An Analysis of Sportsbook Behavior and How to Profit

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ABSTRACT

With upwards of $100 billion bet on the NFL each year (Morrison, 2014), it is critical to the industry that point spreads are set at the correct price. Much research over the past few decades has focused on finding simple arbitrage strategies that can consistently beat the point spread. However, understanding exactly how sportsbooks set point spreads and using that information to find value within betting lines may prove more profitable and more consistent than simply identifying past trends in a very noisy data set. First, we must accept the idea that professional sportsbooks do not set point spreads to even the betting action but instead set prices to maximize profits by taking advantage of incorrect public sentiment. Once this is done, we can attempt to identify profitable scenarios where a sportsbook is giving extra value against the public favorite. This is a process that should yield higher, more consistent profits over identifying trends because we are using the expert knowledge of the sportsbook to our own advantage in each game. With experience, this system may be a very viable way for bettors to be profitable without having to be an expert on the NFL.
LITERATURE REVIEW

The sports wagering world has become very big business. It is estimated that between 200-300 billion dollars are wagered every year on sports, with upwards of 100 billion dollars bet on the NFL alone (Morrison, 2014). With so much money being wagered every year, it is critical to the industry that point spreads are set at the correct price. Consequently, there has been extensive research done to test the market efficiency of sports wagering. In the sports wagering world, “efficiency implies that odds or prices summarize all that is known about an event, and more generally, the absence of profitable betting opportunities (Sauer, 2005, p. 416).” The last point - that there is an absence of profitable betting opportunities - is what researchers are attempting to disprove when testing market efficiency. Anecdotal evidence suggests that there are a small number of sports bettors (or betting syndicates) that win enormous sums of money every year because they have found an advantage over the sportsbook. There are likely multiple ways to gain an advantage and most researchers are looking for trends in order to predict the future outcome of games.

One of the first market efficiency tests found that “while certain mechanical technical rules were unprofitable, rules based on specific hypotheses of bettor behavior patterns, some already in the finance literature, were found to be decidedly profitable (Gandar, Zuber, O’Brien, & Russo, 1988, p. 1006).” However, it seemed as if these economic inefficiencies were dissipating as they became well known. A 1997 follow-up study by Gray and Gray tested several inefficiencies that had been discussed in the original 1988 research. Most notably, the study focused on the home-underdog bias. “The very strong bias over the 1970s and early 1980s has apparently been eliminated. In only two of the last seven, and three of the last eleven seasons has the home-underdog strategy yielded success rates above 52.4% (p. 1735).” It was as
if the betting world, including the sportsbooks, had adjusted to the trends identified in previous studies. This eliminates the arbitrage situation and thus increases market efficiency.

Interestingly, a very recent study by Paul and Weinbach (2011) concludes that “simple strategies of betting against public sentiment by wagering on the underdog were found to reject both the null of a fair bet and the null on no profitability (p. 197).” Another pair of researchers performed a similar test one year later and the results confirmed that “a strategy of betting the home team underdogs (from 2002-2011) would have produced a cumulative winning strategy of 53.5%, above the threshold of 52.38% needed to break even (Szalkowski & Nelson, 2012, p. 15).” To recap, in 1988 one of the first studies identified that simple arbitrage strategies were present in the NFL betting market. A 1997 follow-up contended that these strategies no longer existed a decade later. Meanwhile, a third and fourth follow-up study another decade later agrees with the original 1988 study which claimed that simple arbitrage strategies exist in the market. It appears that inefficiencies come and go over time as sportsbooks adjust, leaving the door open to a constantly changing field to study. As the sports wagering world adjusts to these most recent findings, it should be reasonable to assume that in approximately a decade there will be yet another follow-up study done which refutes the current findings and claims that these simple strategies are decidedly not profitable. But are we ever making any progress by doing this?

