

An Interdisciplinary Approach to Sports Analytics in a University Setting
(Technical Paper)

How Sports Gambling has Changed the Fan Experience
(STS Paper)

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Benjamin Metzger
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Technical Project Team Members
Peter Worcester, Rishab Iyer,
Jacqueline Hoege, Aniket Chandra,
Carl Rhodes, Daniel Ungerleider,
Jacob Leonard, Mary Lansing,
Rachel Kreitzer

On my honor as a University Student, I have neither given nor received
unauthorized aid on this assignment as defined by the Honor Guidelines
for Thesis-Related Assignments

Benjamin Metzger

Signature _____

Benjamin Metzger

William Scherer

Approved _____

William Scherer, Department of Engineering Systems and Environment

Approved *Kent Wayland* _____

Kent Wayland, Department of Engineering and Society

General Research Problem: How to incorporate modern technology into Athletics

How can we leverage today's technology to improve athletics for both the teams and the viewers?

Whether or not we appreciate it, we are living through a revolution: the information revolution. Over the past few decades, as a society we have been collecting massive amounts of data for all sorts of purposes. The end goal of all this data collection is consistently to optimize some process, and throughout these endeavors, we have developed complex analytical methods. Traditionally, these have been for technical or business uses, but the fact of the matter is that a lot of these analytical methods are flexible, and so they have slowly begun to make their way into other industries or fields. I aim to discuss how data analysis can be utilized specifically in sports.

The most high-profile of these cases is the Oakland Athletics in 2002. Through an impersonal, numbers-only approach to the game, the coaching staff and managers were able to turn the team from the laughing stock of the MLB to a playoff contender. This situation became prominent through Michael Lewis' book, *Moneyball*, and a movie with the same name. My technical project aims to create a center for UVa athletics where this type of performance analysis can be done.

The STS research paper will dive into the sociotechnical system of sports gambling. The rise of our modern technology has increased access to sports gambling, which is certainly changing the viewing experience for many fans. Due to things like DraftKings, fantasy football, and live-bets, watching sports for some has become more about trying to make money than caring just about the winners and losers. I hope to investigate how the availability of gambling has changed the viewing experience of professional sports.

Sports and Performance Analytics Center

How can the University leverage its current resources to promote athletic success while also diversifying its academic capabilities?

The objective of my team's technical project is to design and develop a proposal for a Center of Performance Analytics Research here at the University of Virginia. This center will encompass both athletic and academic initiatives, and be integrated as a "pan-university resource" for all stakeholder departments at the University of Virginia. This project is a two-semester long research capstone that will hopefully conclude with a presentation to the Office of the President. We will conduct interviews with several stakeholders and research the established programs at UVa's peer and competitor schools. Namely, we aim to investigate the current analytical capabilities of our sports teams and see how they could utilize an analytics center. From there, we will see how this could be incorporated within existing bodies at the University (e.g. the Data Science Institute, Kinesiology, etc.), and propose a plan for the creation of the center. This proposal will be comprehensive – we are considering everything from the financial model to the creation of databases, as well as performing some analysis with our sports teams as a "proof of concept."

The 2018-2019 collegiate athletics season for the Virginia Cavaliers was considered one of the most successful years for any college sports program (McElroy, 2019). The Virginia Cavaliers were awarded National Champion status in two sports: NCAA Division 1 Men's Basketball and Men's Lacrosse. However, for the Virginia Athletics department to continue to operate at the highest level they need to adapt their approach to current trends – namely, the trend of more and more sports teams embracing data analytics to try to gain competitive advantages.

Currently, there are many teams in the Virginia Athletics department that have engaged in data exploration and analysis to obtain a competitive advantage. For example, engineering students have developed analytics tools to support decision-making on and off the field for the Virginia Cavaliers football team (Hayhurst, 2019, para. 14). There have also been capstone projects for Systems Engineering students that have created analytics frameworks for the Men's and Women's Golf, Field Hockey and Softball programs (W. Scherer, personal communication, October 2019). Other sports at the university have collected little to no data whatsoever. As of now, all the teams that have integrated data analytics with their operations have done so independently of the Athletics department, and we believe that cohesion would help all teams (e.g. discoveries about best nutritional practices could likely be leveraged by several teams). Ted White, the Assistant Athletic Director and our capstone project's sponsor, argued; "We need a structure that would allow all the teams to collect, process and analyze the data efficiently with dedicated resources to provide a competitive advantage. The Football and Basketball teams, at this point in time, have rudimentary data management capabilities." (T. White, personal communication, October 2019).

Illness and injury prevention are also unexplored areas within the athletics department. For athletes, the state of their bodies is equally important for their success as their level of skill in the sport (T. White, personal Communication, October 2019). Data in this area is usually collected through "wearables," which are small sensors worn on the body. Over the years, technological advances have helped wearables evolve so that athletes do not see them as an inconvenience—sensors, microprocessors and memory devices for processing and collecting the data are now miniature (Armstrong, Jovanov & Kerwin, 2007). Mark Allen, the Men's and Women's Squash Head Coach, expressed an interest in such analytics: "I would love an easy and

accurate method to track the health and fitness levels of players, as the data I have now has proven to be less than useful.” (M. Allen, Personal Communication, November 2019). In short, we are seeing that some of the “bigger sports” have already gotten the ball rolling on health data collection, while some of the smaller sports are lagging behind.

