decisions out of their own best interests (Herrnstein, 1990; Lastra et al., 2016 as cited in Tak et al., 2018), new institutionalist approaches do not see the true preferences, theoretically the prioritized self-interests of the stakeholders, expressed every time (Immergut, 1998). Instead, new institutionalism contends that “institutions ... constrain and corrupt human behavior” as well as “induce particular behaviors” (Immergut, 1998, p. 9). New institutionalism consists of three areas: historical, rational choice, and sociological (Hall & Taylor, 1996). As Hall and Taylor (1996) describe it, historical institutionalism is focused on rules or norms of an organization, rational choice focuses on individual self-interests, and sociological institutionalism focuses on the social or cultural components. As the arguments of Tak et al., (2018) and Marchetti et al., (2021) focus on sociological institutionalism, their basis of why individuals match-fix would be on the culturally and socially accepted practice of sports betting. Tak et al., (2018) explains that this new environment of sports betting has created the risk for match-fixing to occur, stating “the remarriage of sports and betting was an institutional decision that put money before ethical issues” (p. 82). Tak et al. (2018), specifically state that legalizing sports betting reduced immoral association to the practice since it is now legally permitted, which as a result would lead to more sport integrity violations like match-fixing.

Sociological institutionalism is also not limited to understanding why individuals make their different choices, but it is also used to describe how organizations change (Hall & Taylor, 1996; Miller & Banaszak-Holl, 2005; Washington & Patterson, 2011). It is understood that organizations change primarily in response to their environment (Washington & Patterson,

2011). These changes are made particularly to enhance the legitimacy of the organization (Hall & Taylor, 1996; Miller & Banaszak-Holl, 2005; Washington & Patterson, 2011). Hall and Taylor (1996) specifically mention that organizations will create new practices in response to their changing environments to increase their “social legitimacy,” regardless of how efficient the new practices are. While the NCAA does not have partnerships with sports betting companies (yet), the NFL has seen massive increases in sponsorship revenue with its partnerships with sports betting companies (Young, 2022). The NFL has also seen a rise in sports betting violations along with the rise in sponsorship revenue (Purdum, 2023). While increased detection methods could also explain the increase in gambling violations, it may also hint that Tak et al., (2018) is likely correct in that institutionally accepted sports betting is potentially going to lead to more match-fixing in sport as people become more interested in betting and less caring about the effects it is having on the integrity of the game.

When it comes to minimizing integrity violations in the new era of sports betting, Tak (2018) examined the challenge in which sport organizations are battling between “managerial efficiency” vs. “ethical legitimacy.” In the analysis of motorboat racing and football (soccer), Tak (2018) notes that the stricter the organizational rules, the more managerial efficiency the organization has, while softer rules leads to more ethical legitimacy. The basis of this understanding is that while the organization would have more control of the competition and its competitors, it would lose the legitimacy of being a true sporting competition, being viewed as more of a gambling game, no different than traditional games like blackjack (Tak, 2018). This was the case for motorboat racing in which competitors must adhere to an exhaustive set of rules and procedures to prevent contaminating the pureness of the race. In contrast, soccer sees less

strict rules, since it needs to maintain its status as a legitimate sport (Tak, 2018). The drawback of softer rules and increased sport legitimacy, however, is match-fixing is easier to execute (Tak, 2018). The NCAA as an institution would need to adapt to the new landscape of sports betting, finding the balance between managerial efficiency and ethical legitimacy that would prevent the occurrence of match-fixing and maintain integrity, especially since sports betting is not going away anytime soon.

Not solely focusing on individual student-athletes, but the structure of the NCAA in terms of match-fixing could be beneficial in preventing the phenomenon of match-fixing. This particular study will not assess individual behavior based on what the NCAA has in place to prevent match-fixing but could help develop more background information as to what the institutional structure of match-fixing prevention may look like in the NCAA, which could be used to explain why match-fixing occurs in the NCAA if there become more scandals in the future.

Education

Education is one of the easiest and most commonly utilized measures for combating match-fixing in sport (Marchetti et al., 2021). Education programs typically focus on informing players in a league about the seriousness of the crime of match-fixing, directing internal stakeholders towards internal reporting mechanisms utilized by the league, and showing external actors that the sport governing body (SGB) is committed and taking the situation seriously (Tak et al., 2018). Proving credibility of the sporting organization is a main reason why match-fixing prevention programs, like the *Don't Fix It!* campaign, are widely used (Harvey, 2020). When conducting these education programs, The Union of European Football Associations (UEFA),

like most SGBs, targets all personnel involved in a sporting event, utilizing both online and on-site training (Manoli et al., 2021). A good education program requires immense planning.

While match-fixing education can be considered a more reactive approach to the problem (Tak et al., 2018), it can transition into a more proactive approach if carried out correctly. To make the education strategy proactive, the goal of the measure should be to create an overall anti-fraud culture, which is instilled through the use of education and training of athletes about the risks and consequences associated with match-fixing (Brooks et al., 2012).

Brooks et al. (2013) identified that fraud is somewhat of a difficult phenomenon to truly define. The concept varies by jurisdiction and not one definition is the same as the other. Taking into account many factors that create fraud, “it is based on deception with the intention of securing some advantage – immediate or in the future – and depriving a third party such as individual(s), a small group of people, or an organisation of honest services or benefits at the expense of other individuals and organisations” (Brooks et al, 2013, pp. 17-18). Match-fixing could fall under the category of fraud since those conducting a fix would be deceiving other stakeholders with some connection to the sporting event for some sort of unfair gain. With that understanding, an anti-fraud culture would be the opposite of fraud. An anti-fraud culture would look to avoid deception at all costs, seeking to be honest and display integrity. Button and Brooks (2009) identified three different elements required to facilitate an anti-fraud culture. First, the organization needs to supply clear and transparent guidelines regarding proper employee behavior. The guidelines should facilitate ethical behaviors in the organization. The guidelines also need to be communicated to the stakeholders in the organization, so they know what the acceptable behaviors are. The second element is to initially bring in honest and moral people to

the organization. It may be difficult to do this in the sporting world as teams generally focus on gathering the best talent possible, which may include immoral and dishonest individuals. The third and final element of facilitating an anti-fraud culture is to develop workplace morale. Employees in the organization should feel good and positive about doing their jobs day in and day out. It is also noted that employees feeling slighted by their employer are more likely to conduct fraudulent behavior towards them (Mars, 1984, & Hollinger & Davis, 2006 as cited in Button & Brooks, 2009).

To create an anti-fraud culture, training should also target younger athletes, as Serby (2015) identified in article 7.2(c) of the Macolin Convention's obligations for SGBs. To help deter these young athletes from fixing, they should be made aware of the possible losses to their earnings and reputations as athletes (Rebeggiani & Rebeggiani, 2013). Sport managers also have an important role in creating an "anti-fraud" culture because their behaviors can influence the culture of a team or league. Teaching managers about the different forms of moral disengagement, identified by Bandura (1999, 2016 as cited in Robertson & Constandt, 2021), that lead to different immoral behaviors, they may be able to lower the amount of unethical decision-making and create an environment of individual responsibility and accountability (Robertson & Constandt, 2021).

While it is predominantly the responsibility of the SGBs to train and educate all players and personnel involved in their respective sport, betting operators should also take an interest in creating an "anti-fraud" culture. Individuals can believe that enhancing sports integrity is mainly to create a fair environment for the sport itself, but in reality, having sporting events free of

corruption creates more fair matches for sports betting and helps legitimize the industry as well (Tak et al., 2022).

Match-fixing stakeholder training and education also requires planning about specific content decisions, delivery decisions, and analysis decisions. Experts recommend that match-fixing education programs contain content about the meaning of match-fixing, how match-fixers operate, SGB rules and regulations, and various tools to recognize, resist, and report any attempts made to fix a match (Abbott & Sheehan, 2013). Barkoukis and O’Shea (2022) further push that anti-match-fixing education programs need to address the skills of resisting and reporting match-fixing requests, indicating that simply informing internal stakeholders about match-fixing only goes so far. Utilizing Austria’s Play Fair Code, it would also be beneficial to tailor each education program to each respective sport, showcasing case studies that specifically identify how match-fixing occurs in an athlete’s sport (Moritzer et al., 2022).

Noteworthy, some match-fixing education programs omit important content. Many programs highlight “organized crime as the phenomenon driver” (Moriconi, 2018, p. 275), which completely neglects the fact that internal stakeholders can and have been the “driver” behind match-fixing attempts (Moriconi, 2018). Moriconi (2018) also identified programs that portray criminals as “bad,” when many times the criminal initiating the fix portrays themselves as good.

Additional content areas include the negative impact on the sport itself if an athlete partakes in match-fixing and the change in relationship between an athlete and a criminal after the first fixed match (Marchetti et al., 2021). Athletes who are educated on the consequences of being involved with crime syndicates, or internal stakeholders attempting to fix a match, and the negativities that may arise when they help fix matches are expected to enhance the ability of the

athlete to reject any attempts made to fix a match (O'Shea et al., 2021). Discussing moral disengagement with the actors involved in sports is also important, as it is often a forgotten aspect in both sport integrity management and education (Robertson & Constantt, 2021). To acquire all of this necessary information, coordination and partnerships require execution, which is an overarching theme in the fight against match-fixing.

Internal Reporting (Whistleblowing) Mechanisms/Protection

“Internal reporting mechanisms are now considered as a leading fraud detection mechanism” (Ondráčková & Verschuuren, 2021, p. 134). Proper internal reporting mechanisms, also known as whistleblowing, is another strategy implemented by many organizations to combat any wrong or immoral behaviors. Quality whistleblowing mechanisms utilize education to provide an understanding to stakeholders about internal reporting mechanisms available to them, while also fostering a culture in which reporting breaches of integrity does not equate to ostracization or other negative outcomes (Brooks et al., 2012; Moriconi & De Cima, 2020; Tweedie & Holden, 2022; Vandekerckhove & Lewis, 2012). Mechanisms also ensure the protection of those reporting and may even utilize third-party organizations to complete the process of reviewing any cases reported (Ondráčková & Verschuuren, 2021). Finally, these mechanisms require clear and precise policies to ensure proper understandings of the reporting process, as well as transparency surrounding the handling of reports (Ondráčková & Verschuuren, 2021; Rennie & Crosby, 2002; Vandekerckhove & Lewis, 2012).

Fairness or Loyalty Conflict and Reporting Culture

Internal reporting mechanisms are commonly utilized by many organizations outside of the sports world, however, sports organizations and SGBs have been identified as having barriers

to these mechanisms (Robertson & Constandt, 2021). Verschuuren (2020, as cited in Robertson & Constandt, 2021) suggested the barriers include “power discrepancies, poor moral attentiveness and moral reasoning, strong organizational loyalties, and the normalization of cultures of silence” (p. 725). As observed in many cases of whistleblowing, individuals also face the difficult choice of choosing between fairness or loyalty (Waytz et al., 2013). In a theoretical match-fixing case, the athlete can either report the individual executing a fixed match and preserve the integrity of the sport or they can stay quiet and protect the athlete that is acting corruptly. The decision to whistle blow may be even harder for team sport athletes, due to the willingness to blow the whistle decreasing as the relationship between the individuals involved becomes closer (Waytz et al., 2013). However, athletes may feel it is better to directly address the fixing athlete themselves, privately, rather than reporting the case to a specific organization which could tarnish the fixing athlete's reputation and lead to the media twisting the story (Moriconi & De Cima, 2020). These combined factors could potentially result in fewer athletes reporting cases of match-fixing against teammates.

Creating an anti-fraud culture through education requires the encouragement of whistleblowing to mitigate any corruption occurring in any sport (Brooks et al., 2012), since environments where reporting is not protected nor encouraged allow for corruption to thrive (Marchetti et al., 2021). An anti-fraud culture should not be limited to athletes reporting corruption, it should also include the mental health issues athletes experience both before and after whistleblowing (Erickson et al., 2019). Whistleblowing is mentally draining and defeating (Erickson et al., 2019). Whistleblowing athletes become the subject of backlash and the target of questioning, such as whether the whistleblower is the one who is partaking in the corrupt act

(Erickson et al., 2019). Many cases also result in the infamous “his word against mine” battle, and without physical evidence of match-fixing, whistleblowers might end up facing a case of defamation against the alleged match-fixer (Moriconi & De Cima, 2020, p. 66). One of the most difficult factors for whistleblowers to come to terms with is the fact that they may end another athlete’s career. Erickson et al. (2019) noted that whistleblowing athletes believed it was not fun ending someone else’s career, but it is something that needs to happen if the athlete wants to see justice in their sport. This perspective directly relates to the dilemma of loyalty or integrity, such a conflicting and difficult choice for an athlete to make. For these reasons, athletes should be encouraged to look for advice early when they encounter a situation involving match-fixing which they need to report (Lewis, 2002).

Whistleblower Protection

SGB internal reporting mechanisms should include whistleblower protections to help facilitate reporting (Serby, 2015; Vandekerckhove & Lewis, 2012). In a specific survey, 42.1% of referees who responded felt they would not be protected for blowing the whistle (Visschers et al., 2020). Implementation of protections against all types of retaliation for whistleblowers is important (Vandekerckhove & Lewis, 2012).

The protective measures for whistleblowers need to specifically mention in the procedures that an SGB (employer) will tolerate absolutely zero retaliation or harassment towards a whistleblower, utilizing proper action if necessary (Lewis, 2002). Yet, while many SGBs do understand the need for protection and that many whistleblowing athletes suffer from retaliation once they report, there are typically no punishments for those initiating the retaliation (Moriconi, 2020). With minute amounts of protection for whistleblowers and no punishments to

retaliators, whistleblowing athletes may be subject to many negative outcomes, including questioning from co-employees, demotion or termination, and potential physical harm (Brooks et al., 2012). Additionally, athletes may lose the ability to play their sport again, as many clubs may retaliate by choosing not to offer the opportunity for these athletes to play for them (Moriconi & De Cima, 2020).

Athletes who have partaken in match-fixing themselves but have reached a point where they no longer want to be involved and feel it is necessary to provide information also require protection (Tweedie & Holden, 2022). These athletes may feel “trapped” and needing to “break free” from their involvement in match-fixing (Tweedie & Holden, 2022, p. 105). The purpose of internal reporting mechanisms is to gather information, which is vital to combating match-fixing. With the current landscape of match-fixing, providing complete or partial immunity to individuals who have participated in this corrupt act may be beneficial (Tweedie & Holden, 2022).

External Agency Involvement

Another aspect of a well-established reporting mechanism involves the utilization of a third-party organization (Ondráčková & Verschuuren, 2021). Third parties require authority in handling any reports made without interference from an SGB. Which removes stakeholder interferences, increases the trustworthiness of the third party, and avoids any conflicts of interest (Ondráčková & Verschuuren, 2021). Trust, specifically, is a key component needed when it comes to getting athletes to report corrupt acts (Erickson et al., 2019; Ondráčková & Verschuuren, 2021). Once athletes decide they need to act and blow the whistle, the next question they ask themselves is ‘Well who do I trust?’ (Erickson et al., 2019, p. 729). Many

athletes do not have a relationship with SGB administrators, and thus question their trustworthiness. If an athlete can understand that the SGB does not influence a report made by a whistleblower, it could help them increase their trust in the third-party organization (Erickson et al., 2019).

While utilizing third parties has its benefits, there should still be some involvement from the SGB and coordination with the third-party organizations (Abbott & Sheehan, 2013; Ondráčková & Verschuuren, 2021). Abbott and Sheehan (2013) noted that “it is imperative that all the stakeholders seek to operate in a coordinated manner to ensure a comprehensive approach to both the prevention of match-fixing and the response to any allegation of match-fixing” (p. 277). Doing so would allow the third party to gather important information from the SGB, which then the third party could use to provide non-legal advice to the SGB on how to handle different situations (Ondráčková & Verschuuren, 2021). The SGB also needs to practice good governance to prevent corruption (Abbott & Sheehan, 2013; Geeraert, 2018). Good governance includes many aspects, but the most relevant to whistleblowing are “open policies and processes”, and “the articulation of ethics and values” (Abbott & Sheehan, 2013, p. 280). Acting consistently when responding to and handling any reports made to the third party, is an important practice of good governance (Ondráčková & Verschuuren, 2021).

Clear and Consistent Procedures

Finally, the entire process and policies of whistleblowing need to be clear and consistent, as “clear procedures for informing need to be in place to allow effective whistleblowing to occur” (Rennie & Crosby, 2002, p. 178). While consistent procedures are important, they may be an overlooked component of the whistleblowing process, as many organizations focus solely on

the whistleblower and not on strategies for handling the reports the whistleblower is making (Vandekerckhove & Lewis, 2012). Ondráčková & Verschuuren (2021) identified critical components necessary for a good reporting mechanism, one notable component was a clear and transparent framework for complaint handling. Creating a flowchart or another form of diagram to showcase the whistleblowing procedure is a great method to portray a clear and transparent framework (Lewis, 2002). Procedures should also include actor roles involved in the whistleblowing process (Vandekerckhove & Lewis, 2012). Effective reporting mechanisms need involvement from top-level management, who can enforce and promote an anti-fraud culture (Miceli et al., 2008, & Roberts et al., 2011, as cited in Verschuuren, 2020). Stakeholders need to understand why the procedures are in place, even the top-level management, which should be taking charge of the entire construction of internal reporting measures (Lewis, 2002).

Important to whistleblowing procedures is an understanding of crime syndicate's countermeasures and handling false reports. First, athletes should be given the option to report verbally or via writing (Lewis, 2002). Given advances in technology, there are multiple ways in which athletes could report cases of match-fixing to the relevant person or organization. Second, crime syndicates do have countermeasures for whistleblowing mechanisms (Tzeng & Ohl, 2023). Investigative units should work together to overcome these different countermeasures. Lastly, false reporters should be held accountable (Vandekerckhove & Lewis, 2012).

Rules, Regulations, and Policies

In the prevention of match-fixing, rules, regulations, and enforcement policies are another main strategy utilized to protect sport integrity (Blair, 2018; Dietl & Wiengärtner, 2014; Kihl, 2021; Tak, 2018; Tak et al., 2018; Villeneuve, 2015). Regulations are considered the most

intimidating and threatening mechanism utilized to combat match-fixing (Howlett & Ramesh, 2003, & Vedung, 1998, as cited in Tak et al., 2018). Meaning that this mechanism revolves around disciplinary action and sanctions in response to a breach in match-fixing rules and policies. Creating rules to help deter corrupt behavior is one of the first steps done by an SGB (Hessert & Ling Goh, 2022). Regulations should include internal stakeholder acknowledgment, as well as incorporating a variety of organizations in creating and enforcing rules (Hessert & Ling Goh, 2022). Many countries also have different match-fixing regulations, potentially creating challenges for the enforcement of rules.

SGBs typically are responsible for creating match-fixing regulations for their own sports, which vary between sports organizations and mostly address player betting. For example, the NCAA prohibits all forms of sports wagering on all levels of athletics for athletes competing in the NCAA (NCAA, n.d.). The NFL on the other hand, allows its players to place bets on all other sporting events that are not professional football but prohibits league personnel from betting on any sports (Breech, 2023). One common sanction for a rules breach includes the suspension of the actors involved in the fix, with UEFA even threatening to suspend entire clubs from competition (Hessert & Ling Goh, 2022).

Internal Stakeholder Acknowledgement

Some organizations, like Football Association of Singapore (FAS), require players to acknowledge the SGB's rules regarding match-fixing and sports wagering by requiring the players to sign an agreement to play in FAS events (Hessert & Ling Goh, 2022). Education programs are critical in alerting actors involved with an SGB about the sports-betting and match-fixing regulations and rules (Tak et al., 2018). If players do not know what the rules are, it could

create some confusion, leading to avoidable disciplinary action. It seems necessary for all SGBs to follow a similar strategy to FAS in requiring a signature acknowledging the rules in order to play, especially for new members, and potentially before the start of each new season. Yet it should be noted that “despite being aware that it is a prohibited practice punishable by disciplinary codes, and receiving training in this regard, athletes continue placing bets” (Moriconi, 2020, p. 8). As discussed later, all aspects need to be covered in both the regulations and education of athletes, so there is no confusion or gaps that allow athletes to place wagers and subsequently alter their level of play and the match.

