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Article

People's Preference to Bet on Home Teams Even When Losing is Likely

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SUMMARY

One intriguing phenomenon is when people make bets that seem to go against their better judgement. This can be seen in sports betting. In this paper, we report a survey-driven study that investigates if people bet more on their home teams, both in scenarios where the team is leading and scenarios where the team is likely to lose. We asked participants to imagine betting with $10,000 on different scenarios. We compared how much they bet on their home teams versus how much they bet on neutral teams in the same circumstance. On average, participants bet slightly more on their home teams than a neutral team when their home team was leading. Participants, however, bet significantly more on their home teams than the neutral teams when their team was facing a large deficit. This study can help explain some more impulsive betting behaviors that might be due to information avoidance.

INTRODUCTION

Sports betting has been well-studied in recent years. However, the impact of fan bias toward their favorite teams on betting decisions remains understudied. Consider, for example, that your favorite football team is down 14 with 5 minutes left. You are given the following bet: a 2-1 gamble if the team wins. Well it is against your better judgement, you might still choose to bet on your favorite team, and that desire is well documented in real-life scenarios. Most studies that outline these behaviors are most often big games because often no one will look at the betting numbers of a regular season comeback. During the Super Bowl LI, a significant number of gamblers bet for the Patriots when they were down 28-3 with the ball on their own 20-yard line and less than 20 minutes to play in the game (1). What makes this bet so shocking is that the odds of the Patriots winning were virtually zero.

There have already been several studies looking at trends in sports betting involving home teams receiving more bets. The home team receives a rather significant bias in betting if those betting are supporters of the home team (2). This phenomenon is mainly due to optimism bias as the ideal scenario the bettors imagine impacts the way they bet and causes a bias for their home team when the odds are even (3). Researchers have not yet studied the situation in which the gambler's team is facing a large deficit, such as the opponent having a 90% or higher chance of winning according to ESPN's chance of winning (an individual data for each game that changes as the competition goes on). This winning percentage chance is a data under every ESPN covered competition. It basically changes in favor of one of the teams as the game goes on and recalculates. (4) Can a gambler's team loyalty overshadow their logic and lead them to bet for the improbable comeback instead of the safe bet for their opponent?

Many studies have examined the reason behind the phenomenon of bettors favoring their home teams in betting behavior. One study hypothesized that risk aversion would drive fans to bet more on a situation that is positive to them when the odds are even than on a negative situation (5). Golman, Lowenstein and Gurney, in this 2017 study, in a between-subjects design, asked sports fans to bet on which of the two top hitters of a local baseball team would have more hits and to bet on which of the same two players would have more strikeouts (5). In the study, the mean bet in the hit condition was $2.30, while the mean bet in the strikeout condition was $1.16. This study found that participants were more willing to bet the batters would have more hits and less willing to bet that the batters would have more strikeouts.

Another study hypothesized that people avoid negative information (6). This study explained that people, when faced with negative information such as the diagnosis of a disease, would choose to avoid such information and try to turn it positive. This could potentially lead to fans betting more on their home team bet against and avoid predicting a negative outcome for the home team such as a loss.

In our study, we presented subjects with 20 scenarios of sporting events in which all the games featured one of the teams down a huge amount and a rather improbable comeback. Of the 20 scenarios, 5 included the specific home team of the city involved in the research and 15 featured teams that were neither liked or disliked to fans of the home team of the city. In each scenario, the survey-taker was asked to bet $10,000 on whichever team they wished. After collecting the data of how much each participant bet on each team in each scenario, we compared how much they favor their home teams versus other neutral teams in each circumstance. The study aimed to discover whether bettors will bet more on the home team when they are ahead than on a neutral team in the same situation. Additionally, we aimed to determine whether bettors tend to bet more on the home team when they are

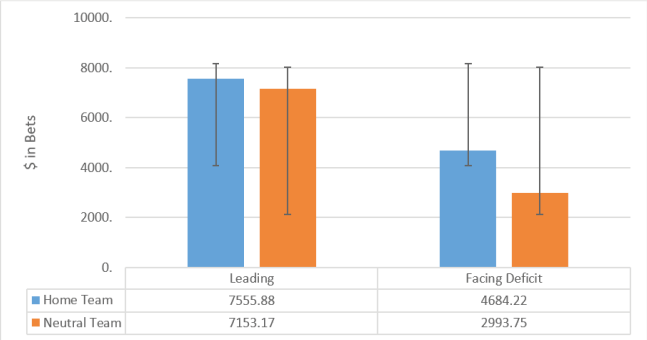

Figure 1: Bets from All participants. Participants (n=119 from 5 cities) were surveyed and average dollar amount that participants were willing to bet on home and neutral teams under leading and facing deficit circumstances was determined. Error bars represent the standard deviation which is the average difference between a value of the bet and the mean bet.

faced with drastic deficits than on other neutral teams in the same situation. In this study, we assessed whether fandom for a team can overshadow fans' judgment and lead those to bet significantly higher, i.e. take a risk that they otherwise would not, for their team.

