

From First Downs to Finance: What Football Betting Reveals about Cognition and Investor Behavior

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ABSTRACT: This study leverages an extensive football betting data set to explore cognitive boundaries, detect sex-based variations in behavior and performance, improve our understanding of financial market price efficiency, and identify potential ethical issues associated with sportsbook marketing practices. We find that bettors who place larger wagers, have superior experience, are female, and/or are in closer geographic proximity to the bet-on team are significantly more likely to profit. On the other hand, men and those placing late wagers and/or bets on standalone games or divisional matchups are statistically more likely to lose. Results extend existing academic research that focuses on the information processing abilities of stock investors and add insight into differences between the decision-making patterns of men and women. We demonstrate a need for tightly focused gambling regulations and educational interventions to help prevent the exploitation of highly vulnerable young male bettors.

KEYWORDS: Behavioral and Social Sciences, Sociology and Social Psychology, Cognition, Sex, Stock Markets.

■ Introduction

Betting and Stock Markets:

Historically confined to limited geographic areas or offshore platforms, wagering on sports recently became a mainstream consumer activity. Since the repeal of the Professional and Amateur Sports Protection Act in 1992, a growing number of states have permitted online wagering, creating a rapidly expanding market with revenues in the tens of billions of dollars annually. Technological innovations, particularly mobile applications, and user-friendly betting interfaces, have further widened access. Today, fans can instantly place bets from nearly anywhere and often use big data and sophisticated analytics to guide their decisions. As societal attitudes evolve, regulatory frameworks solidify, and betting markets grow in financial importance, it becomes increasingly critical to understand how participants behave and which factors contribute to success.

While betting markets are inherently worth further exploration, they also serve as a useful laboratory for studying cognition, biological sex, and behavior in traditional financial markets because the two venues are close analogs. First, prices in each context adjust to new information. In financial markets, events such as earnings announcements and the release of new macroeconomic data immediately shift stock prices, just as an injury report or a coaching change can instantly alter the point spread of a particular wager. Second, sports betting exhibits the same risk-reward relationship seen in finance, as market participants weigh probabilities against possible payoffs in a search for value. That is, a bettor who believes that the odds understate a particular team's chances to win behaves similarly to an investor who sees overlooked potential in a stock. Third, while rare, arbitrage opportunities can also arise in both environments: disparate odds listed on different betting platforms can allow sure-thing profit strategies, while mismatches in an

asset's price across exchanges can unlock gains in financial markets.

Further, using wagering markets as a laboratory offers some compelling advantages, as the rapid nature of sports betting outcomes provides clear feedback loops. While short-term events like corporate earnings or central bank announcements can sometimes offer prompt verdicts on stock market predictions, financial markets generally settle slowly. Because of their shorter timeline, sports betting markets can better help us to analyze how participants process information, manage risk, and act under uncertainty, offering insights that often extend to more traditional financial markets. For example, gamblers might overvalue popular teams, echoing how equity investors can inflate the prices of trendy stocks.

Most importantly, focusing on sports betting markets alleviates the joint hypothesis problem inherent in directly studying traditional financial markets.¹ That is, when researchers test equity market efficiency (whether stock prices fully reflect all available information), they must simultaneously assume a model specifying how financial asset prices are to be determined. This means that any examination of potential differences between values and prices is jointly a test of market efficiency and a test of the validity of the specific asset pricing model being employed. Put simply, the true underlying value of any stock is never revealed with certainty, but contrastingly, in sports betting markets, the value of each wager is unambiguously revealed in the form of a win or loss when the sporting event concludes.

Investigation:

In this study, we explore several key dimensions that may influence financial performance in the form of wager wins and losses. There are two main classes of wagers – moneyline bets and point spread bets – and it is important to distinguish

between them. For moneyline bets, the wager pays out if the bet-on team wins the contest outright, and the odds determine the payout for each dollar wagered (the less likely a team is to win the greater the percent return on a winning moneyline bet).

However, in this study, we strictly examine point spread bets, wagers in which the payout per dollar wagered does not depend on the probability of one team or another winning outright. Instead, for a bettor to cash in, the bet-on team must win the contest by more than (or lose the contest by less than) a specified number of points. Importantly, each point spread wager has a roughly a 50/50 chance of winning because, theoretically, all factors relevant to each team's expected margin of victory (including team distance traveled, home or underdog status, etc.) should be reflected in the point spread. However, it is not clear whether in practice all bet- or bettor-specific factors such as wager size or timing and/or bettor sex are related to the frequency with which point spread bets win or lose, thus exploring these important facets is part of our study's contribution.