Partnerships

Many actors are involved in maintaining and enforcing match-fixing regulations, including “law enforcement, state and national legislation, government regulations, and specific sport and non-sport regulatory oversight bodies including anti-corruption and safe sport agencies” (Kihl, 2021, p. 175). While many actors appear to be involved to some extent, the majority of responsibility in enforcing rules is placed into the hands of the SGB or sport federation, with national regulators taking a laissez-faire approach to the matter (Serby, 2015). For example, UEFA has its own rules and regulations and can exert jurisdictional power over all the members of its organizations to enforce those rules and regulations (Manoli et al., 2021). In another example, having specific rules enforced by SGBs was noted by Blair (2018) in a case involving sport-related match-fixing. The 2012 Olympics saw eight badminton players disqualified for underperforming in matches to aid in bracket seeding. The Badminton World Federation (BWF) was able to proceed with the disqualification of the athletes due to the organization having set policies that address sporting-related match-fixing. Conversely, when the

Japanese Women's soccer team intentionally underperformed at the Olympics to avoid traveling farther, they were not subject to any punishment from the Federation Internationale de Football Association (FIFA). The reason being that FIFA only addressed betting-related match-fixing, so if FIFA did want to pursue any punishment against the Japanese team, they would not be able to (Blair, 2018). Another reason why SGBs are heavily involved in combating match-fixing is that it can be an integrity breach and not a criminal offense. For example, Major League Baseball (MLB) punishing athletes for using performance-enhancing drugs (PEDs) is due to the use of PEDs not so much being a criminal offense, but a violation of the integrity of sport. Match-fixing can similarly be an integrity violation in sports, but it can also become a messier situation. The messier situations are when agencies with more power and jurisdiction need to become involved.

While it has not been a large problem in the U.S., Europe has seen instances of criminal organizations outside of UEFA's scope of power involved in sport corruption in football (i.e., soccer). Since these organizations are not directly involved with UEFA, UEFA cannot pursue any action against the organizations, as they only have authority over their involved stakeholders (Manoli et al., 2021). SGBs are also not able to look through any betting documents, obtain further evidence, or make individuals testify for any wrongdoings (Villeneuve, 2015; Moriconi & Almeida, 2019). SGBs not having the authority to look into cases of match-fixing more thoroughly does curb their ability to single-handedly combat match-fixing (Interpol, 2014, as cited in Villeneuve, 2015).

As evident, athletes are not the only individuals conspiring to manipulate matches. Crime syndicates can play a role in persuading athletes or other involved stakeholders as "fixed matches

primarily serve the monetary interests of criminal individuals” (Dietl & Weingartner, 2014, p. 128). Additionally, betting-related match-fixing is a less regulated avenue for criminal funding compared to other means of criminal funding, like trafficking (Peurala, 2013). Many of these factors make illegal sports betting and match-fixing an attractive way for criminals to earn money. For these reasons, and the limitations SGBs face with lack of authority, the attempts to combat match-fixing need to include involvement from the government and law enforcement (Kihl, 2021; Hessert & Ling Goh, 2022). It takes a multi-stakeholder approach of both sport regulations and national/international legislation to effectively combat match-fixing (Moriconi & Almeida, 2019). Van Bottenburg (2022) asserts a network governance structure in which multiple different organizations work together to achieve a common goal is needed.

Abbott & Sheehan (2013) emphasize that working in coordination with all stakeholders is important to help deter and catch match fixers. This coordination is important as “cooperation frameworks with other stakeholders and law enforcement agencies aim to coordinate actions against the issue, and exchange information and know-how on match-fixing and organized crime” (Manoli et al., 2021, p. 148). The International Olympic Committee (IOC) supports this statement with recommendation 32 of their Olympic Movement in Society stating, “governments should recognize that close collaboration and action in the fight to put an end to illegal and irregular betting and match-fixing is essential, both in relation to Olympic-accredited events and to the wider world of sport competition” (IOC, 2009, p. 13, as found in Moriconi & Almeida, 2019). The importance of a collective group of organizations working together to tackle the “wicked problem” of match-fixing in sport is critical (Van Bottenburg, 2022).

With the legalization of sports betting in the U.S., states now have the ability and power to regulate sports gambling and protect sporting integrity, as recommended by many stakeholders, but they have not given a great deal of attention to the matter (Balsam, 2020). As Abbott and Sheehan (2013) and many others persist, it should not be solely up to the SGB or another singular organization to fight match-fixing, multiple stakeholders need to be involved to have the best chance at preventing and countering match-fixing in any sport. Not one organization can single-handedly tackle match-fixing in sport (Abbott & Sheehan, 2013; Hessert & Ling Goh, 2022; Kihl, 2021; Manoli et al., 2021; Moriconi & Almeida, 2019; Van Bottenburg, 2022; Villeneuve, 2015).

Countries Differ in Regulations

Just like different sporting organizations differ in their gambling rules and policies for cases of match-fixing, most countries differ as well (Tweedie & Holden, 2022; Van Bottenburg, 2022). Van Bottenburg (2022) notes that many national governments have the power and capability to intervene in match-fixing cases, however, each national government worldwide is not the same “differ[ing] in the extent to which they can and will act against match-fixing” (p. 50).

First, Singapore prosecutes cases of match-fixing under their general dishonesty offenses in the Prevention of Corruption Act (PCA), with different sanctions handed out for any breaches (Hessert & Ling Goh, 2022). While Singapore does have sanctions that ideally would deter match-fixing, like up to five years in prison if found guilty, “[there] is still no clear evidence as to whether match-fixing in local and regional matches in Singapore has decreased” (Hessert & Ling Goh, 2022, p. 289). If there are no decreases in match-fixing utilizing Singapore’s

approach, it may make sense to formulate specific match-fixing and sport corruption laws, like SGBs have in place for their organizations. These rules would be nationwide and be in effect for all sports.

The European Union (EU) has also sought to counteract match-fixing for some time now (Moriconi & Almeida, 2019). While the EU has been active, it is only a political agenda and is unfortunately not penalizable at that level without additional instruments or legislation. For this reason, the EU, through the use of the Macolin Convention, urges the member nations to cooperate, also establishing standards of regulation and international monitoring of the regulations. They provide the resources that the member nations utilize for action. This strategy gives EU member nations free reign to create their sanctions (Moriconi & Almeida, 2019). While this gives each member country the ability to act independently, this strategy may not be beneficial, as some national legislations fell short of getting all the elements needed to make match-fixing a true criminal offense (European Convention, 2007, as cited in Moriconi & Almeida, 2019). Just like a uniform policy for all sports to avoid athlete confusion, the EU and Macolin Convention may consider utilizing the same strategy to avoid confusion and ensure their member nations have all their bases covered.

The United States currently has legislation in place to curb any bribery in sporting events. 18 U.S. Code § 224 (1964) specifically states,

Whoever carries into effect, attempts to carry into effect, or conspires with any other person to carry into effect any scheme in commerce to influence, in any way, by bribery any sporting contest, with knowledge that the purpose of such scheme is to

influence by bribery that contest, shall be fined under this title, or imprisoned not more than 5 years, or both.

While the U.S. does have some forms of legislation to uphold sport integrity, its main focus is on bribery, which can be a main aspect of match-fixing. However, it does not consider the non-bribery manners in which match-fixing can be stimulated, like blackmail or utilizing threats (Holden & Rodenberg, 2015, as cited in Balsam, 2020). Without specific match-fixing policies, the U.S. would have to act against any form of corruption in sport using sanctions and legislation already in place, similar to Singapore. Additionally, the sport-specific legislation focuses mainly on preserving betting integrity and not sporting integrity (Holden, 2019, as cited in Balsam, 2020). While this strategy could work for the U.S., it may be a wise idea to look into establishing more sport integrity-centered legislation, especially with the recent NCAA betting investigations. There appear to be many gaps in the legislation. Other means exist in which sporting events can be influenced without the use of bribery.

While it sounds easy to utilize Van Bottenburg's (2022) network governance approach to preventing match-fixing in sport, it is easier said than done. It is abundantly clear that many organizations and individuals are required to work together to have the greatest chance of combating match-fixing (Kihl, 2021; Manoli et al., 2021; Van Bottenburg, 2022). However, Van Bottenburg (2022) identified complexity as a major problem in acquiring the multi-stakeholder approach; as the network increases in complexity, the ability to coordinate between members becomes more difficult. It would require member organizations to find the correct structure for the network, which may be centralized or decentralized governance, or even the creation of an

external organization that controls everything (Van Bottenburg, 2022). Organizations and countries would need to work to find the overall best structure to utilize.

Challenges

While regulations can work to deter match-fixing, there are still some challenges. First, there is never going to be a sporting world free of match-fixing. For there to be zero match-fixing or other betting corruption in sports, there would need to be regulations banning all types of bets (Dietl & Weingartner, 2014). That is not feasible knowing that the underground betting market exists, even with legal betting, and illegal betting will again take over. Another potential challenge faced with regulations is the inconsistent nature in which the regulations are written, and how match-fixing is interpreted by both SGBs and countries (McNamee & Rubicsek, 2022). UEFA had the opportunity to showcase the seriousness with which they handle match-fixing, however, they fell short with relaxed and inconsistent punishments towards the Greek members involved and the indicted Turkish executives (Manoli et al., 2021). As discussed previously, Blair (2018) also notes differences in match-fixing rules and interpretations between badminton and soccer. McNamee & Rubicsek (2022) state that these differences in interpretations can create confusion and lead to inconsistencies in the enforcement of match-fixing infractions, and sometimes no investigations at all. As evident with countries and SGBs differing in rules, the inconsistency gap could be widened. It may be beneficial to utilize a flowchart to showcase the procedures to be made when match-fixing cases arise, as discussed in the whistleblowing section.

Australian authorities recommended to “streamline current processes and provide clarity, transparency and consistency of the sports wagering regulatory system at the national level”

(UNODC, n.d., p. 264) in their fight against match-fixing. Nations struggling with match-fixing and other sports gambling corruption may wish to follow Australia's approach to curbing match-fixing and assess its effectiveness. Regulating match-fixing can be challenging from a financial aspect, since additional government costs are associated with creating and enforcing new regulations (Manoli et al., 2021). Enforcing regulations would also take time and effort. These two factors may dissuade the government from taking any larger roles, continuing to leave it up to the SGBs and their limited power to enforce anything. Match-fixing can happen throughout multiple jurisdictions, which could be challenging to deal with. "When matches are manipulated in different countries and betting takes place on the internet, the risks for criminals getting caught are not great" (Peurala, 2013, p. 273). Being that match-fixing can cross multiple jurisdictions, it is imperative that partnerships are utilized, and cooperation is maintained by stakeholders (Abbott & Sheehan, 2013; Manoli et al., 2021). An international collaboration may also help strengthen jurisdictions with weak regulatory enforcement, along with helping combat cross-nation corruption (Peurala, 2013). Finally, attempting to foster partnerships and achieve the ideal "network governance" could become complex, and the more complex that structure becomes, the more difficult it becomes to coordinate and work efficiently with all the other organizations involved (Van Bottenburg, 2022).

One important note is that while much of the focus of match-fixing prevention has been locked onto which regulations and handling the types of betting markets, there should be further research regarding what bets boost sport sustainability and which bets compromise sport integrity (Moriconi, 2020). Further research regarding athletes' thoughts and opinions regarding sports betting should be conducted, as they are the primary focus of that market (Moriconi &

Almeida, 2019). The attempt may be to find the happy medium between a solid betting market and a sustainable sport free from corruption.

Early Warning Detection Systems/Monitoring

Early Warning Detection Systems (EWDS) and other forms of monitoring are becoming popular means of detecting instances of match-fixing in sport. This form of prevention has great potential, even realized in the 2008 Beijing Olympics, as the IOC deemed it “essential to monitor the betting market, early detecting, and alerting possible irregularities with sports betting” (Moriconi & Almeida, 2019, p. 83).

How EWDS Work

These systems are set up to detect any suspicious trends happening in the sports betting market, such as major price shifts or drastic changes in the odds of sporting events. Detection systems also look into the number of bets being placed on an event (Marchetti et al., 2021). It is important to note that the odds are monitored to a great extent as “the basic concept behind the monitoring of betting market odds is rooted in the notion that market odds may be interpreted as probabilistic forecasts of outcome probabilities” (Forrest & McHale, 2019, p. 7). The detection systems typically utilize a mathematical model to “forecast” the outcome of the sporting event and then compare that model with the actual betting market to help flag any suspicious matches (Forrest & McHale, 2019). Dramatic changes in the betting market or large differences between the mathematical “forecast” and the odds of the betting market may imply that some type of information is circulating between sports gamblers regarding the sporting event (Peurala, 2013; Forrest & McHale, 2019). Potentially, a fixed outcome of the sporting event.

The volume of bets placed should not be overlooked, however, as Ötting et al. (2018) “argue that focusing on odds only and hence ignoring the betting volumes neglects the importance of market liquidity” (p. 484). Betting markets with larger amounts of activity occurring will typically have more fixed odds that will change to a lesser extent when bets are placed, compared to markets with less activity in which a singular bet can shift the odds to a more noticeable extent (Ötting et al., 2018). Both the odds and volume of bets should be tracked when monitoring the betting market, as incorporated by Ötting et al. (2018) and their detection model, as it will cover more bases and ideally lead to more suspicious matches being detected.

The actual monitoring program itself is only part of the entire system for detecting match-fixing. Forest & McHale (2019) describe the entire review process for a match that has been alerted as potentially fixed. Once the match is flagged as suspicious, an expert will review the match and then inform the proper organization of the results of that review. The experts are individuals with a great understanding of sports and betting markets. An expert will analyze the event and look for any explanations for the flagging of the match, if no explanations are found, the event is analyzed by a team. If it is determined that there is a good chance of match-fixing, the case will be pushed to the judicial level.

While certainly a tedious ordeal, the implications of detection systems in sports can be radical in the fight against match-fixing. Even more than ever since information circulating in the illegal betting market generally makes its way to the legal market, affecting the odds and helping identify even more fixed matches (Rebeggiani & Rebeggiani, 2013). Additionally, while the volume of bets placed in unregulated markets is virtually undetectable, many illegal operators still need to give input of their odds online, making it possible to monitor the odds in illegal

markets with the detection systems (Forest & McHale, 2019). The outlook of detection systems is ever promising.

Who is Using EWDS?

Early warning detection systems are evidently becoming popular in today's sporting culture. Sportradar (2023) notes partnerships with a variety of leagues, such as the MLB, NASCAR, and UEFA. Integrity Compliance 360 (IC360), formerly known as U.S. Integrity, (n.d.) is another popular integrity monitoring service in which it has partnerships with many professional sport leagues. IC360 also has partnerships with NCAA member schools and conferences, including three of the four division I power conferences (PAC12 was included but will no longer exist). While many NCAA conferences are listed as clients, only six division I schools are listed. There are also no division II or III schools or conferences covered under IC360. However, the NCAA does state that it monitors around 13,000 collegiate matches over different sports and divisions (McGuire, 2023). IC360 recently flagged a Temple University basketball game as suspicious for match-fixing, providing proof that the NCAA is at least monitored at the division I level (Aiken, 2024).

In addition to sport leagues using monitoring services, Serby (2015) does identify that gambling operators are involved in the process of monitoring sport competitions for match-fixing. Furthermore, Tak et al., (2022) explained earlier that a fixed match does not only affect the integrity of the sporting event itself but also the integrity of the betting market, therefore it is important for both agents to collaborate. The betting industry may be under looked in its efforts to combat match-fixing. However, "the betting industry pursues the realization of betting integrity under the guise of the more widely acceptable concept of sport integrity" (Tak et al.,

2022, p. 1013). Based on this understanding, the SGBs and betting operators must continue to partner to detect fixed matches.

Accuracy and Efficiency

A traditional sporting league contains many teams in which those teams play many games, for that reason, a large number of games would need to be monitored. UEFA monitors upwards of 29,000 matches a year with their detection system, utilizing 400 betting companies that analyze over 100 million bets every day (UEFA, 2015, as cited in Villeneuve, 2015). If the NCAA were to monitor all of its sporting competitions, the organization would have an enormous amount to cover. There are 24 sports that NCAA member institutions compete in and over 1,000 institutions in the NCAA (NCAA, n.d.). In the Football Bowl Subdivision (FBS), there are approximately 1,600 games to monitor a year. That is one sport, which also typically sees lower amounts of games in its full season compared to other sports. Being that these detection systems would have an astronomical number of games to monitor, it would be highly necessary for these systems to be both efficient and accurate. To be efficient, the well-known Sportradar Integrity Services' Universal Fraud Detection System (UFDS) utilizes the advanced technology of artificial intelligence (AI) to aid in its system of monitoring. Since establishing AI in the system in 2018, the UFDS has had “an increase in the number of matches monitored, detected, and ultimately reported to the respective sport federations and law enforcement” (Sportradar, 2023, p. 14). AI technology for detecting match-fixing has created new ways in which events can be monitored, including the processing of 500+ data points during one event (Sportradar, 2023). With the ever-expanding growth of AI, it may have an important usage in the alerting of fixed matches in the future.

In addition to efficiency, the detection systems need to have great accuracy in flagging suspicious matches (Lin & Chen, 2015; Ötting et al., 2018). The UFDS successfully alerted and/or flagged matches in five separate instances (Kerr, 2017). While this study showed the system to be quite accurate, some instances were not. The detection system in the South Korean K-League began operations in 2012 and had not had an alert of match-fixing up to 2018, meaning there were no identified instances of a fixed match. While it is certainly possible that there was no match-fixing occurring, it would be very doubtful that there was none (Tak et al., 2018). In the Chinese Professional Baseball League (CPBL), a detection system was utilized to analyze five different cases of match-fixing in the league. The system looked into poor performance in players from the 1996 case and “provided an accuracy rate for the anomalous efficiency monitoring system as high as 73%” (Lin & Chen, 2015, pg. 313). Next, Ötting et al. (2018) compared the detection accuracy of betting volumes versus betting odds. It was found that the odds method of detection found more of the fixed matches, however, it also flagged more of the matches that were not fixed. Conversely, the betting volume method identified less fixed matches than the odds, but the volume method flagged fewer of the non-fixed matches. It should be noted that these results are from the operator BetFair, in which bettors compete against each other rather than the operator itself. While there are still some flaws to work out in the accuracy of the betting detection systems, they are trending in the right direction. With the continued development of AI, as Sportradar has implemented, the accuracy rate of detection should be expected to increase utilizing the EWDS.

EWDS Challenges

Finally, detection systems do come with certain challenges that need to be overcome. First, the flagging of a match does not prove any match-fixing has occurred, it only alerts the organization that a particular match had some suspicious occurrence (Peurala, 2013). As noted previously, there needs to be a team involved in the analysis of the match, creating that long and tedious process of actually identifying a fixed match. The understanding of monitoring systems only providing alerts is further emphasized by Marchetti et al., stating that “existing monitoring systems (...) do not always present actual evidence of match-fixing” (Marchetti et al., 2021, p. 439). However, with the growing nature of AI, it may not be long until these systems do provide evidence of match-fixing. Next, the implementation of an EWDS may seem unfeasible for some organizations as there could be financial constraints. Some Brazilian soccer managers had “considered such a system as too expensive and not a priority” (Marchetti et al., 2021, p. 439). Many organizations would likely need to hire knowledgeable individuals to help complete analyses for the organization, individuals to maintain the systems, as well as other various costs associated (Group of Copenhagen, 2023). One cost the organizations would likely avoid paying is a fee for hiring a third-party integrity service, as Sportradar offers free service to sport organizations and federations. Sportradar (2023) simply asks that the respective organizations and federations invest in different strategies of prevention, such as the ones described previously. Finally, since many detection systems are on the newer end of creation and continuing to be developed, there are potentially other challenges that have not been discovered yet.

