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Effect of Fandom on Sports Gambling

Drake Deitch

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Effect of Fandom on Sports Gambling

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A Clinical Research Project submitted to the faculty of The Illinois School of Professional Psychology at National Louis University in partial fulfillment of the requirements for the degree of Doctor of Psychology in Clinical Psychology.

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The Doctorate Program in Clinical Psychology
Illinois School of Professional Psychology
at National Louis University

CERTIFICATE OF APPROVAL

Clinical Research Project Title
Effect of Fandom on Sports Gambling

This is to certify that the Clinical Research Project of

has been approved by the CRP
Committee on

as satisfactory for the CRP requirement
for the Doctorate of Psychology degree
with a major in Clinical Psychology

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Abstract

The goal in this study was to investigate the relationship between fandom and betting. The hypothesis was that sports fans who gambled on their favorite teams would be more likely to make irrational decisions based more closely on emotional attachment than logical thinking. A total of 191 fans of the Chicago Bears ($n = 80$), Green Bay Packers ($n = 57$), and Minnesota Vikings ($n = 54$) were recruited for the study. Participants completed a survey that assessed their knowledge of and love for the three teams. Results indicated fans were far more likely to bet on their team regardless of the knowledge they held. Emotional attachment proved to be a strong indicator of how participants chose to allocate their bets, which resulted in an impact on their decision-making process. The implications of the study are to provide more understanding for gamblers, especially younger gamblers who are inexperienced without fully developed brains.

Effect of Fandom on Sports Gambling

Introduction

In U.S. society, athletics has become more than just an activity in which people participate for fun. Whether as a player, coach, referee, fan, or any other association with sports, few could have imagined sports would have the impact it currently holds. The biggest live TV events in the world year after year are sporting events such as the FIFA World Cup, the Olympic Games, and the Super Bowl. With people tuning in to sporting events in such large numbers, more attention is being given to how individuals can capitalize on this increased interest. The sports gambling industry has grown tremendously as a result of many factors, including access, addiction, and entertainment. As the industry grows and gambling becomes more readily accessible, there is growing concern for people who are vulnerable to gambling disorders. Understanding how sports gamblers make betting decisions can help in planning interventions. Comprehending the gambler's mind will result in a greater understanding of the behavioral and psychological traits of individuals who are drawn to risk-taking.

Individuals can choose to bet on sports in a variety of ways. People can bet against the spread (a number set by oddsmakers to provide an advantage or disadvantage based on the margin of predicted victory), bet on a team to win regardless of the spread (referred to as betting the money line), a parlay (which involves needing multiple bets to win to collect the winnings), a teaser (which consists of altering the betting lines to make it more likely that the person will win but the payout becomes smaller), and many others. Like traditional probability games, sports gambling is similar in that it is a game of odds

and chance; however, it is different because the odds are not perfectly calculable. This allows individuals to find flaws in the market rather than individually calculating known probabilities, such as in a game of blackjack (Moya, 2012). Typically, the odds for sports gambling are influenced by the amount of money being gambled on a game.

For years, sports betting has been legal in only one state in the United States, Nevada. Since the legalization of gambling in 1931, Nevada has been the go-to place for sports gambling in the United States (Eadington, 1999). Previously, going to Las Vegas and betting on sports for a weekend was the only feasible way of gambling. In recent years, around a third of U.S. states have put forward legislation that allows for legal sports gambling. This number is only expected to increase in the coming years as sports gambling becomes more ingrained into mainstream culture. Even though legalization is moving slowly across the country, some individuals will take illegal bets from people they know personally. These people are known as bookies and are operating illegally, but many bettors choose to place bets through a bookie for the convenience factor.

With sports gambling becoming more popular by the year, people are finding new and unique ways to bet on sports (Forrest & Simmons, 2003). The implementation of internet gambling has allowed for new opportunities in the industry. Bettors now have the ability to have all of the updated odds at their fingertips and place bets from states in which it is legal (LaPlante et al., 2008). However, there is still a draw for people to travel to a place like Caesars Palace in Las Vegas to watch games with the giant board displaying betting lines, more televisions than one could imagine, and an unmatched energy. There is something to the convenience and ability to access updated odds by the

second with the implementation of internet gambling. Also, live-action betting is now possible, with sports gamblers able to make bets while the game is ongoing. This has provided gamblers more outs than ever before so they can guarantee themselves profits or try to make up for their projected losses while the game is still being played (Summers, 2008).

The risks of gambling-related problems have increased significantly with the implementation of internet gambling (Griffiths & Barnes, 2008). It has been discovered that there is more problem gambling in the 18–24 year age group than in any other age-related group (Dickson et al., 2008). Understanding how gamblers think and behave can open more information to the public about the risks. States are getting a glimpse of how much money can be generated by legalizing sports gambling, but the question becomes, at what cost? Much like the casino industry, many individuals are positively and negatively affected. With legalization and access increasing, there is a greater likelihood of addiction on the horizon that could negatively affect greater society.

Gambling on sports is related to decision-making theory, used to investigate how people make choices under uncertainty and can be directly applied to a sports gambling context in which individuals place wagers on unpredictable events. It is widely accepted that people tend to bet on their home team in a process known as the “home bias.” Betting on the home team is well documented in the research, including outside of a sports context, such as in real estate or the stock market (Coval & Moskowitz, 1999).

There are several explanations for the phenomenon of home bias. Researchers agree that most people prefer to bet on outcomes with known probability rather than in

situations when the probability of winning is unknown unless they think they know the event (Chow & Sarin, 2001). Following this logic, individuals will want to gamble on the team they think they know rather than on another with which they are unfamiliar.

According to another explanation, betting on one's team is connected to emotional reasons. Within this type of explanation, optimism bias is mentioned most frequently.

There are only a few studies on home bias in sports betting and even fewer on the explanations and consequences.

The goal in this study was to investigate the relationship between fandom and betting, and to take a closer look at the importance of knowledge and love in the decision-making process. The first part was accomplished by measuring whether individuals are more willing to bet on games that involve their home team compared to other games that do not include their team when the chance of winning is roughly 50% in each situation. To examine how familiarity and liking a team influence betting on games, subjects were asked to bet on teams with which they were probably similarly familiar. Still, the degree of liking the teams was very different. This research was designed to expand the understanding of the relationship between fandom and betting as well as the understanding of home bias and its psychology. Furthermore, the results of the study can help vulnerable people navigate sports gambling, this fast-growing but relatively young industry.

Literature Review

Gambling Addiction

The perception of gambling and its relationship to mental illness held within the field of psychology has taken many shapes over the history of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. The *DSM-5* included a reclassification from pathological gambling in the “Impulse-Control Disorders Not Elsewhere Classified” into a new category labeled “Substance-Related and Addictive Disorders,” allowing for the understanding that addictions can be behaviorally based and seen through an addictions lens (American Psychiatric Association, 2013). Although there is added convenience to internet gambling, the expansion of legal gambling can pose an increased danger to individuals who are more prone to addiction. The National Center for Responsible Gaming (n.d.) estimates that 1% of the U.S. population has a severe gambling problem; this number is six to nine times higher for adolescents. Narayanan and Manchanda (2012) found that approximately 8% of casino-goers show evidence of addiction. The demographic characteristics of a gambler who is addicted are not significantly different from those of an average gambler. However, addicted gamblers tend to be “heavier gamblers.”

