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A COMPARATIVE ANALYSIS OF HANDICAPPER AND STATISTICAL MODEL SPORTS
GAMBLING RETURNS

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Abstract

This thesis tracks game picks from two sports gambling services. The first is a model from Sportsinsights.com, which predicts the winner of an athletic event using statistical and economic concepts. The second is a group of handicappers from Sportsline.com, who use an individual pundit's intuition and expertise in a particular sport to make their picks. The purpose of this thesis is to determine which type of these services, models or handicappers, offers more profitable picks for potential subscribers. This thesis' research analyzes picks on games in the NFL, NCAA Men's Basketball, and NCAA Football. The results are conflicting. Handicappers produced more accurate and profitable picks in NFL games with a 12.68 percent return, compared to a 8.98 percent model return. However, the model outperformed the handicappers in both NCAA Men's Basketball and Football with returns of -9.85 percent versus -13.35 percent and 2.38 to -12.45 percent respectively. If each service's picks are considered a portfolio, then the research has determined a model's picks, made through statistical analysis, is superior to a handicapper's pick, made by his individual expertise. However, the varying degrees of profitability and inconsistency in success of these professional sites suggest that sports gambling can be a difficult and unreliable profit platform.

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I. Introduction

Sportsbook gambling is an enormous industry. As of 2015, four billion dollars are wagered annually in Las Vegas on athletic events, and, when accounting for estimated illegal gambling activity, the total value of the sports gambling marketplace has been estimated to be as high as 380 billion dollars (Hobson, 2015). That figure would make sports gambling larger than the United State's entire entertainment industry at 340 billion dollars (Bureau of Economic Analysis). The transactions in the sports gambling market are on wagers. Wagers can be on a number of different aspects of a game including the winning team, the point differential between the two teams, the number of points scored, and others. With so much cash flowing through that market, one has to wonder how the participants make their gambles. To aid the choices the participants make, there are two main services designed to enhance the accuracies of the gamblers' picks. The first is individual experts, also known as "handicappers" who make picks based off of their personal experience and intuition. These individuals are typically well-engrained in the sports world and sell their picks for a subscription fee, typically on a per month basis. Secondly, there are statistical models, which use a number of different variables, statistical principles, and economic concepts to predict the outcome. These models are typically found online, and also charge a subscription fee. The topic of this paper will attempt to answer which service offers a higher potential return for their subscribers.

This research has been completed using real-time picks from CBS Sports' handicappers and a popular statistical model on SportsInsights.com between September 1, 2017 and January 15, 2018. These picks are used because of the reputations of their providers. Because of the size and influence of CBS in the media and sports world, the legitimacy of their analysts picks has not been called into question. The data from *SportsInsights.com* has been used in a number

studies, including some mentioned in this paper such as Paul and Weinbach (2011). By tracking the picks from both handicappers and models, a “portfolio” of picks has been created. The accuracy and profitability of this portfolio has been measured, and from these figures one can hope to conclude which service is more profitable.

This thesis will be structured as follows. First, a literature review lays the groundwork for this thesis’ research by reviewing already published papers relevant to the topic. Next, the methodology for collecting and analyzing this paper’s data is outlined. Following the methodology is a detailed summary of the results from the research, including an analysis of where it aligns with and differs from already-completed research. Lastly, a conclusions section will offer closing thoughts as well as suggestions for future research in this area.

II. Literature Review

The literature review that follows covers published papers regarding the following topics: the efficiency of the sports gambling markets, the accuracy of handicappers in predicting the outcome of sports games, the accuracy of statistical models in predicting the outcomes of sports games, and how the accuracy of models and experts fair against each other when compared. It is necessary to have a base knowledge of these subjects before analyzing the research of the thesis. This section highlights each of the topics in the order they are listed above.

A. Market Efficiency

Before detailing research covering the accuracy of handicappers and models, it is essential to discuss the efficiency of the betting lines set by the sportsbooks in Las Vegas. This is a pertinent subject because, as in financial markets, the more efficient the market, the fewer profitable opportunities there are for market participants. Market efficiency in sports gambling is often defined as how accurate the preset lines are relative to the outcome of the game. These lines are initially set by the bookmaker in Las Vegas. However, he may adjust his lines if the gamblers' bets begin to overexpose his position. Therefore, although the bookmaker sets the initial line, the collective judgement of the gamblers determines its final position. In this way, the aggregate of gamblers' opinions can be thought of as the predictor of the game's outcome, much like how financial market participants' opinions determine the prices for financial instruments. The main points of contention among researchers in sports gambling market efficiency are if, when, and how gamblers are able to profit.

Researchers have uncovered different results across different sports. Before analyzing the literature, it is important to first understand how researchers test efficiency. Early research uses a formula built by Gander, et al. (1988):

$$\text{Score} = \alpha_0 + \beta_0 \text{Line} + \varepsilon_1$$

Where “Score” is the final point differential between the winning and losing team at the conclusion of a game, “Line” is the final spread determined by the sportsbook and collective judgement of gamblers, and ε_1 is the error term. The null hypothesis of market efficiency would therefore require that $\alpha_0 = 0$ and $\beta_0 = 1$ so that the spread predicted by the sportsbook equals the actual outcome of a game. As mentioned before, “Line” is initially set by the bookmaker, but is ultimately determined by the direction of the game’s wagers. This formula tests market efficiency by signifying differences between the lines and outcomes of a game, and therefore also signifies opportunities for profit.

Paul and Weinbach (2005) tested the efficiency of the NBA betting market. Using the formula above, they defined market efficiency as the difference between the spread and the actual outcome of the game. $\alpha_0 = 0$ and $\beta_0 = 1$ suggests that a gamble on an NBA game is both a fair bet and not profitable, and the researchers used these as their null hypotheses. A bet is considered “fair” if the expected payoff from the gamble is 0. In order for wagers to be profitable, bettors must take into account the bookmaker’s commission. Paul and Weinbach (2005) used a \$10 commission per \$100 bet as a base for calculating how often a gambler must be right to profit. This calculation can be seen below, where the expected return of a wager is calculated with “p” being probability the gambler’s pick is correct.

$$p(100) - (1 - p)(110) = 0$$

$$100p = 110 - 110p$$

$$p = .5238$$

The first term indicates the winning payoff and the second indicates a losing one. As indicated by the calculation, there is a minimum accuracy rating of 52.4 percent for profitability.

With these figures and concepts in mind, the researchers tested a number of different betting strategies and were able to reject one of two null hypotheses. They found that for games with a favorite of 12.5 points or more, underdogs won more than 50 percent of the time, but not more than 52.4 percent of the time. Meaning, betting against favorites of 12.5 points or more was not a fair bet, but was also not profitable. The researchers also found that, after breaking their sample down into home and away underdogs, betting against *away* favorites (betting on home underdogs) of 12.5 points or more rejected both the fair bet and not profitable hypotheses, meaning home underdogs win more than 52.4 percent of the time in the NBA. This finding suggests there are instances of inefficiency in the sports gambling market, and therefore an ability to profit.

Paul and Weinbach (2005) continued this research by studying college basketball as well. They found a similar result as they did in NBA basketball of rejecting the null of a fair bet, but were unable to find a profitable strategy. The finding of no profitability is of particular importance to this paper because if gambling markets are efficient enough to prevent profitable strategies, then subscribing to a handicapper or statistical model to find profitable betting opportunities is pointless. Paul and Weinbach's continuation of research also added to their original finding by re-identifying a bettor bias towards favorites.

Andersson, et al. (2005) tested how critical information is in a person's ability to predict the outcome of soccer games using the 2002 World Cup. The researchers created an "expert" group of known sports pundits and "non-experts" of average people. For the "non-experts" they further broke down the group by providing some with information about the teams playing such

as important statistics, injuries, etc., and provided no information to the other group. They conducted a number of tests which ranged from comparing the accuracy of the experts and non-experts groups to testing the predictions against random chance. They found that the experts did not outperform the non-experts in predicting the winners of games. In addition, despite ignorance, the group with information did not out-perform the uninformed individuals. A finding such as this would suggest that subscribing to a handicapper for more accurate picks is a fool's errand. However, when testing both experts and non-experts against random predictions, both groups succeeded in selecting more correct winners than random selection would.

Each of the previous pieces of research view gambling market efficiency through a similar lens as financial market efficiency. In contrast, Levitt (2004) studies sports gambling market lines not as a prediction of the outcome of a game, but as a number set intended to take advantage of average gamblers. He posits that if gambling markets were to operate as financial markets do, then bookmakers would operate as market-makers do by bringing together buyers and sellers with similar price points. This essentially makes the bookmaker a middle man who takes a sum off the top of the transaction as a service fee. If this were the case, the bookmaker would set a line that would encourage either the amount of money or number of bets on either side to be equal, excluding his commission. However, after analyzing a number of wagers on NFL games, Levitt found that the number of bets and amount of money on any given game in his data set were extremely one-sided, with two-thirds of the amount of money wagered falling to one side. This finding leads Levitt to conclude that bookmakers systematically move lines and spreads to abuse bettor biases in favor of the sportsbook. This finding would essentially nullify the idea that gambling markets are efficient in the same way financial markets are considered efficient. In this way, sports gambling would be a rigged game in favor of the house, like most

casino games. Paul and Weinbach (2011) defended Levitt's finding in their analysis of NFL games by identifying large differences in the amount of money bet on particular team.

B. Handicapper Literature

Levitt (2004) used wagers on NFL football games to determine the ability of a handicapper to outperform the sportsbook, and concluded that there is no statistically significant evidence to suggest handicappers can do this consistently. Fox and Mayer (2007) compared the predictions from sports gambling advisory companies against the actual score of the game. These advisory companies employed a team of handicappers to make game picks for subscribers. The researchers found that none of the firms they reviewed were correct at the minimal 52.4 percent of the time, indicating that their services were not a profitable investment for their clients.

C. Statistical Model Literature

Statistical modeling is a common practice in sportsbook gambling. There are a number of firms, mainly online, that specialize in predicting the outcomes of sporting events using a particular set of variables ran through a model or algorithm. Due to the private nature of the gambling industry, the details of the models' functionality is secretive. Nonetheless, several academics and other researchers have analyzed several models' predictive accuracy, and therefore the potential returns it offers to clients.

Some academics developed their own models after studying sports gambling. Clarke, et. al., (2008) use the inaccuracy of average handicappers in developing a number of models that they found to have consistently profited in rugby, cricket, and soccer. Langseth (2013) tested a collection of models which attempted to predict the outcomes of Barclay's Premier League soccer games and found that some models were able to produce profit-yielding predictions.