First, we investigate whether the amount of money staked on a particular wager correlates with a higher likelihood of winning. Second, we analyze the significance of geographic proximity between the bettor and team, seeking to determine whether closer proximity translates into an informational advantage or an emotional disadvantage. Third, we examine sex-based differences in bet win rate, connecting these findings to debates in financial markets regarding performance variations between men and women. Fourth, we probe the impact of timing (the interval between placing a bet and kick-off) on success or failure. Fifth, we evaluate how prior betting experience (as captured by the number of previous wagers, cumulative bet stakes, customer age, and accumulated profits) affects the probability of placing a winning wager.

Our research directly adds to the literature on sports betting and academic work on stock markets in several ways. From a behavioral finance perspective, it presents new evidence on how demographic traits such as sex and age affect decision making. One of our key contributions is shedding light on differences in risk tolerance, overconfidence, and information processing between men and women. We also advance discussions about market pricing efficiency by showing that timing and other micro-level dynamics are associated with exploitable inefficiencies. Additionally, our study underscores the growing social impact of sports betting and illustrates the need for nuanced regulatory oversight and consumer education.

■ Literature Review

A significant body of behavioral finance research highlights the psychological factors that influence decision-making under uncertainty. Scholars demonstrate that stock investors tend to be prone to biases that can shape trading volumes and price outcomes.² Biological sex has emerged as a recurring theme in such investigations. Men and women exhibit distinct patterns in financial decision-making, with men often taking greater risks.³ In the context of sports betting, differences can manifest in bet frequency, wager size, and types of bets chosen.⁴ Our

study incorporates the binary (0/1) dummy variable *Male* to isolate the effect of sex on bet outcomes. We seek to determine whether the overconfidence that is generally attributed to men and found to be detrimental in stock market performance can, in a sports betting setting, reduce pick accuracy.

Recent studies in traditional equity markets underscore how external information, such as media sentiment, can influence decision-making. For instance, press coverage can sway both short-term sentiment and trading behavior, thereby affecting stock prices.⁵ The underlying principle that behavioral biases and external information streams drive investor decision-making also resonates in a sports betting context. Conventional wisdom suggests that widely available public information, such as injury reports or weather forecasts, should be priced into point spreads, leaving little room for consistent outperformance. Nonetheless, evidence from prior studies hints at potential inefficiencies that sharp gamblers can exploit.⁶ Large-scale analyses of how specific bettor characteristics correlate with success are rare, rendering our study's deep dataset especially valuable for extending prior findings and drawing fresh conclusions.

The finance literature also examines how predictive modeling influences pricing and decision-making. For example, various AI-driven models, including linear and multilayer perceptron regressions, can help forecast future stock prices under certain conditions.⁷ While these AI approaches focus on the price movement of financial assets rather than sports outcomes, they reinforce the notion that markets, whether equity or betting, may be predictable when correct inputs, modeling, and timely information converge. Translating these ideas to sports betting suggests that accurate forecasting could also hinge on deploying analytical tools to parse large volumes of team, player, and contextual data.

Another relevant strand of literature explores the impact of locality on decision-making, a dynamic which is commonly referred to as the home bias. For example, prior finance research identifies that investors tend to concentrate their investments in local markets while sports studies document that fans identify more strongly with nearby teams. We believe that the latter attachment may affect wagering patterns in one of two ways. One possibility is that bettors who reside closer to a particular team possess more detailed local knowledge, ranging from daily news coverage to community conversations, potentially generating a meaningful informational edge. Alternatively, emotional biases might cloud judgment, causing local bettors to overestimate their team's chances of success. In this study we add nuance to both the direction and magnitude of the home bias by linking wager outcomes to exact distances between bettors and bet-on teams.

■ Methods

Our dataset consists of all 3.6 million National Football League (NFL) point spread bets placed by the entire population of gamblers having accounts at a popular domestic (US) sports betting website during the 2020 season. It details whether the bet won or lost, the amount wagered, and the bettor's sex, age, and location. Based on each customer's zip code

and bet time stamps, we calculate the geographic distance (in miles) between the bettor and the wagered-on team and the time (in hours) between bet placement and game kickoff. We measure experience as the total number of previous bets, total bet stake in prior wagers, customer age, and accumulated profits. We also create indicators for standalone games (such as Monday Night Football) and divisional matchups, where teams within the same division face each other. To account for the potential effects of weather acclimatization and time zone changes on team performance, we include control variables capturing travel direction (north/south and east/west). We also add home-underdog, home-favorite, visiting-underdog, and visiting-favorite markers to account for potential biases relating to such designations.⁸ Appendix 1 contains variable definitions.