Conclusion

In summary, there are many current preventative strategies utilized in the fight against match-fixing. Education plays a role in developing the “anti-fraud culture” (Brooks et al., 2012). It also informs key stakeholders about the dangers of match-fixing, providing items such as ways to resist any attempts made to fix a match or where to report cases of match-fixing (Abbott & Sheehan, 2013; Marchetti et al., 2021; O’Shea et al., 2021; Tak et al., 2018). Whistleblowing policies need to be clear, transparent, and consistent (Lewis, 2002; Ondráčková & Verschuuren, 2021; Rennie & Crosby, 2002; Vandekerckhove & Lewis, 2012). Additionally, whistleblowers need to be protected (Lewis, 2002; Serby, 2015; Tweedie & Holden, 2022; Vandekerckhove & Lewis, 2012), and the correct parties should be handling any reports made (Erickson et al., 2019; Abbott & Sheehan, 2013; Ondráčková & Verschuuren, 2021). Rules and regulations are heavily used to help deter corrupt behavior and punish those that tarnish the integrity of sporting events (Blair, 2018; Dietl & Wiengärtner, 2014; Kihl, 2021; Tak, 2018; Tak et al., 2018; Villeneuve, 2015). These rules and regulations need to be concise, avoiding any broadness that may let stakeholders off the hook (Blair, 2018). Countries and organizations need to work together in the enforcement of the rules and regulations as well (Abbott & Sheehan, 2013; Manoli et al., 2021; Moriconi & Almeida, 2019; Van Bottenburg, 2022). Finally, early warning detection systems show promise in the monitorization and flagging of any suspicious matches (Forest & McHale, 2019; Kerr, 2017; Lin & Chen, 2015; Ötting et al., 2018; Sportradar, 2023). With the continued development of AI, monitorization may become the biggest weapon in combating match-fixing (Sportradar, 2023). It is also important to note the overarching theme of partnerships, as each preventative strategy requires forming partnerships (Abbott & Sheehan, 2013). Fostering a

collaborative and coordinated network of multiple organizations is a necessity if there is to be any success in preventing match-fixing from overtaking the natural state of the sporting environment (Abbott & Sheehan, 2013; Manoli et al., 2021; Moriconi & Almeida, 2019; Van Bottenburg, 2022). A key limitation of the literature is most of the articles either look into match-fixing scandals that occur outside of the United States or research non-US sports. While the match-fixing prevention strategies identified are expected to work in US sports, there is a slim possibility that they do not due to potential differences between countries. Additionally, match-fixing is not as dominant in the United States compared to other countries (noted in the introduction), which is likely the reason behind the lack of research regarding match-fixing in the US, but with the recent legalization of sports wagering in the US and consistent growth of the sports betting industry, it would be beneficial to dig into what a major US sports organization is doing to prevent scandals of match-fixing.

Chapter III: Methodology

Survey Design

The purpose of this survey research was to collect information from NCAA compliance officers regarding their athletic departments strategies to prevent match-fixing in their athletic events. The information collected was both used to display the usage of each prevention strategy and associated good practices. The findings were also used to assess the perceived vulnerability of NCAA competitions to experience match-fixing. A survey was the preferred study method due to the number of institutions affiliated with the NCAA totaling approximately 1,100. Every member institution was invited to participate in the study, which was both financially and physically unfeasible to conduct through other methods.

This research was descriptive and cross-sectional, utilizing a mixed methods approach (Creswell & Creswell, 2018). Data was collected through an online survey created and distributed through Qualtrics. Qualtrics was chosen as it is convenient, free to use, and includes various functions deemed necessary to conduct this research. The University of Minnesota Institutional Review Board reviewed and approved the study (#00021289).

Population/Sample

The population for this study was NCAA-affiliated athletic departments. The NCAA was selected based on many of the individual vulnerabilities identified in the introduction, including lack of compensation for athletes and lower viewership of events (Frenger et al., 2019; Hill, 2015; Huggins, 2022; Marchetti et al., 2021; Tak et al., 2018). In total, 1,101 athletic departments were invited to participate in this study, consisting of 363 at the Division I level, 304 at the Division II level, and 434 Division III schools. Participants were identified through the

NCAA's online directory (<https://web3.ncaa.org/directory/>). The directory contained all current NCAA-member schools, as well as a link to each school's athletic department website. The link from the directory was copied into a spreadsheet. There were a few colleges in the process of transitioning between divisions, those schools were included in the division they were moving into. After collecting all the links for each institution, the athletic department websites were manually scanned to identify the most senior compliance administrator. If there was no senior compliance administrator listed, the institution's athletic director was selected to participate in the survey. Emails of all the participants selected to be invited to participate in the study were copied onto the spreadsheet, placed alongside the link to the website for their respective institution.

There was no random sampling conducted for this study. As understood from Adler (2006) "good sampling practices aim to ensure that all members of the population of interest have a chance of being sampled for the study" (p. 22). While this statement revolves mainly around random sampling, everyone in the population would have a chance of being sampled if they were all invited to participate. Many studies involving surveys would be unable to sample everyone in the target population (Coughlan et al., 2009; Dillman et al., 2014), but it was feasible for this study and the survey was sent to every member of the target population, acting as a census. This form of census sampling eliminates any coverage error that could occur in the study by having a random sample of the study instead (Adler, 2006; Granello & Wheaton, 2004; Umbach, 2004). Sampling error was also removed by sampling everyone in the population (Umbach, 2004). While a perfect response rate was not expected, every selected individual was

given the opportunity to participate in this study. If the criteria of the NCAA-affiliation was met, a survey invitation was sent.

Instrumentation

The survey (appendix A) used for this study was specifically designed to address the research questions. It has never been utilized before in previous studies. Since this was the first implementation of the survey, the validity of the questions may not meet important thresholds. Along with the validity of the survey, the reliability of the survey may also be questionable. Results from this survey will help develop an understanding of the validity and reliability of the survey.

As this is a newly constructed survey, many good practices of survey creation were included in the design. Almost all of the guidelines of survey creation that Dillman et al. (2014) developed in *Internet, phone, mail, and mixed-mode surveys: the tailored design method* were followed when creating the survey. In addition to the guidelines, additional strategies developed by Dillman et al. (2014) were utilized to promote survey responses. Recipients were informed of the usefulness and importance of their response, as well as the potential benefits that could arise to both their institution and the NCAA. The research team additionally allowed respondents to remain anonymous, which could have led to more open answers from the respondents (Comsey, 2002, as cited in Parsons, 2007; Dillman et al., 2014). Finally, in Adler's (2006) analysis of Dillman's (2000) survey guidelines and as recommended by the University of Minnesota Institutional Review Board, respondents were allowed to skip questions to encourage responses. The research team felt allowing for item nonresponse was better than having respondents stop the entire survey (Dillman et al. (2000), as cited in Adler, 2006).

The survey was developed based on existing formats including the *NCAA Survey of Senior Compliance Administrators on Sports Wagering Issues* (NCAA Research, 2023) and Ulrike Spitz's (2016) *Match-fixing: the role of prevention*. Additionally, the associated good practice questions for all the sections were constructed based on the information collected and discussed in the literature review (see literature review for the good practices and their citations). To answer the research questions, the survey asked questions about match-fixing education, reporting mechanisms, rules, detection systems, and tone from the top management.

An overall scoring system was developed based on the survey questions. The sections included in the scoring system included education, reporting, rules, detection systems, and tone from the top. The individual belief questions and demographic questions did not have any influence on the scoring, as well as the consent question. The scoring followed a basic system. Each question was worth one point and most questions included were yes or no questions. "Yes" would imply that the institution either used the prevention strategy or the associated good practices of each strategy. A "No" would indicate that the institution did not use either. An institution that indicated "Yes" for a question would receive one point for that question, while a "No" would result in no point. Respondents also had the option of "Don't Know" as a response to questions. The research team interpreted "Don't Know" as similar to stating "No" for the question, resulting in no point for selecting "Don't Know." For questions that contained multiple answer options (Q12, 16, 32, and 41), the amount of answer options was divided by one, with the best answer receiving the full point and other answers receiving the point value associated with their rank on the list. For example, Q12 contained five options to choose from, asking respondents about how often they reviewed an education program with their internal

stakeholders. “Multiple times per semester” would be considered the best option and was worth one point. “Once a year” was considered the third best option and was worth 0.6 points. “Not reviewed” was considered the least-best practice and was worth zero points. Q11 and Q13 also contained multiple answer options. Options were divided by one similar to the previous questions, however, each option was worth the same number of points. If every option was selected, the respondent would receive the full one point. Q11 and Q13 also contained an “other” option for respondents to include an option that was not listed. If the respondent provided an “other” response, they were able to receive an additional point, which was the same value as the other options. Questions that were omitted from the scoring system in the main blocks of questions were Q3, Q15, Q28, Q29, Q36, Q37, and Q38. These were either questions that assessed future implications of match-fixing prevention strategies if those strategies were not currently used or were qualitative answers regarding detection systems.

Consent was collected prior to participants starting the survey, questions about each individuals’ beliefs regarding match-fixing was assessed, and two demographic questions (division of competition and participants role) were asked. The state where the athletic department was located was not asked as some states have only one or two Division I schools and could be identified rather easily.

Good practices of survey distribution to elicit the most responses were followed (Adler, 2006; Coughlan et al., 2009; Dillman et al., 2014; Umbach, 2004). First utilizing online surveys allows for participants to engage with and complete the survey at their own convenience (Dillman et al. 2000, as cited in Adler, 2006; Dillman et al., 2014). Second, the participants were contacted several times to encourage responses (Coughlan et al., 2009; Dillman et al., 2014;

Umbach, 2004), which included a pre-notice email and five reminder emails over the course of accepting survey responses for this study. Finally, emails finding themselves in a spam folder could become problematic (Adler, 2006; Dillman et al., 2014). Adler (2006) included three practices from the CAN-SPAM Act of 2003 to reduce the chance of survey emails getting sent to spam folders, which were incorporated into the dissemination process of the survey. These practices included indicating the sender of the email, utilizing a proper subject line, and allowing recipients to opt-out of future emails. Dillman et al., (2014) recommended to stay away from “words such as offer, free, cash, win, promo, prize, and so on” (p. 339) in the email to protect it from being sent to spam, which was also followed.

The survey was administered via email through Qualtrics. Qualtrics has a function that allows users to send surveys to a larger number of participants. Before administering the survey, participants were sent a pre-notice email one week prior to receiving the survey, which was also sent through the Qualtrics mass distribution function. The pre-notice email was intended to alert the participants that a survey was coming their way soon, and also informed them about the procedures and purpose of the survey through an information sheet attached (Appendix C). One week following the pre-notice email, the survey was administered to the targeted participants. The survey email contained the information sheet, as well as a link to the Qualtrics survey. Following the initial release of the survey, a total of five reminder emails were sent to the compliance officials. The reminder emails also contained the information sheet to ensure participants were aware of the purpose and procedures of the study. Additionally, participants were informed that their responses would remain anonymous and only the summarized results would be disseminated to the public. Identifying information was avoided in the survey.

Survey Timeline

The pre-notice email was sent one week prior to the release of the survey on February 14th. The first email containing the link to the survey was sent on February 21st. The first reminder was sent on February 28th. After receiving a 3.17% response rate through March 1st, the survey deadline was extended from the original two-week period, with a new closing date of March 22nd. A second reminder email was sent on Monday, March 4th and a third was sent on Monday, March 11th. The final reminders were sent on Monday, March 18th and the morning of Friday, March 22nd.

Data Analysis

The variables of this study are descriptive. They are the Division I, II, and III levels of competition in the NCAA.

IBM SPSS Statistics Version 29 for Mac was the statistical software used to analyze the responses from the survey, along with the Stats iQ and Text iQ functions on Qualtrics. Data was downloaded from Qualtrics into a Microsoft Excel spreadsheet. Responses were reviewed and cleaned to ensure responses were correct and the necessary demographic information was included. Two responses did not indicate the division in which their athletic department competed in, however, one of the participants stated their division in question 38, allowing their response to be incorporated into the analysis. The other participants responses were removed as comparisons could not be made. Another participant responded that their athletic department did not have an anti-match-fixing education program, but the following question was skipped, allowing them to answer the good practice questions when they were not supposed to. Because their anti-match-fixing education program does not exist, they would not be able to incorporate

any good practices into it, so their responses were removed for the section and their vulnerability score was fixed. Finally, another participant skipped the first set of questions asking if their athletic department used a reporting mechanism and were proceeded to answer the good practice questions of the strategy. The participant selected the “Don’t Know” option for more than half of the good practice questions in the section, leading to the assumption that they did not know if their athletic department had a set reporting mechanism in place. As a result, their responses were changed, and their vulnerability score was fixed.

The primary statistical method used to display the data was frequency distributions. Frequency distributions were chosen as it can display the percentage of each NCAA-affiliated institution that utilizes each match-fixing prevention strategy. Frequency distributions also help show the percentage of NCAA-affiliated schools that use the associated good practices of each match-fixing prevention strategy. We then compared the frequency of each match-fixing prevention strategy used across each division to identify the differences in usage. Comparisons between divisions were completed using cross-tabulation analysis function on SPSS.

In addition to frequency distributions, an overall scoring system was developed based on the survey questions. The scoring system was based out of 34 points. A higher score would indicate that the NCAA institution uses more match-fixing prevention strategies and would theoretically be less vulnerable to match-fixing since the opportunity to match-fix would be lower. Vice versa, a lower score would indicate that the NCAA institution does not use many match-fixing prevention strategies and would theoretically be more vulnerable to match-fixing in its collegiate sporting events since the opportunity to match-fix would be enhanced.

Vulnerability was assessed using a percentile rank of three levels, vulnerable, at-risk, and not

vulnerable. Since the scoring system was based out of 34 points, 34 was divided by three to determine placement into each level. Scoring a 22.67 or above was considered not vulnerable, scoring between 22.66 and 11.34 was considered at-risk, and scoring 11.33 or lower was considered vulnerable. We found the average vulnerability score of each division to be further analyzed. For this further analysis, a one-way ANOVA test was used to assess differences between Division I, II, and III institutions mean vulnerability scores (see appendix A for point values for each question). After completing the ANOVA test, a Tukey Honest Significant Difference (HSD) post hoc test was conducted to identify which differences between the three groups of comparison were significant or not. Along with the overall mean vulnerability score, the ANOVA and Tukey HSD tests were conducted for each section of the survey.

Chapter IV: Results

Analysis

1,101 surveys were distributed to all NCAA Division I, II, and III member institutions. Fifty-four responses were collected, equaling a 4.90% response rate. Of the 54 responses, one respondent did not indicate the division in which their institution competed, resulting in unusable data as comparisons could not be made. Another respondent also failed to indicate their division, however, they included it in their description for one of the survey questions. With that, 53 responses were used in the analysis of this study.

Demographic Results

Table 1 depicts the total number of responses per division. Most of the responses (39.6%) were from Division I institutions, followed by Division II (32.1%) and Division III (28.3%). Table 1 also highlights the position each respondent served in their respective athletic department. As intended, most respondents served as the compliance director (64.2%) for their athletic department. The associate directors were the second most common respondent (18.9%), and the athletic directors were the third most common (9.4%).

Table 1*Demographic Information of Participants*

Variable	n	%
Division I	21	39.6
Division II	17	32.1
Division III	15	28.3
Total	53	100.0

Division I Staff

Position	n	%
Compliance Director	18	85.7
Athletic Director	0	0.0
Associate Director	3	14.3
Assistant Director	0	0.0
Administrative Support	0	0.0

Division II Staff

Position	n	%
Compliance Director	13	76.5
Athletic Director	1	5.9
Associate Director	1	5.9
Assistant Director	0	0.0
Administrative Support	1	5.9

Division III Staff

Position	n	%
Compliance Director	3	20.0
Athletic Director	4	26.7
Associate Director	6	40.0
Assistant Director	1	6.7
Administrative Support	1	6.7

Total Staff

Position	n	%
Compliance Director	34	64.2
Athletic Director	5	9.4
Associate Director	10	18.9
Assistant Director	1	1.9
Administrative Support	2	3.8

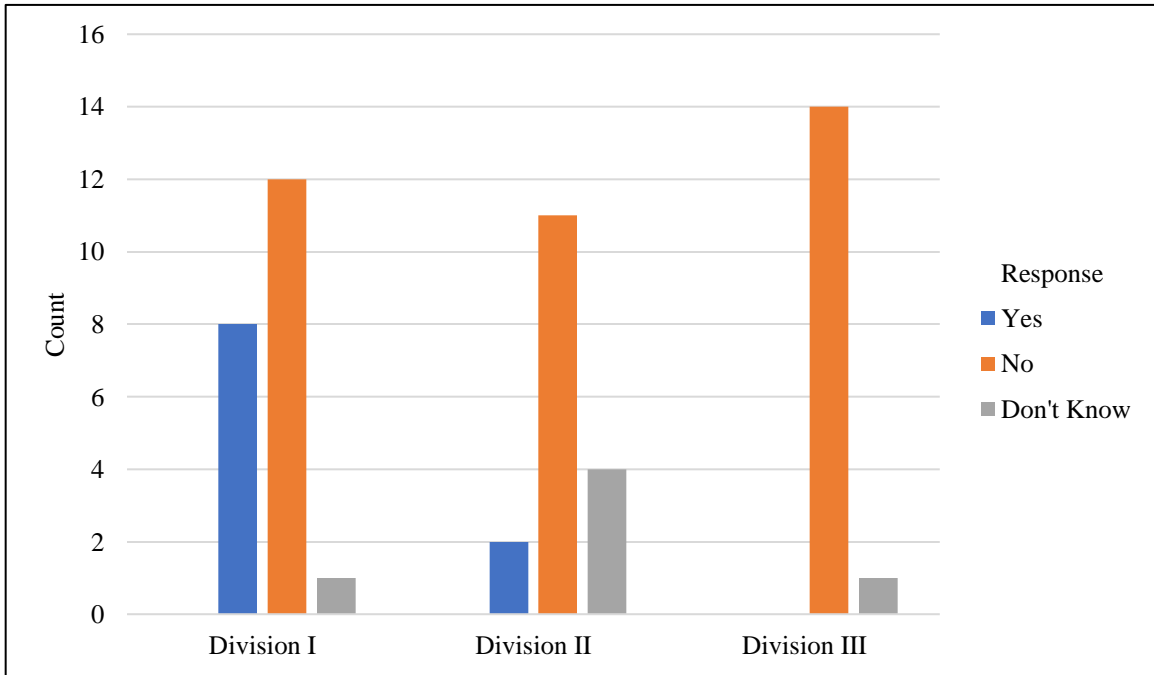
Education

The first section of the survey focused on educational programs utilized to prevent match-fixing. A total of ten NCAA affiliated athletic departments (18.9%) currently offered an

anti-match-fixing education program. Eight of the ten were Division I athletic departments (38.1%) and the remaining two were Division II schools (11.8%) (Figure 1).

Figure 1

Q(2) Does your athletic department have an anti-match-fixing education program?



The remaining 43 NCAA schools that did not currently offer an anti-match-fixing education program were asked if they planned to implement an education program within the next year. Only two Division II institutions (13.3% within division, 4.8% total) intended to implement an anti-match-fixing education program within the next year (Figure 2). One participant did not answer this question. From these results, 37 NCAA member schools (69.8%) did not currently have an anti-match-fixing education program, six (11.3%) did not know if they offered one, and 27 schools (64.3%) did not plan to implement an education program within the next year.

Figure 2

(Q3) Does your athletic department plan to implement an anti-match-fixing education program within the next year?