A seemingly infinite number of variables will inevitably lead to statistically significant profits in the NFL point spread market over a given time period. Anything ranging from location, weather, day of the week, month of the season, etc. could potentially be a factor that affects outcomes. But, as sportsbooks adjust to current inefficiencies, the profitability will disappear before likely reemerging years down the road. This means that even if a very profitable strategy is devised and successfully back tested, it may only be useful for a few years
or less before the betting world catches on and corrects for the inefficiency. This is how an efficient market works (although the stock market corrects arbitrage situations almost immediately), so why are expert researchers wasting their time following the pattern? “Finding patterns is easy in any kind of data-rich environment; that’s what mediocre gamblers do. The key is in determining whether the patterns represent signal or noise” (Silver, 2012, p. 240). If we continue to chase false patterns, the sportsbooks will always be one step ahead. In order to make any progress, we need to understand exactly how the sportsbook operates. Fortunately, a study was published in 2004 which should soon change the game for researchers.

**LEVITT STUDY**

Up until 2004, there was a consensus about the way a sportsbook operates. The consensus, coined the traditional model of sportsbook behavior, claims that sportsbooks set point spreads at the point they believe will attract equal action on both sides. If a sportsbook can attract the same amount of betting dollars on each team, it will earn a risk-free return of about 4.5% on the total money bet due to the ‘bet 11 to win 10’ principle. If 11 dollars are bet on each team, the sportsbook will pay the winner $21 (the $11 bet plus $10 win) and keep the remaining dollar, for a risk free return of 1/22, or 4.5%. While this is the most rational expectation of how a sportsbook operates, Steven Levitt was not convinced. He saw three possibilities for how sportsbooks set prices. The first was the traditional model described above, where sportsbooks set prices in an attempt to equalize the volume of betting on each side. The second possibility assumed that bookmakers could perfectly predict the expected outcome if the game were played a large number of times and by setting the ‘correct’ price, the sportsbook will still earn the risk-free rate. Since both of these possibilities assume the bookmaker is perfect at predicting unknown variables, Levitt decided the actual strategy is likely somewhere in the middle. The
third possibility assumed the sportsbook was better than the average bettor (but not necessarily perfect) at both predicting the outcome of a game and predicting public sentiment for each team. If this is true, sportsbooks would then be able to skew lines slightly against the team the public will favor. This will introduce risk for a sportsbook, but it will also increase expected returns if done correctly.

Levitt was able to gain access to not only point spreads but also the number of bets placed on each team for approximately 20,000 bets during a high-stakes NFL handicapping contest involving 285 contestants at an online sportsbook during the 2004 season. This was the first time a researcher was able to analyze the number of bets a sportsbook received on each team and the results that followed were extremely significant.

*Figure 1.* Bar graph shows the distribution of the Share of Bets on Bettors’ Preferred Team by Percent of Games. From “Why are gambling markets organised so differently from financial markets?,” by S. Levitt, 2004, *Economic Journal*, 144(495), p. 231.
Levitt finds that “in only 20% of the games are 50–55% of the wagers placed on the preferred team. In the median game, almost two-thirds of the bets fall on one side.” More importantly, “if bettor choices were independent and each bettor had a 50% chance of picking either team, then one would expect the preferred team to garner between 50% and 55% of the wagers in nearly two-thirds of the games, compared to only 20% in the data (Levitt, 2004, p. 231).”

Clearly, sportsbooks understand that bettors overestimate favorites because the favorites are bet at a much higher rate than underdogs. Figure 2 and Figure 3 illustrate just how much the typical bettor overestimates a home favorite and even more so an away favorite. Since both distributions are skewed to the right, there is rarely a majority of betting action on the underdog, home or away.

*Figure 2.* Bar graph shows the distribution of the Share of Bets on Favorites when the Home Team is the Favorite by Percent of Games. From “Why are gambling markets organised so differently from financial markets?,” by S. Levitt, 2004, *Economic Journal, 144*(495), p. 232.
Figure 3. Bar graph shows the distribution of the Share of Bets on Favorites when the Road Team is the Favorite by Percent of Games. From “Why are gambling markets organised so differently from financial markets?,” by S. Levitt, 2004, Economic Journal, 144(495), p. 233.