There is a strong correlation between participation in gambling and gambling problems. Several studies have shown that in places where electronic gambling machines were introduced, gambling problems quickly increased, especially in low-income neighborhoods (Abbott, 2017). LaBrie and Shaffer (2011) found four markers for individuals with internet gambling addictions: placing more bets, placing larger bets, betting more frequently, and betting intensely soon after enrollment. Their study supports

the proposition that monitoring actual betting behavior is an appropriate initiative with the potential to promote responsible gambling and avoid disordered gambling. This shows it is possible to recognize a sports betting pattern evidenced by players who later declare that they have gambling-related problems.

It is sometimes complicated for someone to admit they have a problem with gambling. One major issue involves individuals having a distorted view of their winnings and losses. Results of a study that represented the first empirical research to compare individual self-reported and actual online gambling wins and losses showed individuals were more likely to be accurate when they were asked about gambling outcomes in the short term rather than the long term (Braverman et al., 2014). Short-term was defined by results occurring in the last 3 months compared to long-term results that ranged from 3 months to a year. Braverman et al. (2014) found that, on average, between 34% and 40% of the participants communicated a favorable distortion of their gambling outcomes. This means they either overstated their winnings or miscalculated their losses.

Beating the Odds and Finding an Edge

In the United States, football and basketball are widely considered to be the sports that are at the peak of popularity. The two professional sports leagues, The National Football League (NFL) and The National Basketball Association (NBA), cause significant traffic regarding bets being placed. Studying bets in these sports can reveal important patterns of gambling behavior. There are rational ways to maximize wins and minimize losses, but the emotion and popularity associated with a sport can alter one's behavior and override a gambler's goal—to win money.

In a study of NFL (1995–2014) and NBA (2005–2014) data from preseason games, results showed there were ways to take advantage of the system by exploring less meaningful games (Davis & Krieger, 2017). By examining the point spreads closely, the authors found evidence for the systematic misplacing of betting lines. They concluded that when games are less meaningful, such as preseason NFL and NBA games, the point spreads are often too large. With brand new coaches, changes in player rosters, and significant time passing between games, it is both challenging and unpredictable to adequately gauge how much better one team is from the next in the preseason. Davis and Krieger (2017) found that sports books often overstate the difference between teams year over year based on success from the past season. Therefore, betting on the underdogs in these situations allows for an opportunity to gain an edge. In the NFL, a strong correlation was found for betting against teams that had good years early during the following season. This occurred for a variety of reasons, including the amount of parity across the league and the incentives provided for losing teams through the NFL draft. Thus, betting on the underdog early in a season when the oddsmakers are still trying to figure out which teams are good and which are bad provides an opportunity to take advantage as a gambler. If gamblers were making rational instead of emotional decisions, they would use this opportunity to their advantage.

Summers (2008) examined whether there were any predictable patterns in the betting lines throughout the preceding week that bettors could exploit to improve their expected returns, including whether it would have been profitable to try for “middles” as the betting lines changed over the week. The researcher also investigated inefficiencies in

the NFL betting market that could be exploited. There were significant changes in point spreads from the opening to the closing line at all three sports books. Gamblers who are able to pick up on information in real time, such as player information, weather, or team drama, have an ability to gain an edge. The fact that point spreads tend to change throughout the week leaves open the possibility of finding a way to exploit these changes. It was concluded that bettors should do book shopping at the start of the week to get the best line in the direction they want and search for middles when possible.

It has also been discovered that humans are not swayed by the percentages regarding why they bet (Williams & Connolly, 2006). The individuals who engage in these behaviors are usually already aware of these facts. It may be that teaching people about gambling odds is similar to telling smokers about the harmful effects of smoking or alcoholics about the harmful effects of drinking. Williams and Connolly (2006) found knowledge about gambling odds and mathematical skills may not be that important in how individuals make decisions. The researchers examined students' gambling behavior after learning about probability theory as it applies to gambling. They found that the likelihood of gambling, the likelihood of being a problem gambler, the amount of time spent gambling, and the amount of money spent gambling were not affected. Most people do not appear to be rational when they place their bets. There are several known biases in placing bets, including home bias (i.e., the tendency to bet on the home team) or optimism bias, which explains why individuals overestimate the likelihood of a positive outcome. It is logical to think that placing a bet to win money would be part of an

unbiased, thought-out decision-making process; however, we know that decision making is full of cognitive biases.

Decision Theory

Decision theory can be used to explain how typical individuals act when encountering risk or uncertainty. It involves a cognitive process that allows for an informed choice when there is no correct answer at the time of the decision. Traditional economic theory is based on the assumption that people are rational decision makers who identify possible outcomes, their values, and the probabilities, and based on this information will calculate the expected value of outcomes and pick the option with the most expected value. However, how a person values choice dramatically depends on the individual rather than an inherent property of the outcome as expressed by the expected utility hypothesis (Rabin, 2013). Expected utility theory is a tool used to calculate whether the potential outcome of risk is worth the initial investment satisfaction (Machina, 2018). Insurance investments are often seen through the lens of expected utility theory with the thought that investing a small amount now can pay off later with the relative unknowns that come with living life. According to the subjective expected utility theory, a gambler should be able to calculate the desirability of an outcome and the probability of each outcome and, based on these calculations, bet on the outcome with the higher value (Weber & Tan, 2012).

Ellsberg Paradox

In 1961, Daniel Ellsberg conducted two experiments that violated the predictions of the expected utility theory. In Ellsberg's famous two-urn experiment, two urns were

presented with 100 balls. Subjects received \$100 if they picked a red ball and had to decide which urn from which to pick a ball. In the first urn, it was known that there were 50 red balls and 50 black balls. In the second urn was an unknown mix of 100 red and black balls. Even though the chances of drawing a red ball were the same for each urn, Ellsberg found that individuals preferred to pick a ball out of the first urn, where they knew the exact odds, rather than the second urn, where the odds were not specified (Coleman, 2011). Ellsberg proposed that humans favor taking a risk where they know the odds compared to scenarios with unclear odds (Bradley, 2016). Known probabilities of winning or losing are the preferred choice compared to unknown probabilities, even if the known probability of success is low, referred to as the Ellsberg paradox (Golman et al., 2015). In other words, people would rather bet on risky outcomes than on ambiguous outcomes. The Ellsberg paradox represents strong evidence for ambiguity aversion (Fox & Weber, 2002). People prefer “the devil they know,” meaning what they conceive to know about, rather than an unknown risk (Morgenstern & Zechmeister, 2001).

The Ellsberg paradox has puzzled researchers for many years and yielded several possible explanations. One popular explanation is the comparative ignorance hypothesis, introduced by Heath and Tversky (1991). The authors found people are not ambiguity averse when they believe they are exceedingly competent or knowledgeable about the situation. The comparative ignorance hypothesis indicates that in a comparative condition, the knowledge difference between the known and the unknown bet becomes more remarkable (Alevy, 2013).