The University of Virginia’s Strategic Plan, or The 2030 Plan, is an outline of goals and initiatives the university’s administration has set out to be achieved by the year 2030. One of the aims of the plan is “To become the best public university in 2030, and one of the very best in the world, whether public or private... To support this work, we will invest in our data and analytics capabilities.” (UVa Office of Communications, 2019). One proposed way to utilize data and analytics and raise UVa’s reputation is through Learning Analytics. “It is envisaged that education systems that do make the transition towards data-informed planning, decision making, and teaching and learning will hold significant competitive and quality advantages over those that do not.” (Siemens, Dawson & Lynch, 2013, p. 2). So, an analytics center aimed at data-informed planning is aligned with the goals of the 2030 plan. Athletics will serve as the subject matter of this educational endeavor.

While working with the Athletics Department on designing the sports analytics aspect of the project, we aim to collaborate with various academic departments on the learning or education analytics side. As with most academic initiatives, funding for the project is a critical factor in development (A. Groves, Personal Communication, October 2019). My Team and I will research the various fundraising mechanisms the university already has at its disposal, including the donation programs and alumni outreach. We aim to write a group paper in the form of a proposal or the findings of a feasibility study, that serves as a prototype / proposal that we may present to President Jim Ryan. This proposal will need to take into account all areas of the

development of this facility – funding, the physical location, where data is stored, and who will staff it. The ideal result is that the Board will sign off on the funding necessary to bring this work to life, so that we satisfy the two goals: (1) diversifying extracurricular learning opportunities, and (2) having a place where coaches can go to have analysis done for them.

How Sports Gambling has Changed the Fan Experience

*How has the rise of online sports gambling, made instantly available by our modern technology, impacted the viewers of professional athletics**

Introduction

Today's world is more interconnected than ever – the rise of smartphones has allowed almost instant access to the internet for billions across the globe. I seek to discuss how this technology, coupled with sports gambling, has changed how we enjoy sports. More specifically, I assert that sports gambling has added another component of entertainment for any sporting event, and I will touch on how the sociotechnical system of watching sports has changed since online sports gambling became legal.

Background

In 2018, the United States lifted federal regulations regarding sports gambling, leaving it to be a state issue (Licata, 2019). Certain states, such as Nevada, were grandfathered in to allow for sports gambling within the state before 2018, but this opened the door to this industry for the remainder of the nation (Lauletta, 2018). Sports gambling had existed before this, via things like fantasy football, but this legislation allowed for the rise of nationwide gambling through independent gambling institutions, each with apps that would allow for immediate access to a myriad of bets. It is also important to note that there already existed an “underground economy”

of sports gambling, so it is hard to say just how much of the legal gambling we can see now is composed to “new” gamblers (Lauletta, 2018).

This would forever change the sports world for many different social groups. The legislation came with a significant stock increase for casinos and sports franchises. The rise in stock prices for the casinos can be attributed to the fact that their volume of gambles would increase, and the rise in stock prices for sports teams can be explained by the fact that gambling opens the door for other means of entertainment from sports outside of just rooting for a particular team to win (Lauletta, 2018). The NFL, however, seems disproportionately unexcited, as it lobbied congress for regulation in the sports gambling area to maintain the integrity of the games themselves (Breech, 2018). As it currently stands, athletes seem to be unaffected by the rise of gambling, for their motives should not have changed from simply trying to win games, assuming no corruption is going on behind the scenes. The last large social group to consider are the fans themselves, and they will be the main focus of my research. Some fans will of course take advantage of this new avenue of entertainment in moderation, and this will hopefully bolster their enjoyment of the sports they follow. Others will not gamble, and they will be unaffected. The former group will be the main focus of my paper, and I will seek to discuss just how their viewing experience has changed.

Evidence / Data Collection & Methodologies

My research paper will focus on how the rise of online gambling, which came into prominence in 2018, has changed the viewing experience. I will consider online sports gambling as my “sociotechnical system” for the purposes of the thesis. Included in this system are actors such as the fans, fantasy football leagues, online gambling companies, advertisers, and the teams.

The fan experience has been changing ever since the birth of fantasy football, which came into play well before the 2018 ban was lifted. Fantasy football is a means of bringing people together for a competition that gives football value outside of just the winners and losers of the ball-games. More specifically, players of fantasy football draft “fantasy teams” composed of players from any team in the NFL, and you score “points” based on players’ performance for that week. Because a “fantasy team” is composed of players from all over the league, almost every game has some sort of significance for participants of fantasy football – hence my assertion that this gives football value outside of just the winners and losers of the game. Additionally, competitions amongst friends are sometimes made more interesting by adding an “under-the-table” wager on top of everything, and this has served as the first step towards gambling, despite fantasy football not inherently being about gambling. This has been demonstrated by a study in which college students, both male and female, are more likely to have a gambling addiction if they have played fantasy football at any time (Martin, 2014).