This is the second part of Levitt’s findings, and the two conclusions are what form the Levitt Hypothesis. His hypothesis claims that since sportsbooks are the best at predicting the outcome of games and public sentiment, they are able to shade lines against public favorites, especially on the road, in order to increase profits above the risk free return of 4.5% (Levitt, 2004). This hypothesis makes several important claims that go directly against the traditional model. His findings also include a graph about the win rates of all the competitors to show that win rates are normally distributed with a mean of 42/85, or just under 50%. Although the number of bets on any particular game was often far from equal, no one was able to find real success, and the average bettor was as good as the flip of a coin. Over the long term, a bettor (betting an equal amount on each game) with a win rate of 50% will lose at the 4.5% rate that the sportsbook wins.
FOLLOW-UP STUDY

While Levitt’s findings were potentially groundbreaking, there were still many limitations to his study. For one, the data he used was not true sportsbook information because it was from a betting competition where each contestant picked five games each week. There was no way of knowing how many games each contestant would have bet in a particular week since the competition required contestants to pick exactly five games each week. Also, there was no way of knowing how much a contestant would be willing to bet on each pick. While Levitt’s research was a very important step in the right direction, the data set was not completely credible due to the limitations and the results needed to be replicated. In 2007, Rodney Paul had gained access to the dollars bet on each team at sportsbook.com, one of the largest internet sportsbooks in the world. He wanted to test whether or not the Levitt Hypothesis would stand up to actual sportsbook data. His findings are described below.

A much larger percentage of dollars are bet, and accepted, on road favorites. In addition, the higher the pointspread on the game, the higher the percentage of dollars that is bet, and accepted, on the favorite. Specifically, being a road favorite increases the percentage of bets on that team by more than 16%. Also, with each additional point that a favorite is favored by, the percentage of dollars bet on that team rises by 1.31%. Seven-point favorites, for example, have a higher percentage of bets on them than a three-point favorite. Put simply, fans over bet the best teams in the league which leads to sportsbooks accepting a much higher percentage of the wagering dollars on big favorites and road favorites. This leads to a closing pointspread in this market which maximizes profits as the sportsbook does not strictly attempt to set a market clearing price (Paul & Weinbach, 2007, p. 217).
These results confirm every part of the Levitt Hypothesis and even take it a step further by formulating a regression model for the relationship between point spreads and the percentage of bets on the favorite for each game. While Paul notes his findings as ‘striking’, they shouldn’t be striking for anyone who has talked with a bookmaker. Michael “Roxy” Roxborough, founder of Las Vegas Sports Consultants, provides a useful insight into how bookmakers do business. "What makes my company different is that we do more of the research based on actual numbers and less by a gut feeling. In football, for example, we started analyzing all the betting patterns on individual teams to determine the public's bias so we could adjust the spreads accordingly. All we need to do is reflect public opinion; 98 percent of the action on a Monday night game comes from unsophisticated bettors (Beyer, 1989)." This supports the idea that sportsbooks are not pricing to simply clear the market and take the risk free return, but rather they are trying to encourage as much action as possible while keeping more of the action on the favorite (after skewing the line against the favorite). All of this then begs the question: if the odds are set at a point other than the most likely scenario, how can bettors profit?

