



# UNDERSTANDING SPORTSBOOK INDUSTRY STANDARDS

A Comprehensive Data Analysis of  
Line Movement, Line Release, and Vigorish

## ABSTRACT

The online sports betting industry is an extremely competitive environment, with a range of online sportsbooks competing for the estimated \$80 - 380 billion bet on sports each year.<sup>1</sup> Perhaps surprisingly, little data exists regarding industry standards around the elements of the gambling experience most important to sports bettors: line movement, line release times, and the amount of vigorish (bookmaker's fees) charged. This study provides an analysis of each of these factors to identify industry standards and trends that bettors, media, and the general public can rely on when evaluating the services and value offered by online sportsbooks.

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# Introduction

Online sportsbooks have been serving sports bettors for years. In contrast to the stereotypical image of the neighborhood bookie – a quintessentially shady character complete with requisite track suit – the data suggests that these sportsbooks operate in a highly professional and organized business environment.

With this study, SBD seeks to begin addressing the dearth of relevant data regarding the state of this industry. The goal is simple: to gain a better understanding of online sportsbook behavior. By identifying major commonalities and differences between a selection of 12 popular sportsbooks, we intend to qualify industry standards around the most important elements of the sportsbooks' operation.

There are several factors that bettors tend to consider when shopping around for an online sportsbook, but three qualities stand out in terms of metrics we can evaluate for industry

- **Line Movement:** How often do the odds for a given sporting event change after they are initially released?
- **Line Release:** How far in advance are the odds for a given sporting event released for wagering?
- **Vigorish/Juice:** How large of cut does the sportsbook take in order to handle a wager?

Following a brief discussion of the methodology used to determine industry standards for each of these factors, we provide a detailed analysis of the findings. Each factor is evaluated to determine an industry standard for the three most popular types of sports wagers:

- **Moneyline:** Which side will win a given sporting event straight-up?
- **Point Spread:** Which side will win or lose a given sporting event by a pre-determined amount?
- **Totals:** Will the total number of points scored throughout the game be higher or lower than a pre-determined amount?

Ultimately, the data collected revealed only a small degree of variance between the online sportsbooks evaluated. As such, we can confidently conclude that industry standards have developed in the highly competitive online sports betting industry.

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# Methodology

SBD undertook this data analysis study in collaboration with graduate researchers at a leading research university. Researchers were qualified in the fields of quantitative analysis, with specific experience creating models using machine learning algorithms.

The graduate students we collaborated with completed this analysis for no remuneration and selected this project from a large pool of potential options for their coursework. Researchers maintained complete academic independence throughout the research and analysis process.