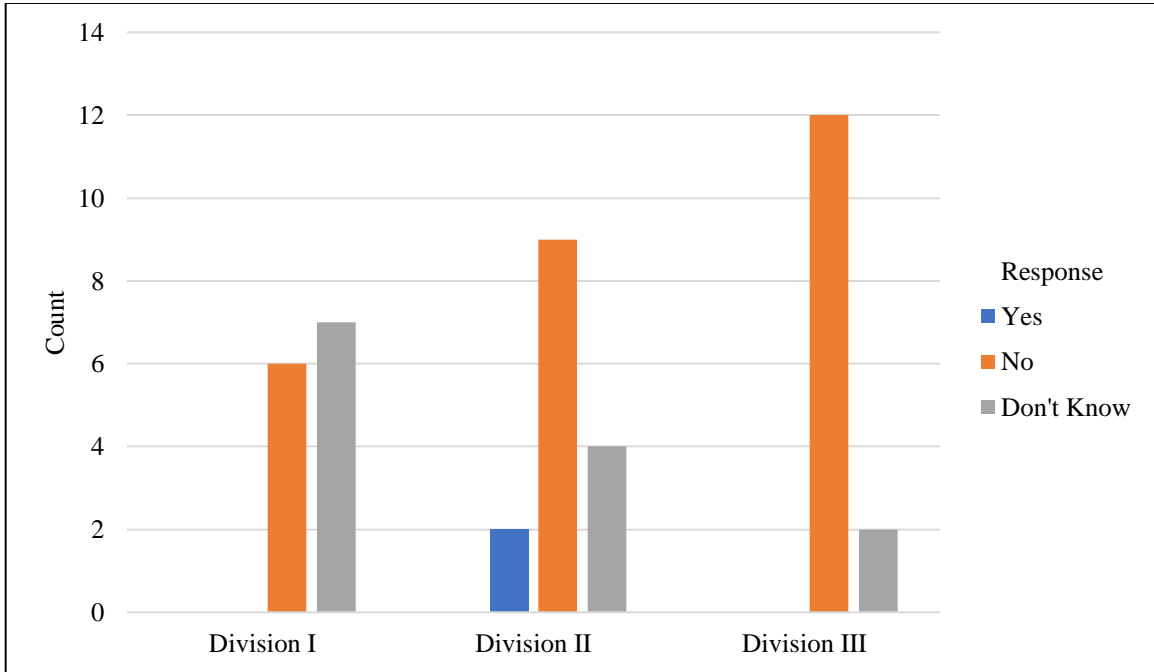


Table 2*Education Survey Results*

Item	Division I (n/%)		Division II (n/%)		Total (n/%)	
	Y	N/DK	Y	N/DK	Y	N/DK
Does your athletic department's anti-match-fixing education program discuss the meaning of match-fixing with internal stakeholders (e.g., student-athletes, coaches, administrators, etc.)?	8 (100.0)	0 (0.0)	2 (100.0)	0 (0.0)	10 (100.0)	0 (0.0)
Does your athletic department's anti-match-fixing education program discuss how match-fixing occurs?	6 (75.0)	2 (0.25)	2 (100.0)	0 (0.0)	8 (80.0)	2 (20.0)
Does your athletic department's anti-match-fixing education program inform internal stakeholders about the consequences of match-fixing?	8 (100.0)	0 (0.0)	2 (100.0)	0 (0.0)	10 (100.0)	0 (0.0)
Does your athletic department's anti-match-fixing education program address the risks that make collegiate student-athletes more vulnerable to match-fixing?	5 (62.5)	3 (37.5)	1 (50.0)	1 (50.0)	6 (60.0)	4 (40.0)
Does your athletic department's anti-match-fixing education program teach internal stakeholders how to resist match-fixing requests?	4 (50.0)	4 (50.0)	1 (50.0)	1 (50.0)	5 (50.0)	5 (50.0)
Does your athletic department's anti-match-fixing education program review case studies of match-fixing with internal stakeholders?	6 (75.0)	2 (25.0)	0 (0.0)	2 (100.0)	6 (60.0)	4 (40.0)
Does each sport have its own tailor-made anti-match-fixing education program?	1 (12.5)	7 (87.5)	0 (0.0)	2 (100.0)	1 (10.0)	9 (90.0)
Do the following internal stakeholders participate in your athletic department's anti-match-fixing education program or not? – <i>Student-athletes</i>	8 (100.0)	0 (0.0)	2 (100.0)	0 (0.0)	10 (100.0)	0 (0.0)
Do the following internal stakeholders participate in your athletic department's anti-match-fixing education program or not? – <i>Coaches</i>	5 (62.5)	3 (37.5)	2 (100.0)	0 (0.0)	7 (70.0)	3 (30.0)
Do the following internal stakeholders participate in your athletic department's anti-match-fixing education program or not? – <i>Athletic Administrators</i>	5 (62.5)	3 (37.5)	2 (100.0)	0 (0.0)	7 (70.0)	3 (30.0)
Do the following internal stakeholders participate in your athletic department's anti-match-fixing education program or not? – <i>Athletic Trainers</i>	5 (62.5)	3 (37.5)	2 (100.0)	0 (0.0)	7 (70.0)	3 (30.0)
Is your athletic department's anti-match-fixing education program provided in the following mode or not? – <i>Online (synchronous)</i>	0 (0.0)	7 (100.0)	0 (0.0)	2 (100.0)	0 (0.0)	9 (100.0)
Is your athletic department's anti-match-fixing education program provided in the following mode or not? – <i>Online (asynchronous)</i>	2 (33.3)	4 (66.7)	0 (0.0)	2 (100.0)	2 (25.0)	6 (75.0)
Is your athletic department's anti-match-fixing education program provided in the following mode or not? – <i>In-person</i>	7 (87.5)	1 (12.5)	2 (100.0)	0 (0.0)	8 (80.0)	2 (20.0)
Is your athletic department's anti-match-fixing education program provided in the following mode or not? – <i>Handouts/Fact Sheets</i>	4 (57.1)	3 (42.9)	0 (0.0)	2 (100.0)	4 (44.4)	5 (55.6)
Is your athletic department's anti-match-fixing education program provided in the following mode or not? – <i>Workshops</i>	1 (20.0)	4 (80.0)	0 (0.0)	2 (100.0)	1 (14.3)	6 (85.7)

Table 2 Continued

	Division I (n/%)			Division II (n/%)			Total (n/%)		
	Once a year	Multiple x semester	Not reviewed	Once a year	Multiple x semester	Not reviewed	Once a year	Multiple x semester	Not reviewed
How often, if at all, is your athletic department's anti-match-fixing education program reviewed with internal stakeholders?	6 (75.0)	1 (12.5)	1 (12.5)	1 (50.0)	0 (0.0)	1 (50.0)	7 (70.0)	1 (10.0)	2 (20.0)

Note. 8 Division I and 2 Division II participants completed this section.

The 10 NCAA member schools that currently provided an anti-match-fixing education program were asked about good practices associated with an anti-match-fixing education program (Table 2). All 10 institutions (100.0%) informed their internal stakeholders about the meaning of match-fixing. Six Division I schools (75.0%) and both Division II institutions (100.0%) also informed their internal stakeholders about how match-fixing occurs. All 10 institutions (100.0%) educated their internal stakeholders of the consequences of match-fixing; however, five Division I schools (62.5%) and one Division II school (50.0%) informed their internal stakeholders about the risks that make collegiate student-athletes more vulnerable to match-fixing. Furthermore, when informing internal stakeholders on how to resist requests to match-fix, only four Division I schools (50.0%) and one Division II school (50.0%) included this content in their education program.

For the orientation of each athletic department's anti-match-fixing education program, six Division I schools (75.0%) used case studies to teach their internal stakeholders about match-fixing; both Division II schools (100.0%) did not use case studies. In addition to reviewing case studies, one Division I school (12.5%) responded that they tailored each anti-match-fixing education program based on the sport receiving the program. The remaining nine schools

(90.0%) did not have a tailored sport specific anti-match-fixing education program. All 10 schools (100.0%) required their student-athletes to participate in their education program. Seven schools (70.0%) responded their coaches, athletic department administrators, and athletic trainers also participated in the anti-match-fixing education program. In addition to the internal stakeholders listed, one respondent mentioned that athletic department interns participated in the education program, two schools stated managers were educated, and one school required all athletics staff members to participate in the education program.

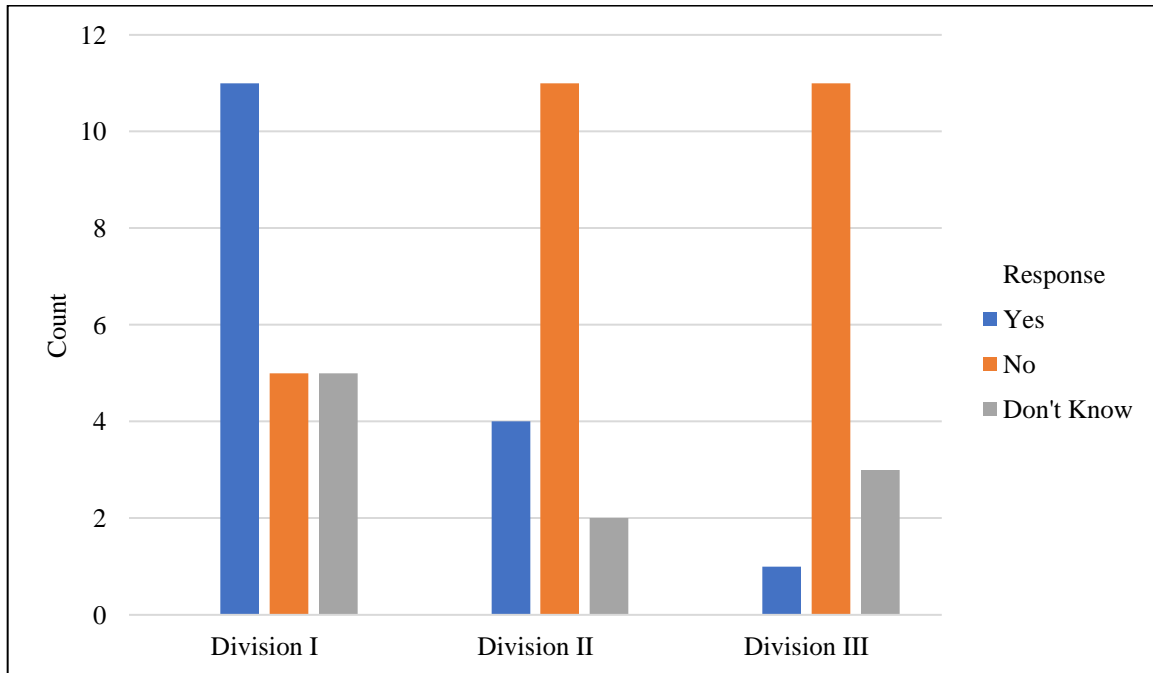
The 10 NCAA affiliated athletic departments delivered their anti-match-fixing education programs through a variety of modes. None of the schools (0.0%) offered an online education program in a synchronous format, but two Division I schools (33.3% within division, 25% total) offered their online education program asynchronously. Nine schools (90.0%) responded that their education program was offered in-person and four of the Division I schools (57.1% within division, 44.4% total) provided a fact sheet for their internal stakeholders. Finally, one Division I school (20.0% within division, 14.3% total) provided their internal stakeholders a workshop session. In addition, one school indicated that their internal stakeholders have a sports wagering agreement and one school responded that their education program is delivered through a QR code. Lastly, of the eight Division I schools that delivered an education program, one school (12.5%) reviewed their program multiple times per semester, six schools (75.0%) reviewed their anti-match-fixing education program once per year, and one school (12.5%) responded that they do not review their education program. For the remaining two Division II schools with an anti-match-fixing education program, one school (50.0%) reviewed their education program once per year and the other (50.0%) indicated that they did not review their education program.

Internal Reporting (Whistleblowing) Mechanisms/Protection

Internal reporting (whistleblowing) mechanisms and protections was the second section survey participants completed. Sixteen total NCAA affiliated athletic departments (30.2%) had a whistleblowing mechanism in place to report match-fixing. Eleven (52.4%) from the Division I level, four (23.5%) from the Division II level, and one (6.7%) from the Division III level of the NCAA (Figure 3).

Figure 3

(Q14) Does your athletic department have a reporting mechanism for internal stakeholders (e.g., student-athletes, coaches, athletic administrators, etc.) to report match-fixing?



Similar to the education section, the 37 participants (69.8%) that did not currently have a whistleblowing mechanism, or did not know if they have one, to report match-fixing were asked if they planned to implement one within the next year. Only one Division I athletic department (10.0% within division, 2.7% total) planned to implement a whistleblowing mechanism for their

internal stakeholders to report match-fixing within the next year (Figure 4). In total, 27 NCAA member schools (50.9%) did not currently have a way for internal stakeholders to report cases of match-fixing, with an additional 10 (18.9%) not knowing if they had a mechanism in place. Thirty-six (97.3%) of those schools do not intend to or did not know if they intended to provide their internal stakeholders a way to report match-fixing.

Figure 4

(Q15) Does your athletic department plan to implement a reporting mechanism for internal stakeholders to report match-fixing within the next year?

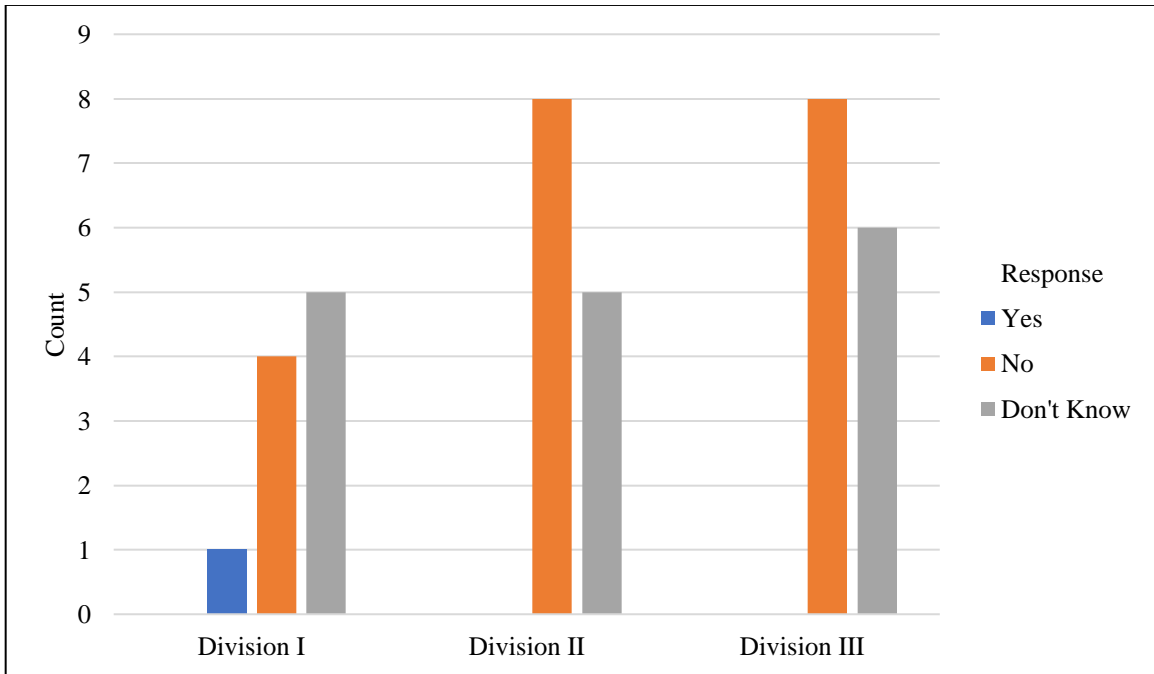


Table 3*Whistleblowing Survey Results*

Item	Division I (n/%)		Division II (n/%)		Division III (n/%)		Total (n/%)	
	Y	N/DK	Y	N/DK	Y	N/DK	Y	N/DK
Does your athletic department review the entire match-fixing reporting mechanism with internal stakeholders?	5 (45.5)	6 (54.5)	2 (50.0)	2 (50.0)	0 (0.0)	1 (100.0)	7 (43.8)	9 (56.3)
Does your athletic department encourage internal stakeholders to report any match-fixing they have witnessed?	9 (81.8)	2 (18.2)	4 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	13 (81.3)	3 (18.3)
Does your athletic department encourage internal stakeholders to seek advice when needing to report cases of match-fixing?	9 (81.8)	2 (18.2)	3 (75.0)	1 (25.0)	0 (0.0)	1 (100.0)	12 (75.0)	4 (25.0)
Does your athletic department's match-fixing reporting mechanism allow internal stakeholders to remain anonymous when reporting?	9 (81.8)	2 (18.2)	2 (50.0)	2 (50.0)	1 (100.0)	0 (0.0)	12 (75.0)	4 (25.0)
Does your athletic department have some form of a zero-tolerance policy for retaliation against whistleblowers who report cases of match-fixing?	7 (63.6)	4 (36.4)	3 (75.0)	1 (25.0)	0 (0.0)	1 (100.0)	10 (62.5)	6 (37.5)
Does your athletic department have punishments for anyone retaliating against a whistleblower that has reported match-fixing?	7 (63.6)	4 (36.4)	3 (75.0)	1 (25.0)	0 (0.0)	1 (100.0)	10 (62.5)	6 (37.5)
Does your athletic department handle match-fixing reports made by internal stakeholders in a consistent manner?	8 (72.7)	3 (27.3)	3 (75.0)	1 (25.0)	1 (100.0)	0 (0.0)	12 (75.0)	4 (25.0)
Is your athletic department's match-fixing reporting mechanism outlined in a flow chart or other type of visual format?	1 (9.1)	10 (90.9)	0 (0.0)	4 (100.0)	0 (0.0)	1 (100.0)	1 (6.3)	15 (93.8)
Does your athletic department utilize an external agency to investigate match-fixing reports made by internal stakeholders?	3 (27.3)	8 (72.7)	0 (0.0)	4 (100.0)	0 (0.0)	1 (100.0)	3 (18.3)	13 (81.3)
Athletes who report cases of match-fixing may experience negative effects on their mental health. Does your athletic department provide mental health resources for internal stakeholders who have reported match-fixing?	10 (90.9)	1 (9.1)	4 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	15 (93.8)	1 (6.3)

Item	Division I (n/%)		Division II (n/%)		Division III (n/%)	Total (n/%)		
	All	Some	All	Some	None	All	Some	None
To what extent, if at all, is your match-fixing reporting mechanism shared with internal stakeholders in your athletic department?	5 (45.5)	6 (54.5)	2 (50.0)	2 (50.0)	1 (100.0)	7 (43.8)	8 (50.0)	1 (6.3)

Table 3 Continued

Note. 11 Division I, 4 Division II, and 1 Division III participant completed this section.

The 16 institutions that indicated they currently have a whistleblowing mechanism for match-fixing were asked further questions on their use of the good practices of an effective whistleblowing mechanism (Table 3). First, five Division I (45.5%) and two Division II schools (50.0%) shared their reporting mechanism with all of their internal stakeholders. Six Division I (54.5%) and two Division II schools (50.0%) shared their mechanism with some of their internal stakeholders. One Division III school (100.0%) did not know the extent to which they shared their whistleblowing mechanism with their internal stakeholders. Next, participants were asked if they reviewed their whistleblowing mechanism with their internal stakeholders. Five Division I schools (45.5%) and two Division II schools (50.0%) reviewed their reporting mechanism with their internal stakeholders. The remaining six Division I schools (54.5%), two Division II schools (50.0%), and the lone Division III school (100.0%) did not review their whistleblowing mechanism.

Participants were asked if their athletic department encouraged internal stakeholders to report cases of match-fixing. Nine Division I schools (81.8%) and four Division II schools (100.0%) encouraged their internal stakeholders to report. The Division III school did not encourage reporting. Participants were then asked if their athletic department encouraged internal stakeholders to seek advice if they needed to report match-fixing. Nine Division I institutions (81.8%) and three Division II schools (75.0%) encouraged their internal stakeholders to seek advice for reporting. The remaining schools did not encourage their stakeholders to seek advice when reporting match-fixing. Furthermore, participants were asked if their athletic department's

whistleblowing mechanism allows internal stakeholders to remain anonymous when reporting match-fixing. Twelve athletic departments (75.0%) allowed anonymity when reporting a fixed match, split between nine Division I (81.8%), two Division II (50.0%), and one Division III (100.0%) program.

The next set of questions focused on the formatting of each athletic department's whistleblowing mechanism, as well as the managing of match-fixing reports. Regarding a zero-tolerance of retaliation policy, seven Division I schools (63.6%) and three Division II schools (75.0%) had a zero-tolerance policy. Five total institutions (31.3%) did not know if they had this policy. Concerning individual punishments for retaliating against a whistleblower, nine Division I (63.6%) and three Division II programs (75.0%) punished retaliatory actions; five (31.3% total) athletic departments did not know if they punished retaliation. With respect to consistently managing reports of match-fixing, 12 athletic departments (75.0%) handled reports consistently, split between eight Division I (72.7%), three Division II (75.0%), and one Division III school (100.0%).