However, Langseth qualifies this finding by indicating that much of the money that would be won would be from two “freak results” without which would have led to a substantial loss.

D. Comparing Handicappers and Models

As mentioned earlier, Andersson et al., (2005) researched the ability of individuals, including sports experts, to predict the game outcomes of the 2002 World Cup. They found that the individuals were better able to predict the winners than a random guess would, but indicated that a simple strategy of following the world rankings would yield an even higher accuracy. The researchers note that the international soccer rankings are finalized through a computer model, which may fall into the same category of the models this paper attempts to review. Therefore, Andersson, et al., may have found that models are more effective than experts at predicting the outcome of sporting events.

Song, et al., (2007) found that neither handicappers nor statistical models could predict the outcomes of games enough for a subscriber to profit, and were outperformed by the lines set by Las Vegas sportsbooks. Spann and Skiera (2009) produced research that added to that finding. They compared the handicappers and models in the German premier soccer league and concluded that statistical models, although unable to profit consistently, outperform handicappers.

E. Literature Review Conclusions

In summary, literature suggests that there are instances of market inefficiency as indicated by profitable opportunities. However, these opportunities often exist under very strict parameters, and that neither service is certain to give subscribers profitable picks, but does indicate that there may be an advantage to using models over experts. These points are critical to keep in mind when evaluating the research of this thesis.

It is also important to note the debate surrounding gambling market efficiency. If casinos systematically rig lines, and these lines are not an accurate prediction of a game, then figuring out how to profit from sports gambling is not a matter of finding market inefficiencies, but is one of finding sportsbook vulnerabilities.

III. Description of Data and Research Methodology

A. Data Characteristics

The thesis' research compares hypothetical wagers from handicappers and from a statistical model. The wagers are on games in the National Football League (NFL), College Football (NCAAF), and College Basketball (NCAAM) spanning from September 1, 2017 to January 14, 2017. The three sports were selected because of their reference in academic papers discussed in the literature review section, as well as their overall prominence in sports gambling. The time window was chosen to cover the heart of the football seasons, as well as the beginning part of the college basketball season. In addition, one of the goals of this research is to expand the data traditionally used in academic literature reviewing gambling. Often, papers are written on a singular sport or on racing. When trying to determine if handicapper or model services are better, it is important to get a holistic picture of the service's ability to accurately predict the outcomes of games across different sports.

B. Handicapper Data

The handicapper data comes from *Sportsline.com*. Sportsline is an affiliate of CBS Sports and archives game picks from several sports experts and professional handicappers. Given the reputation and size of CBS as not only a sports organization, but also as a news organization, it is reasonable to say the analysts they employ are knowledgeable in their fields. It should be noted, however, that these picks are free, which does not fully represent the services handicappers offer. Most professional handicappers charge a monthly fee, which can range upwards of \$500. Because of the monetary constraints associated with the thesis, obtaining picks directly from a professional handicapper was not possible. Sportsline.com's picks serve as an alternative that includes the expertise of a professional handicapper, without the cost.

Because this thesis' research analyzes three different sports, three different handicapper picks were reviewed. A different handicapper for each sport is used because the site lists specific handicappers as superior in specific sports. Each of the handicappers highlighted in the research was the number one handicapper for their respective sport as of December 1, 2017, as listed by Sportsline.com. R.J. White's picks are studied for NFL games, (White is CBS' preeminent NFL handicapper), Micah Roberts for NCAA Men's Basketball, and Kenny White for NCAA Football.

C. Model Data

The statistical model data is pulled from SportsInsights.com. This site offers "betting systems developed by a team of economists and financial experts to identify measurably mispriced games. Sportsbooks leave money on the table every day as they look to offset risk." Their systems deliberately prey upon gambling market inefficiency by incorporating past data and real time information into their models. The site has been utilized in past academic research including Paul and Weinbach (2011) and Moskowitz (2015). Given its past use in academia, the sites' models are considered legitimate for the purposes of this paper.

There is an inherent difference in how the data is presented on each site. CBS sports does not pair its picks with a money line as SportsInsights does. CBS not including a money line with their experts picks causes some concern as the money line determines the potential cash flows for a bet. To ameliorate this, a dummy money line acts as a substitute. This dummy money line is searched using ESPN Insider, which offers real time graphs tracking money line movements. Because White selects a specific spread he finds most advantageous from a gambling perspective, the money line at that time can be found using ESPN's tool by searching when White's spread existed. It is important to note that White is not the one picking the money line.

Although “shopping” for money lines can be a part of skilled gambling, CBS does not intend its picks to be gambling advice primarily, and so its analysts do not look for the optimal line. This may take away from the true skill of the handicapper portfolio, but the monetary constraints not allowing a subscription to a true handicapper made finding handicappers with a money line difficult. In addition, SportsInsights.com also does not give a money line, but simply states the return the bet would make. A money line can be calculated as their returns are based off a \$100 bet, but that is an unnecessary step for the purposes of this paper.

D. Research Methodology

The bets compared between SportsInsights.com’s model and the handicappers of Sportsline.com are only against the spread, as opposed to money-line and over/under bets. This narrowing of the data is done to yield a more specific result. Money-line and over/under bets require a different type of analysis in making a pick. In addition, spread bets can often be more challenging to make because it requires the bettor to be able to estimate the margin by which a team will lose, rather than if the team will simply win or not, or simply knowing whether the accumulation of points will reach a certain point. Further details about each type of bet can be found in Appendix A.

The picks are also only on full games. Some gamblers bet on specific halves, quarters, etc., but these types of bets are ignored to maintain homogeneity within the data.

As it relates to calculating returns, it is important to note that the model and the handicappers both self-report returns. However, due to some limitations with the specifics of the returns, the money-lines for both the handicappers’ and the model’s bets are standardized to -110. A -110 line yields a \$90.91 profit for a winning wager and a \$100 loss for a losing one. By doing this, the profitability from purely picking spread, as opposed to picking advantageous

money-lines as well, can be more accurately compared between the two groups. Also, gambling advisory services charge fees. In the research, fifty dollar per month is deducted from the returns in order to mimic the subscription fee.

IV. Summary of Findings

The following tables highlight the profitability of the handicappers' and the model's portfolio of picks across their NFL, NCAA Football, and NCAA Men's Basketball game selections. Each service has the profitability of its picks detailed in two tables. The left table highlights the money that would have been won with a hundred dollar bet on each pick and a hypothetical fifty dollars per month subscription fee. The table on the right details the accuracy of the handicapper's or model's picks. This was done by calculating the number of games picked correctly divided by the total number of games. The tables are listed by sport, starting with the NFL, followed by NCAA Men's basketball, and finishing with NCAA Football. In addition, a graph visually demonstrating each service's cumulative earnings over time is included. This graph offers key insights into certain profitability trends.

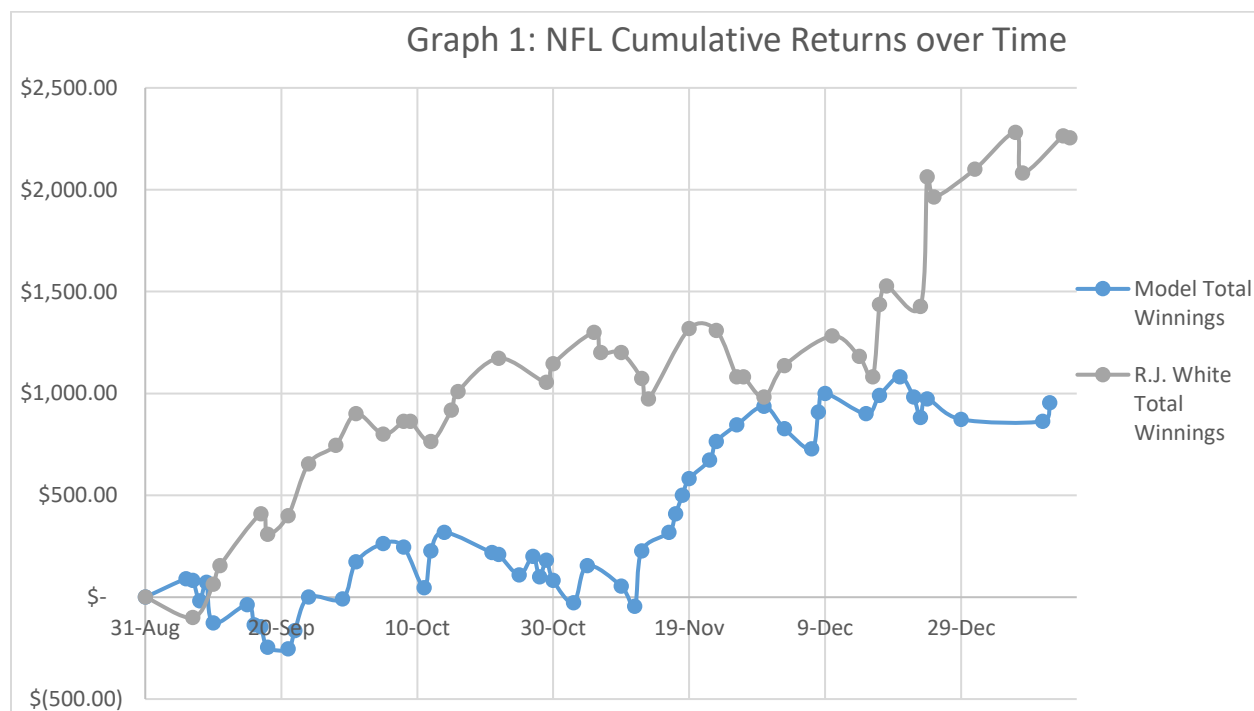
A. NFL

<u>Table 1: NFL - SportsInsider Model Statistics</u>			
		Number of Pushes	0
Money Won	\$954.59	Number of Games Picked Incorrectly	35
Fee	\$(200.00)	Number of Games Picked Correctly	49
Money Wagered	8400	Total Number of Games	84
Return	8.98%	Accuracy	58.33%
		Inaccuracy	41.67%

<u>Table 2: NFL - R.J. White Statistics</u>			
		Number of Pushes	7
Money Won	\$2,254.63	Number of Games Picked Incorrectly	62
Fee	\$(200.00)	Number of Games Picked Correctly	93
Money Wagered	\$16,200.00	Total Number of Games	162
Return	12.68%	Accuracy	57.41%
		Inaccuracy	38.27%

For NFL games, R.J. White from Sportsline.com outperformed the model from SportsInsights.com by 3.7 percent. This finding is solidified by the fact that White made picks on nearly double the amount of games than the model did, meaning that there is more certainty behind White's higher return than the model's lesser return.