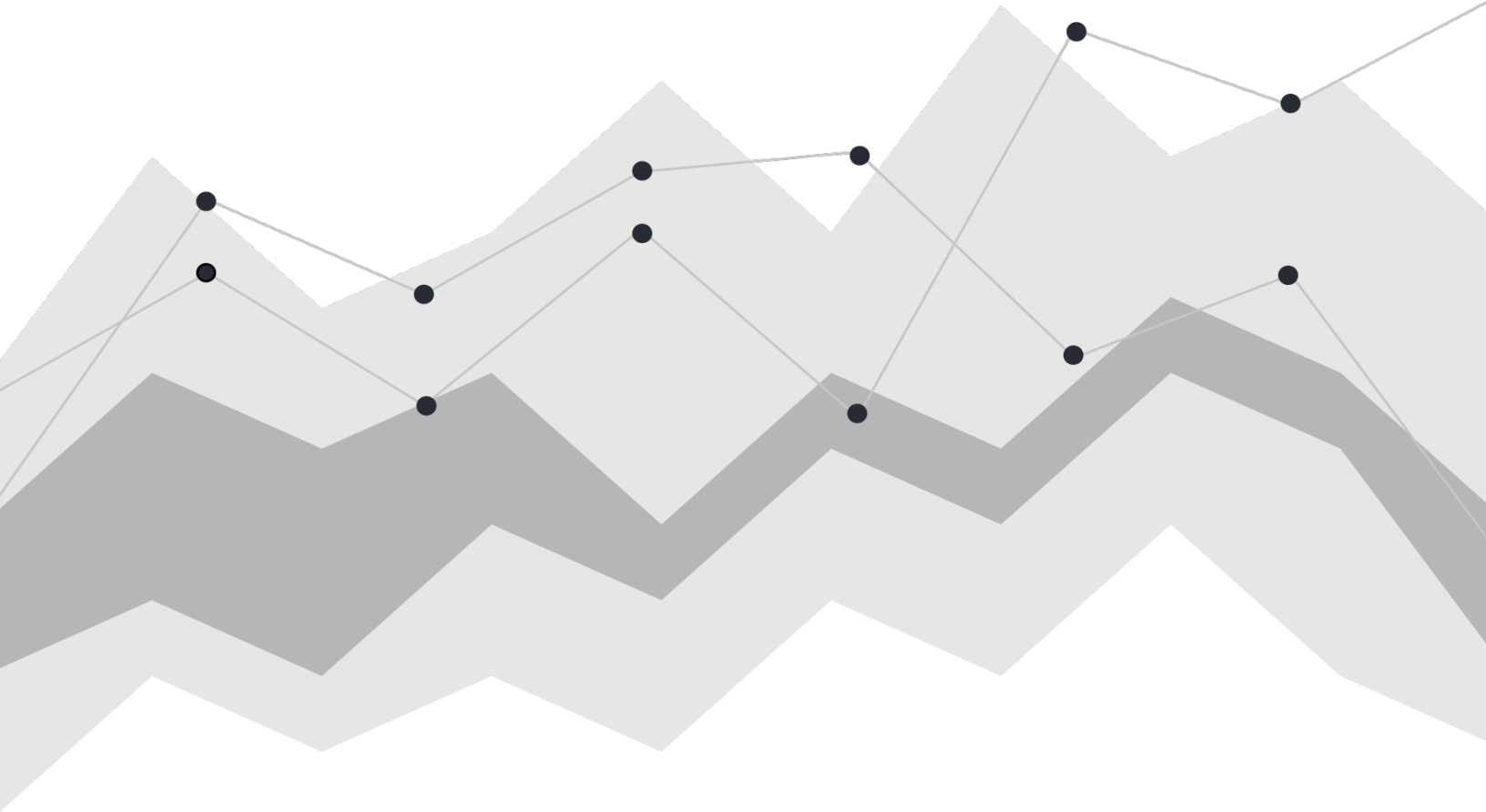
Researchers were provided with raw data from 12 online sportsbooks, consisting of odds from the 2018 NFL regular season. Odds data were provided for 173 of 256 total games in the 2018 NFL season. Odds for both pre-game and live-game wagering were provided, depending on availability.

Although exact figures are hard to come by in this highly competitive industry, the 12 online sportsbooks evaluated collectively represent the lion's share of the online sports betting market.

Odds were analyzed using traditional quantitative methods. While the calculations themselves are relatively straightforward, the huge number of data points to be analyzed required professional quantitative analysis to ensure accuracy.

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# Line Movement



## How Often Should the Line Move?

Ultimately, sports bettors are shopping for the best odds when determining where they are going to place their wagers. Odds in sports betting fluctuate in the lead up to an event based on both factors directly related to the game and the amount of money being wagered on each potential outcome. This fluctuation is referred to as line movement.

Bettors follow line movement because it indicates which side of the wager the money is falling on. Many bettors pursue a strategy of betting against the public, while others 'chase steam,' or closely monitor line movement to identify large wagers coming down on one side (this usually indicates an expert 'sharp' or group of sharps 'syndicate' has taken that side of the wager).

There's nothing wrong with a sportsbook moving the line more or less frequently – it's simply an indication of their responsiveness to changes in demand on either side of the wager. Bettors that prefer to monitor the lines closely throughout the week to capitalize on changes in demand will prefer sportsbooks with more line movement. Those who like to know they can rely on consistent pricing will prefer sportsbooks with less line movement.

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## Moneyline Odds Movement

Moneyline odds saw the greatest amount of pre-game movement across all sportsbooks evaluated. On average, bettors can expect to see the moneyline shift two times in the week leading up to an NFL matchup.