NEW THEORY

It would be very naïve to think that an average person is capable of building a computer simulation to predict the outcome of an NFL game that would be able to compete with the supercomputers and expert analysts which Las Vegas sportsbooks employ. Additionally, we learn from previous research that identifying simple arbitrage strategies is not a viable long-term strategy. In order to find success, we need a new way of thinking that will allow us to find value within a betting line. Levitt’s hypothesis is a great starting point for this new way of thinking. We can safely assume that sportsbooks make a profit year after year because Las Vegas wouldn’t keep offering the high-stakes service if it wasn’t profitable. We can also safely assume that Las
Vegas is better at predicting the outcome of a football game than the average bettor as Levitt’s research concludes. If we can find a way to determine when sportsbooks are shading the point spread against the public favorite, couldn’t we simply side with the sportsbook and make a profit? It is simple in theory, but determining when sportsbooks are shading the point spread is something that hasn’t been done before. This is primarily because we lacked the information about betting percentages until the Levitt and Paul studies.

Table 1

Regression Results for Percentage Bet on Favorites at sportsbook.com for the 2006-07 NFL Season

<table>
<thead>
<tr>
<th>Dep. Var.: % of Dollars Bet on Favorite</th>
<th>All Favorites (256 games)</th>
<th>Home Favorites (175 games)</th>
<th>Road Favorites (81 games)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.5225*** (35.2366)</td>
<td>0.5138*** (30.2277)</td>
<td>0.7185*** (36.5783)</td>
</tr>
<tr>
<td>Pointspread</td>
<td>0.0131*** (6.5683)</td>
<td>0.0145*** (6.1891)</td>
<td>0.0054 (1.3465)</td>
</tr>
<tr>
<td>Road Favorite Dummy</td>
<td>0.1626*** (10.7627)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Regression results are presented for the Sportsbook.com betting data for the 2006–07 NFL Season. The dependent variable is % of the dollars bet on the favorite. The independent variables include an intercept, the pointspread (positive value for favorite), and a dummy variable if the favorite was the road team. For each independent variable, the coefficient and accompanying t-statistic is shown. The results are shown for the sample as a whole, the sample of home favorites, and for the sample of road favorites.

* - notation denotes significance of a t-test that the coefficient is different from zero. * is significant at 10%, ** is significant at 5%, and *** is significant at 1%.


Table 1 shows the regression results from Paul’s study using actual betting percentages from sportsbook.com. The regression formulas for home favorites and road favorites are critical to understanding how the sportsbook typically operates for a regular season NFL game. It seems likely that since sportsbooks typically accept over 70% of the action on road favorites, betting home underdogs has value. This is the exact bet that has been studied by many researchers in the past because it has been profitable for many seasons. However, betting every road favorite is
unlikely to bring the highest possible return. It is entirely possible that in some road favorite situations, the sportsbook sets the mark at the point where their computers and experts agree is the correct handicap. In this case, approximately 70% of the public will side with the road favorite as is illustrated in the Levitt study, but in the long term the win percentage for a bettor in this situation will be 50% (losing money). This could also be the case for home favorites; if the sportsbook is setting some lines exactly where they should be, we are essentially betting 11 to win 10 on the flip of a coin. We can’t take it on faith that just because a sportsbook has a lopsided bet percentage that we should go against the public and side with the sportsbook. Instead, we must look at it from the sportsbook perspective and make inferences based upon what we see happen during the betting week.

We know what range of betting percentages sportsbooks will typically accept for a given game based upon the regression model. It makes sense then that if a sportsbook makes a deliberate effort to stray from this range, there is value on one side or the other depending on which way the sportsbook strays. This situation should be decidedly profitable and, more importantly, it should always be profitable (as long as the sportsbook is winning). When the sportsbook strays from normal behavior, there must be a reason and that reason should tell us the sportsbook knows something that the betting public doesn’t. Interestingly, the reason itself doesn’t actually matter to us. The only thing that matters is that if we see a sportsbook make a deliberate effort to stray from the normal betting percentage, we can ride the coattails of the experts in Las Vegas and beat them at their own game. The key word to remember is deliberate; sometimes there will be an outlier in the data which is simply noise rather than a signal. Developing an understanding of which situations may be noise and which are a signal will be crucial to establishing long term profitability.
The idea is astoundingly simple. It follows the old saying “if you can’t beat them, join them”. We know that developing a better simulator than Las Vegas is next to impossible and the feat has only been done by a select few. Instead, we should let Las Vegas do the handicapping for us and only bet when they are giving us value. One concern will certainly pertain to how many games we can expect to see value. This is something that may only be answered through data, though theoretically it shouldn’t be more than half of the games since we are looking for outliers. The most important concern about this strategy is determining when a sportsbook is making a deliberate effort to stray from the norm. In order to do this, we should view the relationship between the bet percentage and the point spread as our market. In an efficient market, the bet percentage should be relatively close to the regression model produced in Paul’s study. If the bet percentage is too high on the favorite, the sportsbook should increase the point spread in order to move the bet percentage closer to the norm and increase efficiency. If this doesn’t happen, or if the point spread moves in the wrong direction and further decreases efficiency, there should be value betting against the public. Obviously, a measure such as “too high” is an arbitrary figure but with experience, it will become less arbitrary.