A point of interest is the lopsided nature of the accuracies. When compared, Tables One and Two demonstrate that although White has a more profitable portfolio of picks, but the number of games he picked correctly relative to the total number of picks is lower than the model's portfolio. This seemingly contradictory finding is the result of seven pushes in White's picks, relative to zero pushes in the model's portfolio. Meaning, although White's pushes would result in a less accurate overall performance, White did not lose any money on those picks because pushes result in the refund of wagers. This anomaly is recorded in the "Inaccuracy" cell, as White recorded an inaccuracy of thirty-eight percent while the model recorded an inaccuracy of about forty-two percent.



Graph One accounts for each service's cumulative winnings over the data period. As evidenced by the data tables, R.J. White's picks finish at a higher return than the model's picks. However, this magnitude of disparity is most evident starting in early December, toward the end of the NFL season. This finding may suggest that R.J. White is superior to the model in analyzing information from games earlier season and incorporating that information into his future picks. In this case, one would expect White's return to further distance itself from the model's return as time goes on.

B. NCAA Men's Basketball

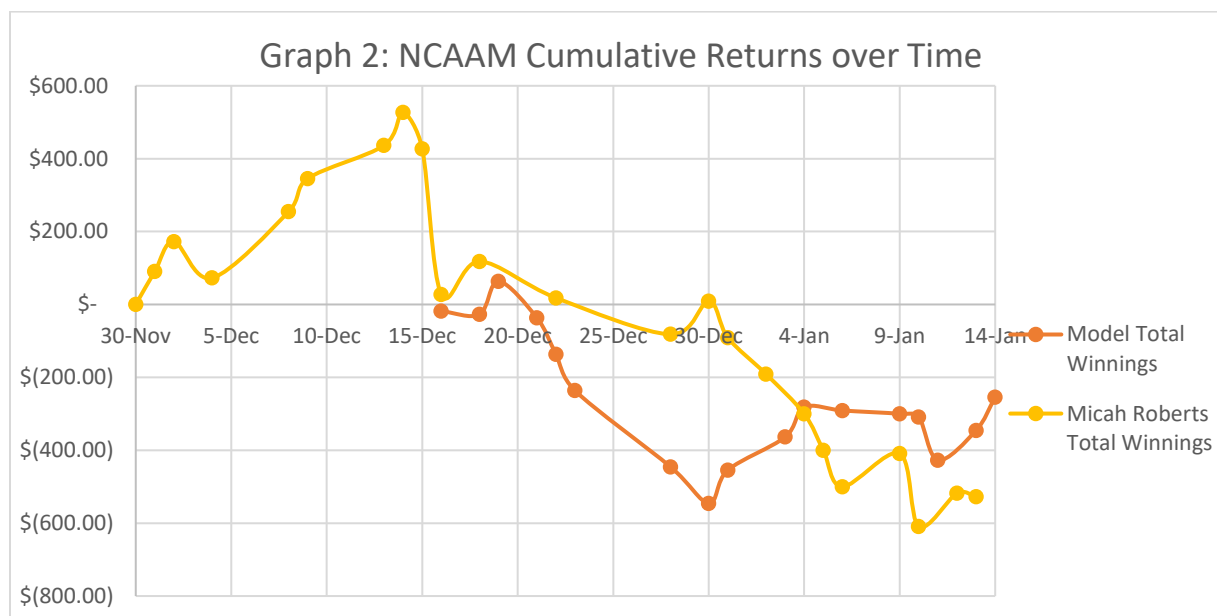
		Pushes	1
Money Won	\$(254.53)	Number of Games Picked Incorrectly	18
Fee	\$(100.00)	Number of Games Picked Correctly	17
Money Wagered	\$3,600.00	Total Number of Games	36
Return	-9.85%	Accuracy	47.22%
		Inaccuracy	50.00%

		Pushes	0
Money Won	\$(527.26)	Games Picked Incorrectly	18
Fee	\$100.00	Games Picked Correctly	14
Money Wagered	\$3,200.00	Total Number of Games	32
Return	-13.35%	Accuracy	43.75%
		Inaccuracy	56.25%

As noted in Tables Three and Four, both the model and handicapper did not earn a profit from their NCCA Men's Basketball picks. The model, however, does appear to be slightly more accurate than the handicapper. This result has similarities to past research. As mentioned in the

Literature Review section, Paul and Weinbach (2008) did not find a profitable betting strategy for college basketball.

This result is of potential interest to gamblers as neither a professional sports analyst nor a sophisticated statistical model were able to forecast the outcomes of games at a profitable level. Although it is a very popular sport in Las Vegas, this research suggests that college basketball is a sport that gamblers may want to take caution in.



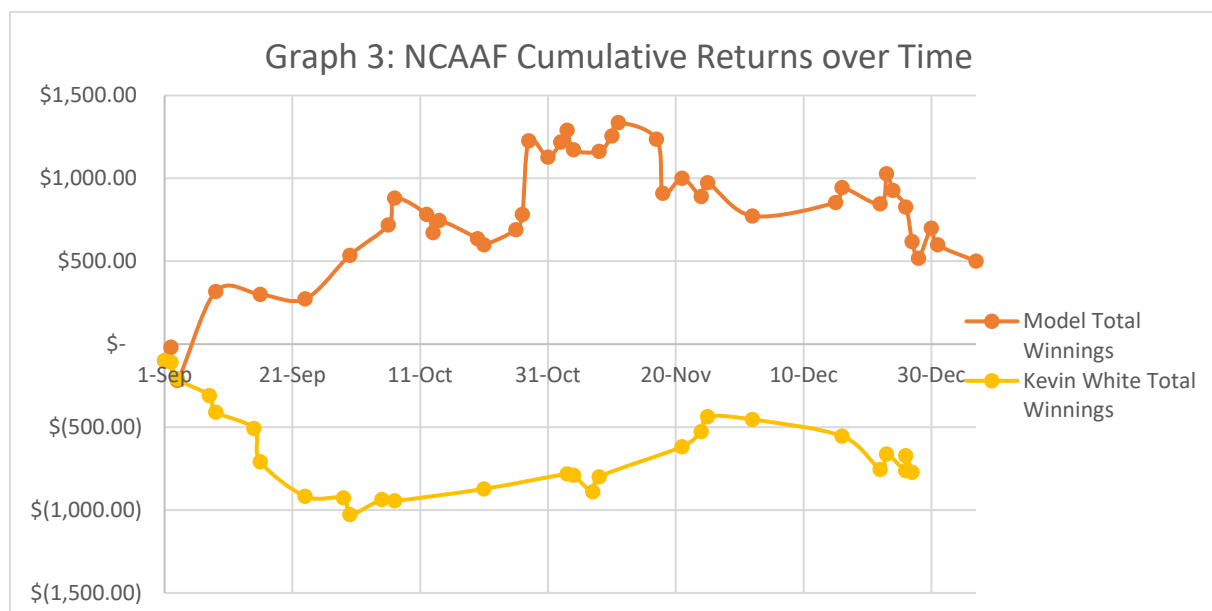
Graph Two is particularly interesting because it demonstrates Micah Robert's volatile return activity. During the beginning of data collection in NCAA Men's Basketball, Micah made picks which were yielding profits substantially higher than the model's picks. However, just a few days of bad choices depleted all of his gains. The model had nearly the opposite experience. After a series of loss-generating picks, the model regained some lost ground, although it never landed in the black. No other sport had returns as volatile as NCAA Men's basketball, which may be an indication to potential gamblers to be wary of this particular market.

C. NCAA Football

Money Won	\$500.06	Pushes	5
Fee	\$(200.00)	Number of Games Picked Incorrectly	55
Money Wagered	\$12,600.00	Number of Games Picked Correctly	66
Return	2.38%	Total Number of Games	126
		Accuracy	52.38%
		Inaccuracy	43.65%

Money Won	\$(772.71)	Pushes	2
Fee	\$200.00	Number of Games Picked Incorrectly	25
Money Wagered	\$4,600.00	Number of Games Picked Correctly	19
Return	-12.45%	Total Number of Games	46
		Accuracy	41.30%
		Inaccuracy	54.35%

As seen in Tables Five and Six, the college football picks yield the clearest result. The model outperformed Kevin White's picks by fourteen percent, the most significant margin found by the research.



The disparity of returns is most evident in the NCAA Football picks. As demonstrated by Graph three, at no point did Kevin White's picks generate a positive return, and only in the very beginning of data collection did the model yield a negative return. If White can be assumed to be representative of most NCAA Football handicappers, then potential gambling service subscribers should be wary of how effective an individual's expertise and intuition are at making picks in NCAA Football.

D. Summary Statistics

Table 7: Summary Statistics				
	Model Return	Handicapper Return	Model Return	Handicapper Return
NFL	8.98%	12.68%	\$ 754.59	\$ 2,054.63
NCCAM	-9.85%	-19.60%	\$ (354.53)	\$ (627.26)
NCAAF	2.38%	-21.15%	\$ 300.06	\$ (972.71)
Total			\$ 700.12	\$ 454.66

Table seven offers conclusions of the profitability of handicapper and model subscriptions from a portfolio perspective. This table details the amount of money that a subscriber would have won if he or she were to have placed a hundred dollar bet on each of the gambling service's picks.

Both services would have offered a positive monetary return, mainly due to their success on NFL picks. However, the model outperformed handicappers in both NCAA Men's basketball and football, and substantially so. Although both did not yield positive returns in Men's Basketball, the model picks would have only lost about half of the money handicapper's picks would have. In addition, the model had been able to yield a positive return in NCAA Football, albeit a small one. The model's success in the NFL and NCAA Football, as well as handicappers' lackluster performances in NCAA sports, led to its higher overall return.

V. Shortcomings and Conclusion

A. Research Shortcomings

The first concern of this research has to do with the time limitations of this thesis. Both types of services were able to profit in one sport, but whether they are to do this consistently over more than one season cannot be determined by the data in this thesis alone. Future research should track the returns of handicappers and models over a multi-season period of time. The time table of the research in this paper is limited to five months, which only covers a single season of the sports in question.

Next, due to monetary constraints, the picks analyzed in this paper were free and self-reported. Actual subscriptions, as mentioned previously, are very expensive, and can range into hundreds of dollars. The ideal study would subscribe to both a notable handicapper and an esteemed gambling model.