Comparison emphasizes the difference between the known and the unknown bet values. A lack of knowledge regarding one of the choices does not mean it is inherently worse. However, humans tend to want to avoid the option about which they are “ignorant” (Casaca et al., 2014). Individuals gravitate toward known probabilities rather than unknown probabilities, even if the odds are indeed the same (Chow & Sarin, 2001).

Home Bias

It is often seen in the investing world that people will invest in stocks and assets that are locally grounded rather than expanding their investment searches internationally. There are many potential reasons individuals choose to invest locally rather than globally. For example, investors may feel comfortable with local companies because they are closer to home or because they hear more about them (Huberman, 1998).

French and Poterba (1991) were groundbreaking in their research on the home bias. They were the first to show how individuals are more prone to domestic ownership. The results of their study revealed investors expect domestic returns to be higher than those for a diversified portfolio. It is difficult for investors to learn that expected returns in domestic markets are not systematically higher than those abroad. This is due to statistical uncertainties that predict expected returns in equity markets (French & Poterba, 1991).

Regarding gambling, it is understood that individuals will gamble in a domain in which they consider themselves to be knowledgeable over one that is foreign. Therefore, it would be rare for professional poker players to want to spend their time away from the poker table and instead at the slot machines or roulette table. This can best be seen in the

concept known as advantage gambling, or the legal use of strategies (e.g., understanding mathematical advantages) to reduce risk. These individuals exploit weaknesses in gambling products and promotions to generate profits (Banks, 2013).

This relationship is similar when seen through a sports gambling lens. Research indicates there is a relationship between a fan's team and who they thought would win in a game (Russo & Corbin, 2016), which is associated with betting behavior (Staněk, 2017). It was also found that sports gamblers tend to bet on more popular teams, resulting in their odds being less favorable than they would be for less popular teams (Feddersen et al., 2018).

One explanation for the home bias follows from the Ellsberg paradox and the comparative ignorance hypothesis. Based on this explanation, one can expect that people choose to bet on their home team because they know more about it than the other team. When faced with ambiguous choices, they prefer the familiar one, as described by the familiarity bias (Tversky & Kahneman, 1974). Familiarity bias refers to a preference to choose familiar situations over unfamiliar ones. When presented with ambiguous choices, individuals will lean toward wagering on the more familiar option (De Vries et al., 2017). There is a propensity to back choices for which individuals have more information than the alternatively less familiar choice.

Another set of explanations focuses on emotional factors. Positive emotions toward a team can influence decision making in at least two ways. The first is optimism bias or the idea that one's desire influences the future outcome of an event (Staněk, 2017). When people are optimistic about the chances of their team winning, they might

be more likely to bet on the desired outcome. A study specifically looking at the Czech sports betting market showed home bias could be the cause of optimism bias. People's expectations and desires can influence their future behavior. There is an assumption that the bettors are also home team supporters and have greater knowledge of their home team.

The other essential way in which emotions can influence decision making is connected to the person's love for their team. The love domain conveys that betting is rooted deeply in the relationship between sports and fans (Lopez-Gonzalez et al., 2018). Placing a bet on one's team is equivalent to showing love for what that team represents. It is well known that people often continue betting on their team, even if it loses, which cannot be explained by knowing the team. If knowledge was more important, people could be expected to stop betting on their team after several losses. According to the love explanation, continuing to bet on a team represents being loyal and trusting them. It is worth noting that the gambler's fallacy, which refers to the belief that the opposite outcome will balance a result in the future, can also explain why people continue to show faith in a team they are supporting even after a loss (Laplace, 1951). The person believes random outcomes happening in a row increases the chances of a self-correction, resulting in the opposite outcome (Leonard & Williams, 2016). In reality, the results of a previous outcome have a small, if any, impact on future events. A team losing previously does not mean that team will bounce back with a win. The phrase, "it is hard to beat a team three times in a season," gets thrown around a lot in the NFL. This would mean teams in the same division played twice in the regular season and then also met in the playoffs. In

actuality, the team that won the first two games has won the third game more times than they lost. The team winning the first two games likely would have finished with a better overall record, resulting in playing a home game in the playoffs, creating a further advantage for a team that is likely already better given that they won the first two games.

Placing wagers with friends or family can grow the feeling of love by sharing experiences and making lasting memories. For years this was seen in groups taking trips to Las Vegas to show their love for their teams and bond with other like-minded sports fans. These experiences created more substantial relationships with the sport and their peers.

Betting against an enemy (i.e., hate betting) can also be interpreted as an act of love and loyalty. Even when a fan's team is not playing, placing a wager against a rival team is a way of feeling emotionally and fiscally invested in an outcome. Loyalty and commitment are only compromised when short-term rewards are high (Powell & Van Vugt, 2003).

A concept of contention in the sports gambling industry is "hedging your heart." When individuals root for a team, is it wise to gamble on the opposing team so they either enjoy their team winning or experience the pleasure of winning a wager they placed? In this scenario, the person will never feel fully satisfied because although they are winning, it comes with a cost related to their fandom. Research has shown a reluctance to hedge in these scenarios because of the harm to a bettor's identity (Morewedge et al., 2016).

In summary, the literature provides evidence for the presence of home bias in sports gambling. The research outlines human behavior and the parallels in sports gamblers. Impulsivity and emotional investment are seen in both examples. Knowledge

and emotional factors are both supported through the research. It would be interesting to examine the two in one study. It is logical to think that knowing and loving a team correlate. People feel the pull to know more about things they enjoy, which is no different in a sports context. On top of that, sports fans tend to know not only about their teams but also their opposing teams.

Purpose of the Study

With sports gambling rapidly becoming legal across the United States, businesses are looking to profit from a new and vulnerable group. Sports fans fall into this vulnerable group because of their passion and team loyalty. As there is little research into the effects of fandom on sports gambling and legalization increasing nationwide, it is crucial to start laying a foundation for the effect that fandom can have on sports gambling and the associated risks. With fandom rampant in many sports, it can be expected that love and passion can alter how individuals perceive a future event. However, there has been limited research on how loving a team influences betting behavior. The current study involved an examination of home bias in sports betting and its relationship with knowing and liking a team in hypothetical bidding scenarios.

For the study, the researcher selected three NFL teams that are in the same league and often play against each other and historically have had a 50–50 chance of winning against each other. This way, it could be reasonably expected that fans of the three teams would have familiarity with all three teams, but they would be sharply divided in terms of which team they loved. This helped to examine whether love is an essential factor in betting, separate from knowledge.

Four questions arose as fundamental. Will there be a difference in how likely a fan will bet based on whether or not their home team is playing? Is there a significant correlation between knowing and liking a team? Will there be a difference in how likely a fan will bet based on how knowledgeable they are about the team? Will there be a difference in how likely a fan will bet based on how much they like or dislike the team?

Hypothesis

The research questions at the forefront of the study were then developed into hypotheses. The hypotheses were as follows.

Hypothesis 1

H1₀: There is no significant difference in how likely a fan is to bet based on whether or not their home team is playing.