RESULTS

We distributed a survey that contains several betting scenarios via Amazon Mechanical Turk to participants in cities whose teams were mentioned in the survey (New York, Boston, Chicago, Philadelphia, Los Angeles), and data were collected from those surveys.

Overall 140 results were collected (**Figure 1**) including 48 results from New York (**Figure 2**), 21 from Boston (**Figure 3**), 13 from Chicago (**Figure 4**), 16 from Philadelphia (**Figure 5**), 21 from Los Angeles (**Figure 6**), and 18 from other states. Though we did not record the gender, the median age group was 25-35, and participants claimed in the survey to have a median tendency of risk-taking of 3 on a scale of 1-5. The median annual income group was $50,000-100,000, and a majority (76%) of the participants watched sports at least once a week. The 18 responses that recorded participants that were not fans of the five cities' sports teams were disregarded as the data collected would not be appropriate.

To begin, the participants tended to bet more on their favorite teams than neutral teams in both scenarios (**Figure 1**). The average bet for a leading home team was $7,556 compared to $7153 for a leading neutral team (p=0.0035), a 5.6% advantage in favor of the home team. Participants were also more likely to vote for a trailing home team compared to a trailing neutral team. The participants' average bet was $4684 when betting for their favorite teams when they were down and $2855 when betting for a losing neutral team (p<0.0001). The bet for the home team increased by 64% compared to the neutral team. This reflected a strong trend of bettors electing to bet significantly more on their home teams when facing a serious deficit comparing to a neutral team.

Through a two-way ANOVA test, we determined that the factor of the score (whether the team was leading or behind) significantly impacted the bets (p<0.001) and the factor of the team (whether it was a home team or neutral team) significantly impacted the bets (p<0.001). In addition, the interaction of the two factors also significantly impacted the bets (p<0.001).

To prevent the numbers only reflecting the cities with larger fan-bases, such as New York which represented nearly half of the data collected, the data was separated by cities to reflect potential outliers or inaccuracies. This was also done to prevent a fan-base of a historically significantly more dominant franchise to vote much more in favor of their home teams than other teams.

According to our data, we ranked the amount of money bet on the participants' home teams when they were leading from the highest to lowest by cities in this order: Chicago, Boston, Los Angeles, New York, and Philadelphia. Furthermore, we ranked the amount of money bet on a neutral team when they were leading from the highest to lowest by cities in this order: Chicago, Boston, Los Angeles, New York, and Philadelphia.

The bet on the home team, when they were facing a significant deficit, as ranked from the highest to lowest in this order: Boston, New York, Chicago, Los Angeles, and Philadelphia. As for the amount bet on neutral teams when

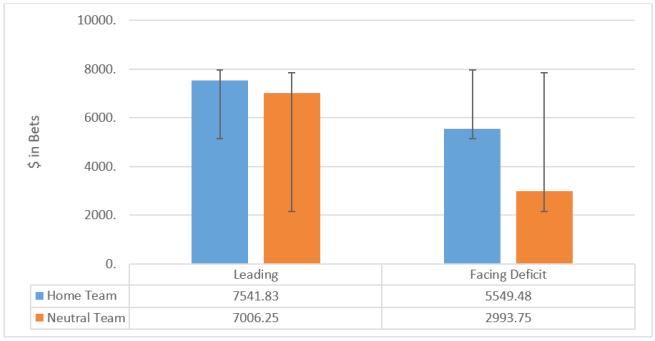

Figure 2: Bets from New York-based participants. Participants (n=48 from New York) were surveyed and average dollar amount that participants were willing to bet on home and neutral teams under leading and facing deficit circumstances was determined. Error bars represent the standard deviation which is the average difference between a value of the bet and the mean bet.