Another concern is that only three handicappers and one model have been analyzed. To get a holistic picture of both services' abilities, and to truly compare intuition versus statistics, a research study would have to subscribe to several prominent handicappers and models. Only through the law of large numbers would an accurate assessment of pick-making be made.

B. Research Conclusion and Final Thoughts

Similar to past literature on the same topic, the research in this paper yields a hazy conclusion comparing the abilities of handicappers and models to produce profitable picks for their subscribers. Each type of gambling service definitively outperformed the opposing service in at least one of the researched sports, with a third sport yielding a negative return for both services. This finding may indicate that certain gambling services are better at specific sports, or

that it is remarkably difficult to profit consistently in the gambling industry, reinforcing a common conclusion for research in this area.

The research in this thesis has always been concerned with comparing a handicapper's individual's expertise against a model's statistical sophistication. Each sport had a different result in determining which is superior. The inconclusiveness of the research in this thesis may potentially indicate two things. First, it may be indicative of the shortcomings of the data and research methodology of this thesis, which is discussed in the previous section, or the uncertainty of this research may suggest that there is an inherent unreliability in sports gambling services, or even sports gambling at-large. In either case, with the assumptions that the model and handicappers analyzed in this paper are representative of the talents of all models and handicappers, the original question of this thesis regarding which type of sports gambling service is more effective at producing returns is answered. According to the research in this paper, a gambler is better off subscribing to models than handicappers as most evidenced by the summary statistics table in the Summary of Findings chapter.

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Appendix A – General Gambling Terminology and Concepts

Sports wagers typically consist of one of three types of bets: the *money line*, the *spread*, and the *over/under*. This section breaks down each of these wagers as they are referenced later in the paper.

The *money line* is the simplest of the three types. It is a simple bet on which team is going to win the game. It consists of two dollar figures, one for the favored team and one for the underdog. For the favorite, the money line is the amount that must be bet in order to win \$100 and is associated with a “-”. The underdog’s money line is the amount that is won for a \$100 bet and is associated with a “+”. These bets can be divided into smaller amounts that are proportional to the original line. For instance, on Thursday November 9, 2017 the Arizona Cardinals played the Seattle Seahawks. Seattle was the favorite with a -250 money line. Arizona was the underdog with a +222 money line. Seattle won the game 22-16. In order to win \$100, a gambler would have to have wagered \$250 on Seattle. In order to have won \$10, the gambler would have had to bet \$25 on Seattle.

The *spread* is a bet based on the point differential in a game. The favorites and underdogs are still referenced with a “-” and “+”, respectively. In order to win a wager on the favorite, that team must win by more than the spread set by the sportsbook. In order to win a bet on the underdog, the underdog must win the game, or lose by less than the set spread. If the outcome of the game is exactly the spread, then bettors receive their money back. This is called a *push*. Returning to the previous example, Seattle was favored with a -6 line, and won the game 22-16. In this case, all spread bettors would have received their money back because the result was a *push* as Seattle won, but not by more than the spread.

The *over/under* is a bet on the amount of points scored in a game by both teams collectively. A bookmaker sets a figure that a bettor believes is more or less than the total points going to be scored. If the bettor believes that the figure is too low, he bets the over. If the bettor believes the figure to be too high, he bets the under. The over/under are typically associated with their own money lines. In the previous example, the over/under was 40, and the outcome was 22-16. $22+16=38$, so those gamblers who bet on the under, would have won their bets.

Appendix B – Returns by Pick

A. NFL - SI

Date	Pick and Spread	Result	Win/Loss	Winnings	Cumulative Winnings
11-Jan	ATL at PHI (+3)	(10-15)	Win	\$90.91	\$954.59
10-Jan	NO at MIN (-4)	24-29	Win	\$90.91	\$863.68
10-Jan	BUF at JAX (-8.5)	(3-10)	Loss	\$(100.00)	\$772.77
29-Dec	OAK (+7.5) at LAC	(10-30)	Loss	\$(100.00)	\$872.77
24-Dec	LAR at TEN (+6)	27-23	Win	\$90.91	\$972.77
23-Dec	CLE (+6.5) at CHI	(3-20)	Loss	\$(100.00)	\$881.86
22-Dec	PIT at HOU (+9)	34-6	Loss	\$(100.00)	\$981.86
20-Dec	DET at CIN (+4.5)	17-26	Win	\$90.91	\$1,081.86
17-Dec	LAR (+1) at SEA	42-7	Win	\$90.91	\$990.95
15-Dec	CHI (+5) at DET	(10-20)	Loss	\$(100.00)	\$900.04
9-Dec	MIN at CAR (+3)	24-31	Win	\$90.91	\$1,000.04
8-Dec	TEN at ARI (+3)	(7-12)	Win	\$90.91	\$909.13
8-Dec	PHI (+2) at LAR	43-35	Win	\$90.91	\$818.22
7-Dec	DAL at NYG (+4)	30-10	Loss	\$(100.00)	\$727.31
3-Dec	PHI at SEA (+3.5)	(10-24)	Win	\$90.91	\$827.31
3-Dec	LAR at ARI (+7.5)	32-16	Loss	\$(100.00)	\$736.40
3-Dec	NE at BUF (+7.5)	23-3	Loss	\$(100.00)	\$836.40
30-Nov	DET at BAL (-2.5)	20-44	Win	\$90.91	\$936.40
26-Nov	BUF (+9.5) at KC	16-10	Win	\$90.91	\$845.49
26-Nov	NO at LAR (-2.5)	20-26	Win	\$90.91	\$754.58
26-Nov	MIA (+17) at NE	17-35	Loss	\$(100.00)	\$663.67
23-Nov	LAC (-118) at DAL	28-6	Win	\$90.91	\$763.67
22-Nov	MIN (-2.5) at DET	30-23	Win	\$90.91	\$672.76
19-Nov	WAS (+10) at NO	31-34	Win	\$90.91	\$581.85
19-Nov	KC at NYG (+10)	(9-12)	Win	\$90.91	\$490.94
19-Nov	JAX at CLE (+7.5)	19-7	Loss	\$(100.00)	\$400.03
18-Nov	DET at CHI (+3.5)	27-24	Win	\$90.91	\$500.03
17-Nov	BAL (-2) at GB	23-0	Win	\$90.91	\$409.12
16-Nov	LAR at MIN (-2)	(7-24)	Win	\$90.91	\$318.21
12-Nov	LAC (+5.5) at JAX	17-20	Win	\$90.91	\$227.30
12-Nov	NYJ at TB (+1)	(10-15)	Win	\$90.91	\$136.39
12-Nov	DAL at ATL (-3)	(7-27)	Win	\$90.91	\$45.48
11-Nov	NE at DEN (+7.5)	41-16	Loss	\$(100.00)	\$(45.43)
9-Nov	CLE (+11.5) at DET	24-38	Loss	\$(100.00)	\$54.57
4-Nov	IND (+7) at HOU	20-14	Win	\$90.91	\$154.57

4-Nov	KC at DAL (-2.5)	17-28	Win	\$90.91	\$63.66
2-Nov	BUF at NYJ (+3)	21-34	Win	\$90.91	\$(27.25)
2-Nov	TB (+7) at NO	(10-30)	Loss	\$(100.00)	\$(118.16)
2-Nov	DEN (+8) at PHI	23-51	Loss	\$(100.00)	\$(18.16)
30-Oct	DEN (+7) at KC	19-29	Loss	\$(100.00)	\$81.84
29-Oct	CHI (+8.5) at NO	(12-20)	Win	\$90.91	\$181.84
29-Oct	LAC (+7) at NE	13-21	Loss	\$(100.00)	\$90.93
29-Oct	PIT (-3) at DET	20-15	Win	\$90.91	\$190.93
28-Oct	HOU at SEA (-6.5)	38-41	Loss	\$(100.00)	\$100.02
27-Oct	CAR (+2) at TB	17-3	Win	\$90.91	\$200.02
25-Oct	SF (+13) at PHI	(10-33)	Loss	\$(100.00)	\$109.11
22-Oct	CIN (+4.5) at PIT	14-29	Loss	\$(100.00)	\$209.11
22-Oct	CAR at CHI (+3)	(3-17)	Win	\$90.91	\$309.11
21-Oct	NO at GB (+4.5)	26-17	Loss	\$(100.00)	\$218.20
14-Oct	LAC (+3.5) at OAK	17-16	Win	\$90.91	\$318.20
12-Oct	DET at NO (-4)	38-52	Win	\$90.91	\$227.29
12-Oct	PIT (+5) at KC	19-13	Win	\$90.91	\$136.38
11-Oct	PHI at CAR (-3)	28-23	Loss	\$(100.00)	\$45.47
11-Oct	CLE (+10) at HOU	17-33	Loss	\$(100.00)	\$145.47
8-Oct	CAR (+2.5) at DET	27-24	Win	\$90.91	\$245.47
8-Oct	NYJ at CLE (0)	17-14	Loss	\$(100.00)	\$154.56
8-Oct	GB at DAL (-2)	35-31	Loss	\$(100.00)	\$254.56
8-Oct	LAC (+3) at NYG	27-22	Win	\$90.91	\$354.56
5-Oct	BUF at CIN (-3)	16-20	Win	\$90.91	\$263.65
1-Oct	SF (+6.5) at ARI	15-18	Win	\$90.91	\$172.74
1-Oct	OAK at DEN (-3)	(10-16)	Win	\$90.91	\$81.83
29-Sep	PHI at LAC (-125)	26-24	Loss	\$(100.00)	\$(9.08)
29-Sep	NYG (+3) at TB	23-25	Win	\$90.91	\$90.92
24-Sep	ATL at DET (+3)	30-26	Loss	\$(100.00)	\$0.01
24-Sep	DEN at BUF (+3.5)	16-26	Win	\$90.91	\$100.01
24-Sep	KC at LAC (+3)	24-10	Loss	\$(100.00)	\$9.10
24-Sep	PIT at CHI (+7)	17-23	Win	\$90.91	\$109.10
24-Sep	NYG (+6) at PHI	24-27	Win	\$90.91	\$18.19
24-Sep	MIA at NYJ (+6.5)	(7-20)	Win	\$90.91	\$(72.72)
22-Sep	CIN (+8) at GB	24-27	Win	\$90.91	\$(163.63)
21-Sep	BAL at JAX (+4)	(7-44)	Win	\$90.91	\$(254.54)
21-Sep	SEA (+3) at TEN	27-33	Loss	\$(100.00)	\$(345.45)
18-Sep	DET at NYG (-3)	24-10	Loss	\$(100.00)	\$(245.45)
17-Sep	DAL at DEN (+2.5)	17-42	Win	\$90.91	\$(145.45)