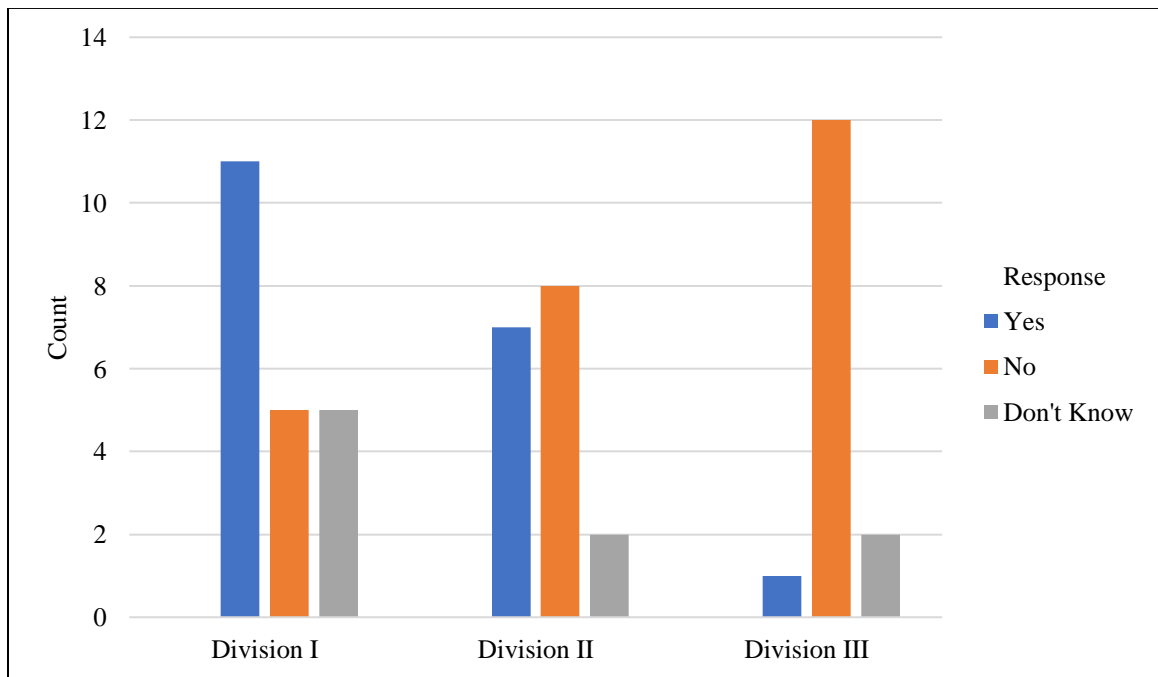
Furthermore, regarding departments outlining their whistleblowing mechanism either with a flowchart or some other visual aid; one Division I school (9.1% within division; 6.3% total) displayed their whistleblowing mechanism in a visual format. Continuing, only three Division I athletic departments (27.3% within division; 18.6% total) used a third-party agency to investigate reports of and act on of match-fixing. Finally, 15 schools (93.8%) reported offering mental health resources for internal stakeholders.

Rules, Regulations, and Policies

Rules, regulations, and policies was the third section of the survey. Nineteen total NCAA member schools (35.8%) currently have their own match-fixing rules, regulations, and policies. Eleven (52.4%) of those schools are Division I, seven (41.2%) are Division II, and one (6.7%) is a Division III program (Figure 5).

Figure 5

(Q27) Does your athletic department have rules, regulations, or policies developed for match-fixing?



Thirty-four NCAA member schools (64.2%) either did not know if they had match-fixing rules or did not have their own match-fixing rules. From this group, only one Division II school (10.0%) and two Division III schools (14.3%) planned to create and implement their own rules, regulations, and policies within the next year (Figure 6).

Figure 6

(Q28) Does your athletic department plan to develop rules, regulations, or policies for match-fixing within the next year?

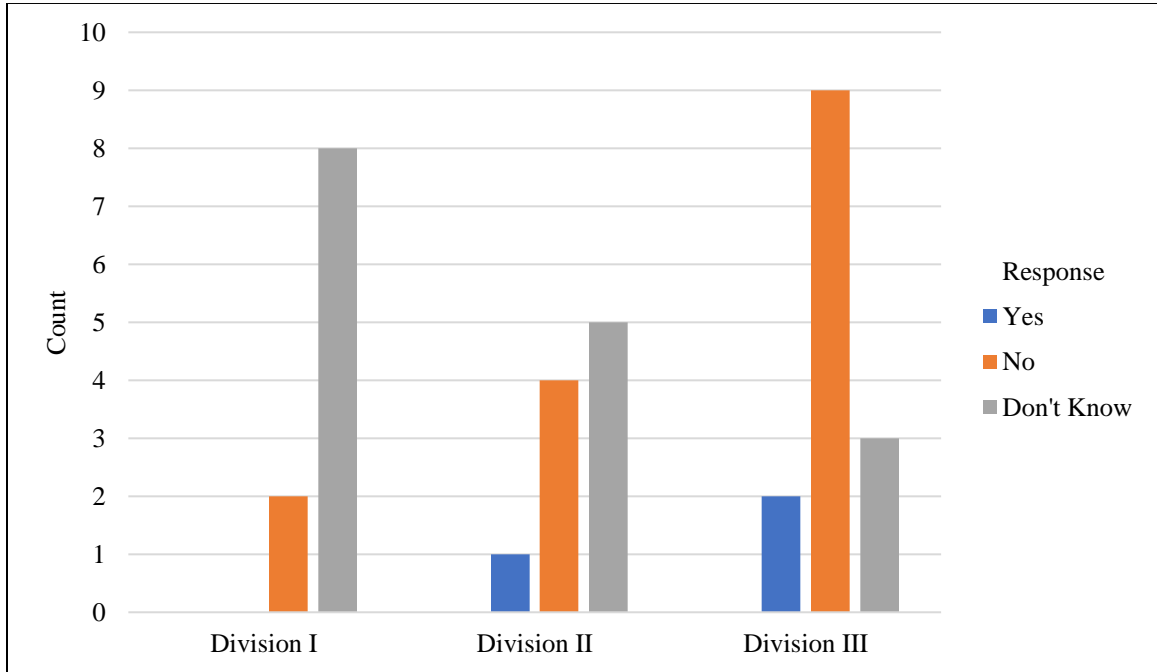


Table 4*Rules, Regulations, and Policies Survey Results*

Item	Division I (n/%)		Division II (n/%)		Division III (n/%)		Total (n/%)	
	Y	N/DK	Y	N/DK	Y	N/DK	Y	N/DK
Does your athletic department review your institutions rules, regulations, or policies for match-fixing with internal stakeholders (e.g., student-athletes, coaches, administrators, etc.)? [^]	9 (81.8%)	2 (18.2)	6 (85.7)	1 (14.3)	1 (100.0)	0 (0.0)	16 (84.2)	3 (15.8%)
Does your athletic department review the NCAA's rules, regulations, or policies for match-fixing with internal stakeholders?	18 (85.7)	3 (14.3)	9 (52.9)	8 (47.1)	9 (60.0)	6 (40.0)	36 (67.9)	17 (32.1)
Does your athletic department review your respective state's laws regarding sports gambling with internal stakeholders?	15 (71.4)	6 (28.6)	9 (52.9)	8 (47.1)	6 (40.0)	9 (60.0)	30 (56.6)	23 (43.4)
Does your athletic department require internal stakeholders to acknowledge their understanding of the match-fixing rules in any form? (e.g., a signature)	8 (38.1)	13 (61.9)	3 (17.6)	14 (82.4)	1 (6.7)	14 (93.3)	12 (22.6)	41 (77.4)
Is your athletic department able to partner with law enforcement to investigate reports of match-fixing when needed?	11 (52.4)	10 (47.6)	4 (23.5)	13 (76.5)	4 (26.7)	11 (73.3)	19 (35.8)	34 (64.2)

Note. [^]. Only completed by 19 schools that indicated they had their own rules developed.

Table 5*Rules, Regulations, and Policies Survey Results Cont.*

(Q32) How often, if at all, does your athletic department review any of the rules, regulations, or policies for match-fixing with internal stakeholders?				
Division I (n/%)				
Not Reviewed	< Once a year	Once a year	Once a semester	Multiple times a semester
3 (14.3)	0 (0.0)	13 (61.9)	1 (4.8)	4 (19.0)
Division II (n/%)				
Not Reviewed	< Once a year	Once a year	Once a semester	Multiple times a semester
6 (37.5)	0 (0.0)	9 (56.3)	1 (6.3)	0 (0.0)
Division III (n/%)				
Not Reviewed	< Once a year	Once a year	Once a semester	Multiple times a semester
8 (53.3)	1 (6.7)	4 (26.7)	1 (6.7)	1 (6.7)
Total (n/%)				
Not Reviewed	< Once a year	Once a year	Once a semester	Multiple times a semester
17	1 (1.9)	26 (50.0)	3 (5.8)	5 (9.6)

Note. Missing DII response.

Continuing, Table 4 contains the results for the rules portion of the survey. Of the 19 schools that have their own match-fixing rules, regulations, and policies, 16 (84.2%) reviewed them with their internal stakeholders. Since the NCAA has its own rules for sports gambling, in which match-fixing is included, all participants were asked if they reviewed the NCAA's rules with their internal stakeholders. Thirty-six institutions (67.9%) reviewed the NCAA's rules, including 18 Division I institutions (85.7%), nine Division II institutions (52.9%), and nine Division III institutions (60.0%). Similarly, sports gambling and match-fixing laws exist that individuals must abide by. States have different laws and regulations developed for sports gambling (American Gaming Association, 2024), but 18 U.S. Code § 224 is a federal statute (1964). Participants were asked if they reviewed their respective state's laws with their internal stakeholders, with the understanding that all state's must cooperate with 18 U.S. Code § 224.

Thirty NCAA schools (56.6%) reviewed their state's respective match-fixing laws, including 15 Division I schools (71.4%), nine Division II schools (52.9%), and six Division III schools (40.0%). Following all the questions for the types of match-fixing rules, regulations, and policies, participants were asked the frequency in which they reviewed them with their internal stakeholders. Most athletic departments reviewed these rules once per year, including 13 Division I (61.9%), nine Division II (56.3%), and four Division III member schools (26.7%). One school (1.9%) reviewed the rules less than once per year, three (5.8%) reviewed the rules once per semester, and five schools (9.6%) reviewed these different rules multiple times in a semester. Seventeen schools (32.7%) did not review these rules at all (Table 5).

In addition to the types of rules athletic departments are required to follow, participants were asked if their athletic department's internal stakeholders were required to acknowledge the rules, regulations, and policies for match-fixing (Table 4). Eight Division I (38.1%), three Division II (17.6%), and one Division III institution (6.7%) required internal stakeholders to acknowledge their understanding of any rules, regulations, and policies in some capacity. Finally, participants were asked if their athletic department is able to partner with law enforcement to combat match-fixing when needed. Nineteen schools (35.8%) were able to form this partnership, including 11 Division I schools (52.4%), four Division II schools (23.5%), and four Division III schools (26.7%). Most athletic departments did not know if they could partner with law enforcement, with 26 (49.1% total) selecting this option.

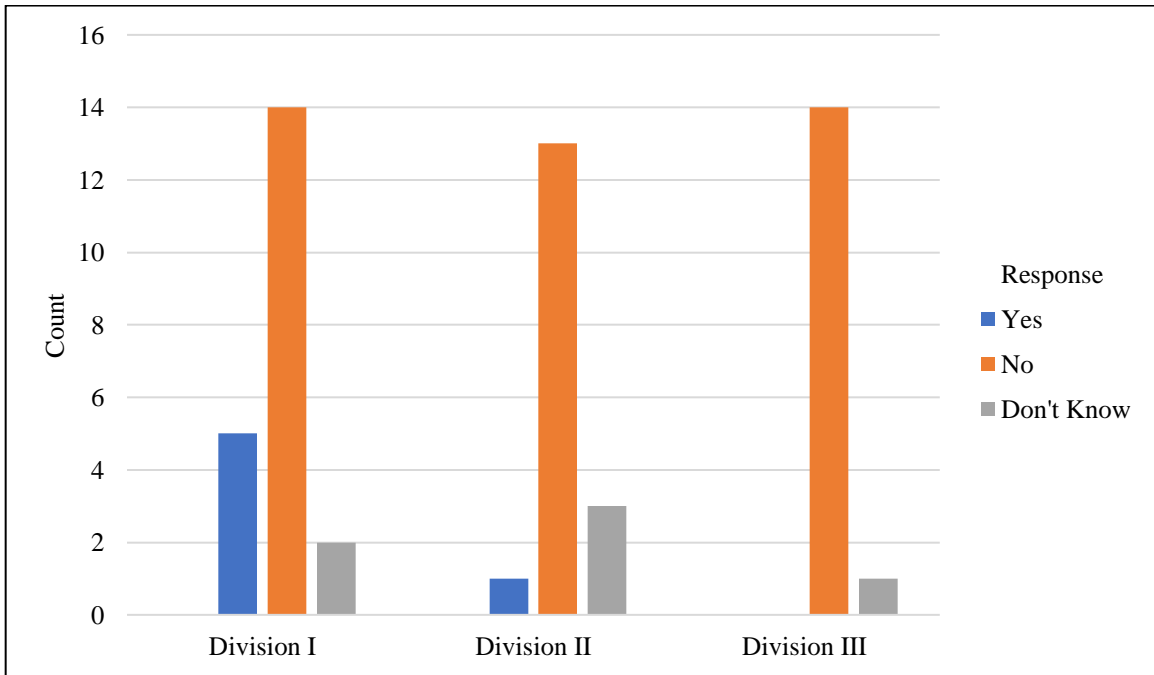
Early Warning Detection Systems

The fourth major section of the survey focused on early warning detection systems (EWDS) and their involvement in collegiate athletics. Six total NCAA member schools (11.3%)

responded that their athletic department currently used an EWDS to detect match-fixing in their sporting events. Five (23.8%) of these schools were from the Division I level, and the remaining school (5.9%) competes at the Division II level (Figure 7). Of the five Division I schools that used an EWDS, three indicated that they used Prohibet for their services and two used IC360, aka U.S. Integrity. The Division II school did not know which provider their athletic department used.

Figure 7

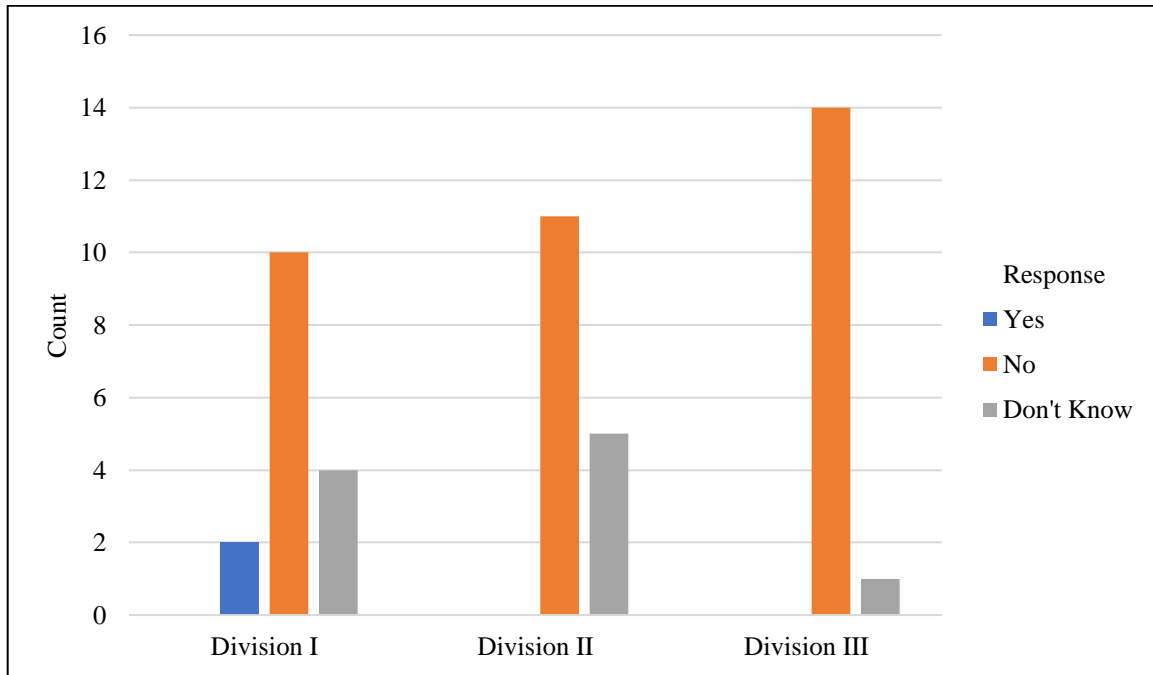
(Q35) Does your athletic department currently use an early warning detection system (betting market monitoring system) to detect potential match-fixing in your sporting events?



The remaining 47 schools were asked if they planned to implement an EWDS into their athletic department within the next year. Two Division I programs (12.5% within division; 4.3% total) planned to implement an EWDS within the next year (Figure 8).

Figure 8

(Q36) Does your athletic department plan to implement an early warning detection system (betting market monitoring system) to detect potential match-fixing in your sporting events within the next year?



Participants that did not currently have an EWDS in their athletic programs were asked to provide reasons why. Nine responses from Division I programs, 14 from the Division II level, and 12 from Division III schools were received. Three themes were identified including financial constraints, lack of resources, and the notion that match-fixing is “not much of an issue at the moment”. These three themes were consistent across each division, but some themes were more prevalent than others. First, four Division I programs responded that they did not have an EWDS due to costs. For example, “costs [are] the main reason. There are so many things that our athletic department has to provide, and the list just keeps getting bigger and bigger each year. Which in turn, makes the costs increase every year” (Division I, #1). Another participant agreed with costs, but also identified other reasons for not having an EWDS, including “cost, [a] lack of

significant betting on our matches, [and] U.S. Integrity does some of this in general” (Division I, #2).

The perception that match-fixing was not an issue and that bet monitoring companies provided an EWDS service were additional reasons for not implementing an EWDS. For example, one participant said “we don’t feel that sports betting is as prevalent in our institution’s games. We lead on out sports betting experts to monitor betting on events they have available” (Division I, #3). An additional reason for not implementing EWDS was that sports gambling was illegal in certain states and thus an EWDS was unnecessary, with another participant stating, “sports gambling is not legal in our state so not a prevalent of a concern” (Division I, #4). Furthermore, two other participants noted that their department was “not aware” of EWDS (Division I, #5) or they “[were] in the process of setting up ProhiBet” (Division I, #6). Finally, one Division I participant provided multiple reasons for why their athletic department did not use an EWDS, including the need to better educate student-athletes, the difficulties with EWDS, and other schools were not using EWDS, specifically stating...

Because at some point we need athletes to know that they know what the rules and basic laws prohibit regarding any type of gambling activity. We need our due diligence watching team outcomes, but well disguised prop-bets are not reasonably feasible. Plus, the systems seem to go too far based on what has been communicated. Students gamble on sports, we need rules that are more flexible to individual cases before we intentionally [out] any student when other schools are intentionally doing nothing (Division I, #7).

Division II programs also shared different reasons for why athletic departments did not currently use an EWDS. Again, a lack of capacity in terms of costs and a lack of human

resources (e.g., staffing) hindered their ability to implement a monitoring system for their athletic departments. The following representative quotations displayed these themes.

“our budgets continue to be cut annually and we are not able to make any additional expenses” (Division II, #1).

“we are a small DII staff, so monitoring it would fall under compliance, which could be a lot for me” (Division II, #2).

“we are a one-person compliance office” (Division II, #1).

“not enough staff to do this” (Division II, #3).

Participants also shared that they were unaware of match-fixing or did not know if they had access to an EWDS. Finally, several respondents mentioned to some extent that match-fixing was not a large enough threat at the Division II level to justify the implementation of any monitoring systems. For example, participants stated “[match-fixing is] not an issue in NCAA Division II Athletic Departments. We educate on gambling and sports wagering but have not had any match-fixing issues that we are aware of” (Division II, #4). Another program provided a similar answer, stating “we do not have any evidence that [match-fixing] is overly prevalent in our department [or] at our level,” (Division II, #1) along with their response of the limiting factors of cost and staffing issues. In addition to the lack of evidence of match-fixing at the Division II level, many respondents simply felt that Division II sporting events do not draw enough attention to be bet on, with one participant summing the theme up by stating “our institution does not generate attention on a level in which we should employ such measures” (Division II, #5). Participants also provided assurances that EWDS could be added if needed, with one program that believes match-fixing is not a current issue for Division II sporting events

stating, “we are certainly willing to address [match-fixing] if there is a mandate to do so or compelling evidence of need” (Division II, #6). The other program responded that “[EWDS] could be beneficial... but I think it could be more the education piece and then slowing doing the monitoring” (Division II, #2).