H1_a: There is a significant difference in how likely a fan is to bet based on whether or not their home team is playing.

Hypothesis 2

H2₀: There is no significant correlation between knowing and liking a team.

H2_a: There is a significant correlation between knowing and liking a team.

Hypothesis 3

H3₀: There is no significant difference in how much a fan is willing to bet based on how knowledgeable they are about the team.

H3_a: There is a significant difference in how much a fan is willing to bet based on how knowledgeable they are about the team.

Hypothesis 4

H₀: There is no significant difference in how much a fan is willing to bet based on how much they like or dislike the team.

H_a: There is a significant difference in how much a fan is willing to bet based on how much they like or dislike the team.

Methods

Participants

A total of 191 fans of the Chicago Bears ($n = 80$), Green Bay Packers ($n = 57$), and Minnesota Vikings ($n = 54$) were recruited for the study. Gender breakdown was 157 male, 33 female, and one other. The average age of the participants in the study was 32.5 years old. The race/ethnicity breakdown was primarily White with 170 participants, seven Asian, six African American, five Hispanic, and three American Indian or Alaska Native. Education levels varied with 90 participants completing a bachelor's degree, 52 participants completing some college, 36 participants earning a graduate degree, 12 participants receiving a high school diploma, and one participant with less than high school.

Participants were acquired through advertising on Reddit.com. Inclusion criteria included that participants needed to be 18 years of age or older and a member of one of the three fan bases being studied. Three teams, the Chicago Bears, Green Bay Packers, and Minnesota Vikings, were chosen for the study. The reason for picking these teams was that the achievement of these teams has been very close over time. The teams have won between 47%–53% when playing against each other, dating back to the inaugural meeting of the Chicago Bears and Green Bay Packers in 1932. In other words, the three teams have a roughly 50% chance of winning or losing against each other. Ideally, the three teams should have precisely a 50% chance of winning or losing against each other, but that is hard to achieve in real-life situations.

Measures

Data were collected for this study via an online survey that was provided to participating individuals (see Appendix A).

Demographic Information

The demographic questionnaire covered age, gender, race, education level, being a sports fan, and whether the person had ever participated in sports gambling to enable the researcher to understand the specific background characteristics of the participants.

Knowing and Liking the Team

Participants were asked to individually decide on a 1–7 Likert scale how much they liked and how well they knew each listed team. Knowing the team was broken down into three questions: knowing the players, knowing the history, and knowing the team's performance. Loving the team was broken down into how much they liked the team as a whole and how much they liked the players and the coach.

Hypothetical Betting on Games

Participants were presented with all possible game options among the three teams: Packers–Bears, Packers–Vikings, and Bears–Vikings. They were asked which of the three games they would likely bet on most and least.

Hypothetical Betting on Teams

Participants were presented with all three game options and asked, in each case, if they had \$100, how much they would bet on either team winning the game. After this question, participants were asked to rank each team's finishing position in the NFC North division for the 2020 season between 1 and 3.

Procedures

The recruitment and survey were achieved through electronic means. Participants were recruited in the summer season of 2020. Individuals were recruited through advertising on online team-specific forums such as team-specific pages on Reddit by using a recruitment flyer.

Links were posted on various Reddit communities, including the subreddits of the Green Bay Packers (205,000 members), Chicago Bears (135,000 members), and Minnesota Vikings (134,000 members). These are communities where fans can gather online to discuss the day-to-day happenings of their favorite team. Clicking on the flyer took interested individuals to an online SurveyMonkey survey where participating individuals could submit their responses.

Data Collection

By clicking on the link in the advertisement, individuals were directed to the link for the survey where they were provided with the Informed Consent Form. After the informed consent was filled out and participants acknowledged the terms of the study, the following welcome message was displayed to participating individuals:

Thank you for agreeing to take part in this survey. Your participation is greatly appreciated and allows for the research to be possible. The survey intends to help better understand the common sports fan and their gambling habits. All answers will be kept confidential and only used to analyze data for research. This is a short survey that should only take between 10-15 minutes. Please, answer to the best of your knowledge.

The survey took approximately 10–15 minutes to complete, and individuals could enter a raffle consisting of four \$25 Amazon gift certificates by clicking on a separate link. The data were extracted from the SurveyMonkey website to a password-protected Excel sheet and stored. The information gained through the survey and raffle was kept separately and not connected to the participants in any way. The data were kept anonymous and will be destroyed 5 years after the completion of the study.

Ethical Considerations

The Institutional Review Board at National Louis University approved the study, and all participants signed off on an informed consent form. The survey was transparent and made participants aware of the research goals. All participants received the same survey regardless of the team of which they were a fan.

Results

A total of 191 participants signed the informed consent and all of them completed the survey; no participant was excluded from the data analysis. Responses collected in the study were received in August and September of 2020.

SPSS was used to conduct statistical analyses to test the research hypotheses. A chi-square test of statistical significance was used to examine the relationship between fandom and the likelihood of betting on a game with the team in it, analysis of variance (ANOVA) was used to compare the net home bets across demographic groups, and multiple regression analysis were used to test the association between love and knowledge. After completing the survey, a post hoc analysis was used to find patterns within the collected data that were not thought to be primary aspects of the study. Completing a post hoc analysis opened new avenues of interpreting the data that were not previously explored.

Participant Demographics

The average age of the participants in the study was 32.5 years, with a standard deviation of 8.548. Of the 80 Chicago Bears fans (41.88%), 57 Green Bay Packers fans (29.84%), and 54 Minnesota Vikings fans (28.27%), there were 157 male participants (82.20%), 33 female participants (17.28%), and one other participant (0.52%). Of the 191 participants, 170 were White (89.01%), five were Hispanic (2.62%), six were African American (3.14%), seven were Asian (3.66%), and three were American Indian or Alaska Native (1.57%). There were a variety of education levels among the sample, including one participant who did not have a high school degree (0.52%), 12 participants who had a

high school diploma (6.28%), 52 participants who had some college experience (27.23%), 90 participants who graduated college with a bachelor's degree (47.12%), and 36 participants who attained a graduate degree (18.85%).

Likelihood of Betting on a Game

Chi-square tests of independence were performed to examine the relationship between being a fan of a team and the likelihood of betting on a game in which the team was playing. Results supported Hypothesis 1. All three teams' fans were more likely to bet on games in which their home teams were playing, $\chi^2 = 45.46, p < .0001$. Furthermore, all three teams' fans were least likely to bet on games in which their home teams were not playing, $\chi^2 = 87.87, p < .0001$. For details, see Table 1.

Table 1

Distribution of the Likelihood of Betting on a Game Among Fans of the Three Teams

| | Bears vs. Packers | Packers vs. Vikings | Vikings vs. Bears | Grand total |
|---------------------|----------------------|------------------------|----------------------|-------------|
| Most likely | | | | |
| Bears | 38 | 16 | 25 | 79 |
| Packers | 43 | 9 | 5 | 57 |
| Vikings | 8 | 27 | 19 | 54 |
| Grand total | 89 | 52 | 49 | 190 |
| Least likely | | | | |
| Bears | 30 | 40 | 9 | 79 |
| Packers | 0 | 19 | 38 | 57 |
| Vikings | 35 | 15 | 4 | 54 |
| Grand total | 65 | 74 | 51 | 190 |

Correlation Between Liking and Knowing a Team

To test Hypothesis 2, it was necessary to run three simple regressions, one for each team.