17-Sep	NYJ (+13.5) at OAK	20-45	Loss	\$(100.00)	\$(236.36)
16-Sep	CLE (+8) at BAL	(10-24)	Loss	\$(100.00)	\$(136.36)
15-Sep	ARI at IND (+7)	16-13	Win	\$90.91	\$(36.36)
10-Sep	CAR at SF (+4.5)	23-3	Loss	\$(100.00)	\$(127.27)
10-Sep	SEA (+3) at GB	(9-17)	Loss	\$(100.00)	\$(27.27)
9-Sep	PIT at CLE (+9.5)	21-18	Win	\$90.91	\$72.73
8-Sep	ARI (-125) at DET	23-35	Loss	\$(100.00)	\$(18.18)
7-Sep	KC at NE (-8)	42-27	Loss	\$(100.00)	\$81.82
7-Sep	JAX (+6) at HOU	29-7	Win	\$90.91	\$181.82
6-Sep	NYJ (+10) at BUF	(12-21)	Win	\$90.91	\$90.91

B. NFL – R.J. White

Date	Pick and Spread	Result	Win/Loss	Winnings	Cumulative Winnings
14-Jan	JAX @ PIT (-7)	45-42	Loss	\$(100.00)	\$2,254.63
14-Jan	NE @ MIN(-4)	24-29	Win	\$90.91	\$2,354.63
13-Jan	TEN @ NE (-13.5)	14-35	Win	\$90.91	\$2,263.72
13-Jan	ATL (-2.5) @ PHI	(10-15)	Win	\$90.91	\$2,172.81
7-Jan	CAR @ NO (-6.5)	26-31	Loss	\$(100.00)	\$2,081.90
	BUF @ JAX (-7.5)	(3-10)	Loss	\$(100.00)	\$2,181.90
6-Jan	TEN (+8) @ KC	22-21	Win	\$90.91	\$2,281.90
	ATL (+6) @ LAR	26-13	Win	\$90.91	\$2,190.99
31-Dec	KC (+3.5) @ DEN	27-24	Win	\$90.91	\$2,100.08
	CLE (+10.5) @ PIT	24-28	Win	\$90.91	\$2,009.17
	ARI (+9.5) @ SEA	26-24	Win	\$90.91	\$1,918.26
	NO (-6.5) @ TB	24-31	Loss	\$(100.00)	\$1,827.35
	NYJ @ NE (-15.5)	(6-26)	Win	\$90.91	\$1,927.35
	DAL @ PHI (+3)	(6-0)	Loss	\$(100.00)	\$1,836.44
	CHI @ Min (-11.5)	(10-23)	Win	\$90.91	\$1,936.44
	OAK (+8) @ LAC	(10-30)	Loss	\$(100.00)	\$1,845.53
	CAR (+4) @ ATL	(10-22)	Loss	\$(100.00)	\$1,945.53
	JAX (+3.5) @ TEN	(10-15)	Loss	\$(100.00)	\$2,045.53
	SF (+4) @ LAR	34-13	Win	\$90.91	\$2,145.53
	BUF (-2.5) @ MIA	22-16	Win	\$90.91	\$2,054.62
25-Dec	PIT @ HOU (+9)	34-6	Loss	\$(100.00)	\$1,963.71
	OAK @ PHI (-9)	(10-19)	Push	\$-	\$2,063.71
24-Dec	NYG @ ARI (-3)	0-23	Win	\$90.91	\$2,063.71

	DEN @ WAS (-3)	(11-27)	Win	\$90.91	\$1,972.80
	SEA (+5) @ DAL	21-12	Win	\$90.91	\$1,881.89
	DET @ CIN (+3.5)	17-26	Win	\$90.91	\$1,790.98
	ATL @ NO (-5.5)	13-23	Win	\$90.91	\$1,700.07
	LAR @ TEN (+7)	27-23	Win	\$90.91	\$1,609.16
	JAC @ SF (+4.5)	33-44	Win	\$90.91	\$1,518.25
23-Dec	MIN @ GB (+9)	16-0	Loss	\$(100.00)	\$1,427.34
18-Dec	ATL @ TB (+6)	24-21	Win	\$90.91	\$1,527.34
17-Dec	LAR (+2.5) @ SEA	42-7	Win	\$90.91	\$1,436.43
	TEN @ SF (-1.5)	23-25	Win	\$90.91	\$1,345.52
	NE (-2.5) @ PIT	27-24	Win	\$90.91	\$1,254.61
	CIN @ MIN (-10.5)	(7-34)	Win	\$90.91	\$1,163.70
	GB @ CAR (-3)	24-31	Win	\$90.91	\$1,072.79
	NYJ @ NO (-14.5)	19-31	Loss	\$(100.00)	\$981.88
16-Dec	CHI (+5.5) @ DET	(10-20)	Loss	\$(100.00)	\$1,081.88
14-Dec	DEN @ IND (+2)	25-13	Loss	\$(100.00)	\$1,181.88
10-Dec	DET @ TB (+3)	24-21	Push	\$-	\$1,281.88
	IND (+3) @ BUF	(7-13)	Loss	\$(100.00)	\$1,281.88
	SF (+2.5) @ HOU	26-16	Win	\$90.91	\$1,381.88
	CHI (+6.5) @ CIN	33-7	Win	\$90.91	\$1,290.97
	NE (-11) @ MIA	20-27	Loss	\$(100.00)	\$1,200.06
	TEN @ ARI (+3)	(7-12)	Win	\$90.91	\$1,300.06
	OAK (+4) @ KC	15-26	Loss	\$(100.00)	\$1,209.15
	MIN @ CAR (+3)	24-31	Win	\$90.91	\$1,309.15
	WAS @ LAC (-6)	13-30	Win	\$90.91	\$1,218.24
	PHI (+2.5) @ LAR	43-35	Win	\$90.91	\$1,127.33
	DAL @ NYG (+5.5)	30-10	Loss	\$(100.00)	\$1,036.42
3-Dec	PHI (-3.5) @ SEA	(10-24)	Loss	\$(100.00)	\$1,136.42
	KC @ NYJ (+3)	31-38	Win	\$90.91	\$1,236.42
	DET (+3) @ BAL	20-44	Loss	\$(100.00)	\$1,145.51
	MIN (+3) @ ALT	14-9	Win	\$90.91	\$1,245.51
	IND @ JAC (-9.5)	(10-30)	Win	\$90.91	\$1,154.60
	CAR @ NO (-4.5)	21-31	Win	\$90.91	\$1,063.69
	TB @ GB (-2)	20-26	Win	\$90.91	\$972.78
	HOU (+6.5) @ TEN	13-24	Loss	\$(100.00)	\$881.87
30-Nov	WAS (+1.5) @ DAL	14-38	Loss	\$(100.00)	\$981.87

27-Nov	HOU @ BAL (-7)	16-23	Push	\$-	\$1,081.87
26-Nov	DEN (+5) @ OAK	14-21	Loss	\$(100.00)	\$1,081.87
	SEA @ SF (+6.5)	24-13	Loss	\$(100.00)	\$1,181.87
	CLE @ CIN (-8)	16-30	Win	\$90.91	\$1,281.87
	BUF (+10) @ KC	16-10	Win	\$90.91	\$1,190.96
	TEN @ IND (+3.5)	20-16	Loss	\$(100.00)	\$1,100.05
	JAC (-5) @ ARI	24-27	Loss	\$(100.00)	\$1,200.05
	GB (+14) @ PIT	28-31	Win	\$90.91	\$1,300.05
	CAR @ NYJ (+4.5)	35-27	Loss	\$(100.00)	\$1,209.14
23-Nov	MIN (-2.5) @ DET	30-23	Win	\$90.91	\$1,309.14
	LAC @ DAL (PK)	28-6	Loss	\$(100.00)	\$1,218.23
19-Nov	JAC @ CLE (+7.5)	19-7	Loss	\$(100.00)	\$1,318.23
	BAL (-2) @ GB	23-0	Win	\$90.91	\$1,418.23
	LAR @ MIN (-2.5)	(7-24)	Win	\$90.91	\$1,327.32
	TB (PK) @ MIA	30-20	Win	\$90.91	\$1,236.41
	NE (-7) @ OAK	33-8	Win	\$90.91	\$1,145.50
	BUF (+4.5) @ LAC	24-54	Loss	\$(100.00)	\$1,054.59
	PHI (-3) @ DAL	37-9	Win	\$90.91	\$1,154.59
	ARI @ HOU (+2)	21-31	WIN	\$90.91	\$1,063.68
13-Nov	MIA (+9) @ CAR	21-45	LOSS	\$(100.00)	\$972.77
12-Nov	NYJ @ TB (+2.5)	(10-15)	WIN	\$90.91	\$1,072.77
	NO @ BUF (+3)	47-10	LOSS	\$(100.00)	\$981.86
	NE @ DEN (+7.5)	41-16	LOSS	\$(100.00)	\$1,081.86
	MIN (-1.5) @ WAS	38-30	WIN	\$90.91	\$1,181.86
	CIN (+4.5) @ TEN	20-24	WIN	\$90.91	\$1,090.95
	LAC @ JAC (-3.5)	17-20	Loss	\$(100.00)	\$1,000.04
	GB @ CHI (-3)	23-16	LOSS	\$(100.00)	\$1,100.04
9-Nov	SEA @ ARI (+6)	22-16	PUSH	\$-	\$1,200.04
6-Nov	DET @ GB (+2.5)	30-17	LOSS	\$(100.00)	\$1,200.04
5-Nov	BAL @ TEN (-3.5)	20-23	LOSS	\$(100.00)	\$1,300.04
	DEN @ PHI (+7.5)	23-51	LOSS	\$(100.00)	\$1,400.04
	LAR (-3.5) @ NYG	51-17	WIN	\$90.91	\$1,500.04
	OAK @ MIA (+3)	27-24	PUSH	\$-	\$1,409.13
	KC @ DAL (-1)	17-28	WIN	\$90.91	\$1,409.13
	ARI @ SF (+2.5)	20-10	LOSS	\$(100.00)	\$1,318.22
	ATL @ CAR (+1.5)	17-20	WIN	\$90.91	\$1,418.22
	IND (+13) @ HOU	20-14	WIN	\$90.91	\$1,327.31
	BUF @ NYJ (+3)	21-34	WIN	\$90.91	\$1,236.40