Appendix 1: This table contains definitions of the variables utilized in the logistic regression specification.

Variable	Definition
<i>Win</i>	1 = yes, 0 = no
<i>Bet Stake</i>	amount wagered
<i>Miles</i>	miles bettor is away from bet-on team
<i>Local</i>	1 = 250 miles or fewer, 0 = otherwise
<i>Male</i>	1 = male, 0 = female
<i>Age</i>	customer age
<i>Prior Bets</i>	number of prior wagers
<i>Prior Bet Stake</i>	total prior amount wagered
<i>Prior Profit</i>	total prior amount net profit
<i>Hours Until Event</i>	number of hours until kickoff
<i>Standalone Game</i>	1 = yes (Monday, Thursday, Saturday, and Sunday night), 0 = no
<i>Divisional Game</i>	1 = yes, 0 = no
<i>Profit_{t-1 to t-7}</i>	net profit from one to seven days before wager
<i>Profit_{t-8 to t-30}</i>	net profit from eight to 30 days before wager
<i>North Bet Team Traveled</i>	miles north the bet-on team travelled
<i>East Bet Team Traveled</i>	miles east the bet-on team travelled
<i>Home Favorite</i>	1 = yes, 0 = no
<i>Home Underdog</i>	1 = yes, 0 = no
<i>Visiting Favorite</i>	1 = yes, 0 = no
<i>Visiting Underdog</i>	1 = yes, 0 = no

Because of the complex interrelationships between variables, interpretations based on univariate statistics such as mean, median, standard deviation, etc. may be unreliable. So, we instead explore connections via regression analysis. Our model enables us to determine whether significant correlations exist between variables and together allow us to quantify how much one (the dependent) variable changes in response to another (an independent) variable. *Win* is the binary (0/1) dependent variable (set to 1 if the wager is successful and to 0 otherwise), so we employ a logistic regression specification, which is well suited for handling binary outcomes. The likelihood of winning the *i*-th bet is given as:

$$\ln\left(\frac{p_i}{1-p_i}\right) = \beta_1(\text{Bet Stake})_i + \beta_2(\text{Miles})_i + \beta_3(\text{Male})_i + \beta_4(\text{Age})_i + \beta_5(\text{Prior Bets})_i + \beta_6(\text{Prior Bet Stake})_i + \beta_7(\text{Prior Profit})_i + \beta_8(\text{Hours Until Event})_i + \beta_9(\text{Standalone Game})_i + \beta_{10}(\text{Divisional Game})_i + \gamma' \mathbf{C}_i \quad (1)$$

where $\mathbf{C}_i$ represents a series of control variables and γ is the corresponding coefficient vector. These controls include prior bettor profits, team distance traveled, and team classification variables for home/visiting and favorite/underdog status.

Interpreting results is straightforward. Put simply, in equation (1) p_i is the probability that bet *i* wins. So, if a particular coefficient estimate (β_1 through β_{10}) is significantly greater than zero, then an increase in that variable improves the likelihood of a win after controlling for all other variables in the equation. Significance is quantified by the p-value associated with each coefficient estimate. When the p-value is low (below 0.05), then we can be confident that a meaningful correlation exists. For example, if we find that β_3 is greater than zero and

its associated p-value is 0.02, then men (those assigned a value of 1 for variable *Male*) are more likely to win on average. If, on the other hand, that coefficient was to be statistically negative, then women (*Male* = 0) generally fare better.

It is important to recognize that we examine only point spread bets in this study. Point spreads presumably account for all factors that determine the strength of one team in a matchup relative to the other. So, if this market is price efficient then each of the right-hand side variables should be no different than zero. For example, the likelihood of placing a winning bet on one category of team or the other (e.g., home vs. visiting and/or favorite vs. underdog) should be close to 50%, and it follows that the coefficient estimates for dummy variables *Home Favorite*, *Home Underdog*, *Visiting Favorite*, and *Visiting Underdog* should not be statistically significant.