So how exactly do we identify when the sportsbook is making a deliberate effort? There are two main cases which make sense theoretically and which should be relatively easy to spot with some experience. The first situation is reverse line movement, which is when the line (point spread) moves in the opposite direction from what would increase efficiency. This is not a new idea and many online handicapping sites have tried to use this strategy. If a home favorite has 74% of public bets and the line is currently at -4, it would make sense that the bookmaker increases the line, maybe up to -5 or -6, in order to bring the bet percentage down closer to the regression model. Thus, if a sportsbook lowers the line to -3, this is very likely a deliberate
effort to have more than the usual amount of action on the home favorite. In this case, we should be very confident that the sportsbook is shading against the road favorite and there is great value in betting on the underdog. The reason we can be so confident that this reverse line movement is a signal of value is because there is no logical reason a sportsbook would do this in an efficient market. The only viable reason for this reverse movement is that the sportsbook wants to have more than the normal amount of action on a particular team, thereby taking a position on the other team since they stand to lose money if the public favorite covers. If we believe this to be true, it would be ludicrous not to take advantage of the information.

The second situation that may arise in a betting week to signal value is what we can call a lack of line movement in order to increase efficiency. Let’s assume that on Monday, the bet percentage is hovering around 70% for a 5 point home favorite. By Friday, the bet percentage has slowly risen to 80% and the sportsbook has chosen not to move the line. This would be an example of a lack of line movement. With a 5 point spread on a home favorite, the bet percentage implied by efficiency would be in the ballpark of 58-59% (with some small variance). If a sportsbook appears to be happy with a bet percentage over 70% for the majority of the betting week, it would be reasonable to assume the casino wants more than the normal amount of action on the home favorite. However, this situation is where we must be very careful about our observations. If the bet percentage was 80% on Monday and decreases to 70% by Friday, this may not be a deliberate effort to stray from the norm. Rather, it would be reasonable for the sportsbook to assume the bet percentage will continue to drop in the next two days and wind up close to the level implied by efficiency. We need to remember that the regression model has some unknown variance in the data which we may be able to estimate through experience.
An important note to make about these two systems is that certain point spreads are more meaningful than others. Figure 4 shows the score differential tallies for all 256 games played in each of the previous three NFL seasons. It appears that the data is consistent from year to year and running chi-squared tests supports the eye test at a significance level of .01.

Figure 4. Bar graph showing distribution of Tallies for each Score Differential by Percent of Games.

Approximately 13.9% and 10.2% of games finish with score differentials of three and seven respectively, which should not be surprising due to the scoring system in football. The surprising takeaway from this graph is that 1 in every 5 football games are decided by three touchdowns or more. It is rare for point spreads to be set above 20 even though an average of three games per week will be decided by three touchdowns or more.