Lastly and similarly to Division II, the Division III programs also perceived that match-fixing was not an issue to justify the use of a monitoring system. The following representative quotations illustrate this point, “at the Division III level, our games are often not on the betting markets, and therefore this is not a threat,” (Division III, #1) also mentioning that they do still focus on education for sports wagering, but not on match-fixing. Similarly, another participant responded “[we are a] small DIII college, [match-fixing] is not a current issue on our campus,” (Division III, #2) again mentioning that they still incorporate education on sports wagering on other events. A third participant stated, “as a Division III institution, we typically do not have events available to be bet on, therefore our student-athletes would not need to affect the outcome of their games” (Division III, #3). While match-fixing was generally not perceived as an issue at the Division III level and thus the main reason why EWDS were not utilized, other barriers still existed for Division III athletic departments to implement monitoring systems. The major takeaway is match-fixing “doesn’t seem to be a major concern at the time” (Division III, #4) for Division III programs (all responses are listed in Appendix B).

Tone from the Top

The last section of the survey included upper management behaviors towards match-fixing and sports gambling (Table 6). First, participants were asked if their athletic department had any partnerships with sports gambling companies. Four schools had a partnership with a

sports gambling company, all of which were Division I schools (19.0% within division; 7.5% total). Participants were also asked if their athletic department promotes ethical behavior to their internal stakeholders. Fifty-one participants (96.2%) believed their athletic department promoted ethical behavior to its internal stakeholders. Lastly, participants were asked how transparent their athletic departments were about actions involving sports gambling. Sixteen Division I (76.2%), 12 Division II (75.0%), and nine Division III schools (60.0%) were always transparent when acting on situations involving sports gambling. Nine total schools (17.3%) were mostly transparent with their actions, four (7.7%) were rarely transparent, and two schools (3.8%) responded that they were never transparent with any actions involving sports gambling.

Table 6*Tone from the Top Survey Results*

Item	Division I (n/%)		Division II (n/%)		Division III (n/%)		Total (n/%)	
	Y	N/DK	Y	N/DK	Y	N/DK	Y	N/DK
Does your athletic department have a current partnership with a sports gambling company?	4 (19.0)	17 (81.0)	0 (0.0)	17 (100.0)	0 (0.0)	15 (100.0)	4 (7.5)	49 (92.5)
Does your athletic department promote ethical behavior to internal stakeholders (e.g., student-athletes, coaches, administrators, etc.)?	21 (100.0)	0 (0.0)	16 (94.1)	1 (5.9)	14 (93.3)	1 (6.7)	51 (96.2)	2 (3.8)
To what extent, if at all, is your athletic department transparent with any actions involving sports gambling?								
Division I (n/%)								
Always transparent		Mostly transparent		Rarely transparent		Never transparent		
16 (76.2)		5 (23.8)		0 (0.0)		0 (0.0)		
Division II (n/%)								
Always transparent		Mostly transparent		Rarely transparent		Never transparent		
12 (75.0)		1 (6.3)		2 (12.5)		1 (6.3)		
Division III (n/%)								
Always transparent		Mostly transparent		Rarely transparent		Never transparent		
9 (60.0)		3 (20.0)		2 (13.3)		1 (6.7)		
Total (n/%)								
Always transparent		Mostly transparent		Rarely transparent		Never transparent		
37 (71.2)		9 (17.3)		4 (7.7)		2 (3.8)		

Vulnerability Analysis

The previous sections from the survey were combined to create a scoring system to assess the vulnerability of each division of the NCAA.

First, the average vulnerability score for NCAA Division I schools was 13.9, placing them in the at-risk category of vulnerability. There was a large range of scores in the Division I level, with a low score of 4.5 and a high score of 28.3. NCAA Division II schools scored an average of 7.9, putting them in the vulnerable category of the scale. The range of scores for the Division II schools included a low score of 1.0 and a high score of 22.2. Lastly, NCAA Division

III schools scored an average of 4.9, also placing them in the vulnerable category of the scale. The range for Division III schools was not as wide as the DI and DII levels; the low score was 2.0 and the high score was 8.8. The overall vulnerability score for the NCAA was 9.4, putting them in the vulnerable category as well (Table 7).

A one-way ANOVA was conducted to determine a significant difference in mean total scores for each division, along with each individual section from the survey that combined to create the total score. From this test, there were statistically significant differences between divisions for the total vulnerability score, and the sections of education, reporting, and rules. For the total vulnerability score, significant differences were seen between Division I and Division II (MD = 6.01, $p = .017$), and Division I and Division III (MD = 8.93, $p = <.001$). There was no statistically significant difference between Division II and Division III (MD = 2.93, $p = .414$). For the education portion of the survey, the only statistically significant difference occurred between Division I and Division III athletic departments (MD = 2.83, $p = .010$). The differences between Division I and Division II (MD = 1.93, $p = .089$), as well as Division II and Division III (MD = 0.90, $p = .626$) were not significant. The internal reporting section of the survey was similar to education, with the only significant difference happening between Division I and Division III (MD = 3.68, $p = .006$). The score difference between both Division I and Division II (MD = 2.32, $p = .098$) and Division II and Division III (MD = 1.36, $p = .496$) were not significant. Next, the rules, regulations, and policies section saw significant differences between Division I and Division II (MD = 1.42, $p = .037$), and Division I and Division III (MD = 2.23, $p = <.001$). There was no significant difference between Division II and Division III (MD = 0.81, $p = .414$).

= .381). Lastly, there were no significant differences identified for the EWDS and tone from the top sections of the survey.

Table 7

ANOVA Results of Vulnerability Scores

Variable	Division I	Division II	Division III	ANOVA (F)	P-Value
Total Score ^{^*}	13.88 ± 8.39	7.87 ± 6.18	4.95 ± 2.21	9.079	<.001
Education [*]	2.83 ± 3.86	0.90 ± 2.22	0.00 ± 0.00	5.081	.010
Reporting [*]	4.14 ± 4.22	1.82 ± 3.44	0.47 ± 1.25	5.522	.007
Rules ^{^*}	3.96 ± 1.82	2.54 ± 1.79	1.73 ± 1.43	7.926	.001
EWDS	0.24 ± 0.45	0.06 ± 0.24	0.00 ± 0.00	3.000	.059
Management	2.70 ± 0.47	2.66 ± 0.57	2.72 ± 0.39	0.057	.945

Notes. a. mean ± std dev

b. [^]. The mean difference between Division I and Division II is significant (<.05).

c. ^{*}. The mean difference between Division I and Division III is significant (<.05).

Beliefs of Match-Fixing in the NCAA

Six questions were asked about the current and potential state of match-fixing in collegiate athletics, and the confidence NCAA member schools had in both the NCAA and their own institutions to prevent the phenomenon.

First, 13 Division I participants (61.9%) believed match-fixing is a current problem in the NCAA to some extent, and 20 (95.2%) believed to some extent that match-fixing has the potential to become a problem in the future. Conversely, only one Division I participant (4.8%) believed their own institution has a match-fixing problem, and only six (28.6%) believed to some extent that their institution could potentially experience a match-fixing problem in the future. For confidence in the NCAA to prevent match-fixing, most participants were slightly confident, with 12 (57.1%) having this belief. Three participants (14.3%) were somewhat confident in the NCAA to prevent match-fixing and six (28.6%) had no confidence in the NCAA. No participants (0.0%) were very confident. Participants were a little more confident in their own abilities to prevent match-fixing, with one participant (4.8%) being very confident, eight (38.1%) being

somewhat confident, and 11 (52.4%) being slightly confident. Only one participant (4.8%) had no confidence in their athletic department to prevent match-fixing in their own sporting events (Table 8).

Table 8

Division I Athletic Department Match-Fixing Beliefs

Item	Division I (n/%)			
	Definitely Yes	Probably Yes	Probably Not	Definitely Not
Is match-fixing a current problem in the NCAA?	1 (4.8)	12 (57.1)	8 (38.1)	0 (0.0)
Does match-fixing have the potential to become a problem in the NCAA?	12 (57.1)	8 (38.1)	1 (4.8)	0 (0.0)
Is match-fixing a current problem at your college or university?	0 (0.0)	1 (4.8)	11 (52.4)	9 (42.9)
Does match-fixing have the potential to become a problem at your college or university?	2 (9.5)	4 (19.0)	13 (61.9)	2 (9.5)
Item	Very	Somewhat	Slightly	Not at all
How confident are you in the NCAA's ability to prevent match-fixing in collegiate sporting events?	0 (0.0)	3 (14.3)	12 (57.1)	6 (28.6)
How confident are you in your institution's ability to prevent match-fixing in collegiate sporting events?	1 (4.8)	8 (38.1)	11 (52.4)	1 (4.8)

Next, Division II participants were roughly split between match-fixing probably being a current problem in the NCAA and probably not being a current problem, with the former having nine responses (52.9%) and the latter with eight (47.1%). As for match-fixing's potential to become a problem in the NCAA, majority of participants (94.1%) felt there is potential for the phenomenon to become problematic in the NCAA in the future to some extent. Similar to the Division I results, Division II participants had different beliefs when it came to their own institution. All participants (100.0%) believed to some extent that match-fixing is not a problem at their own institution. When asked about the potential to become a problem at their institution, only two schools (11.8%) flipped sides, answering that match-fixing probably has the potential

to become a problem at their own institution. When asked about the confidence participants have in the NCAA to prevent match-fixing, six (35.3%) were somewhat confident and nine (52.9%) were slightly confident in the NCAA. No Division II participants (0.0%) were very confident in the NCAA and two (11.8%) had zero confidence. Again, participants appeared to be more confident in their own institution's abilities to prevent match-fixing compared to the NCAA. Two participants (11.8%) were very confident in their school, nine (52.9%) were somewhat confident, and four (23.5%) were slightly confident in their school. Two participants (11.8%) were not confident in their athletic department's ability to prevent match-fixing in their own sporting events (Table 9).

Table 9

Division II Athletic Department Match-Fixing Beliefs

Item	Division II (n/%)			
	Definitely Yes	Probably Yes	Probably Not	Definitely Not
Is match-fixing a current problem in the NCAA?	0 (0.0)	9 (52.9)	8 (47.1)	0 (0.0)
Does match-fixing have the potential to become a problem in the NCAA?	3 (17.6)	13 (76.5)	1 (5.9)	0 (0.0)
Is match-fixing a current problem at your college or university?	0 (0.0)	0 (0.0)	6 (35.3)	11 (64.7)
Does match-fixing have the potential to become a problem at your college or university?	0 (0.0)	2 (11.8)	13 (76.5)	2 (11.8)
Item	Very	Somewhat	Slightly	Not at all
How confident are you in the NCAA's ability to prevent match-fixing in collegiate sporting events?	0 (0.0)	6 (35.3)	9 (52.9)	2 (11.8)
How confident are you in your institution's ability to prevent match-fixing in collegiate sporting events?	2 (11.8)	9 (52.9)	4 (23.5)	2 (11.8)

For the Division III schools, participants were again split on their belief of the current state of match-fixing in the NCAA, with seven (46.7%) responding that match-fixing is probably a problem and seven (46.7%) responding that match-fixing is probably not a current problem in

the NCAA. One participant (6.7%) believed match-fixing is definitely not a current problem in the NCAA. For the participants' belief about the potential for there to be match-fixing in the NCAA, two (13.3%) responded that there is definitely potential for it and eight (53.3%) responded that there is probably potential for match-fixing in the NCAA. On the contrary, four participants (26.7%) believe there is probably not potential for match-fixing and one participant (6.7%) believed there is definitely not potential for there to be match-fixing in the NCAA. When it came to the participants' own institution, most (86.7%) responded that match-fixing is definitely not a problem at their own institution. The remaining two participants (6.7% each) were split between probably and probably not a current issue at their own institution. As for the potential for match-fixing to become a problem at the participants' own institution, most again (66.7%) responded that there is definitely not potential of it becoming a problem. Three (20.0%) believed there is probably not potential for match-fixing to become problematic and two (13.3%) responded that there is probably potential for match-fixing to become a problem at their own institution. Lastly, most Division III participants (46.7%) were somewhat confident in the NCAA to prevent match-fixing in collegiate athletics, followed by slightly confident (26.7%), and rounded out with two participants (13.3%) each for very confident and no confidence. As for the participants own Division III institutions, most were again somewhat confident with eight (53.3%) selecting this option. Slightly confident again followed with four participants (26.7%) having this belief, very confident followed with two participants (13.3%) selecting this option, and one participant (6.7%) had no confidence in their athletic department's ability to prevent match-fixing (Table 10).

Table 10*Division III Athletic Department Match-Fixing Beliefs*

Item	Division III (n/%)			
	Definitely Yes	Probably Yes	Probably Not	Definitely Not
Is match-fixing a current problem in the NCAA?	0 (0.0)	7 (46.7)	7 (46.7)	1 (6.7)
Does match-fixing have the potential to become a problem in the NCAA?	2 (13.3)	8 (53.3)	4 (26.7)	1 (6.7)
Is match-fixing a current problem at your college or university?	0 (0.0)	1 (6.7)	1 (6.7)	13 (86.7)
Does match-fixing have the potential to become a problem at your college or university?	0 (0.0)	2 (13.3)	3 (20.0)	10 (66.7)
Item	Very	Somewhat	Slightly	Not at all
How confident are you in the NCAA's ability to prevent match-fixing in collegiate sporting events?	2 (13.3)	7 (46.7)	4 (26.7)	2 (13.3)
How confident are you in your institution's ability to prevent match-fixing in collegiate sporting events?	2 (13.3)	8 (53.3)	4 (26.7)	1 (6.7)

Finally, the overall responses for participants attitudes and beliefs about match-fixing in collegiate athletic events for both their own institution and the NCAA are as follows. Participants were about mixed in their belief surrounding the current state of match-fixing in the NCAA, with 29 (54.7%) answering either probably yes or definitely yes and 24 (45.3%) answering probably not or definitely not. Most participants did believe that match-fixing has the potential to become a problem in the NCAA, with 17 (32.1%) responding definitely yes and 29 (54.7%) responding probably yes. Forty-six participants (86.8%) to some extent believe that match-fixing could become problematic in the NCAA in the future. As shown in each separate division's responses, participants' beliefs shifted when it came to their own institution instead of the NCAA in its entirety. Most participants responded that match-fixing is not a current problem at their own institution, with 33 (62.3%) responding that it is definitely not a current problem and 18 (34.0%) responding that match-fixing is probably not a problem at their own institution. Interestingly,

while most respondents felt match-fixing does have potential to become a problem in the NCAA in the future, most respondents also believed that match-fixing does not have potential to become a problem at their own institution. Twenty-nine participants (54.7%) responded that there is probably not potential and 14 (26.4%) responded that there is definitely not potential for match-fixing to become a problem at their own institution. Lastly, for the overall confidence participants have in the NCAA to prevent match-fixing, most were slightly confident in the NCAA, with 25 (47.2%) selecting this option. Sixteen participants (30.2%) were somewhat confident in the NCAA, two (3.8%) were very confident, and ten participants (18.9%) had no confidence in the NCAA to prevent match-fixing. For their own institution's ability to prevent match-fixing, 25 participants (47.2%) were somewhat confident and 19 (35.8%) were slightly confident. Five (9.4%) were very confident in their own institution and four participants (7.5%) were not confident (Table 11).

Table 11

Overall Athletic Department Match-Fixing Beliefs

Item	Total (n/%)			
	Definitely Yes	Probably Yes	Probably Not	Definitely Not
Is match-fixing a current problem in the NCAA?	1 (1.9)	28 (52.8)	23 (43.4)	1 (1.9)
Does match-fixing have the potential to become a problem in the NCAA?	17 (32.1)	29 (54.7)	6 (11.3)	1 (1.9)
Is match-fixing a current problem at your college or university?	0 (0.0)	2 (3.8)	18 (34.0)	33 (62.3)
Does match-fixing have the potential to become a problem at your college or university?	2 (3.8)	8 (15.1)	29 (54.7)	14 (26.4)
Item	Very	Somewhat	Slightly	Not at all
How confident are you in the NCAA's ability to prevent match-fixing in collegiate sporting events?	2 (3.8)	16 (30.2)	25 (47.2)	10 (18.9)
How confident are you in your institution's ability to prevent match-fixing in collegiate sporting events?	5 (9.4)	25 (47.2)	19 (35.8)	4 (7.5)

To summarize, most match-fixing prevention strategies were not used by NCAA member institutions. Rules, regulations, and policies saw the most implementation, followed by reporting mechanisms, anti-match-fixing education programs, and rounding out with EWDS. Most member schools had good upper management practices. As a result of the low frequencies of match-fixing prevention usage, Division I institutions mean vulnerability score landed in the “at-risk” category, while both Division II and III institutions mean vulnerability score fell into the “vulnerable” category. The overall mean vulnerability score for the NCAA also fell into the “vulnerable” category. Significant differences in mean vulnerability scores were identified between Division I and Division II, as well as Division I and Division III institutions. Significant differences between divisions were found for the scores of different survey sections that contributed to the mean score as well. Finally, participants were split on whether match-fixing was a current problem in the NCAA or not, however, most participants felt there was potential for match-fixing to become problematic in the NCAA. Contrarily, most participants felt match-fixing was not a current problem at their own institution, and also believed match-fixing does not have the potential to become problematic at their own institution. In addition, the increased confidence in one’s own institutions ability to prevent match-fixing was noticed with the slight increase in confidence compared to the NCAA.

Chapter V: Discussion and Conclusion

The main purpose of this study was to explore the current state of match-fixing prevention in all three NCAA divisions and assess the opportunity-based vulnerability of there to be fixed NCAA sporting competitions. Each research question is discussed in its own section, primarily looking at the frequency of use for each notable prevention strategy for match-fixing. In addition, a comparison of mean scores from the survey was conducted between Division I, II, and III institutions to assess if there were any differences in their vulnerability for match-fixing. Practical implications from this research are also identified, limitations of the research are discussed, and future suggestions for additional research are made.

The main findings from this research were an overall low frequency of usage of the different recommended strategies used to prevent match-fixing, and NCAA athletic competitions considered “vulnerable” to match-fixing. Differences between divisions were also identified. As expected, NCAA Division I programs used more prevention methods and therefore provided less opportunities for individuals to match-fix, making them theoretically the least vulnerable of the three divisions. Also as expected, both Division II and Division III were significantly more vulnerable to match-fixing compared to Division I.

RQ1: Match-Fixing Prevention Strategies Used by NCAA Member Schools

Research question 1 aimed to provide an understanding of what common prevention strategies found in the literature were used by NCAA member schools. While statistical comparisons could not be made, frequency distributions were used to display a visual of the differences in their usage.

Education

Surprisingly, only 10 survey participants (18.9%) responded that their athletic department provided an anti-match-fixing education program for their internal stakeholders. Marchetti et al. (2021) discussed how education is viewed as one of the easier ways to address match-fixing and is a very commonly used strategy. However, education was the second least used strategy among NCAA member schools, only having more usage than EWDS. Many schools likely educate on the topic of sports wagering, identified by four participants in question 38, but did not expand on the details of match-fixing.

For the 10 schools that had an anti-match-fixing education program, most incorporated good practices of such programs. Manoli et al. (2021) recommended anti-match-fixing programs target all personnel and be offered through a variety of modes. Majority of the 10 participants did target many personnel in their athletic department to participate in their anti-match-fixing education program, with all making sure their student-athletes participated. As for providing a variety of ways to participate in the education program, many participants had in-person training for their program, but not many provided other modes for education. None of the schools provided a synchronous online education session, which was surprising in today's world of video communication. Many of the recommendations from Abbott & Sheehan (2013) were also met, including 100.0% of schools covering the meaning of match-fixing and 80.0% reviewing how match-fixing occurs. Conversely, only 50.0% taught their internal stakeholders to resist match-fixing requests, which was recommended by both Abbott & Sheehan (2013) and Barkoukis & O'Shea (2022). The only two good practices that saw most participants respond with either no or

do not know were, the tailoring of each anti-match-fixing education program and teaching internal stakeholders to resist.