■ Results

Empirical Findings:

Coefficient estimates and associated p-values (computed using robust standard errors) are presented in Table 1. Results from Model 1 offer important insights into information processing and price efficiency in both betting and stock markets. To begin, greater stakes can either reflect deeper analysis (justified confidence) or overconfidence, the former potentially enhancing and the latter hindering profitability. The significant and positive coefficient estimate for bet stake suggests that winning is associated with heightened preparedness. The negative estimate for miles (geographic distance) demonstrates that intense local knowledge frequently translates into more accurate predictions.

Table 1: This table presents the coefficient estimates from the logistic regression specification. Notably, *Male* is negatively associated with the likelihood that a bet wins, while all prior experience variables are positively associated.

	Model 1		Model 2	
	Estimate	p-Value	Estimate	p-Value
Main Variables of Interest				
<i>Bet Stake</i>	0.00003	0.009	0.00003	0.000
<i>Miles</i>	-0.00005	0.000		
<i>Local</i>			0.10003	0.000
<i>Male</i>	-0.01139	0.002	-0.01351	0.002
<i>Age</i>	0.00102	0.000	0.00102	0.000
<i>Prior Bets</i>	0.00015	0.000	0.00012	0.000
<i>Prior Bet Stake</i>	0.00000	0.918	0.00000	0.773
<i>Prior Profit</i>	0.00005	0.000	0.00005	0.000
<i>Hours Until Event</i>	0.00040	0.000	0.00040	0.000
<i>Standalone Game</i>	-0.09858	0.000	-0.09961	0.000
<i>Divisional Game</i>	-0.12300	0.000	-0.12304	0.000
Control Variables				
<i>Profit_{t-1 to t-7}</i>	-0.00006	0.000	-0.00006	0.000
<i>Profit_{t-8 to t-30}</i>	-0.00005	0.000	-0.00005	0.000
<i>North Bet Team Traveled</i>	-0.00405	0.000	-0.00386	0.000
<i>East Bet Team Traveled</i>	-0.00163	0.000	-0.00206	0.000
<i>Home Favorite</i>	-0.11634	0.000	-0.17602	0.000
<i>Home Underdog</i>	0.04062	0.000	-0.02059	0.001
<i>Visiting Favorite</i>	0.23538	0.000	0.17430	0.000
<i>Visiting Underdog</i>	-0.16812	0.000	-0.22551	0.000

We recognize that measuring distance linearly may be problematic because, for example, the change in a bettor's knowledge base when going from 100 to 200 miles out is greater than the change from 1,000 to 1,100 miles. So, in Model 2 we replace the continuous variable *Miles* with dummy indicator *Local*, which is set to 1 when the distance between the bettor and the bet-on team is 250 miles or fewer, 0 otherwise. The result-

ing estimate for *Local* is 0.10003 with an associated p-value of less than 0.001. This positive and highly significant coefficient affirms that the closer proximity the greater the bet win rate.

Importantly, sex (measured by the *Male* dummy variable) also exhibits a statistically significant negative correlation with bet success, suggesting that bets placed by women perform substantially better than do those placed by men. In economic terms, this difference is impactful. The coefficient estimate of -0.01139 suggests that the factor by which male odds differ from female odds is $e^{-0.01139}$, or 0.9886. Therefore, holding other factors constant, females have about a 1.15% greater likelihood $(1/0.9886 - 1)$ of winning each wager relative to males.

A person's biological sex does not itself affect the propensity to place winning bets. Instead, differences in win rates likely result from sex-based demographic associations or differences in financial tendencies, risk tolerances, and/or non-financial perceptions associated with sex (or gender). For instance, Table 2 illustrates that female bettors tend to be older and place larger wagers, and each of these characteristics is associated with a higher win rate. Conversely, women also prefer to bet on more distant teams and are more likely to bet on standalone games, each of which reduces their win rate.

Table 2: This table presents the means and differences in means for male and female bettors.