Compared to other types of wagers, the moneyline exhibits a much higher degree of variance in line movement between various sportsbooks:



Line Movement

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Among those evaluated, the sportsbook exhibiting the most line movement adjusted the pre-game line an average of 3.8 times during the 2018 NFL season. On the contrary, the sportsbook that kept their lines most consistent moved the odds an average of only 0.6 times from release to kick off.

On average, the moneyline odds changed 1.96 times from line release to kick off during the 2018 NFL season. Modest rounding places the industry standard for pre-game moneyline odds movement at two times per game.

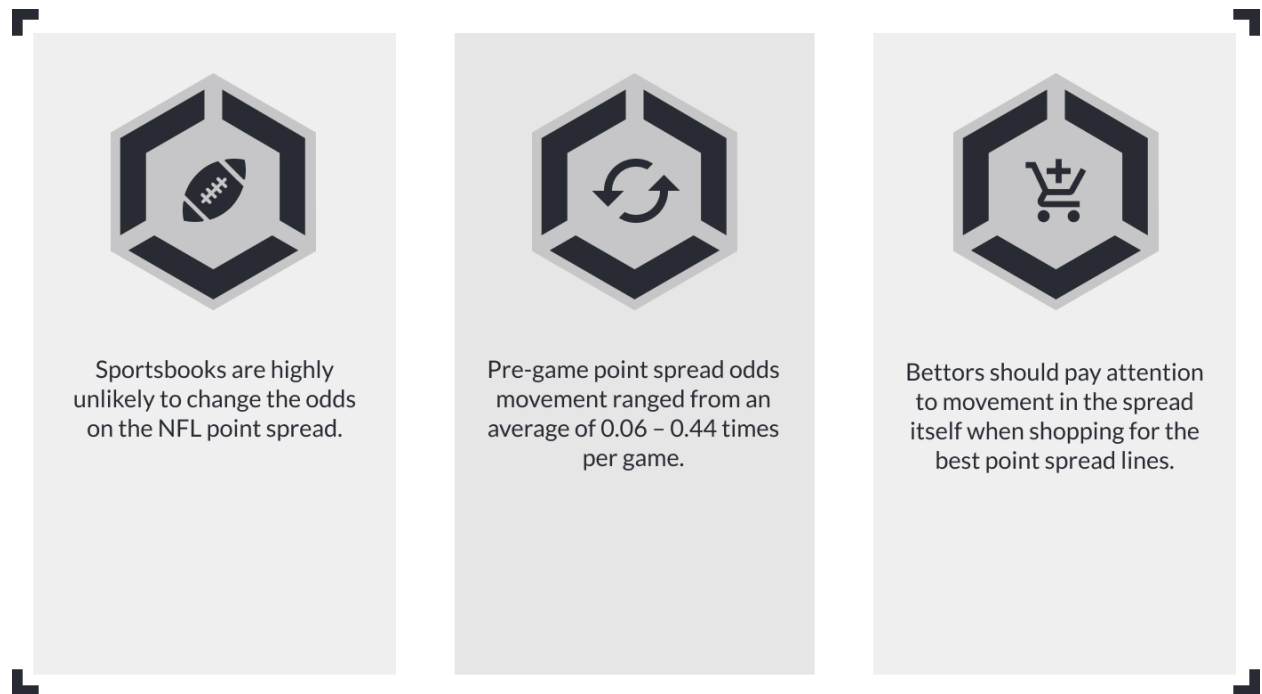
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## Point Spread Odds Movement

Point spread odds saw significantly less movement than those for the moneyline in the lead up to NFL gameday. In fact, the *data suggests that the point spread odds are unlikely to move at all*, which might be surprising to some casual observers.

It is worth noting, however, that unlike the moneyline, sportsbooks do not necessarily need to adjust the point spread odds to manipulate demand on either side of a given point spread wager. Because the spread itself can be adjusted to the same effect, there is little reason for sportsbooks to also modify the payout on either side. For example, the spread could be increased from +/- 7.5 to +/- 8.5 rather than changing the odds from -105 to -110.

The same is true of totals betting, which brings up one interesting aside: the point spread odds were more likely to shift than those for the total at all sportsbooks evaluated.