Tak et al. (2018) also discussed how anti-match-fixing education programs are a reactive approach to the problem. While the lack of current usage of education programs by NCAA member schools foreshadows this understanding, there is likely still time for schools to be more proactive in their prevention. Both the Vanderbilt backup quarterback case and investigation of the Temple University men's basketball team in March of 2024 for example, will hopefully urge the NCAA to start implementing prevention strategies soon, like education, and reduce the occurrence of anymore cases. A suggestion for anti-match-fixing education programs based on the results of the survey and the literature (Abbott & Sheehan, 2013; Barkoukis & O'Shea, 2022; Tak et al., 2018) is add to schools' existing sports wagering education programs or initiate one. The two are closely associated, and most schools already educate on sports wagering, even some of the Division III programs (see appendix B for responses). Match-fixing education should review what it is, how it occurs, and consequences that can result to both the individuals involved and the sport as a whole (Abbott & Sheehan, 2013; Marchetti et al., 2021; O'Shea et al., 2021). Most importantly, match-fixing education should also teach internal stakeholders how to resist a request to fix (Abott & Sheehan, 2013; Barkoukis & O'Shea, 2022). It is better to be prepared to some extent than ignore the phenomenon and believe that match-fixing simply will not happen at each school's own institution, which was noticed in the attitudes and beliefs portion of the survey. Anti-match-fixing education programs are arguably the most feasible prevention strategy that can be implemented at every level of the NCAA. Abbott & Sheehan's (2013) analysis of the INTERPOL – FIFA program and Moritzer et al.'s (2022) review of

Austria's *Play Fair Code* provide great examples of good education programs the NCAA could use as a model. UEFA (n.d.) released their new *Fight the Fix* education program in 2022 which the NCAA could also use to help develop a match-fixing framework or program.

Internal Reporting (Whistleblowing) Mechanisms/Protection

Internal reporting (whistleblowing) mechanisms was the second most used prevention strategy in the NCAA, with 16 participants (30.2%) responding that their athletic department had a mechanism in place. Ondráčková and Verschuuren (2021) stated that whistleblowing was a “leading fraud detection mechanism” (p. 134). Knowing this, and the low implementation of reporting mechanisms from the survey, more schools should look into establishing a reporting mechanism in their athletic department or University. Yet one Division I program responded that their athletic department plans to implement a reporting mechanism within the next year. On the NCAA website *Sports betting* page (n.d.), however, a hotline is available to report alleged integrity violations in NCAA sporting competitions, including match-fixing. Which could help explain the low usage of whistleblowing mechanisms by its member schools.

For the 16 member schools that had their own whistleblowing mechanism in place, most included good practices. The encouragement of reporting and seeking advice are major components of creating an anti-fraud culture (Brooks et al., 2012; Lewis, 2002), which was completed by 81.3% and 75.0% of athletic departments. Brooks et al. (2012) and Erickson et al. (2019) maintained that whistleblowers can be subject to many negative outcomes, which should be addressed with zero-tolerance retaliation policies and punishments to individuals that retaliate (Lewis, 2002; Moriconi, 2020). From the results, 10 (62.5%) participants had zero-tolerance policy for retaliation and punishments for individuals that did retaliate against a whistleblower.

Lastly, all but one school provided their internal stakeholders mental health resources, which is beneficial for those reporting cases of match-fixing.

Member schools also underused key good practices. While consistency of such mechanisms was subjective and 75.0% of participants indicated that their athletic department handled reports in a consistent manner, most mechanisms were likely unclear or lacked transparency for internal stakeholders. One participant responded that their athletic department displayed their reporting mechanism visually. Lewis (2002) discussed how a visual aid or flowchart is an effective way to create clearness in a reporting mechanism. NCAA member schools could certainly have a clear and transparent framework, but this result points otherwise. Additionally, if the process for reporting and investigating an alleged integrity violation is not outlined and shared with internal stakeholders, it is possible that NCAA member schools are not as consistent as they think when handling reports of match-fixing. Future research could examine match-fixing reporting mechanisms on a more objective basis to identify the clearness and consistency of such mechanisms. The good practice of utilizing an external agency was also underused compared to the others, with only 18.3% using one. Since the NCAA has a hotline to report match-fixing, they could make it the universal reporting procedure for all levels of the NCAA. With that, they could incorporate a third-party agency to help investigate these reports, who would collaborate with both the NCAA and member school during its investigation. Additionally, the NCAA could display their new universal procedure externally and in a flowchart for individuals, and the member schools could review this mechanism in their education programs.

Rules, Regulations, and Policies

Rules, regulations, and policies was the most used strategy to prevent match-fixing. Nineteen participants (35.8%) responded that their athletic department had their own match-fixing rules, and 16 (84.2%) reviewed the rules with their internal stakeholders. There was no agreed-on set of rules, regulations, or policies that were best at preventing match-fixing. Most of the literature focuses on the difference in laws between countries (Tweedie & Holden, 2022; Van Bottenburg, 2022) and the importance of collaboration between many stakeholders (Abbott & Sheehan, 2013; Hessert & Ling Goh, 2022; Kihl, 2021; Manoli et al., 2021; Moriconi & Almeida, 2019; Van Bottenburg, 2022; Villeneuve, 2015). For these reasons, this section focused on the frequency in which the different rules for match-fixing were reviewed.

More than half of the participating NCAA schools reviewed the NCAA's match-fixing rules and their state's laws for sports wagering with their internal stakeholders. Most participants stated that they reviewed these rules with their internal stakeholders once per year. Serby (2015) discussed how younger athletes should be targeted more in education sessions, so underclassmen might benefit from reviewing the rules more often than once per year. One of the good practices that could be beneficial when reviewing these rules was to have internal stakeholders acknowledge their understanding of the rules, just like Football Association Singapore (Hessert & Ling Goh, 2022). Very few schools required internal stakeholders to acknowledge match-fixing rules as, only 22.6% required this practice. Additionally, as the literature states (Abbott & Sheehan, 2013; Hessert & Ling Goh, 2022; Kihl, 2021; Moriconi & Almeida, 2019), partnerships are incredibly important when enforcing rules. Not many member schools indicated they could partner with law enforcement if needed, while 35.8% were able to partner. As sports

wagering and match-fixing continues to evolve, the rules will also require changing. Future research that examines the most appropriate rules, regulations, and policies to prevent match-fixing, is important, which could then become more universally seen in all areas of sport.

Early Warning Detection Systems

As expected, EWDS was the least used prevention strategy. Only six schools (mostly at the Division I level) responded that their athletic department currently used one. As stated previously, IC360 monitors many of the top Division I league's and the NCAA states that it monitors many matches across different divisions as well (McGuire, 2023). Two Division I participants mentioned that their athletic department does not have an EWDS themselves because of the understanding that their sporting events are already monitored. This is likely the case for many other Division I institutions and could explain why its usage was low.

The Division II and III institutions had similar results to each other about using EWDS. Only one Division II school had used an EWDS and none of the Division III institutions used one. Many more also did not plan to implement an EWDS within the next year. While there were Division II and III schools stating financial constraints and resources as a contributing reason why they did not have an EWDS, the more common theme was that match-fixing was not a problem at their respective levels and did not justify the need to implement one. This was an expected reason since no known match-fixing cases have occurred at either level, and none of the popular regulated sports betting sites offered bets on either level. The NCAA could implement monitorization in the future for these two divisions if regulated sites began offering more wagers to be placed on Division II and III sporting competitions.

Since EWDS is an up-and-coming prevention and detection strategy for match-fixing, the usage rates will more than likely increase. It would not be surprising for the NCAA to adopt EWDS, instead of individual schools adding to their own athletic departments. Many of the participating schools experienced financial constraints and resource limitations that prevented them from incorporating EWDS themselves, which would be negated if the NCAA were to provide this service to all its member schools.

Tone from the Top

Most athletic departments displayed proper management of its own actions involving both sports gambling and match-fixing. Only four programs responded that their athletic department had a partnership with a sports gambling company. As Tak et al. (2018) described, social acceptance of sports gambling could fuel more integrity violations in sports as having these partnerships would “put money before ethical issues” (p. 82). As of now, however, the NCAA does not appear to have many of these sport gambling partnerships, which places it in a better integrity environment than if it had many partnerships. While the future is unpredictable, and one would probably assume that many more partnerships will arise in the future, the current lack of partnerships hints that the acceptance of sports gambling in collegiate athletics seems to be on the lower end and the NCAA is prioritizing integrity. This assumption of prioritized integrity within the NCAA is further enhanced by 96.2% of participants responding that their athletic department promoted ethical behavior to its internal stakeholders. Finally, most athletic departments were transparent with their actions involving sports gambling, which is a good practice of whistleblowing mechanisms (Lewis, 2002; Ondráčková & Verschuuren, 2021). Being transparent would let individuals know the athletic department is not trying to hide any practices.

Beliefs of Match-Fixing in the NCAA

This portion of the survey did not factor into the vulnerability scores for the athletic departments but was included to gauge current beliefs about match-fixing throughout the entire NCAA and throughout each individual division. Most participants were split on whether match-fixing in the NCAA was currently a problem or not, but most agreed that the potential for there to be match-fixing in the NCAA was present to some extent. The interesting result was that while most participants agreed there is potential of match-fixing to become problematic in the NCAA, participants beliefs flipped when it came to its potential to become problematic within their own institutions. Many schools felt that match-fixing has the potential to become a problem in the NCAA, but just not at their own school, pointing at a potential bias to one's own ability to prevent match-fixing. This idea is further magnified by the slight increase in confidence in one's own athletic department's ability to prevent match-fixing compared to their confidence in the NCAA's ability to prevent match-fixing in collegiate athletics.

RQ2: Vulnerability of NCAA Member Schools to Experience Match-Fixing

As expected, the Division I level of the NCAA had the highest score on the developed vulnerability scale (13.88) out of the three divisions. Indicating that more prevention strategies are used at the Division I level compared to the other divisions and the theoretical opportunity for internal stakeholders to fix competitions was lowest. Division I athletics fell into the at-risk category of the scale. This comes as no surprise since most regulated sports gambling sites primarily offered wagers to be placed on NCAA Division I sporting events. It would be expected that for this reason, Division I athletic departments would have to take more precautions to maintain integrity in their events, and therefore, incorporate more prevention strategies for

match-fixing. The NCAA may also provide more resources to these programs to further enhance its protection.

The Division II level had the second highest vulnerability score (7.87) of the three divisions, and Division III had the lowest (4.95). Both of these divisions fell into the vulnerable category. These lower scores indicated that not many athletic departments at these levels have prevention mechanisms in place to reduce the internal stakeholders' opportunity to fix matches. Again, this result is likely due to the fact that regulated betting sites do not offer many bets on these levels of competition. As stated by many participants regarding EWDS, little to no fixing occurs to justify its use. Their rationale is likely similar for the other prevention strategies for match-fixing.

The overall vulnerability score for the NCAA was expected as well (9.43), falling into the vulnerable category of the developed scale. In total, most of the prevention strategies were not used by member schools. Of the schools that did use prevention strategies, most were Division I programs. With the continued growth of sports gambling in the U.S., and NCAA president Charlie Baker "expressing concerns about threats to the integrity of competition and harassment of athletes by bettors" (Beard, 2024, para. 5), the use of prevention measures will likely increase in the future, decreasing opportunity-based vulnerability of NCAA member schools to experience match-fixing.

RQ3: Difference in Vulnerability Between Divisions

The difference in total vulnerability scores was significant between Division I and Division II athletic departments, as well as between Division I and Division III athletic departments. These results further show that Division I athletic departments are less vulnerable

to match-fixing due to opportunity-based reasons compared to both Division II athletic departments and Division III athletic departments. With this decreased vulnerability, Division I athletic departments would then be implementing more match-fixing prevention strategies compared to both Division II athletic departments and Division III athletic departments.

The differences between divisions for each category of the survey was also analyzed. Both education and reporting saw a significant difference between Division I and Division III athletic departments in their individual contributions to the vulnerability score, meaning Division I athletic departments use these strategies more than Division III ones. From the frequency distribution, we do know that none of the Division III programs had used an anti-match-fixing education program, and 11 Division I programs used a reporting mechanism compared to one Division III program. Similar to the total vulnerability score, the rules portion of the survey also saw significant differences between Division I and Division II departments and Division I and Division III departments. Indicating the Division I schools have better use of this prevention method compared to the other divisions. There were no statistically significant differences for the use of EWDS and tone from the top management.

Limitations

While this study is believed to be a great start in analyzing match-fixing prevention strategies in the NCAA and resulted in hopefully useful information for the future of collegiate athletics, it is still exploratory in nature and does come with limitations. First, there was a very low response rate for the survey (4.9%), indicating a high likelihood of non-response bias (Blair & Zinkhan, 2006; Bose, 2001; Sivo et al., 2006). The responses from the NCAA member schools that were included in the study could be very different than the NCAA schools that did not

complete the survey. The many participants that opted to not participate could have used more prevention strategies and the NCAA could be more protected from match-fixing than what was found in this study. Conversely, those that did not participate could have also not used any prevention strategies and the vulnerability score of the NCAA could be even lower than was found. The non-response bias can lead to sample bias which affects the generalizability of the results to the overall population of NCAA member schools (Blair & Zinkhan, 2006; Sivo et al., 2006). Andrade (2020) stated that generalizability can occur if the population is known and a valid sampling method is used. This study has the known population of the NCAA-affiliated schools and used census sampling to ensure all participants had the opportunity to participate. However, the non-response bias looms large and the results are not entirely generalizable to the remaining NCAA schools.

The second limitation of the study was the survey itself. While the survey was based on the *NCAA Survey of Senior Compliance Administrators on Sports Wagering Issues* (NCAA Research, 2023) and Ulrike Spitz's (2016) *Match-fixing: the role of prevention* and included many of the good practices from Dillman et al. (2014) and other authors, this study was its first implementation, and the validity and reliability of the instrument is unknown. There were no reliability tests conducted on the survey and there was no pilot study completed. Additionally, there is a possibility that the questions do not measure what they were intended to measure. Questions were up to participant interpretation, which may have differed from how the research team interpreted the questions. Most questions also only contained a yes, no, or don't know answer option, aside from question 38, meaning participants were limited in their response. For

these reasons, the questions from the survey may not accurately represent the vulnerability scores or the usage of both the prevention strategies and their good practices.

Future Research

Many ideas for future research stemmed from this study. The first suggestion for future research would be to find more qualitative answers regarding why NCAA member schools elected not to implement different strategies to prevent match-fixing. Question 38 of the survey resulted in many beneficial responses for why participants athletic departments had not incorporated an EWDS. The NCAA could use these responses to understand what it needs to do as the governing organization to help minimize some of the barrier's member schools face that limit their ability to implement any of the prevention strategies for match-fixing. Interviews would be the best way to collect this information as a researcher could also look to identify the resources member schools likely need from the NCAA in order to have more prevention for match-fixing, along with collecting a better understanding of the rationale for why a strategy is not implemented.

The second suggestion for future research is to gain an enhanced understanding of prevention strategies. The survey questions were limited to the good practices identified within the literature, and participants did not have the chance to elaborate on any of the questions, they could simply select one of the response options. Collecting detailed understandings of current prevention strategies could help locate any gaps in current strategies, but also potentially identify a new good practice associated with the prevention measure. Interviews would also be the best way to collect this information and allow participants to expand more on the prevention strategies their athletic department uses to prevent match-fixing.

A third suggestion is to collect the viewpoints of student-athletes surrounding match-fixing prevention strategies. While the administrators have a good understanding of how their athletic department operates and the measures that are used to prevent match-fixing, the student-athletes could have a different viewpoint that would potentially improve the use of their school's match-fixing prevention strategies. There could also be a potential gap in what the athletic department thinks it is doing but is not what the student-athletes are receiving. This would not be to disprove anything the participants have stated for this current research study, but rather a way to let the athletic departments know what student-athletes are possibly missing out on in terms of match-fixing prevention resources. Similar to the previous suggestions having an aim of informing the NCAA of resources the member schools need or the barriers they face, this suggested research would attempt to have the same results, just between the member schools and its student-athletes.

A final suggestion is to identify effective prevention methods. Examining effective prevention mechanisms is difficult but a similar study completed by Giel et al. (2023) involving computer-based tasks with more of the prevention strategies could be developed. While this would not be a real-life sporting event, it is a good way to manipulate the environment and simulate scenarios athletes could face and could translate to some extent over to true sport. There could also be research that looks into leagues occurrences of match-fixing and the prevention strategies they have in place; however, it could be difficult to account for confounding variables. The results from a study like this may help inform the NCAA which prevention methods it should focus on to better prevent match-fixing.

Conclusion

The aim of this study was to develop an understanding of the perceived vulnerability of NCAA member schools to experience match-fixing based on the usage of different recommended prevention strategies that limit the opportunity to fix matches. Previous work has identified the NCAA as more at-risk than some of the other major professional U.S. sports based on lower viewership (Lewis, 2023; Marchetti et al., 2021) and the financial structure of the leagues (Hill et al., 2020), which ties into rationalization and pressure from Cressey's (1953) fraud triangle, but no known studies have attempted to analyze the opportunity portion of the triangle and its relation to the NCAA. For this reason, along with the growing industry of sports betting in the U.S. and the potential ways it can jeopardize sport integrity, it was considered valuable to look into what sport leagues are doing in the U.S. to prevent the occurrence of integrity violations.

There is much relevance for match-fixing related research in the U.S. and collegiate athletics. Two instances of alleged match-fixing in NCAA competitions have already been released in 2024 (Aiken, 2024; Salvador, 2024), a large-scale student-athlete sports gambling bust happened in the state of Iowa in 2023 (Olson, 2023; Rittenberg, 2023), a previous study found the NCAA to be of more risk for match-fixing in certain sports compared to their professional counterparts (Hill et al., 2020), and many gambling violations have recently been occurring in U.S. sports (Anderson, 2023). Match-fixing has detrimental consequences to the integrity of competitions and can ruin the honesty and pureness of the sporting event (Hosmer-Henner, 2010; Thorn, 2019). For these reasons, and the continuing growth of sports wagering in the U.S., it is extremely important to both identify weaknesses leagues and organizations face in

terms of preventing the phenomenon and urge them to begin taking action to prevent what has plagued many countries in the world already.

To help identify weakness and urge action, the research team constructed a new survey developed from match-fixing prevention literature, and previous frameworks, to identify the recommended prevention strategies and their good practices. The results of the study found the usage of recommended match-fixing prevention strategies to be low. As a result of the poor usage of prevention strategies, the NCAA and two of its lower divisions were found to be “vulnerable” to match-fixing. The higher division, Division I, was considered “at-risk,” but their score was just two points above the “vulnerable” category. It can be concluded from these results that very little prevention measures for match-fixing are used in the NCAA, and there is great opportunity for internal stakeholders of the NCAA to engage in fixing. The results from this study, along with that of Hill et al. (2020), further push the higher vulnerability and riskiness the NCAA faces with regard to match-fixing and should urge the NCAA to take action.

There are practical implications from this study. First, it notifies the NCAA and its member schools of each division the extent of their vulnerability to match-fixing from an opportunity-based perspective. Besides tone from the top management, each prevention strategy identified was used by less than 40% of participants. Division II schools, Division III schools, and the NCAA overall were identified as “vulnerable” based on the developed scale, while Division I was found to be “at-risk.” These results could create a sense of urgency to be better protected from match-fixing and lead to increased usage of the prevention strategies by these schools. Schools that have not previously thought about match-fixing prevention may also be introduced to the recommended prevention strategies and begin thinking more about how they

can protect their athletic events and internal stakeholders from match-fixing. For the member schools that did currently use the recommended prevention strategies, they are able to see either weaknesses in their strategy usage or understand which good practices they are missing out on and can implement them into their strategy to enhance its efficacy and continue reduce their risk for opportunity-based match-fixing.

As a general recommendation from the results, education programs should be added to help spread awareness of match-fixing and teach internal stakeholders to “recognize match fixing, resist it and report it” (Abbott & Sheehan, 2013, p. 281). Whistleblowing mechanisms should be implemented by more universities to report instances of match-fixing and should create an environment where reporting is accepted, and whistleblowers are protected.

Whistleblowing mechanisms could also be displayed in a visual format for internal stakeholders to better understand the procedures. Rules, regulations, and policies should continue to evolve as sports wagering grows and match-fixing potentially becomes a larger problem in the NCAA. NCAA member schools should make a better effort to educate their internal stakeholders on all the different types of rules, regulations, and policies that must be followed, and do so more often. Finally, the NCAA should look into providing EWDS to all of its Division I member schools for now. If the regulated betting sites begin permitting more wagers to be placed on Division II or Division III competitions, or Division II or III institutions begin to see more threats of match-fixing at their schools, the NCAA should look to provide this service to them as well to avoid the constraints these schools may face of implementing it themselves.