The Cronbach's alphas for the "Knowledge" and "Liking" scales (consisting of five and three items, respectively) were between .91 and .96 (see Table 2), meaning looking at the individual questions was not going to reveal more detailed information. Note that the alphas had to be run separately for each team as a target. However, each alpha was calculated across all three groups of fans because there can only be one row of observations per participant in the alpha calculations.

An index score was created for knowledge by averaging the five items and an index score was created for liking by averaging the three items.

Table 2

Cronbach's Alphas for the Knowledge and Liking Scales

| | Knowledge | Liking |
|---------|-----------|--------|
| Bears | 0.92 | 0.91 |
| Packers | 0.95 | 0.96 |
| Vikings | 0.96 | 0.96 |

Note. Cronbach's alphas were run separately for each team as a target, but each alpha was across all three groups of fans.

The correlation between knowing and liking the Bears was $r = .51$, $F(1,189) = 66.86$, $p > .0001$, with an R^2 of .26. The correlation between knowing and liking the Packers was $r = .48$, $F(1,189) = 53.34$, $p > .0001$, with an R^2 of .24. The correlation between knowing and liking the Vikings was $r = .63$, $F(1,189) = 125.49$, $p > .0001$, with an R^2 of .40. The relationship between knowledge and liking appeared to hold for both home and opposing teams. For more details, see Table 3.

Table 3

Association Between Knowing and Liking the Bears, Knowing and Liking the Packers, and Knowing and Liking the Vikings

| | Coefficients | SE | <i>t</i> | <i>p</i> | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|-------------------|--------------|------|----------|----------|--------------|--------------|----------------|----------------|
| Intercept | 2.33 | 0.25 | 9.23 | 0.00 | 1.83 | 2.83 | 1.83 | 2.83 |
| Liking Bears | 0.47 | 0.06 | 8.18 | 0.00 | 0.36 | 0.59 | 0.36 | 0.59 |
| Intercept | 3.48 | 0.19 | 18.74 | 0.00 | 3.11 | 3.85 | 3.11 | 3.85 |
| Liking Packers | 0.34 | 0.04 | 7.64 | 0.00 | 0.25 | 0.43 | 0.25 | 0.43 |
| Intercept | 2.00 | 0.22 | 9.04 | 0.00 | 1.57 | 2.44 | 1.57 | 2.44 |
| Liking Vikings | 0.58 | 0.05 | 11.20 | 0.00 | 0.48 | 0.68 | 0.48 | 0.68 |

Note. Three separate simple regressions were performed.

For Hypotheses 3 and 4, the researcher looked at correlations for the three fan bases to determine whether love and knowledge were associated with fans' betting tendencies. To calculate the average "liking" and "knowing" scores, the indexes mentioned above were used. The average net bets were calculated for the fans of all three teams for all three games. All net bet calculations (correlation and average) were based on the net home team bet (bet for the home team minus bet for the opponent). Table 4 shows fans' average scores for knowing and liking each team and their net bet for each game.

Each team's fans knew and liked their team the most among the three teams. The net home bets of the fans of all three teams were positive, which means the fans of all three teams said they would put more money on their home team winning no matter which team their team was playing against.

Table 4

Average Scores for Bears, Packers, and Vikings Knowing and Liking the Bears, Packers, and Vikings and Their Net Bet Amounts for Each Game

| | Bears fans | | Packers fans | | Vikings fans | |
|---------|--|-------|--|-------|--|-------|
| Bears | Bears know Bears | 5.14 | Packers know Bears | 3.75 | Vikings know Bears | 3.49 |
| | Bears like Bears | 5.60 | Packers like Bears | 2.78 | Vikings like Bears | 3.16 |
| | | | Packers net bet: Packers vs. Bears | 71.12 | Vikings net bet: Vikings vs. Bears | 59.78 |
| | | | | | | |
| Packers | Bears know Packers | 4.02 | Packers know Packers | 5.97 | Vikings know Packers | 4.39 |
| | Bears like Packers | 2.60 | Packers like Packers | 6.22 | Vikings like Packers | 2.26 |
| | Bears net bet: Bears vs. Packers | 4.44 | | | Vikings net bet: Vikings vs. Packers | 38.17 |
| | | | | | | |
| Vikings | Bears know Vikings | 3.51 | Packers know Vikings | 3.62 | Vikings know Vikings | 6.05 |
| | Bears like Vikings | 3.32 | Packers like Vikings | 2.43 | Vikings like Vikings | 6.30 |
| | Bears net bet: Bears vs. Vikings | 24.42 | Packers net bet: Packers vs. Vikings | 48.19 | | |
| | | | | | | |

Note. All net bet calculations (correlation and average) were based on net home team bet (bet for the home team minus bet for opponent).

Correlation and significance levels are summarized in Table 5. All significance tests were two-tailed. For example, in the Packers versus Vikings, the net bet was positively correlated with Packers fans' liking for the Packers (.31, $p < .02$), whereas the net home bet for Packers fans was negatively correlated with their liking for the Vikings (-.22). For that same game, Vikings fans' net home bet was negatively correlated with their liking for the Packers (-.30) and positively correlated with their liking for the Vikings (.33).

Table 5*Correlation and Significance Level of Knowing and Liking a Team Versus Net Home Bet*

| Knowing and Liking vs. Net Home Bet | | | | | | | | | | | | |
|-------------------------------------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|
| | <i>N</i> | <i>r</i> | <i>p</i> | <i>N</i> | <i>r</i> | <i>p</i> | <i>N</i> | <i>r</i> | <i>p</i> | <i>N</i> | <i>r</i> | <i>p</i> |
| | Know Bears | | | Like Bears | | | Know Packers | | | Like Packers | | |
| Bears | 80 | 0.05 | NS | 80 | 0.26 | <.02* | 80 | -0.03 | NS | 80 | -0.17 | NS |
| Packers | 57 | 0.2 | NS | 57 | -0.22 | NS | 57 | 0.38 | <.01 | 57 | 0.29 | <.03* |
| | Know Bears | | | Like Bears | | | Know Vikings | | | Like Vikings | | |
| Bears | 80 | 0.13 | NS | 80 | 0.26 | <.02* | 80 | -0.1 | NS | 80 | -0.31 | <.01** |
| Vikings | 54 | 0.11 | NS | 54 | 0.06 | NS | 54 | 0.2 | NS | 54 | 0.33 | <.02* |
| | Know Packers | | | Like Packers | | | Know Vikings | | | Like Vikings | | |
| Packers | 57 | 0.26 | NS | 57 | 0.31 | <.02* | 57 | 0.14 | NS | 57 | -0.22 | NS |
| Vikings | 54 | 0.18 | NS | 54 | -0.3 | <.03* | 54 | 0.2 | NS | 54 | 0.33 | <.02* |

Note. All net bet calculations (correlation and average) were based on net home team bet (bet for the home team minus bet for opponent).