30-Oct	DEN @ KC (-7)	19-29	Win	\$90.91	\$1,145.49
29-Oct	HOU @ SEA (-6)	38-41	Loss	\$(100.00)	\$1,054.58
	CHI @ NO (-9)	(12-20)	Loss	\$(100.00)	\$1,154.58
	CAR (+1.5) @ TB	17-3	WIN	\$90.91	\$1,254.58
	SF (+13) @ PHI	(10-33)	Loss	\$(100.00)	\$1,163.67
	PIT (-3) @ DET	20-15	Win	\$90.91	\$1,263.67
22-Oct	JAC (-3) @ IND	27-0	Win	\$90.91	\$1,172.76
	ARI @ LAR (-3)	0-33	Win	\$90.91	\$1,081.85
	CAR @ CHI (+3)	(3-17)	Win	\$90.91	\$990.94
	TB @ BUF (-3)	27-30	PUSH	\$-	\$900.03
	CIN (+5.5) @ PIT	14-29	LOSS	\$(100.00)	\$900.03
	SEA @ NYG (+4)	24-7	Loss	\$(100.00)	\$1,000.03
	BAL @ MIN (-5)	16-24	Win	\$90.91	\$1,100.03
16-Oct	IND @ TEN (-7.5)	22-36	Win	\$90.91	\$1,009.12
	LAC (+3.5) @				
15-Oct	OAK	17-16	Win	\$90.91	\$918.21
	LAR (+2.5) @ JAC	27-17	Win	\$90.91	\$827.30
	TB @ ARI (+1.5)	33-38	Win	\$90.91	\$736.39
	DET @ NO (-4)	38-52	Win	\$90.91	\$645.48
	CLE (+9.5) @				
	HOU	17-33	Loss	\$(100.00)	\$554.57
	MIA @ ATL (-12)	20-17	Loss	\$(100.00)	\$654.57
	CHI @ BAL (-6.5)	27-24	Loss	\$(100.00)	\$754.57
	NE @ NYJ (+9.5)	24-17	Win	\$90.91	\$854.57
12-Oct	PHI @ CAR (-3)	28-23	Loss	\$(100.00)	\$763.66
9-Oct	MIN @ CHI (+3)	20-17	Push	\$-	\$863.66
8-Oct	BAL (+3) @ OAK	30-17	Win	\$90.91	\$863.66
	JAC @ PIT (-7.5)	30-9	Win	\$90.91	\$772.75
	NYJ @ CLE (PK)	17-14	Loss	\$(100.00)	\$681.84
	TEN @ MIA (+3)	(10-16)	Win	\$90.91	\$781.84
	SEA @ LAR (PK)	16-10	Loss	\$(100.00)	\$690.93
	SF @ IND (-1.5)	23-26	Win	\$90.91	\$790.93
	BUF (+3) @ CIN	16-20	Loss	\$(100.00)	\$700.02
5-Oct	NE @ TB (+4.5)	19-14	Loss	\$(100.00)	\$800.02
1-Oct	CAR @ NE (-9.5)	33-30	Loss	\$(100.00)	\$900.02
	JAC @ NYJ (+4)	20-23	Win	\$90.91	\$1,000.02
	OAK @ DEN (-3)	(10-16)	Win	\$90.91	\$909.11
	PHI @ LAC (-2)	26-24	Loss	\$(100.00)	\$818.20
	SF (+6.5) @ ARI	15-18	Win	\$90.91	\$918.20

	LAR (+6) @ DAL	35-30	Win	\$90.91	\$827.29
	NYG (+3) @ TB	23-25	Win	\$90.91	\$736.38
	DET @ MIN (-2)	14-7	Loss	\$(100.00)	\$645.47
28-Sep	CHI @ GB (-7)	14-35	Win	\$90.91	\$745.47
24-Sep	CIN (+8.5) @ GB	24-27	Win	\$90.91	\$654.56
	ATL (-3) @ DET	30-26	Win	\$90.91	\$563.65
	NO @ CAR (-5.5)	34-13	Loss	\$(100.00)	\$472.74
	MIA @ NYJ (+6)	(6-20)	Win	\$90.91	\$572.74
	BAL @ JAC (+3.5)	(7-44)	Win	\$90.91	\$481.83
	CLE @ IND (+1.5)	28-31	Win	\$90.91	\$390.92
	OAK (-3) @ WAS	(10-27)	Loss	\$(100.00)	\$300.01
21-Sep	LAR @ SF (+3)	41-39	Win	\$90.91	\$400.01
18-Sep	DET @ NYG (-3)	24-10	Loss	\$(100.00)	\$309.10
	WAS (+2.5) @				
17-Sep	LAR	27-20	Win	\$90.91	\$409.10
	DAL @ DEN				
	(+2.5)	17-42	Win	\$90.91	\$318.19
	CLE (+8) @ BAL	(10-24)	Loss	\$(100.00)	\$227.28
	MIN @ PIT (-5.5)	(9-26)	Win	\$90.91	\$327.28
	GB @ ATL (-2.5)	23-34	Win	\$90.91	\$236.37
	BUF @ CAR (-7)	(3-9)	Loss	\$(100.00)	\$145.46
	TEN (-1.5) @ JAC	37-16	Win	\$90.91	\$245.46
11-Sep	NO @ MIN (-3)	19-29	Win	\$90.91	\$154.55
10-Sep	NYJ (+9) @ BUF	(12-21)	Win	\$90.91	\$63.64
	ATL @ CHI (+7)	23-17	Win	\$90.91	\$(27.27)
	IND @ LAR (+1.5)	(9-46)	Win	\$90.91	\$(118.18)
	CAR @ SF (+5.5)	23-3	Loss	\$(100.00)	\$(209.09)
	OAK @ TEN (-2.5)	26-16	Loss	\$(100.00)	\$(109.09)
	PHI (-1) @ WAS	30-17	Win	\$90.91	\$(9.09)
7-Sep	KC @ NE (-9)	42-27	Loss	\$(100.00)	\$(100.00)

C. NCAAM – SI

Date	Pick and Spread	Result	Win/Loss	Winnings	Cumulative Winnings
14-Jan	DAVID (-8.5) at FORD	75-45	Win	\$90.91	\$(254.53)
13-Jan	SLU (+1) at G-MAS	81-86	Loss	\$(100.00)	\$(345.44)
13-Jan	AUB (-2) at MS-ST	76-68	Win	\$90.91	\$(245.44)
13-Jan	UNCG (-5.5) at WCAR	66-55	Win	\$90.91	\$(336.35)
11-Jan	NEU (+3.5) at COFC	66-82	Loss	\$(100.00)	\$(427.26)
11-Jan	UNCW (+7) at ELON	80-78	Win	\$90.91	\$(327.26)
11-Jan	TX-AR (-9.5) at LROCK	65-77	Loss	\$(100.00)	\$(418.17)
11-Jan	PPRDN (+17.5) at BYU	63-83	Loss	\$(100.00)	\$(318.17)
11-Jan	SAMF (-4) at CITA	107-91	Win	\$90.91	\$(218.17)
10-Jan	HARV (+6) at WOFF	62-63	Win	\$90.91	\$(309.08)
10-Jan	MERCER (-6.5) at WCAR	56-58	Loss	\$(100.00)	\$(399.99)
9-Jan	KENT at MIA-OH (-1)	69-80	Win	\$90.91	\$(299.99)
9-Jan	SJ-ST (+22) at SD-ST	49-85	Loss	\$(100.00)	\$(390.90)
6-Jan	LROCK at GA-SO (-13.5)	69-72	Loss	\$(100.00)	\$(290.90)
6-Jan	GONZ (-19) at LOYMM	85-66	Push	\$-	\$(190.90)
6-Jan	MERCER (+3.5) at FURM	71-74	Win	\$90.91	\$(190.90)
4-Jan	C-IRV (+4.5) at UC-DAV	53-64	Loss	\$(100.00)	\$(281.81)
4-Jan	TN-MAR (+6.5) at AUS- P	69-75	Win	\$90.91	\$(181.81)
4-Jan	SIU-ED (+6) at EKU	85-82	Win	\$90.91	\$(272.72)
3-Jan	STBON at DAYT (+2)	72-82	Win	\$90.91	\$(363.63)
31-Dec	UL-LAF (-5) at ARK-ST	88-78	Win	\$90.91	\$(454.54)
30-Dec	CAL at STAN (-7)	77-74	Loss	\$(100.00)	\$(545.45)
28-Dec	IL-CHI (+7.5) at WRGHT	61-65	Win	\$90.91	\$(445.45)
28-Dec	IUPUI (+14.5) at NKU	59-77	Loss	\$(100.00)	\$(536.36)
28-Dec	MONM (-6.5) at QUINN	76-78	Loss	\$(100.00)	\$(436.36)
28-Dec	VALPO (0) at IN-ST	64-73	Loss	\$(100.00)	\$(336.36)
23-Dec	ILL at MIZZ (-5)	70-64	Loss	\$(100.00)	\$(236.36)
22-Dec	WRGHT at GT (-8)	85-81	Loss	\$(100.00)	\$(136.36)
21-Dec	OR-ST (-4.5) at KENT	78-79	Loss	\$(100.00)	\$(36.36)
19-Dec	ORU at ARK (-24)	69-104	Win	\$90.91	\$63.64
18-Dec	QUINN (+9) at DREX	71-72	Win	\$90.91	\$(27.27)
18-Dec	IDAHO at WMICH (-5)	82-52	Loss	\$(100.00)	\$(118.18)
16-Dec	C-IRV (+18.5) at STMARY	66-73	Win	\$90.91	\$(18.18)
16-Dec	N-TEX (+9.5) at SD	86-83	Win	\$90.91	\$(109.09)

16-Dec	CMU (-2) at SO-UT	80-86	Loss	\$(100.00)	\$(200.00)
16-Dec	E-ILL (-1.5) at S-ALA	52-63	Loss	\$(100.00)	\$(100.00)