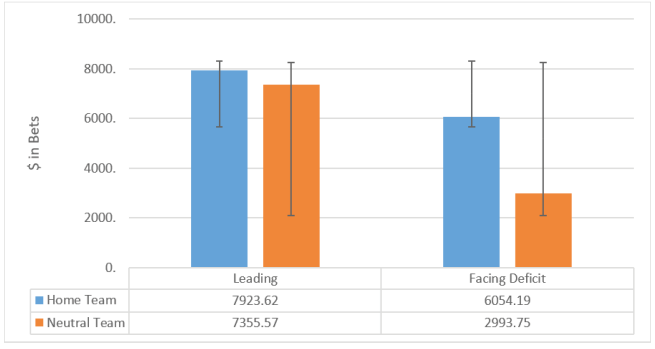

Figure 3: Bets from Boston-based participants. Participants (n=21 from Boston) were surveyed and average dollar amount that participants were willing to bet on home and neutral teams under leading and facing deficit circumstances was determined. Error bars represent the standard deviation which is the average difference between a value of the bet and the mean bet.

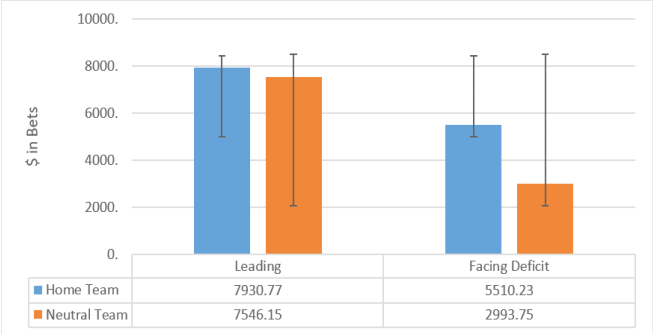

Figure 4: Bets from Chicago-based participants. Participants (n=13 from Chicago) were surveyed and average dollar amount that participants were willing to bet on home and neutral teams under leading and facing deficit circumstances was determined. Error bars represent the standard deviation which is the average difference between a value of the bet and the mean bet.

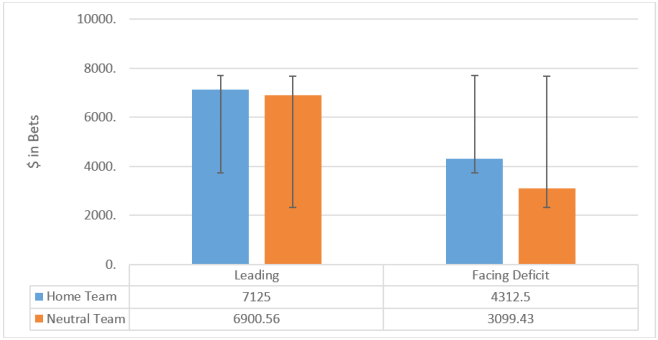

Figure 5: Bets from Philadelphia-based participants.Participants (n=16 from Philadelphia) were surveyed and average dollar amount that participants were willing to bet on home and neutral teams under leading and facing deficit circumstances was determined. Error bars represent the standard deviation which is the average difference between a value of the bet and the mean bet.

they were facing a deficit, the cities were ranked from the highest amount to lowest as follows, Philadelphia, New York, Los Angeles, Boston, and Chicago.

In the five cities, fans of Los Angeles sports teams had the highest difference between their bet on their home teams and neutral teams when leading (**Figure 6**), and fans of Philadelphia sports teams had the lowest difference between their bet on their home teams and neutral teams when leading (**Figure 5**). Fans of Boston bet the highest difference between the home teams and neutral teams when facing a deficit (**Figure 3**). Philadelphia fans bet the least difference between their home teams and neutral teams when they were facing a deficit (**Figure 5**). The standard deviation of all the bets was highest in New York (**Figure 2**) and lowest in Philadelphia (**Figure 5**).

The data demonstrate an overall trend that showed the bettors of all cities betting more on their home teams, both when facing a significant deficit or leading. Even though there was a difference in how much more each city bet on their home teams than neutral teams in each circumstance, they did overall tend to favor their home teams when facing a nearly impossible deficit. This demonstrated the existence of a bias favoring their home team that dictates the bettors' judgment, even when it was illogical to bet that way.

DISCUSSION

Here we present the results of a study that demonstrate the trend of fans betting more for the home team as opposed to a neutral team when the team was facing a significant deficit. This research specifically focused on how the bias fans have for their favorite teams might overshadow logical judgment when placing bets, sometimes betting for their favorite teams even during extremely unfavorable situations. In this study, participants bet in scenarios when a team was facing a significant deficit. We compared how they bet in those scenarios on their home teams compared to neutral teams.

Even though the results from the different cities varied slightly, we could see a general trend. In all the cities, the fans bet more on their favorite teams no matter if they were down or leading compared to neutral teams in the same circumstances. The fans bet especially higher on their favorite teams when they were down compared to when other neutral teams are down.