Next, the NCAA could also benefit from these results as they are provided an understanding of what its member schools are lagging in for match-fixing prevention. The results

can inform the NCAA of resources they may want to provide to improve their member school's usage of prevention strategies. Future research utilizing qualitative data from member schools could also help identify ways in which the NCAA would be even more beneficial in helping improve the landscape of match-fixing prevention in its sporting environment. Additionally, because there was a significant difference between Division I and Division II institutions, as well as Division I and Division III institutions, the NCAA may want to start paying more attention to those two lower levels. While currently this difference is understandable, if the sports betting environment shifts to allow more bets on more collegiate events, the NCAA would benefit by being extra prepared to handle the shift.

Theoretical contributions are also present from this work. There has been a variety of studies and articles developed for match-fixing. Many of these articles analyze causes, risks and consequences of match-fixing, discuss the recommended prevention strategies in greater detail, provide detailed case studies of the phenomenon, and much more (refer to introduction and literature review for articles). While many articles helped describe the prevention strategies that are widely used to prevent match-fixing, there have not been many studies that examine the usage of the prevention strategies. More specifically, there have not been any studies that used the opportunity aspect of Cressey's (1953) fraud triangle to identify match-fixing vulnerability in sport league based on its usage of prevention strategies. While the newly constructed survey and the study contain flaws and limitations, it attempts to offer a new way of analyzing match-fixing risks in sport; attempting to provide the basis for developing a mechanism to assess sport leagues opportunity-based vulnerability to match-fixing. Developing a more well-rounded system to assess this opportunity-based match-fixing vulnerability could be incredibly useful in helping

academia understand further what increases risks for match-fixing in a sport and could also be critical in providing different leagues knowledge of what they need to do to be better protected from the phenomenon.

Additionally, literature has primarily used rationalization to understand why individuals fix matches (Hill, 2015; Tak et al., 2018; Tzeng & Lee, 2021), but Marchetti et al. (2021) and Tak et al. (2018) focus their discussion on institutionalism and the social acceptance of sports wagering as the concern for match-fixing. It is evident that money is the main culprit for match-fixing (Frenger et al., 2019; Hill, 2015; Huggins, 2022; Manoli & Antonopoulos, 2015; Marchetti et al., 2021; Tak et al., 2018; Tzeng & Lee, 2021; Tzeng & Ohl, 2023), but less is known about the structure of sports that allows individuals to actually execute a fix. This study attempted to offer a deeper understanding of the institutional structure of match-fixing prevention in a sports league that allows for match-fixing to occur, focusing less on identifying rationalizations internal stakeholders make to fix matches. While we now know what some NCAA member schools are doing to prevent match-fixing in their sporting events, it is still unknown as to how effective the strategies truly are at preventing match-fixing. Because match-fixing has not been as prevalent in the U.S. compared to other countries, further research could look at a league overseas that has experienced a larger case of match-fixing and compare their results of prevention usage to that of the NCAA, which could indicate whether an even larger lack of prevention usage caused that league to experience match-fixing, or if other institutional practices caused it.

In the end, as long as sports wagering persists in the U.S. and in collegiate athletics, the risk of match-fixing will always be present. It is best to take early action to prevent the

phenomenon from plaguing collegiate sport, instead of waiting for it to happen and reacting to the problem like Tak et al. (2018) has stated. With sports gambling issues continuing to rise in American sport, it is only a matter of time until major match-fixing scandals begin to pop-up more frequently in collegiate athletics if the NCAA and its member schools continue to avoid using strategies that can help prevent the problem. Developing a mechanism to assess opportunity-based vulnerability for match-fixing based on prevention strategy usage could prove to be extremely beneficial in helping improve the prevention landscape and urge the NCAA and its member schools to become more proactive in their match-fixing prevention.

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Appendix A

NCAA Match-Fixing Prevention Survey and Scoring System

Note: Point value listed in parentheses next to response option

Start of Block: Consent

Q1 After reading the information sheet/consent form, do you agree to participate in this research study?

- Yes
- No

Skip To: End of Survey If Q1 = No

End of Block: Consent

Start of Block: Education

Q2 Does your athletic department have an anti-match-fixing education program?

- Yes (1)
- No (0)
- Don't Know (0)

Display This Question:

If Q2 = No

Or Q2 = Don't Know

Q3 Does your athletic department plan to implement an anti-match-fixing education program within the next year?

- Yes (0)
- No (0)
- Don't Know (0)

Skip To: End of Block If Q3 = Yes

Skip To: End of Block If Q3 = No

Skip To: End of Block If Q3 = Don't Know

Q4 Does your athletic department's anti-match-fixing education program discuss the meaning of match-fixing with internal stakeholders (e.g., student-athletes, coaches, administrators, etc.)?

- Yes (1)
- No (0)
- Don't Know (0)

Q5 Does your athletic department's anti-match-fixing education program discuss how match-fixing occurs?

- Yes (1)
- No (0)
- Don't Know (0)

Q6 Does your athletic department's anti-match-fixing education program inform internal stakeholders about the consequences of match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

Q7 Does your athletic department's anti-match-fixing education program address the risks that make collegiate student-athletes more vulnerable to match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

Q8 Does your athletic department's anti-match-fixing education program teach internal stakeholders how to resist match-fixing requests?

- Yes (1)
- No (0)
- Don't Know (0)

Q9 Does your athletic department's anti-match-fixing education program review case studies of match-fixing with internal stakeholders?

- Yes (1)
- No (0)
- Don't Know (0)

Q10 Does each sport have its own tailor-made anti-match-fixing education program?

- Yes (1)
- No (0)
- Don't Know (0)

Q11 Do the following internal stakeholders participate in your athletic department's anti-match-fixing education program or not?

	Yes (0.25)	No (0)	Don't Know (0)
Student-athletes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Athletic administrators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Athletic trainers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please list below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12 How often, if at all, is your athletic department's anti-match-fixing education program reviewed with internal stakeholders?

- Less than once a year (0.25)
- Once a year (0.5)
- Once a semester (0.75)
- Multiple times a semester (1)
- Not reviewed (0)

Q13 Is your athletic department's anti-match-fixing education program provided in the following mode or not?

	Yes (0.2)	No (0)	Don't Know (0)
Online (Synchronous)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online (Asynchronous)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In-person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Handouts/Fact sheets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please list below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Education

Start of Block: Reporting

Q14 Does your athletic department have a reporting mechanism for internal stakeholders (e.g., student-athletes, coaches, athletic administrators, etc.) to report match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

*Display This Question:
If Q14 = No
Or Q14 = Don't Know*

Q15 Does your athletic department plan to implement a reporting mechanism for internal stakeholders to report match-fixing within the next year?

- Yes (0)
- No (0)
- Don't Know (0)

*Skip To: End of Block If Q15 = Yes
Skip To: End of Block If Q15 = No
Skip To: End of Block If Q15 = Don't Know*

Q16 To what extent, if at all, is your match-fixing reporting mechanism shared with internal stakeholders in your athletic department?

- Shared with all internal stakeholders (1)
- Shared with some internal stakeholders (0.5)
- Shared with no internal stakeholders (0)
- Don't Know (0)

Q17 Does your athletic department review the entire match-fixing reporting mechanism with internal stakeholders?

- Yes (1)
- No (0)
- Don't Know (0)

Q18 Does your athletic department encourage internal stakeholders to report any match-fixing they have witnessed?

- Yes (1)
- No (0)
- Don't Know (0)

Q19 Does your athletic department encourage internal stakeholders to seek advice when needing to report cases of match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

Q20 Does your athletic department's match-fixing reporting mechanism allow internal stakeholders to remain anonymous when reporting?

- Yes (1)
- No (0)
- Don't Know (0)

Q21 Does your athletic department have some form of a zero-tolerance policy for retaliation against whistleblowers who report cases of match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

Q22 Does your athletic department have punishments for anyone retaliating against a whistleblower that has reported match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

Q23 Does your athletic department handle match-fixing reports made by internal stakeholders in a consistent manner?

- Yes (1)
- No (0)
- Don't Know (0)

Q24 Is your athletic department's match-fixing reporting mechanism outlined in a flow chart or other type of visual format?

- Yes (1)
- No (0)
- Don't Know (0)

Q25 Does your athletic department utilize an external agency to investigate match-fixing reports made by internal stakeholders?

- Yes (1)
- No (0)
- Don't Know (0)

Q26 Athletes who report cases of match-fixing may experience negative effects on their mental health. Does your athletic department provide mental health resources for internal stakeholders who have reported match-fixing?

- Yes (1)
- No (0)
- Don't Know (0)

End of Block: Reporting

Start of Block: Rules

Q27 Does your athletic department have rules, regulations, or policies developed for match-fixing?

- Yes (1)
 - No (0)
 - Don't Know (0)
-

Display This Question:

If Q27 = No

Or Q27 = Don't Know

Q28 Does your athletic department plan to develop rules, regulations, or policies for match-fixing within the next year?

- Yes (0)
 - No (0)
 - Don't Know (0)
-

Display This Question:

If Q27 = Yes

Q29 Does your athletic department review your institutions rules, regulations, or policies for match-fixing with internal stakeholders (e.g., student-athletes, coaches, administrators, etc.)?

- Yes (1)
- No (0)
- Don't Know (0)

Q30 Does your athletic department review the NCAA's rules, regulations, or policies for match-fixing with internal stakeholders?

- Yes (1)
- No (0)
- Don't Know (0)

Q31 Does your athletic department review your respective state's laws regarding sports gambling with internal stakeholders?

- Yes (1)
- No (0)
- Don't Know (0)

Q32 How often, if at all, does your athletic department review any of the rules, regulations, or policies for match-fixing with internal stakeholders?

- Less than once a year (0.25)
- Once a year (0.5)
- Once a semester (0.75)
- Multiple times a semester (1)
- Not reviewed (0)

Q33 Does your athletic department require internal stakeholders to acknowledge their understanding of the match-fixing rules in any form? (*e.g., a signature*)

- Yes (1)
- No (0)
- Don't Know (0)

Q34 Is your athletic department able to partner with law enforcement to investigate reports of match-fixing when needed?

- Yes (1)
- No (0)
- Don't Know (0)

End of Block: Rules

Start of Block: EWDS

Q35 Does your athletic department currently use an early warning detection system (betting market monitoring system) to detect potential match-fixing in your sporting events?

- Yes (1)
- No (0)
- Don't Know (0)

*Display This Question:
If Q35 = No
Or Q35 = Don't Know*

Q36 Does your athletic department plan to implement an early warning detection system (betting market monitoring system) to detect potential match-fixing in your sporting events within the next year?

- Yes (0)
- No (0)
- Don't Know (0)

*Skip To: Q38 If Q36 = No
Skip To: Q38 If Q36 = Don't Know*

Q37 Which early warning detection system does your athletic department currently use? *Select all that apply*

- Sportradar (0)
- Betradar (0)
- Genius Sports (0)
- Stats Perform (0)
- Other (please list below) (0)

*Display This Question:
If Q36 = Yes
Or Q36 = No
Or Q36 = Don't Know*

Q38 What are some reasons why your athletic department does not currently utilize early warning detection systems? *Please list all the reasons below*

End of Block: EWDS

Start of Block: Tone from the top

Q39 Does your athletic department have a current partnership with a sports gambling company?

- Yes (0)
- No (1)
- Don't Know (0)

Q40 Does your athletic department promote ethical behavior to internal stakeholders (e.g., student-athletes, coaches, administrators, etc.)?

- Yes (1)
- No (0)
- Don't Know (0)

Q41 To what extent, if at all, is your athletic department transparent with any actions involving sports gambling?

- Always transparent (1)
- Mostly transparent (0.75)
- Occasionally transparent (0.5)
- Rarely transparent (0.25)
- Never transparent (0)

End of Block: Tone from the top

Start of Block: Individual beliefs

Q42 Is match-fixing a current problem in the NCAA?

- Definitely yes
- Probably yes
- Probably not
- Definitely not

Q43 Does match-fixing have the potential to become a problem in the NCAA?

- Definitely yes
- Probably yes
- Probably not
- Definitely not

Q44 Is match-fixing a current problem at your college or university?

- Definitely yes
- Probably yes
- Probably not
- Definitely not

Q45 Does match-fixing have the potential to become a problem at your college or university?

- Definitely yes
- Probably yes
- Probably not
- Definitely not

Q46 How confident are you in the NCAA's ability to prevent match-fixing in collegiate sporting events?

- Very confident
- Somewhat confident
- Slightly confident
- Not at all confident

Q47 How confident are you in your institution's ability to prevent match-fixing in collegiate sporting events?

- Very confident
- Somewhat confident
- Slightly confident
- Not at all confident

End of Block: Individual beliefs

Start of Block: Demographics

Q48 Which level of the NCAA are you currently associated with?

- Division I
- Division II
- Division III

Q49 What is your primary role in your respective athletic department? *Please select one*

- Athletic director
- Compliance director
- Associate director
- Assistant director
- Administrative support
- Other

End of Block: Demographics

Appendix B

Responses for Q36 - What are some reasons why your athletic department does not currently utilize early warning detection systems? Please list all the reasons below

Division I Responses

1. “Cost is the main reason. There are so many things that our athletic department has to provide and the list just keeps getting bigger and bigger each year. Which in turn, makes the costs increase every year as well.”
2. “Cost, lack of significant betting on our matches, US Integrity does some of this in general.”
3. “We don't feel that sports betting is as prevalent on our institutions games. We lead on our sports betting experts to monitor betting on events they have available.”
4. “Sports gambling is not legal in our state so not a prevalent of a concern. Also, resources are a challenge.”
5. “Not aware of them.”
6. “We are in the process of setting up Prohibet to help with sports wagering and match fixing issues.”
7. “Because at some point we need athletes to know that they know what the rules and basic laws prohibit regarding any type of gambling activity. We need our due diligence watching team outcomes, but well disguised prop-bets are not reasonably feasible. Plus the systems seem to go too far based on what has been communicated. Students gamble on sports, we need rules that are more flexible to individual cases before we intentionally out any student when other schools are intentionally doing nothing. “

8. "Cost"
9. "Costs of such systems"

Division II Responses

1. "Personnel- we are a one-person compliance office. Cost- our budgets continue to be cut annually and we are not able to take on any additional expenses. Rate of occurrence- We do not have any evidence that this is overly prevalent in our department/at our level."
2. "We are a small DII staff so monitoring it would fall under compliance which could be a lot for me. Further, I don't think there is much fixing of matches, or games with being such a small school and who attends games. I think it could be beneficial to have something in place but I think it could be more the education piece and then slowly doing the monitoring,"
3. "Budgetary; Not enough staff to do this; I believe we don't think that our program is at great risk for match fixing"
4. "Not an issue in NCAA Division II Athletic Departments. We educate on gambling and sports wagering but have not had any match fixing issues that we are aware of"
5. "Our institution does not generate attention on a level in which we should employ such measures."
6. "We are a small private school at the D-2 level and have never thought this would be something we should be concerned about at this level. We are certainly willing to address this if there is a mandate to do so or compelling evidence of need."
7. "NCAA D2. Cost"
8. "We are a D2 school with minimal risk for this type of activity."

9. "Do not think [its] needed at our level"
10. "I started in this position in October and this is the first time I've heard about match-fixing or any type of program of such."
11. "Costs and not enough staffing"
12. "cost and low need"
13. "As we begin our transition to Division I, there is the potential of implementation. However currently, there is no need for a system to monitor this. Education is currently limited to the basics (i.e. compliance education sessions with SA/Coaches....basically, gambling is not permissible)."
14. "I don't know if we have access to them."

Division III Responses

1. "At the division III level, our games are often not on the betting markets, and therefore this is not a threat. We do education around sports gambling, but we do not go into the specifics of match-fixing."
2. "Small DIII college, is not a current issue on our campus. We educate on sports wagering in other sporting events to ensure that they follow NCAA rules."
3. "As a division 3 institution, we typically do not have events available to bet on, therefore our student-athletes would not need to affect the outcome of their games. We also do not have the resources/funding to utilize something like this."
4. "Doesn't seem to be a major concern at the time."
5. "Resources and affordability. D3 - not much match fixing going on"

6. “Cost, low prevalence of gambling issues in general in our population, other priority needs. At a different level, my answers may be different.”
7. “Perceived Lack of interest in "fixing" DIII contests. Doubt the public really cares that much about DIII contests”
8. “We are a Division II institution and it has not come up”
9. “It is my humble opinion that no one is betting on our contest.”
10. “We do not see match fixing as an issue at DIII.”
11. “Not sure”
12. “financial, we do not have a policy and are just starting to gather information.”

Appendix C

Information Sheet/Consent Form

Title: Match-Fixing Prevention in NCAA Sports Competitions: Analyzing Strategies and Assessing Perceived Vulnerability

You are invited to be in a research study about match-fixing prevention strategies for NCAA sports competitions. You were selected as a possible participant because you are an NCAA-affiliated institution, and you are responsible for compliance in your athletic department. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Ryan Gasper, Sport Management MA student in the School of Kinesiology at the University of Minnesota -Twin Cities. Dr. Lisa A Kihl, Professor of Sport Management, Associate Director of the School of Kinesiology, and the Director of the Global Institute for Responsible Sport Organizations (GIRSO), will be advising Ryan for this study.

Procedures:

If you agree to be in this study, we would ask you to do the following things:

We are asking you to complete an online Qualtrics survey as part of a research study. The survey will ask you various questions about match-fixing prevention strategies that your athletic department may currently use. We expect the survey to take approximately 10-15 minutes to complete. Participation in this survey is completely voluntary, there will not be any compensation for participation. You are also free to exit the study at any time and skip any questions you would prefer not to answer. The survey will remain open for two weeks. We will send three reminder emails throughout the process to continually encourage responses. We ask that you complete the survey to the best of your ability.

Purpose:

The purpose of this study is to investigate strategies currently used to prevent match-fixing by NCAA Division I, II, and III member schools. The results will also help us assess the overall vulnerability of match-fixing in NCAA sports competitions.

The fast-growing landscape of sports betting in the U.S., along with the recent sports betting scandals at Iowa State University and the University of Iowa, inspired this research. We expect the main benefit to be providing the NCAA with an overall understanding of its member institutions' abilities to prevent match-fixing in collegiate athletics. There are no foreseeable risks for participating in this research.

Confidentiality:

During the project, information from this study will be kept private and will be stored securely. We will avoid asking for easily identifiable information and make all responses anonymous. Only the research team [the graduate student and the advisor] will have access to information that could identify you. Any potential identifying information will not be shared with others outside of this research study. However, organizations that may inspect and copy your information include the Institutional Review Board (IRB), the committee that provides ethical and regulatory oversight of research, and other representatives of this institution, including those that have responsibilities for monitoring or ensuring compliance (such as the Quality Assurance Program of the Human Research Protection Program (HRPP)).

Any information that could potentially identify you will be removed or changed before we publish any report or share the results or data from this study. Again, we will try to avoid asking for any easily identifying information in the survey and intend to make your response anonymous. The data will not be shared with any third parties, however, the findings of this study will be disseminated to the relevant stakeholders through seminars, workshops, scientific conferences, and publications. We will not identify your specific university or program in any presentations or published materials and will make every effort to de-identify the information when disseminating the results of this study. Only the general, summarized findings from the study will be presented publicly.

Voluntary Nature of the Study:

Participation in this study is voluntary. There will be no compensation for participating. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. The research team is also not affiliated with the NCAA, so your standings with the NCAA will not be affected in any way. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researchers conducting this study are Ryan Gasper and Dr. Lisa Kihl. You may ask any questions you have now or at a later moment. **You are encouraged** to contact them at the University of Minnesota – Twin Cities. You may contact Ryan at gaspe063@umn.edu or 563-690-8730. You may also contact Ryan’s advisor, Dr. Lisa A. Kihl, at lkihl@umn.edu.

This research has been reviewed and approved by an IRB within the Human Research Protections Program (HRPP). To share feedback privately with the HRPP about your research experience, call the Research Participants’ Advocate Line at 612-625-1650 (Toll Free: 1-888-224-8636) or go to z.umn.edu/participants. You are encouraged to contact the HRPP if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.

- You want to get information or provide input about this research.

Please print a copy of this information to keep for your records.