D. NCAAM – Micah Roberts

Date	Pick and Spread	Result	Win/Loss	Winnings	Cumulative Winnings
13-Jan	GON (-13) @ SF	75-65	Loss	\$(100.00)	\$(527.26)
	AUB (-3) @ MISST	76-68	Win	\$90.91	\$(427.26)
12-Jan	MARQ @ BUT (-4.5)	83-94	Win	\$90.91	\$(518.17)
10-Jan	COL (+11) @ USC	58-70	Loss	\$(100.00)	\$(609.08)
	DRAKE (+5.5) @ VALP	60-77	Loss	\$(100.00)	\$(509.08)
9-Jan	TEN (-2) @ VANDY	92-84	Win	\$90.91	\$(409.08)
6-Jan	S.ALA (+12.5) @ UT- ARL	67-91	Loss	\$(100.00)	\$(499.99)
5-Jan	WIS (-2) @ RUT	60-64	Loss	\$(100.00)	\$(399.99)
4-Jan	HOU (+10) @ WICH	63-81	Loss	\$(100.00)	\$(299.99)
	BYU (-2) @ SF	69-59	Win	\$90.91	\$(199.99)
	PORST (+1) @ E.WASH	74-81	Loss	\$(100.00)	\$(290.90)
2-Jan	DREX (+2) @ UNC- WIL	87-107	Loss	\$(100.00)	\$(190.90)
31-Dec	VA. TECH (+3) @ SYR	56-68	Loss	\$(100.00)	\$(90.90)
30-Dec	FSU (+11.5) @ DUKE	93-100	Win	\$90.91	\$9.10
28-Dec	NMST (-5.5) @ UCIRV	65-60	Loss	\$(100.00)	\$(81.81)
22-Dec	BRAD (+7.5) @ OLM	59-82	Loss	\$(100.00)	\$18.19
18-Dec	VAL (-2) @ SC	76-68	Win	\$90.91	\$118.19
16-Dec	UT (+3) @ BYU	65-77	Loss	\$(100.00)	\$27.28
	CMU (-3.5) @ UT	80-86	Loss	\$(100.00)	\$127.28
	LOY-C (-2) @ MIL	56-73	Loss	\$(100.00)	\$227.28
	UNLV (-6.5) @ PAC	81-76	Loss	\$(100.00)	\$327.28
15-Dec	UCD (+4) @ SF	61-74	Loss	\$(100.00)	\$427.28
14-Dec	SD (-12.5) @ NAR	90-77	Win	\$90.91	\$527.28
13-Dec	PORSU (+14.5) @ ORE	84-95	Win	\$90.91	\$436.37
9-Dec	ILL @ UNLV (-5)	82-89	Win	\$90.91	\$345.46
8-Dec	OK @ USC (+2.5)	85-83	Win	\$90.91	\$254.55
	SJU @ ASU (-5)	70-82	Win	\$90.91	\$163.64
4-Dec	FSU @ FL (-9)	83-66	Loss	\$(100.00)	\$72.73
2-Dec	MISU @ SDSU (-3)	73-53	Loss	\$(100.00)	\$172.73

	NEV (-10.5) @ UCI	76-65	Win	\$90.91	\$272.73
	PER (-2.5) @ MAR	80-75	Win	\$90.91	\$181.82
1-Dec	DUQ @ PIT (-6)	64-76	Win	\$90.91	\$90.91

E. NCAAF – SI

Date	Pick and Spread	Result	Win/Loss	Winnings	Cumulative Winnings
6-Jan	BAMA (-4) at UGA	26-23	Loss	\$(100.00)	\$500.06
31-Dec	UGA at OKLA (+3)	54-48	Loss	\$(100.00)	\$600.06
30-Dec	LOU at MS-ST (+7)	27-31	Win	\$90.91	\$700.06
30-Dec	WISC (-6) at MIA-FL	34-24	Win	\$90.91	\$609.15
28-Dec	VT (+6) at OK-ST	21-30	Loss	\$(100.00)	\$518.24
27-Dec	BC (+2.5) at IOWA	20-27	Loss	\$(100.00)	\$618.24
27-Dec	PUR (+3) at ARZ	38-35	Win	\$90.91	\$718.24
27-Dec	SO-MIS (+15) at FSU	13-42	Loss	\$(100.00)	\$627.33
27-Dec	MIZZ (-2.5) at TEXAS	16-33	Loss	\$(100.00)	\$727.33
26-Dec	KS-ST at UCLA (+6.5)	35-17	Loss	\$(100.00)	\$827.33
24-Dec	HOU (-2.5) at FRES	27-33	Loss	\$(100.00)	\$927.33
23-Dec	APP-ST (+6.5) at TOL	34-0	Win	\$90.91	\$1,027.33
23-Dec	ARMY (+7) at SDSU	42-35	Win	\$90.91	\$936.42
22-Dec	TTU (+3) at USF	34-38	Loss	\$(100.00)	\$845.51
16-Dec	GA-ST (+7) at WKU	27-17	Win	\$90.91	\$945.51
15-Dec	MARSH (+4.5) at CO-ST	31-28	Win	\$90.91	\$854.60
15-Dec	NO-TX (+7) at TROY	30-50	Loss	\$(100.00)	\$763.69
15-Dec	ORE at BOISE (+7)	28-38	Win	\$90.91	\$863.69
2-Dec	NO-TX (+12) at FAU	17-41	Loss	\$(100.00)	\$772.78
2-Dec	UMASS (-2.5) at FL-INT	45-63	Loss	\$(100.00)	\$872.78
25-Nov	IA-ST (+2) at KS-ST	19-20	Win	\$90.91	\$972.78
25-Nov	ODU at MIDTN (-13)	(10-41)	Win	\$90.91	\$881.87
25-Nov	ND (-2.5) at STAN	20-38	Loss	\$(100.00)	\$790.96
24-Nov	WMICH (+12) at TOL	(10-37)	Loss	\$(100.00)	\$890.96
24-Nov	OHIO (-6.5) at BUFF	24-31	Loss	\$(100.00)	\$990.96
24-Nov	TTU (+7.5) at TEXAS	27-23	Win	\$90.91	\$1,090.96
21-Nov	KENT (+15.5) at AKRON	14-24	Win	\$90.91	\$1,000.05
18-Nov	HAW (+10) at UT-ST	0-38	Loss	\$(100.00)	\$909.14
18-Nov	RICE (+7) at ODU	21-24	Win	\$90.91	\$1,009.14

18-Nov	UMASS (+3) at BYU	16-10	Win	\$90.91	\$918.23
18-Nov	SMU (+11) at MEM	45-66	Loss	\$(100.00)	\$827.32
18-Nov	MIZZ at VAND (+7)	45-17	Loss	\$(100.00)	\$927.32
18-Nov	MARSH at UTSA (-2.5)	(7-9)	Loss	\$(100.00)	\$1,027.32
18-Nov	MICH (+7) at WISC	(10-24)	Loss	\$(100.00)	\$1,127.32
18-Nov	GT (-7) at DUKE	20-43	Loss	\$(100.00)	\$1,227.32
18-Nov	TX-ST (+26.5) at AK-ST	(12-30)	Win	\$90.91	\$1,327.32
17-Nov	UNLV at NM (-2)	38-35	Loss	\$(100.00)	\$1,236.41
11-Nov	MI-ST at OH-ST (-17.5)	(3-48)	Win	\$90.91	\$1,336.41
11-Nov	TENN (+11.5) at MIZZ	17-50	Loss	\$(100.00)	\$1,245.50
11-Nov	NC-ST (-3) at BC	17-14	Push	\$-	\$1,345.50
11-Nov	OK-ST (-7) at IA-ST	49-42	Push	\$-	\$1,345.50
11-Nov	SMU (+3) at NAVY	40-43	Push	\$-	\$1,345.50
11-Nov	PUR at NW (-5)	13-23	Win	\$90.91	\$1,345.50
10-Nov	BYU (+3.5) at UNLV	31-21	Win	\$90.91	\$1,254.59
8-Nov	KENT (+20.5) at WMICH	20-48	Loss	\$(100.00)	\$1,163.68
8-Nov	TOL at OHIO (+3.5)	(10-38)	Win	\$90.91	\$1,263.68
4-Nov	OH-ST (-20) at IOWA	24-55	Loss	\$(100.00)	\$1,172.77
4-Nov	VT at MIA-FL (-3)	(10-28)	Win	\$90.91	\$1,272.77
4-Nov	CHAR at ODU (-9)	0-6	Loss	\$(100.00)	\$1,181.86
4-Nov	TEXAS at TCU (-6.5)	(7-24)	Win	\$90.91	\$1,281.86
4-Nov	ARZ (+7) at USC	35-49	Loss	\$(100.00)	\$1,190.95
3-Nov	MARSH at FAU (-6)	25-30	Loss	\$(100.00)	\$1,290.95
3-Nov	NW (-1.5) at NEB	31-24	Win	\$90.91	\$1,390.95
3-Nov	BYU (+12.5) at FRES	13-20	Win	\$90.91	\$1,300.04
3-Nov	SO-MIS (+7) at TENN	(10-24)	Loss	\$(100.00)	\$1,209.13
3-Nov	UCF at SMU (+15)	31-24	Win	\$90.91	\$1,309.13
2-Nov	NAVY at TEMP (+7.5)	26-34	Win	\$90.91	\$1,218.22
31-Oct	BGSU at KENT (+3)	44-16	Loss	\$(100.00)	\$1,127.31
28-Oct	NEB (+4) at PUR	25-24	Win	\$90.91	\$1,227.31
28-Oct	APP-ST at UMASS (+3.5)	27-30	Win	\$90.91	\$1,136.40
28-Oct	OK-ST (-8) at WVU	50-39	Win	\$90.91	\$1,045.49
28-Oct	NC-ST at ND (-6.5)	14-35	Win	\$90.91	\$954.58
28-Oct	TEXAS (-10) at BAY	38-7	Win	\$90.91	\$863.67
28-Oct	MIZZ at CONN (+14)	52-12	Loss	\$(100.00)	\$772.76
28-Oct	BOISE (-9.5) at UT-ST	41-14	Win	\$90.91	\$872.76
27-Oct	LOU at WAKE (+3)	32-42	Win	\$90.91	\$781.85