The infographic consists of three vertical panels, each with a hexagonal icon at the top and text below. The first panel has a football icon and text stating that sportsbooks are unlikely to change odds. The second panel has a refresh icon and text stating that pre-game odds movement is minimal. The third panel has a shopping cart icon and text advising bettors to pay attention to spread movement.

- Sportsbooks are highly unlikely to change the odds on the NFL point spread.**
- Pre-game point spread odds movement ranged from an average of 0.06 - 0.44 times per game.**
- Bettors should pay attention to movement in the spread itself when shopping for the best point spread lines.**

On average, the point spread odds changed an average of 0.21 times from line release to kick off during the 2018 NFL season. These data suggest that bettors should not expect to see odds movement on the point spread as an industry standard.

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## Totals Odds Movement

Totals odds saw virtually no movement during the 2018 NFL season.

Looking at the data, it's clear that all sportsbooks prefer to adjust the expected total rather than stray from the odds that are initially posted. This is a major difference that needs to be considered between moneyline betting vs. totals or spread betting.

Compared to the point spread, totals lines exhibit even less odds movement. A follow up study will be required to evaluate each sportsbooks' proclivity for adjusting the spread and totals themselves.



Sportsbooks almost never adjust the odds for totals lines.



Pre-game totals odds movement ranged from an average of 0.01 - 0.34 moves per game.



Bettors evaluating movement in totals lines should focus their efforts on the total itself, not the odds.

On average, totals odds changed just 0.14 times per game during the 2018 NFL season. These data suggest that bettors should not expect to see noticeable odds movement on NFL totals lines when laying wagers before the game begins.



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# Odds Movement: Takeaways

When qualifying industry standards for pre-game odds movement, there are some clear trends to take note of. With a small amount of rounding, we can identify the following industry standards for odds movement on the most popular types of wagers:

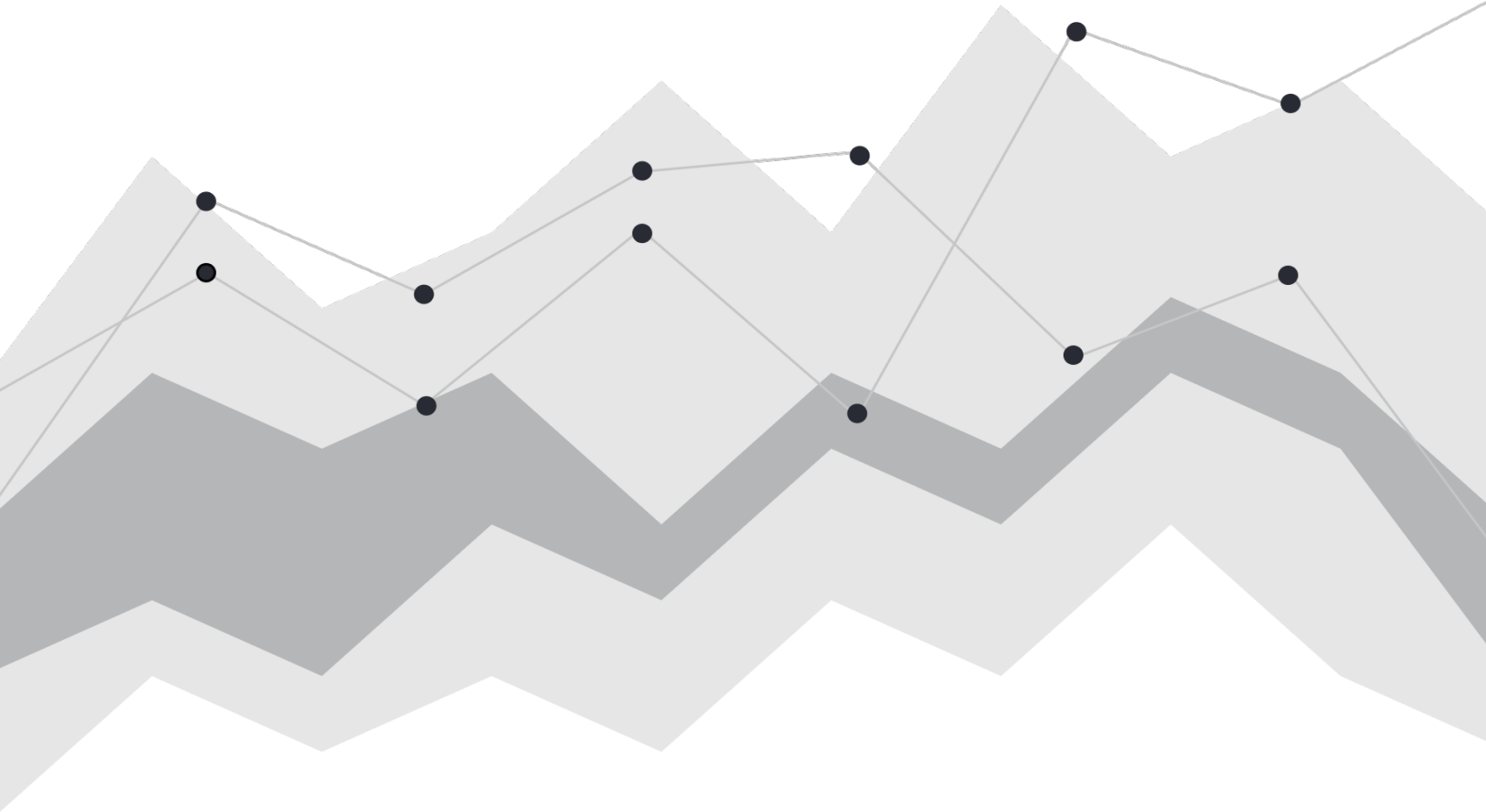
- **Moneyline:** Two moves per game.
- **Point Spread:** No odds movement.
- **Totals:** No odds movement.