* $p < .05$. ** $p < .01$.

Betting Behavior and Demographic Factors

One-way ANOVAs were performed to compare the net home bets across three different age groups for each game. The results showed no statistically significant difference in the net bets between the age groups for any of the games. However, younger participants were betting slightly less money on the Bears versus the Packers and more on the Vikings versus the Bears ($F =$ between 0.42 and 1.35, $p =$ between 0.25 and 0.96).

For means, standard deviations, and F and p values, see Tables 6 and 7.

Table 6*Means and Standard Deviation of Net Bet Among the Age Groups*

| | Groups | Count | Sum | Average | Variance | <i>SD</i> |
|-------------------------------|--------|-------|------|---------|----------|-----------|
| Net bet Bears (vs. Packers) | 20–29 | 31 | -79 | -2.55 | 1354.86 | 36.81 |
| | 30–39 | 35 | 127 | 3.63 | 2572.30 | 50.72 |
| | 40+ | 14 | 307 | 21.93 | 2884.38 | 53.71 |
| Net bet Bears (vs. Vikings) | 20–29 | 31 | 572 | 18.45 | 2236.92 | 47.30 |
| | 30–39 | 35 | 918 | 26.23 | 1733.71 | 41.64 |
| | 40+ | 14 | 464 | 33.14 | 1928.75 | 43.92 |
| Net bet Packers (vs. Bears) | 18–29 | 20 | 1528 | 76.40 | 835.94 | 28.91 |
| | 30–39 | 21 | 1413 | 67.29 | 1354.61 | 36.81 |
| | 40+ | 8 | 607 | 75.88 | 1494.13 | 38.65 |
| Net bet Packers (vs. Vikings) | 18–29 | 23 | 1142 | 49.65 | 1563.87 | 39.95 |
| | 30–39 | 21 | 1155 | 55.00 | 1560.00 | 39.95 |
| | 40+ | 8 | 310 | 38.75 | 3180.79 | 56.40 |
| Net bet Vikings (vs. Packers) | 20–29 | 21 | 845 | 40.24 | 2420.09 | 49.19 |
| | 30–39 | 23 | 825 | 35.87 | 2606.21 | 51.05 |
| | 40+ | 10 | 391 | 39.10 | 1824.77 | 42.72 |
| Net bet Vikings (vs. Bears) | 20–29 | 21 | 1462 | 69.62 | 1010.35 | 31.79 |
| | 30–39 | 23 | 1324 | 57.57 | 1768.89 | 42.06 |
| | 40+ | 10 | 442 | 44.20 | 2545.07 | 50.45 |

Table 7*One-Way ANOVAs of Net Bet and Age Groups*

| | Source of variation | SS | df | MS | F | p value | F crit |
|-------------------------------------|---------------------|-----------|-------|---------|------|---------|--------|
| Net bet Bears (vs. Packers) | Between groups | 5818.91 | 2.00 | 2909.46 | 1.35 | 0.26 | 3.12 |
| | Within groups | 165600.78 | 77.00 | 2150.66 | | | |
| | Total | 171419.69 | 79.00 | | | | |
| Net bet Bears (vs. Vikings) | Between groups | 2283.99 | 2.00 | 1141.99 | 0.58 | 0.56 | 3.12 |
| | Within groups | 151127.56 | 77.00 | 1962.70 | | | |
| | Total | 153411.55 | 79.00 | | | | |
| Net bet Packers (vs. Bears) | Between groups | 965.88 | 2.00 | 482.94 | 0.42 | 0.66 | 3.20 |
| | Within groups | 53433.96 | 46.00 | 1161.61 | | | |
| | Total | 54399.84 | 48.00 | | | | |
| Net bet Packers (vs. Vikings) | Between groups | 1539.34 | 2.00 | 769.67 | 0.43 | 0.65 | 3.19 |
| | Within groups | 87870.72 | 49.00 | 1793.28 | | | |
| | Total | 89410.06 | 51.00 | | | | |
| Net bet Vikings (vs. Packers) | Between groups | 220.18 | 2.00 | 110.09 | 0.05 | 0.96 | 3.18 |
| | Within groups | 122161.32 | 51.00 | 2395.32 | | | |
| | Total | 122381.50 | 53.00 | | | | |
| Net bet Vikings (vs. Bears) | Between groups | 4573.13 | 2.00 | 2286.56 | 1.42 | 0.25 | 3.18 |
| | Within groups | 82028.20 | 51.00 | 1608.40 | | | |
| | Total | 86601.33 | 53.00 | | | | |

One-way ANOVAs were performed to compare the net home bets across three different education levels for each game. According to the results, participants with a graduate degree said they would place lower home bets against the Bears than would participants with high school, some college, or bachelor's degrees, $F(2,51) = 4.47$, $p = 0.02$. No other statistically significant difference in the net bet between the education

levels was found for any of the other games. For means, standard deviations, and F and p values, see Tables 8 and 9.

Table 8

Means and Standard Deviation of Net Bet Among the Education Levels

| | Groups | Count | Sum | Average | Variance | <i>SD</i> |
|-------------------------------|---------|-------|------|---------|----------|-----------|
| Net bet Bears (vs. Packers) | HS+Some | 28 | 273 | 9.75 | 2301.75 | 47.98 |
| | Bach | 37 | -138 | -3.73 | 1381.42 | 37.17 |
| | Grad | 15 | 220 | 14.67 | 3908.10 | 62.51 |
| Net bet Bears (vs. Vikings) | HS+Some | 28 | 612 | 21.86 | 2374.50 | 48.73 |
| | Bach | 37 | 919 | 24.84 | 1356.42 | 36.83 |
| | Grad | 15 | 423 | 28.2 | 2861.74 | 53.50 |
| Net bet Packers (vs. Bears) | HS+Some | 21 | 1548 | 73.71 | 513.01 | 22.65 |
| | Bach | 24 | 1630 | 67.92 | 1284.95 | 35.85 |
| | Grad | 12 | 876 | 73 | 1747.09 | 41.80 |
| Net bet Packers (vs. Vikings) | HS+Some | 21 | 933 | 44.43 | 1998.06 | 44.70 |
| | Bach | 24 | 1227 | 51.13 | 1885.42 | 43.42 |
| | Grad | 12 | 596 | 49.67 | 1374.06 | 37.07 |
| Net bet Vikings (vs. Packers) | HS+Some | 15 | 726 | 48.4 | 2019.69 | 44.94 |
| | Bach | 29 | 1077 | 37.14 | 2845.27 | 53.34 |
| | Grad | 10 | 258 | 25.8 | 1256.4 | 35.45 |
| Net bet Vikings (vs. Bears) | HS+Some | 15 | 1032 | 68.8 | 1778.74 | 42.18 |
| | Bach | 29 | 1922 | 66.28 | 1041.71 | 32.28 |
| | Grad | 10 | 274 | 27.4 | 2178.04 | 46.67 |