The participants in every city bet at least 50% higher on their home teams than the neutral teams when they were down, demonstrating a difference in betting preference. The large gap between the two values means that especially during high-risk circumstances when a team was facing a gigantic deficit, the fans' bias that favors their favorite team would lead them to disregard their better judgment to bet for the significantly fewer probable winners in the scenarios in the survey. Even though betting on the team that was down has a better potential return if they win, their victory was so improbable that even with these better returns, it was still the more reasonable choice to bet on the team that was leading. Yet, on average, the fans still bet nearly half of the $10,000 on their home team and even more in some circumstances (such as the fans of Boston who bet more on their home team when they were down than the team that is leading on average). These results support that the bias favoring their favorite team does overshadow logical judgment in extreme betting

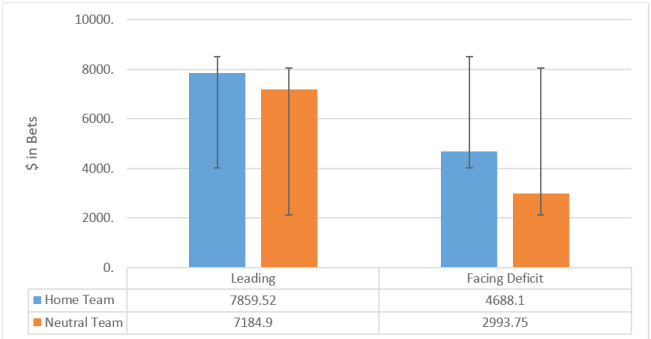

Figure 6: Bets from Los Angeles-based participants. Participants (n=21 from Los Angeles) were surveyed and average dollar amount that participants were willing to bet on home and neutral teams under leading and facing deficit circumstances was determined. Error bars represent the standard deviation which is the average difference between a value of the bet and the mean bet.

circumstances.

When viewing the different cities, we saw that the success of the cities' sporting franchise history could impact the fans confidence in their teams' ability of overcoming a deficit or preserving a lead. Those claiming to be fans of Boston sports teams appeared to be the most confident of their franchises' chances to come back from significant deficits, while having significantly more confidence in their team than a neutral team to comeback from a large deficit. This might be tied to the historical success of Boston franchises, as they collectively have the second highest amount of championship wins for a city and the most championships (twelve) since 2000 (7). Philadelphia bettors, however, appeared to be the least confident when their home teams were facing a significant deficit, which would be reasonable as they have only obtained two championships across all athletic franchises in the city since 2000 (7).

The results of the survey could be explained by several potential theories for why the participants bet much more on their favorite team even when the team was down significantly. Firstly, it was likely that, due to the information avoidance of the participants, they do not wish to accept and receive the potential information of their favorite team losing with a bet on the opposing team. Thus, they would bet on their favorite team to avoid predicting such potential results. Secondly, it was also possible that the bias participants have for their home team was strong enough to remain even in unfavorable circumstances. Lastly, risk aversion could have impacted the results as bettors could have been avoiding the bet that shows potentially negative results in their team losing.

There were several potential sources of errors in this survey. Firstly, the survey takers might not have reflected completely what they would do in a real-life betting circumstance in the survey as the survey involves hypothetical scenarios. When treating a hypothetical circumstance in a survey, it was difficult for the participants to express exactly what they would do in an actual betting circumstance as the pressure of actual loss and gain of property could influence the judgment of the bettors. One potential way to alleviate that error is giving a participant an actual monetary bonus when they win their bets. Also, as $10,000 is a large amount of money, a smaller amount of hypothetical money might be more realistic for the participants. In addition, the survey had a limitation in that it only focused on the fans of five major cities and though this reflects a large amount of people, the survey might not be accurate for the entire country. Even though the five cities represented in the research were cities with major athletic markets and a huge amount of professional sports audience, it was still only five cities out of the hundreds in the United States. Thus, there were bound to be possibilities, as well as decisions and opinions not represented and taken into consideration in this research.

Through the results from the study, it was evident that bettors do have the tendency to bet more on their home teams than neutral teams when facing a large deficit. This trend could contribute to bringing several new pieces of information such as a potential area of marketing for betting companies. In addition, the hypothesis proposed in this study could advance theories in related areas such as the idea of information acceptance bias. Those theories could be applied to many other scenarios that involves similar biases due to information avoidance. Those scenarios, related to sports betting or not, could bring to light multiple potential resolution or predictions. For example, this bias could have implications with marketing and other decision sciences.