Overall, the sportsbooks evaluated were very consistent with their tendency to move the line. The sportsbook that moved the line most often did so across all three bet types, as did the sportsbook that moved the line the least.

There is very little variation between sportsbooks when it comes to point spread and totals odds, whereas the amount of odds movement on moneylines varies significantly between sportsbooks. The takeaway for bettors is that it's worth keeping an eye on odds movement when betting the moneyline, but those who want to evaluate line movement on the point spread or totals will be better served observing the value of the total or spread itself.

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# Line Release Times



## How Early Should the Odds Be Posted?

Many sports bettors like to place their wagers far in advance of the sporting event in question, whereas others like to wait until the last minute to get in on the action. In any case, there are merits to each approach. Early odds tend to be a more accurate reflection of the oddsmaker's prediction of what will happen in the event, as they have not yet been heavily influenced by the amount of money coming in on either side.

Betting later offers advantages in the fact that bettors have a better idea of the injuries and weather changes that might affect the outcome. It also offers bettors the chance to see where the public is putting their money, which is crucial for those who like to bet against the public or chase steam moves.

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## Moneyline Line Release Times

Compared to point spread and totals lines, moneylines were the last to be released at all 12 sportsbooks evaluated in this study.

Ten out of 12 sportsbooks evaluated released totals and point spread lines at the same time, whereas only two released their moneyline that same day. In some cases, this discrepancy is striking – one sportsbook saw a 43-day delta between the average release of point spread/totals lines and moneyline odds.

- Only **three** of **12** sportsbooks released moneyline odds more than **ten days** in advance of the game.
- **Four** of **12** sportsbooks released moneyline odds approximately **one week** before game day.
- **Four** of **12** sportsbooks released moneyline odds only **three days** prior to game day.

The earliest moneyline odds were released at an average of 20 days prior to game day. The sportsbook with the second earliest average line release time followed at an average of five full days later.

The average moneyline odds release across all books was 7.9 days prior to game day. As an industry standard, it's fair to say that bettors should expect to be able to wager on NFL moneylines one week in advance of the game.

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## Point Spread Line Release Times

There is a great deal of variation in line release times for the point spread. While one sportsbook released their point spread lines an average of just three days in advance of the game, another released theirs at a striking average of 46 days in advance.

Bettors pursuing a strategy of putting down early money to avoid the influence of the public and big money on the line will find more options to do so on the point spread compared to the moneyline. At 11 of the 12 sportsbooks analyzed, the point spread was the first line to become available or was released at the same time as the totals line.