26-Oct	EMICH (+8) at NIU	27-30	Win	\$90.91	\$690.94
21-Oct	WAKE (+4) at GT	24-38	Loss	\$(100.00)	\$600.03
21-Oct	UNC (+20) at VT	(7-59)	Loss	\$(100.00)	\$700.03
21-Oct	UT-ST (+3.5) at UNLV	52-28	Win	\$90.91	\$800.03
21-Oct	IOWA at NW (-3)	(10-17)	Win	\$90.91	\$709.12
21-Oct	TULSA at CONN (+3.5)	14-20	Win	\$90.91	\$618.21
21-Oct	TROY (-9.5) at GA-ST	34-10	Win	\$90.91	\$527.30
21-Oct	AKRON (+15) at TOL	21-48	Loss	\$(100.00)	\$436.39
21-Oct	BC at UVA (-6.5)	41-10	Loss	\$(100.00)	\$536.39
20-Oct	WKU at ODU (+8.5)	35-31	Win	\$90.91	\$636.39
20-Oct	BUFF (+3) at MIA-OH	14-24	Loss	\$(100.00)	\$545.48
20-Oct	KENT (+19) at OHIO	(3-48)	Loss	\$(100.00)	\$645.48
14-Oct	MICH at IND (+7.5)	27-20	Win	\$90.91	\$745.48
14-Oct	UVA at UNC (+3)	20-14	Loss	\$(100.00)	\$654.57
14-Oct	UTSA (-2.5) at NO-TX	26-29	Loss	\$(100.00)	\$754.57
14-Oct	SC (+3) at TENN	15-9	Win	\$90.91	\$854.57
14-Oct	BOISE (+6) at SDSU	31-14	Win	\$90.91	\$763.66
13-Oct	EMICH (+6.5) at ARMY	27-28	Win	\$90.91	\$672.75
13-Oct	AUB (-7) at LSU	23-27	Loss	\$(100.00)	\$581.84
13-Oct	MI-ST (-3.5) at MINN	30-27	Loss	\$(100.00)	\$681.84
12-Oct	TX-ST (+14.5) at ULL	(7-24)	Loss	\$(100.00)	\$781.84
7-Oct	UGA at VAND (+17)	45-14	Loss	\$(100.00)	\$881.84
7-Oct	LSU (+1) at FLA	17-16	Win	\$90.91	\$981.84
7-Oct	MISS (+21.5) at AUB	23-44	Win	\$90.91	\$890.93
7-Oct	PSU at NW (+14)	31-7	Loss	\$(100.00)	\$800.02
7-Oct	TEMP (-3) at ECU	34-10	Win	\$90.91	\$900.02
7-Oct	FAU (-4.5) at ODU	58-28	Win	\$90.91	\$809.11
6-Oct	EMICH (+14.5) at TOL	15-20	Win	\$90.91	\$718.20
6-Oct	MI-ST (+10) at MICH	14-10	Win	\$90.91	\$627.29
30-Sep	FSU (-7) at WAKE	26-19	Push	\$-	\$536.38
30-Sep	CONN (+16.5) at SMU	28-49	Loss	\$(100.00)	\$536.38
30-Sep	SC (+7.5) at TA&M	17-24	Win	\$90.91	\$636.38
30-Sep	CLEM (-7) at VT	31-17	Win	\$90.91	\$545.47
30-Sep	HOU at TEMP (+12)	20-13	Win	\$90.91	\$454.56
30-Sep	NW (+15) at WISC	24-33	Win	\$90.91	\$363.65
23-Sep	BC (+33.5) at CLEM	(7-34)	Win	\$90.91	\$272.74
23-Sep	WVU at KANSAS (+24)	56-34	Win	\$90.91	\$181.83
23-Sep	MIA-OH at CMICH (0)	31-14	Loss	\$(100.00)	\$90.92
23-Sep	CINCY (+10) at NAVY	32-42	Push	\$-	\$190.92

23-Sep	NM (+11) at TULSA	16-13	Win	\$90.91	\$190.92
23-Sep	ARK (+2.5) at TA&M	43-50	Loss	\$(100.00)	\$100.01
23-Sep	PITT (+9) at GT	17-35	Loss	\$(100.00)	\$200.01
16-Sep	ND (-13) at BC	49-20	Win	\$90.91	\$300.01
16-Sep	UT-ST at WAKE (-13)	(10-46)	Win	\$90.91	\$209.10
16-Sep	ULL (+23) at TA&M	21-45	Loss	\$(100.00)	\$118.19
16-Sep	BAY (+13.5) at DUKE	20-34	Loss	\$(100.00)	\$218.19
9-Sep	NM-ST (+6.5) at NM	30-28	Win	\$90.91	\$318.19
9-Sep	TCU (-3) at ARK	28-7	Win	\$90.91	\$227.28
9-Sep	STAN at USC (-6)	24-42	Win	\$90.91	\$136.37
9-Sep	WMICH (+7) at MI-ST	14-28	Loss	\$(100.00)	\$45.46
9-Sep	EMICH (+5) at RUTG	16-13	Win	\$90.91	\$145.46
9-Sep	CINCY (+33.5) at MICH	14-36	Win	\$90.91	\$54.55
9-Sep	NEB (+11.5) at ORE	35-42	Win	\$90.91	\$(36.36)
9-Sep	OKLA (+7) at OH-ST	31-16	Win	\$90.91	\$(127.27)
3-Sep	WVU (+5) at VT	24-31	Loss	\$(100.00)	\$(218.18)
3-Sep	TA&M at UCLA (-5)	44-45	Loss	\$(100.00)	\$(118.18)
2-Sep	BALL at ILL (-6)	21-24	Loss	\$(100.00)	\$(18.18)
2-Sep	TROY at BOISE (-10)	13-24	Win	\$90.91	\$81.82
2-Sep	MD (+18) at TEXAS	51-41	Win	\$90.91	\$(9.09)
1-Sep	BC (-4) at NIU	23-20	Loss	\$(100.00)	\$(100.00)

F. NCAAF – Kevin White

Date	Pick and Spread	Result	Win/Loss	Winnings	Cumulative Winnings
27-Dec	TEX @ MIZ (-2.5)	33-16	Loss	\$(100.00)	\$(772.71)
26-Dec	KST (-2) vs. UCLA	35-17	Win	\$90.91	\$(672.71)
	UTAH @ WVU (+6.5)	30-14	Loss	\$(100.00)	\$(763.62)
23-Dec	APP ST (+7.5) vs. TOL	34-0	Win	\$90.91	\$(663.62)
22-Dec	CMICH (PK) vs. WYO	14-37	Loss	\$(100.00)	\$(754.53)
	UAB (+7.5) @ OHIO	(6-41)	Loss	\$(100.00)	\$(654.53)
16-Dec	BSU v. ORE (-7.5)	38-28	Loss	\$(100.00)	\$(554.53)
2-Dec	FRES @ (+8.5) @ BSU	14-17	Win	\$90.91	\$(454.53)
2-Dec	OSU (-7) v WISC	27-21	Loss	\$(100.00)	\$(545.44)
	GEO (+2.5) @ AUB	28-7	Win	\$90.91	\$(445.44)
	TCU (+7) v OK	17-41	Loss	\$(100.00)	\$(536.35)
25-Nov	ND @ STAN (+2)	20-38	Win	\$90.91	\$(436.35)
24-Nov	MIA @ PIT (+13.5)	14-24	Win	\$90.91	\$(527.26)

21-Nov	KENT (+15) @ AKR	14-24	Win	\$90.91	\$(618.17)
	TOL (-17) @ BG	66-37	Win	\$90.91	\$(709.08)
8-Nov	EMICH @ CMICH (+2)	30-42	Win	\$90.91	\$(799.99)
7-Nov	AKR (+6.5) @ MIAO	14-24	Loss	\$(100.00)	\$(890.90)
4-Nov	ILL (+14) @ PER	(10-29)	Loss	\$(100.00)	\$(790.90)
	OK (+3) @ OKST	62-52	Win	\$90.91	\$(690.90)
3-Nov	MEM (-12) @ TUL	41-14	Win	\$90.91	\$(781.81)
21-Oct	MICH @ PSU (-8)	13-42	Win	\$90.91	\$(872.72)
	KAN (+39) @ TCU	0-43	Loss	\$(100.00)	\$(963.63)
	PER @ RUT (+9.5)	(12-14)	Win	\$90.91	\$(863.63)
	IND @ MSU (-6.5)	(9-17)	Win	\$90.91	\$(954.54)
	BUF @ MIAO (-2.5)	14-24	Loss	\$(100.00)	\$(1,045.45)
7-Oct	NMSU (+13) @ APSU	31-45	Loss	\$(100.00)	\$(945.45)
	EMICH (+14) @ TOL	15-20	Win	\$90.91	\$(845.45)
5-Oct	LOU @ NCSU (+3)	25-39	Win	\$90.91	\$(936.36)
30-Sep	OKST (-9.5) @ TXT	41-34	Loss	\$(100.00)	\$(1,027.27)
29-Sep	BYU @ UTS (+2)	24-40	Win	\$90.91	\$(927.27)
	USC (-3.5) @ WSU	27-30	Loss	\$(100.00)	\$(1,018.18)
23-Sep	ND @ MSU (+3.5)	38-18	Loss	\$(100.00)	\$(918.18)
	NCST (+12.5) @ FSU	27-21	Win	\$90.91	\$(818.18)
	DUKE @ UNC (+2.5)	27-17	Loss	\$(100.00)	\$(909.09)
	UTP (+20) @ NMSU	14-41	Loss	\$(100.00)	\$(809.09)
16-Sep	CLE @ LOU (+3)	47-21	Loss	\$(100.00)	\$(709.09)
	BAY (+14) @ DUKE	20-34	Push	\$-	\$(609.09)
	UCLA (-3) @ MEM	45-48	Loss	\$(100.00)	\$(609.09)
15-Sep	ARI @ UTEP (+23)	63-16	Loss	\$(100.00)	\$(509.09)
9-Sep	IND @ VIR (+3)	34-17	Loss	\$(100.00)	\$(409.09)
	IOW (-3) @ ISU	44-41	Push	\$-	\$(309.09)
8-Sep	OHIO (+2.5) @ PER	21-44	Loss	\$(100.00)	\$(309.09)
3-Sep	TAM @ UCLA (-3.5)	44-45	Loss	\$(100.00)	\$(209.09)
2-Sep	AL (-7) v. FSU	24-7	Win	\$90.91	\$(109.09)
	FL (+5) v. MICH	17-33	Loss	\$(100.00)	\$(200.00)
1-Sep	CSU(+3.5) @ UC-B	(3-17)	Loss	\$(100.00)	\$(100.00)

ACADEMIC VITA

Academic Vita of Matthew Root
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Education

B.S. Finance and Economics Minor
Honors: Finance

A Comparative Analysis of Handicapper and Statistical Model Sports Gambling Returns

Thesis Supervisor: Robert Novack

Work Experience:

June 2017 - August 2017

Finance Analyst

JPMorgan Chase & Co.

Newark, Delaware

Manager: Rowan Olivia Baluta

June 2016 -August 2016

Contract Analyst

The Kellogg Company

Horsham, PA

Manager: Brian Dividock

Awards:

William A Schreyer Scholarship

Presidential Leadership Academy

Presentations:

CEO Compensation Public Policy Presentation

December 2015

Presidential Leadership Academy

Community Service Involvement:

Penn State Dance MaraTHON fundraising

Language Proficiency: English