I view fantasy football as “online gambling lite.” There are two major avenues of actual gambling that we have seen come into prominence: “daily fantasy,” which inherently DOES come with gambling, and “live bets.” The latter is a bit of a misnomer – these bets can be placed before the game as well, not just during the game (hence “live”), but what I seek to discuss are things such as point spreads (bets on if a particular team will win by a certain amount or not), over-unders (bets on if the sum of both teams’ points will be greater than or less than a certain value), and money-lines (bets simply on which team will win). I consider these an extension of fantasy football because they are a more accessible means of the trend I asserted earlier – a way of giving football relevance to some fan outside of simply which team wins the game. Daily fantasy is an extension of traditional fantasy because it requires a lot more attention from a user –

in the past teams were drafted once per season, but daily fantasy requires a draft for every week of football, and these leagues inherently do come with gambling.

Regarding the viewers, I will seek to research what proportion of viewers are “traditional fans” (i.e. those watching the games with the primary purpose of rooting for a team to win, or possibly watching a game just for the sake of entertainment) versus “gambling fans” (i.e. those who watch the games with the primary purpose of monitoring how their bets are doing, caring less about the winners and losers of the ball games), and how these proportions have changed. More specifically, online gambling could have attracted a whole new fan base for professional sports – those just started watching because the games now have the ability to result in monetary gain. Regarding fantasy football leagues, I will seek to research how participation has changed in these leagues since the ban was lifted in 2018.

As a sports fan myself, I would really like to think that the “teams / athletes” piece of the sociotechnical system has not changed much. More specifically, I like to think that the motivation for athletes has always been, and will always be, to win the game. Should their motives be anything other than that, the value of watching a game and hoping for a particular outcome (as I do – I consider myself a “traditional sports fan” inasmuch as I don’t gamble) is completely stripped away. However, corruption has probably always been a factor, and so to see how the sociotechnical system has changed for teams and athletes, I will seek to research if there have been any significant changes in corruption frequency or magnitude since online gambling arose in 2018. This will be a tough area to fully address considering that it is impossible to say how much corruption has gone unnoticed, and so evidence here will likely come in the form of anecdotes or case studies on the matter.

The advertisements aired during NFL football games has undeniably changed. Ever since the ban was lifted, sports gambling sites were advertised so frequently during NFL games that it was almost impossible for any NFL fan to be ignorant of their existence. This is a big deal because now, fans can't even watch NFL games without being notified of the availability of immediate gambling – most of these sites require a user to download an app and create an account, all of which can be completed within 5 minutes. This is also tied to the fan experience, because it is as if the ads are actively trying to change the fan experience from “watch the games for the outcome” to “watch the games because you can make money.” To discuss the change in this piece of the system, I will need to collect data demonstrating that the makeup of advertisements during football games has changed. This seems pretty straightforward because the ad makeup went from 0% online gambling sites (because they didn't exist) to some significant value greater than zero. What I think may be interesting will be a discussion of what other industries' ads have declined – big players in that area are pharmaceuticals, automotive companies, and beer.

Online gambling companies are the only “new” actor in this sociotechnical system. Their main way of making themselves known to fans is through advertisements during games, discussed in the preceding paragraph, but other avenues of advertising exist as well. For example, people receive individualized ad combinations on their social media based on their internet activity. That trend comes with a lot of controversy, and I will not discuss it in my paper, but I will rather discuss how online gambling institutions make themselves known to sports fans through “targeted” ads on social media. I will also discuss how these companies operate. Evidence in this area will likely come from articles in business journals.

Conclusion

Athletics is undoubtedly a humongous industry, with several sports franchises being worth North of \$1 Billion. Because of the potential financial benefits of analytics (e.g. a team winning the championship of their sport comes with a tremendous payoff for the franchise), we have seen professional sports teams embrace our modern data analytics methods. Naturally, college sports have begun to follow this trend, and UVa refuses to fall behind. The goal of my capstone project is to create a center where performance analytics can be done for the athletic programs at the university. We will consider areas including, but not limited to, the financial model / funding for the center, in what institute within the university the center will reside, who will do the analysis, and how we will store the data in a responsible way. Additionally, we will do some small-scale analytics projects for the teams as a “proof of concept” for the center. Ideally, we will present this proposal to the Office of the President for approval.

Within my own social circle, I have noticed conversation while watching games transition from a discussion on the game itself (e.g. the outcome, whether or not we agreed with a certain play-call) to a discussion on how my friends’ bets are doing. Truthfully, this observation of mine is what prompted me to take on this topic. So, regarding the STS paper, I seek to understand and present information on how the rise of online sports gambling has changed the viewing experience for sports fans.

* Please Note that I changed topics in the Spring of 2020

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