	Male	Female	Difference	p-Value
Main Variables of Interest				
<i>Bet Stake</i>	\$60.94	\$62.09	-\$1.15	0.000
<i>Miles</i>	875.37	879.93	-4.56	0.000
<i>Age</i>	42.39	43.88	-1.49	0.000
<i>Prior Bets</i>	37.78	33.17	4.61	0.000
<i>Prior Bet Stake</i>	\$2,294.12	\$2,281.00	\$13.12	0.000
<i>Prior Profit</i>	-\$85.41	-\$134.47	\$49.06	0.000
<i>Hours Until Event</i>	13.81	12.16	1.66	0.000
<i>Standalone Game</i>	0.41	0.42	-0.02	0.000
<i>Divisional Game</i>	0.34	0.34	0.00	0.536
Control Variables				
<i>Profit_{t-1 to t-7}</i>	-\$5.42	-\$11.30	\$5.87	0.000
<i>Profit_{t-8 to t-30}</i>	-\$32.89	-\$35.44	\$2.55	0.000
<i>North Bet Team Traveled</i>	-0.28	-0.29	0.01	0.000
<i>East Bet Team Traveled</i>	-0.28	-0.37	0.09	0.164
<i>Home Favorite</i>	0.33	0.33	0.00	0.022
<i>Home Underdog</i>	0.13	0.13	0.00	0.091
<i>Visiting Favorite</i>	0.21	0.21	0.01	0.000
<i>Visiting Underdog</i>	0.33	0.34	0.00	0.069

Returning the focus to Table 1, greater investing experience, as captured by age, prior bet counts, and cumulative prior profits, is a strong predictor of success, implying a learning or skill accumulation effect. Intuitively, bettors who place sports book wagers closer to game time should benefit from more accurate and up-to-date information. Conventional advice in most circles often encourages waiting to confirm injury status or last-minute weather changes. Counterintuitively, the positive estimate for hours until the event indicates that the earlier the bet is placed, the greater the chance that it wins. This potentially occurs because as kickoff approaches, the point spread migrates towards its true underlying value, and therefore, little opportunity remains to beat the market. The negative coefficients on standalone matchups and divisional games may indicate that such matchups are often marked by heightened public attention and rivalry elements, so they come with greater unpredictability that seems to erode bettors' chances of winning.

To ensure reliability, we control for previously demonstrated effects inherent in equities and sports betting markets. The negative parameter estimates associated with prior profitability may be related to short-term price reversals.⁹ Anecdotally, teams that travel north and east are typically at a disadvantage because of acclimatization and body clock influences on human performance, and the significance of the associated parameter estimates indicates that the market does not properly account for these factors. Controlling for team classification as a home/visiting team as well as favorite/underdog status is critical, as we find that these factors also play an important role in whether bets win or lose.¹⁰

Cognition in Stock Markets:

Using sports betting markets as a proxy for traditional financial markets alleviates the joint hypothesis problem. Therefore, empirical results presented here provide valuable insight into the behavioral mechanisms driving stock markets. Our results indicate that in sports betting, deeper and more diligent study of teams and matchups increases bettor confidence and produces more accurate forecasts. The positive association between stake (a proxy for confidence) and win probability bolsters the prior academic work in behavioral finance, which links confidence with stronger performance.

The emotional pull of cheering for a local team could potentially bias a bettor's objective analysis, but any such distortion may be offset by better awareness of local sports news, rumors, and developments that may not permeate national headlines. Results indicate that, on average, the home effect produces a net benefit, suggesting that local bettors hold an edge in predicting outcomes for the team in their vicinity. This proximity effect mimics that observed in equity markets, whereby investors favor stocks from familiar companies located in their region.¹¹

As expected, experience quantified by age, number of prior bets, and prior profit have an important positive impact on pick accuracy, while counterintuitively, our findings show that bets placed just before kickoff tend to fare worse. While having the latest insights on injuries or weather might seem advantageous, the market appears to grow more efficient as kickoff nears. Casual bettors, who represent the majority, may typically place their wagers late, whereas sharp bettors quickly exploit mispricings in initial lines. This illustrates the intricate nature of market efficiency.

While primetime and rivalry matchups tend to draw larger betting volumes, they also appear to carry additional layers of unpredictability. Divisional familiarity can lead to unexpected game plans, upsets, and/or rivalry-fueled performances that are not adequately captured by prior game statistics. Similarly, standalone games attract both sharp and casual money, potentially causing erratic line movements. For the typical bettor, these circumstances appear to reduce the probability of a successful bet, suggesting that hype overshadows whatever informational edges that an individual might possess. This is akin to stock markets, where intense attention can foster emotional decision making and speculation (marked by fear of

missing out, herding behavior, or loyalty biases), thus reducing predictability.

Biological Sex:

Regarding the observation that women win more frequently, one possibility is that they have greater aptitude in general. Another is that since a smaller proportion of women bet on sports, the women who self-select to gamble are on average more highly knowledgeable (a participation bias). One way to disentangle this would be to run a controlled experiment with 100 women and 100 men, none of whom had ever placed a sports bet. If we were to observe that the women come out ahead, then we could infer that they are more analytically skilled on average. If men outperformed women, then considering our regression findings, we could conclude that fewer women choose to bet, and those who self-select tend to be more informed.