METHODS

This study aimed to determine if the bias amongst sports bettors on their home team was strong enough to make them bet irrationally. Thus, a simulation of betting was determined to be the most reliable method for the research. A survey that contained several betting scenarios was sent out via Amazon Mechanical Turk to participants in cities whose teams were mentioned in the survey, and data was collected from those surveys.

We designed the survey so that as much bias involving favoring their home or favorite team in a betting scenario as possible was taken into consideration. When the participants began the survey, they were given a variety of scenarios in the four major American sports: hockey, basketball, football, and baseball. In each category, there were four to six scenarios. Each scenario portrayed a game in which one specific team was faced with a rather large deficit. That deficit would be difficult to overcome given the little time left in the game displayed in the scenario. In each of the scenarios, we prompted the participants to imagine that they were given $10,000 to bet on both or either teams in any combination they wish. To make it at least somewhat favorable to bet on the team that is down, the gamble for a team that was down was 2 to 1. Thus, if they bet $1 on team A, the team facing the deficit, and win, they earn $2. We asked the participants to make betting decisions in each of the scenarios with the $10,000. The participant would make decisions regarding how much to bet on either team if they choose to do so instead of betting everything on one team. After they bet, we could find a difference between the bet on the team that was down versus the team that was ahead. For example, if the participant bet $9,000 on the team that was up and $1,000 on the team that was down, the value would be -8000 (1000-9000 = -8000). We could compare this value to the amount the participant bets in the scenarios with neutral teams. This value could lead to the discovery of whether the bias for their home team overshadows the better judgment of the bettor even when the team they favor was faced with a large deficit. The amount of money the participants bet on the neutral teams would demonstrate how the participant would normally treat such a betting circumstance without any potential bias. To ensure that those neutral scenarios would minimize bias, a scenario involving a team's historical rival(s) would be disregarded.

During the survey, there were multiple ways to ensure

Table 1: Cities and teams involved in the survey.

Home teams	Their respective rival teams	Their respective neutral teams
Boston	New York, Los Angeles	Chicago
New York	Boston, Philadelphia	Chicago, Los Angeles
Chicago	Philadelphia	New York, Los Angeles
Philadelphia	New York, Chicago, Boston	Los Angeles
Los Angeles	Boston	Chicago, Philadelphia

that we take into consideration the home team or favorite team of the participant. Firstly, in the 20 scenarios in the survey, the questions appealed to multiple cities. It targeted Chicago, New York, Philadelphia, Boston, and, Los Angeles. In those 20 scenarios, the neutral scenarios from the perspective of New York fans might be the scenarios that feature other home teams of other cities, ensuring the appeal of the survey in a wide range of cities. In addition, the five cities were chosen to have the most popular teams and strong fan bases. In these cities, even if one participant was only a fan of one team in Philadelphia, it was more likely for that participant to have at least one of his other favorite teams in other sports to appear in other fore-mentioned cities, ensuring the accuracy of the results. At the end of the survey, a question also required participants to list their favorite teams in each of the four major professional sports to ensure that we treated their data in each scenario appropriately. In addition to asking the participants their favorite teams, there were also demographic questions. The first demographic question asked for the annual income of the participants. The annual income of the participants would be able to inform the researchers how much the $10,000 bet meant to the participants as those who were affluent might not care for the $10,000 as much as a less affluent participant. Secondly, the demographic question asked for how comfortable the participant was to take risks which could provide information about how the participant bet and whether the bet was normal or abnormal according to the value. In addition to the previous questions, the demographic questions also inquired how often the participant watched sports and whether the participant had bet on sports before.

We also utilized a two-way ANOVA later in the study to analyze the results. The two factors were whether the team was a home team or neutral team and whether the team was facing the large deficit or leading by that large amount. We created three null hypotheses:

1. The factor of the score (whether the team was leading or behind) does not significantly impacts the bets.
2. The factor of the team (whether it was a home team or neutral team) does not significantly impacts the bets.
3. Score and Team interaction do not have a significant impact on bets.

The score is a significant term in the ANOVA analysis with a *p*-value of less than 0.001, rejecting the first null hypothesis, the team is also a significant term with a *p*-value of less than 0.001, affirming the second null hypothesis. Lastly, the team-score interaction is also a significant term with a *p*-value of less than 0.001 rejecting the third null hypothesis. It would be reasonable to conclude that both factors, whether a participant is betting on a favorite (home) team and a neutral team as well as whether the team is facing a large deficit or leading by a large amount, significantly impact the amount of the bet placed.

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