For the betting world, this graph is fundamental to determining the most important point spreads. If a bookmaker moves the line from -4 to -3, the percentage of the time the favorite will cover/push increases more than when the bookmaker moves the line from -5 to -4. Generally speaking, line movements around three and seven points are more important than any other line.
movements because the chance of a team covering a particular line is changing more than usual. If reverse line movement or a lack of line movement occur around three or seven point spreads, the likelihood of the action being a *deliberate* effort from the bookmaker is high.

**METHODOLOGY & RESULTS**

While the theory can be confusing at first, it is quite simple in practice. The most difficult part of the experiment was locating the correct data. Fortunately, vegasinsiders.com had the necessary information in order to compare the bet percentage movement to the point spread movement throughout the entire betting week. Unfortunately, full season data was only available for the 2013-14 season and vegasinsiders.com is the only site that lists bet percentage info for the entire week so the test pool was limited. However, out of the 256 games played during the 2013-2014 season, 72 games (28.1%) were found to have enough deliberate action to analyze. These were games that appeared to have a *deliberate* action by the sportsbooks in order to stray from normal behavior and increase sportsbook profits. Additionally, the 72 picks were all ranked with a confidence level of 3, 4, or 5. A confidence level of 3 meant that the pick was not very strong, but there was some small effort to decrease efficiency which makes it look like the game has value. A confidence level of 4 meant that the pick almost certainly had value but it was unclear exactly how much because the public bet percentage was difficult to understand. A confidence level of 5 meant that the pick had a tremendous amount of value due to either a severe amount of reverse movement or a severe lack of movement. For a matter of completeness, notes were taken on every game mentioning why the game fit or didn’t fit the criteria.
Table 2

*Win Rates by Confidence Level for Home and Away Games*

<table>
<thead>
<tr>
<th>Confidence Level</th>
<th>All Games</th>
<th>Home Games</th>
<th>Away Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>15-15-1</td>
<td>14-12-1</td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>(50.0%)</td>
<td>(53.8%)</td>
<td>(25.0%)</td>
</tr>
<tr>
<td>4</td>
<td>17-5-1</td>
<td>11-4-1</td>
<td>6-1</td>
</tr>
<tr>
<td></td>
<td>(77.3%)</td>
<td>(73.3%)</td>
<td>(85.7%)</td>
</tr>
<tr>
<td>5</td>
<td>10-8</td>
<td>6-6</td>
<td>4-2</td>
</tr>
<tr>
<td></td>
<td>(55.5%)</td>
<td>(50.0%)</td>
<td>(66.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>42-28-2</td>
<td>31-22-2</td>
<td>11-6</td>
</tr>
<tr>
<td></td>
<td>(60.0%)</td>
<td>(58.5%)</td>
<td>(64.7%)</td>
</tr>
</tbody>
</table>

Of the 72 games, the theory correctly predicted the winner in 42 games while pushing (tying) in two games, which equates to a win rate of 60%. This is an outstanding win rate, albeit for a small sample. An analysis of the win rate by confidence level produces a promising outlook for future years. Win rates for both a confidence of 4 and 5 yielded profitable results; interestingly, a confidence level of 3 resulted in a win rate of 50% over 31 games which is below the break-even threshold. Still, the overall win rate rejects the null hypothesis of a fair bet (p=50%) at the 5% level and it rejects the null hypothesis of a profitable bet (p=52.38%) at the 10% level. Undoubtedly, these significance levels have potential to improve as the sample size increases so this is definitely a strong start. Another important piece of analysis is the win rate for each of the two strategies. The lack of movement strategy yielded a record of 17-7 for a win rate of 70.8%, much larger than a typical gambler can achieve long-term which demonstrates terrific potential. The reverse movement strategy resulted in a record of 25-21-2 for a win rate of 54.3%, well below the other strategy but still above the break-even mark. All of these metrics are important to analyze if we are to make progress in future years. However, it is important to emphasize that these win rates come with a very small sample size; a single year worth of data is not enough information to reach any concrete conclusions.
LIMITATIONS & CONCLUSION