Table 9*One-Way ANOVAs of Net Bet and Education Levels*

| | Source of variation | SS | df | MS | F | p value | F crit |
|-------------------------------------|---------------------|-----------|----|---------|------|---------|--------|
| Net bet Bears (vs. Packers) | Between groups | 4827.81 | 2 | 2413.90 | 1.12 | 0.33 | 3.12 |
| | Within groups | 166591.88 | 77 | 2163.53 | | | |
| | Total | 171419.69 | 79 | | | | |
| Net bet Bears (vs. Vikings) | Between groups | 404.69 | 2 | 202.35 | 0.10 | 0.90 | 3.12 |
| | Within groups | 153006.86 | 77 | 1987.10 | | | |
| | Total | 153411.55 | 79 | | | | |
| Net bet Packers (vs. Bears) | Between groups | 430.02 | 2 | 215.01 | 0.20 | 0.82 | 3.17 |
| | Within groups | 59032.12 | 54 | 1093.19 | | | |
| | Total | 59462.14 | 56 | | | | |
| Net bet Packers (vs. Vikings) | Between groups | 528.55 | 2 | 264.27 | 0.14 | 0.87 | 3.17 |
| | Within groups | 98440.43 | 54 | 1822.97 | | | |
| | Total | 98968.98 | 56 | | | | |
| Net bet Vikings (vs. Packers) | Between groups | 3130.85 | 2 | 1565.43 | 0.67 | 0.52 | 3.18 |
| | Within groups | 119250.65 | 51 | 2338.25 | | | |
| | Total | 122381.50 | 53 | | | | |
| Net bet Vikings (vs. Bears) | Between groups | 12928.74 | 2 | 6464.37 | 4.47 | 0.02 | 3.18 |
| | Within groups | 73672.59 | 51 | 1444.56 | | | |
| | Total | 86601.33 | 53 | | | | |

Discussion

The aim of the present study was to examine how sports gambling is influenced by sports fandom. Deciphering what is logical and what is emotional can be an increasingly difficult task when an individual is both knowledgeable about their team and their team's rivals. A major reason to conduct this study was to gain a better understanding of fans' behavior. Previous analysis based on a single variable made understanding fans' true behavior more difficult. In this study, examining both liking and knowing allowed for a better understanding of a fan's behavior. The results of the study confirmed the initial hypothesis that fans of sports teams would exhibit a home bias when gambling on sports.

Hypothesis 1 focused on fans and their likelihood of betting on games in which their home teams were playing and of avoiding betting on games in which their home team was not participating. The results of the study confirmed the initial hypothesis; this was true for the fans of all three teams. As was seen in the Czech betting market with the understanding that optimism bias and general knowledge of the home team resulted in home bias being evident (Staněk, 2017), the current study revealed similar results. In studying the three NFL teams, results showed Bears and Packers fans were more likely to bet on the Bears–Packers game than on games against the Vikings. This is likely due to recency bias, the act of valuing recent events over historic events, in that the Bears have lost a significant portion of games against the Packers in the past 10 years, although very few players and coaches are still associated with the team from 10 years prior. Interestingly, many Bears fans did not seem willing to bet on a game against the Packers. More Packers than Bears fans reported to be most likely to bet on the Packers–Bears

game (75% vs. 48%) and fewer Packers than Bears fans reported to be least likely to bet on the Packers–Bears game (0% vs. 38%). One reason might be that although throughout the entire history of the rivalry the chances of the Bears winning against the Packers have been approximately 50%, the Packers have had significantly more success recently, which could skew people's thoughts heading into matchups in the near future. It is possible that Bears fans thought their team would lose and they did not want to bet against this happening, or they experienced the outcome of the game as more unpredictable.

Overall, many of the fans were considering the likelihood that their home team would win. It can be assumed that individuals show a recency bias in analyzing their teams. Success or failure in previous seasons can sway their thinking one way or the other. Although these teams have similar win–loss records over many years, the results for recent years combined with knowledge about the current team can alter how one perceives their chances of winning.

Hypothesis 2 displayed a correlation between liking and knowing one's team. The correlations between liking and knowing were .51 for the Bears, .48 for the Packers, and .63 for the Vikings. All three of these correlations were moderate. This held across all three fan bases studied. Generally, this indicates fans like their team more when they know more about it. Furthermore, when a person develops a liking they are more likely to invest time and learn more about the topic, in this case a sports team. When a person becomes more familiar with a particular team, they tend to have more interest in and generate loyalty for that team. This loyalty can develop for many reasons, such as the players, the team's history, playing style, or long-term support over the years. Familiarity

with the team and players tends to bring about more interest and loyalty, which can be essential in deciding whether an individual will keep supporting the team. A prominent link between knowing and liking a team can come from emotional and cognitive factors. When people learn more about a team and its players, they can understand their strong and weak points, methods, structure, and overall situation. This understanding makes a person appreciate the team more and thus they will be more likely to keep supporting that team in good times and bad.

Hypothesis 3 established a significant difference in a fan's willingness to bet based on their knowledge of their team. The results revealed a correlation across all three teams for knowledgeable fans. Knowledge of the team, coaches, and previous seasons resulted in the Packers fans being most likely to bet on themselves, the Vikings fans just behind them, and the Bears fans being least likely to bet on themselves. More knowledge about the team, especially of a positive nature, makes a person appreciate what the team is and want to show support. This creates emotional investment and makes them want to bet more money to see the team succeed. Also, more knowledge about the team gives people a better understanding of the value of their bets, making them more likely to bet on a team when it is strong. This evidence confirms the significance of how much a fan is willing to bet based on a combination of cognitive and emotional factors.

Hypothesis 4 showed there was a significant difference in how much a fan was willing to bet based on how much they liked or disliked the team. There appeared to be a clear emotional attachment that affected fans' willingness to bet. An easy way to think of this is that people feel their odds of knowing the outcomes of games are higher when they

have a greater emotional attachment clouding their judgment while not knowing the future outcome. There is more optimism that can be expressed before a competition takes place because the individual's thinking is not yet being swayed by the outcome. In the present study, the r values being in the 0.2 to 0.3 range indicated there were often low to moderate correlations when analyzing the impact of liking or disliking a team. This showed fans have a hard time not being swayed by how much they like or dislike a team.

This further brings together the correlation between Hypotheses 3 and 4. A strong correlation between love and knowledge further influences a fan's desire to show support because their internal loyalty grows with the emotional connection. There is also a greater understanding of where the team is relative to others, so figuring out when and how much to bet becomes an easier calculation. When the team is the favorite, it can set off signals that there is a greater chance of that team winning to the naked eye than in reality.

Although the strength of correlations varied, there was clear evidence to support that fans were following their hearts over their heads. There are many factors that are believed to have played a part in the results and strong rationales in place for many of the questions posed from the study.

This is likely because knowing is influenced by whether fans know positive or negative information about the team, whereas liking is directional. Also, all significance tests were two-tailed. The averages were affected by the 2020 season record for the teams. The net home bet for the Bears against the Packers was only \$4.44. They were more evenly matched with the Vikings, and their net home bet was \$24.42. The net home

bet for the Packers against the Bears was \$74.42. Bears fans' liking for the Bears during this season was also lower than the Packers and Vikings fans' liking for the home team.