Risk preferences, cultural norms, and less overconfidence may also contribute to this sex-related phenomenon. For example, women who gamble on sports may be driven more by a profit (as opposed to a risk-seeking) motive and therefore gravitate to data-driven decision making and/or are less prone to the overconfident behavior exhibited by men (which may result in males relying less on data research and logic). In the stock market, the same general principles apply. Numerous studies highlight that men tend to trade more frequently and take on higher levels of risk, partly due to overconfidence or competitive impulses. Women, in contrast, are usually more patient and thorough, which helps them curb excessive risk-taking and minimize transaction costs. These factors can preserve gains and compound returns over time.

■ Conclusions

In several important respects, sports betting markets mirror the structure and function of financial markets (e.g., a multitude of decentralized participants, continuous price adjustments, and the critical role of information flow). By leveraging a particularly rich betting dataset, we provide fresh evidence on how demographic and experiential factors translate into measurable advantages and disadvantages for sports bettors and stock traders alike.

Higher stakes, closer geographic distance, female sex, and greater age and experience all coincide with increases in the likelihood of placing a winning bet. In contrast, shorter intervals between bet placement and event start, as well as betting on games that represent standalone events or divisional rivalries, appear to diminish bettors' prospects of placing successful wagers. These findings, along with the observation that women systematically perform better, raise questions about whether stock markets incorporate information efficiently or are instead susceptible to strong yet rather simple biases. Evidence presented here suggests that price inefficiencies can persist long-term even across well-developed, technologically advanced, and highly liquid markets.

Limitations:

There are two caveats to consider. First, we caution that, to a degree, sports betting is both investment and entertainment.¹² That is, bettors take pleasure in the act of placing wagers and, knowingly or not, accept potential losses in exchange for making the games feel more exciting or engaging. Consequently, they are not strictly seeking to maximize wealth, and therefore betting behaviors may not be entirely ascribable to stock investors. Second, COVID-19 led to significant disruptions throughout the 2020 NFL season. Uncertainty about player health combined with frequent schedule changes introduced new complexities, making it more challenging to set accurate lines and odds and thus creating greater volatility and ambiguity during the time period examined.

Regulatory Implications:

Given our findings and considering the enormous size and rapid growth rate of the sports betting industry, potentially important regulatory issues arise. Observed differences in bet performance across demographics may signal the need for deeper scrutiny of how betting products are marketed to consumers. Sportsbooks collect as much information on their clientele as possible, presumably to implement highly focused marketing tactics. Ethical considerations may arise if promotional strategies or platform features seek to capitalize on biases appearing within specific subpopulations. For example, it could be deemed exploitative if a sports book were to employ promotions which push wagers having highly unfavorable odds (last-minute bets or parlays) on inexperienced young male bettors. Perhaps a risk-awareness flag, like those mandated for some stock trades, could be implemented for particularly risky bets.

In addition, instituting consumer education could mitigate the observed effects of overconfidence. Sportsbooks update odds as information is released in real time, giving both the book and highly sophisticated participants a decisive advantage. To ensure adequate consumer protection, it would be reasonable for regulators to require sportsbooks to disclose how point spreads are determined and reveal their net profits on wagers placed at the opening line vs. those at the closing line (e.g., the win rates of early vs. late bets).

By rethinking both marketing messages and platform design elements, operators and regulators alike can strive to create fairer, more transparent systems that acknowledge and mitigate the role of behavioral biases rather than amplifying them to exploit vulnerable customers.

Paths for Future Research:

There are several potentially fruitful paths for future investigation. One promising direction involves incorporating real-time injury data or advanced team performance metrics to measure how quickly and effectively bettors integrate new information into their wagering decisions. Another possibility is to focus on individual-level bet histories over a more extended timeline, examining how cumulative experience and learning curves evolve in the long term. Researchers might also benefit from parsing data by bet type (such as point spread, money

line, or prop bets) to better understand which segments of the market are most and least susceptible to price inefficiencies. Finally, future studies could explore how online betting companies craft their promotional messages to appeal to various demographic segments and how these strategies influence risk-taking behaviors. Researchers could then disentangle how platform design features, such as push notifications, user interface cues, and loyalty rewards, influence user engagement and well-being.

■ Acknowledgments

I am grateful for the invaluable guidance and mentorship that Dr. Rodney Paul provided throughout.

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