The current research regarding profitable sports betting strategies is not working. The reason for this is that we are looking at the wrong set of data. Instead of looking backwards for previous trends that have been profitable in recent years but have no justifiable reason to continue into future years, we should be looking forward by analyzing the behavior of sportsbooks. We can safely assume that sportsbooks are better at predicting the outcome of a given NFL game due to the amount of resources and experience sportsbooks possess; additionally, we can assume that sportsbooks understand incorrect public sentiment about overrated or underrated teams on a weekly basis. Because of these two assumptions, it appears likely that sportsbooks are able to shade lines against publicly favored teams (oftentimes favorites) in order to increase profits above the risk-free rate. The reason we are now able to look forward is because of the groundbreaking research of Steven Levitt and Rodney Paul. Both were able to gain unprecedented access to information which is now relatively commonplace, that is, the percentage of bets on each team at a particular sportsbook. This information became publicly available only about a decade ago but it is time we begin using this information to our competitive advantage.

The most promising part about the new theory presented is that our win rate should improve as time progresses. This is because we can use a Bayesian approach to correcting our mistakes by making appropriate changes to the theory as our experience grows. As long as our conjectures make sense theoretically, we are moving in the right direction. Previous research strategies have done little more than point out recent trends with the hopes they will continue in future years. Furthermore, publishing such research is often a self-destructive action since sportsbooks are able to adjust for simple arbitrage strategies that anyone can use. On the other
hand, there are two reasons Rodney Paul cites that explain why more complex arbitrage strategies, like the new theory presented, can persist indefinitely. The first reason is that most gamblers have bankroll limitations which don’t allow for bets large enough to upset any efficient market. For those few gamblers that have a seemingly unlimited bankroll, the second reason arbitrage can be sustained is due to the prerogative of a sportsbook to accept a bet. Sportsbooks have the option to deny or place a limit on the size of a bet, thus eliminating any potential issues. Since most people can’t afford to bet enough to upset the balance and those that can afford to bet enough are limited by sportsbooks, bet percentages should always reflect the view of the public consensus rather than the view of a few disproportionately large individual bets (Paul & Weinbach, 2007, p. 216).

There were limitations to this study that were primarily caused by a lack of available information. Only one season was available to be examined due to the fact that most handicapping websites do not archive the relationship between point spread and bet percentage throughout each betting week. Also, remaining objective while examining each game’s betting week is difficult to do for an entire season. It is possible that definitions of what constitutes a confidence level of 3 vs. a confidence level of 4 changed between week 1 and week 17. This could potentially skew results between different parts of the season. Another limitation, albeit a relatively minor one, is that the information available regarded the percentage of bets on each team rather than the percentage of dollars. Bets can vary greatly in size which may distort the betting percentages we see compared to the actual action taken in by a sportsbook. Our inability to observe the size of bets may also distort results, though it may be reasonable to assume that on average, the percentage of bets will correlate well with the percentage of dollars wagered.
While a win rate of 60% shows outstanding potential for this new theory, it may be a bit naïve to assume such a win rate can continue long-term. Optimistically, a win rate between 55-60% long-term is what we should strive for in order for this to be considered a great success.

Fortunately, this win rate should have less variance year to year compared to strategies such as betting every home underdog. This is because we are placing trust in the hands of the best experts in the world to consistently beat the average bettor at predicting the outcome of football games. We are combining the art of understanding sportsbook behavior with the science of following sportsbook predictions to gain an advantage on the betting public. The science is easy to explain; it is the art that requires experience to master. As our experience grows, similar methods could potentially be applied to other types of bets, most notably the over/under bet, or even other sports such as college football or the NBA. It is the simple sophistication of this theory that allows for ongoing improvements according to past performance. The era of big data has made it more difficult to decipher signal from noise. “There are so many hypotheses to test, so many data sets to mine – but a relatively constant amount of objective truth (Silver, 2012, p. 13).” Hopefully, this new strategy can change the direction of future research and move us closer to attaining objective truth.
References