Responses collected in the study were received in the months of August and September of 2020. With typical NFL seasons taking place from September to February and a long 6–7 month offseason following, the rationale for this was to minimize the impact of the results of the past season.

Although the results between the three teams (Bears vs. Packers, Packers vs. Vikings, and Bears vs. Vikings) fell between a 47% to 53% win percentage since the inaugural Chicago Bears versus Green Bay Packers meeting in 1932, it is fair to wonder if recent head-to-head records and team success would sway individuals. The Green Bay Packers have won eight of their last 10 games against the Chicago Bears (Packers won the last two games), the Chicago Bears and Minnesota Vikings have both won five of their last 10 against one another (Bears won the last four games played), and the Minnesota Vikings have won five of their last 10 games against the Green Bay Packers (one game was a tie). Because of these varying results, the researcher made a concerted effort to avoid recency bias by conducting the survey closer to the start of the season when free agency and the NFL draft have commenced.

Although all three fan bases had correlations that explained the impact of their love for their team on their sports gambling tendencies, the fan base with the least correlation was the Chicago Bears. Even though the Bears struggled in the previous season, their fans exhibited the most prominent home bias in the study. There are several reasons to explain this finding. One is the history of the Chicago Bears dating back to the

early 1920s, as the Bears and the Green Bay Packers are two of the longest-standing franchises in the NFL. In contrast, the Minnesota Vikings formed in the early 1960s, so with less time as an NFL franchise there has been less time to develop a strong home bias among the fan base. Another reason for the Bears having the strongest correlation is the city's personality. Chicago is known for having a blue-collar mentality combined with a team that has not won as much as they would have hoped for in recent years. This could result in Bears fans exhibiting a stronger pull to defend their team.

Limitations

Hypothetical betting was primarily used for this study. This is where individuals who participate note what they think they would bet but results do not perfectly account for the real-life scenario. Because there is no actual financial risk, it is likely that a hypothetical scenario only somewhat captures the expected behavior. Although it still provides a look into individual attitudes and beliefs, factors such as social desirability must also be considered when analyzing results.

Self-reporting was used to gather data in the study to understand the participants' thoughts and potential behaviors. This type of reporting allows for the gathering of information in an often accessible and far-reaching capacity. There are some concerns with self-reporting with regard to accuracy, especially given that the communication was not face-to-face. Factors such as submission time of day also influence how a participant interprets the questions asked and their associated responses.

Allowing people to choose to participate in the study, as opposed to them being assigned through random selection, was another limitation. Self-selection allowed people

who were naturally interested in the topic to come forward and participate. There was some concern over bias; however, as the study was designed to measure fans' gambling behavior, there was an expected bias based on the nature of the study. The personalities of individuals who found the survey via the internet could be different than the personalities of those selected randomly and could have affected the results.

Conclusions

The researcher in this study attempted to take broad concepts in decision-making theory and apply them to sports fans gambling tendencies. In doing so, the researcher set out to better understand how sports fans think. Particularly, how they show or do not show bias with the team of which they are a fan. Parlaying sports fandom with gambling allows for deeper insight into how individuals think and behave when emotionally engaged. With sports gambling quickly approaching nationwide legality, it is vital for owners of sports books to continue understanding consumers' betting habits and for individual gamblers to understand how their fandom can affect their biases. In analyzing the data, some factors emerged, such as the time of the study, team selection, and participants in the study, that could have affected the results; however, the statistical analysis combined with the knowledge of previously-researched concepts allowed for comfort with the study's results.

Overall, results of the study conclusively showed bias existed across all three fan bases analyzed. Various factors likely played a part in this conclusion; yet, there was still variance among the three fan bases. NFL fans are among the most passionate across sports and this study further confirms how their loyalty influences their behavior.

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Appendix A: Survey

Thank you for agreeing to participate in this survey. Your participation is greatly appreciated and allows for the research to be possible. The survey intends better to understand the common sports fan and their gambling habits. All answers will be kept confidential and only used to analyze data for research. This is a short survey that should only take between 5-15 minutes. Answer to the best of your knowledge.

Age:

Gender:

Male

Female

Other

Race/ethnicity:

White

Hispanic

African American

Asian

Other

Education:

Less than high school

High school diploma

Some college

Bachelors degree

Graduate degree

1. Are you interested in sports?

(1 = No interest; 7= Obsession)

1 2 3 4 5 6 7

2. Have you gambled on sports before?

Yes No

2.1. If yes, how long have you been gambling on sports?

_____ years

2.2. If you have gambled, how successful have you been as a sports gambler?

(1 = Never won; 7 =Always win)

1 2 3 4 5 6 7

The next few questions will ask you about the Bears:

3.1. How well do you know the Bears?

1 2 3 4 5 6 7

3.2. How well do you know the history of the Bears?

1 2 3 4 5 6 7

3.3. How well do you know the players of the Bears?

1 2 3 4 5 6 7

3.4. How well do you know the performance of the Bears in the last 5 years?

1 2 3 4 5 6 7

3.5. How much do you like the Bears?

1 2 3 4 5 6 7

3.6. How much do you like the players of the Bears ?

1 2 3 4 5 6 7

3.7. How much do you like the coach of the Bears?

1 2 3 4 5 6 7

The next few questions will ask you about the Packers:

4.1. How well do you know the history of the Packers?

1 2 3 4 5 6 7

4.2. How well do you know the players of the Packers?

1 2 3 4 5 6 7

4.3. How well do you know the performance of the Packers in the last 5 years?

1 2 3 4 5 6 7

4.4. How much do you like the Packers?

1 2 3 4 5 6 7

4.5. How much do you like the players of the Packers ?

1 2 3 4 5 6 7

4.6. How much do you like the coach of the Packers?

1 2 3 4 5 6 7

The next few questions will ask you about the Vikings:

5.1. How well do you know the history of the Vikings?

1 2 3 4 5 6 7

5.2. How well do you know the players of the Vikings?

1 2 3 4 5 6 7

5.3. How well do you know the performance of the Vikings in the last 5 years?

1 2 3 4 5 6 7

5.4. How much do you like the Vikings?

1 2 3 4 5 6 7

5.5. How much do you like the players of the Vikings?

1 2 3 4 5 6 7

5.6. How much do you like the coach of the Vikings?

1 2 3 4 5 6 7

6. If you could choose, which of the following games you would be most likely to bet on?

Bears – Packers:

Packers – Vikings:

Vikings – Bears:

7. If you could choose, which of the following games you would be least likely to bet on?

Bears – Packers:

Packers – Vikings:

Vikings – Bears:

8. If you had \$100 to bet on a Bears–Packers game, how much would you bet that

The Bears win:

The Packers win:

9. If you had \$100 to bet on a Packers–Vikings game, how much would you bet that

The Packers win:

The Vikings win:

10. If you had \$100 to bet on a Vikings–Bears game, how much would you bet that

The Vikings win:

The Bears win:

11. Please rank the teams in order of where they will finish in the NFC North for the 2020 season, in your opinion.

(1st, 2nd, 3rd)

Bears

Packers

Vikings