- **Two** of **12** sportsbooks released the point spread on average more than **40** days in advance.
- **Two** of **12** sportsbooks released the point spread on average between **25 – 39** days in advance.
- **None** of the sportsbooks evaluated released the point spread between **15 – 25** days in advance.
- **Three** of the **12** sportsbooks released the point spread on average between **10 – 15** days in advance.
- **Six** of the **12** sportsbooks released the point spread on average less than nine days in advance.

The average point spread odds release across all books was 18.6 days in advance of game day. This number is heavily influenced by outliers, so it's not possible to determine an industry standard for point spread line release times with the currently available data.

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## Totals Line Release Times

As with the point spread, there is a great deal of variation in line release times on totals wagers, which ranged from 3 - 46 days. Most sportsbooks evaluated (10 of 12) released totals and point spread lines at the same time.

Bettors who want to get down money early have plenty of options when it comes to totals betting, particularly compared to the moneyline. This is good news for bettors who want to jump on early odds that haven't yet been influenced by public money or steam moves.

- **Two** of **12** sportsbooks released the point spread on average more than **40** days in advance.
- **Two** of **12** sportsbooks released the point spread on average between **25 – 39** days in advance.
- **None** of the sportsbooks evaluated released the point spread between **15 – 25** days in advance.
- **Four** of the **12** sportsbooks released the point spread on average between **10 – 15** days in advance.
- **Five** of the **12** sportsbooks released the point spread on average less than nine days in advance.

Totals lines across all books were released an average of 18.6 days prior to game day. This number is identical to the average across all books for the point spread. This average was heavily influenced by outliers, making it less reliable as an industry standard.

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# Line Release Times: Takeaways

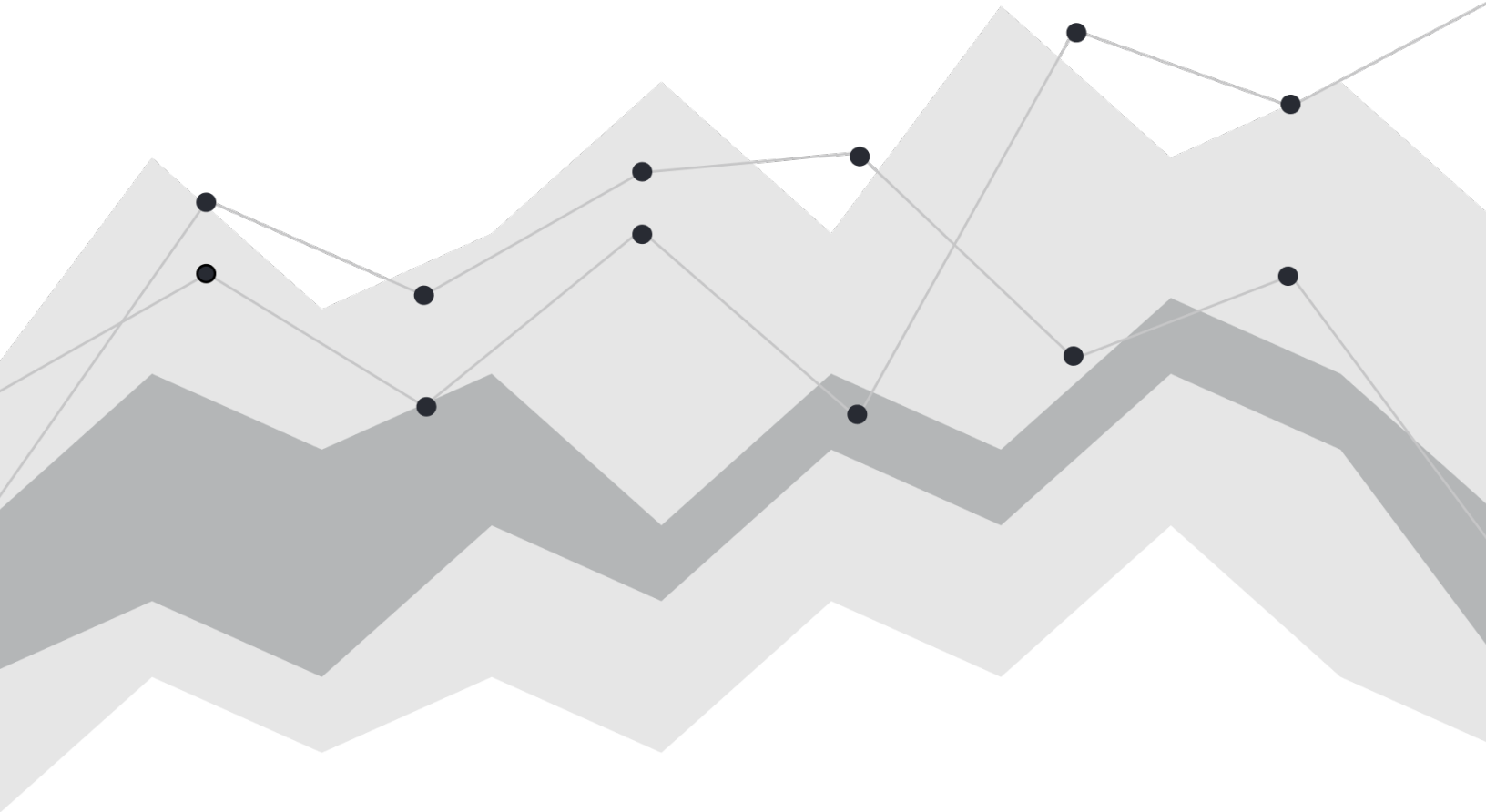
When qualifying industry standards for line release times, it's clear that some bet types exhibit significantly more variation between online sportsbooks. With the data available in this study and a modest amount of rounding, we can extract the following conclusions and industry standards:

- **Moneyline:** Lines released an average of **8** days prior to game. The relatively small amount of variance suggests this average is a reliable industry standard.
- **Point Spread:** Lines released an average of **19** days prior to game. The large degree of variance suggests this average should not be assumed as an industry standard.
- **Totals:** Lines released an average of **19** days prior to game. The large degree of variance suggests this average should not be assumed as an industry standard.

As mentioned previously, moneylines were released later than point spread and totals lines in virtually all circumstances. The degree of variation in line release times across all bet types suggests that sportsbooks do not coordinate timing with respect to releasing betting lines.

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# Comparing the Juice



## How Much Does Each Sportsbook Charge to Handle a Bet?

Sportsbooks don't rely on correctly picking winners to be viable businesses. In fact, sportsbooks aren't in the business of betting at all. They are in the business of facilitating betting. The business model is simply to attract enough action on each side of the wager to cover the pay out on the other side, and then collect the vigorish or juice as a profit.

The juice is integrated into the odds themselves in the form of overround, which is the sportsbook's way of taking wagers on a range of outcomes that's greater than the actual possible outcomes. For example, a sportsbook might set the odds at  $-300/+225$ , which translates to a total implied probability of 105%. 5% is the overround, which correlates closely to the amount of vigorish baked into the line.

Sports bettors operate on the thinnest of margins to turn a profit over the long run, so they are greatly concerned with the amount of juice included on the betting line. Extra dollar charged in juice cuts into a sports bettor's profits over time, meaning that higher juice requires them to win more often to stay in the green. All else equal, sports bettors will always prefer to bet at the sportsbook and on the lines with the lowest juice.

This study evaluated the 12 sportsbooks for the amount of juice charged on both traditional wagers placed before the game (pre-game juice) and on live wagers placed once the game is already underway (live game juice). We wanted to evaluate both the differences between sportsbooks and the differences between pre-game and live juice at each book.

## Evaluating Pre-Game Juice

For the purposes of this study, we evaluated pre-game juice to be the amount of vigorish included in the line at its initial release, prior to game start. Vigorish is expressed as a percentage for the purposes of this study, which is not to be confused with the percentage amount of overround included on each line. These numbers are often similar but not identical. The formula for calculating vigorish is as follows:

$$V = \frac{o}{(1 + o)} \quad \text{and} \quad O = \frac{v}{(1 - v)}$$

Where:  
"v" represents vigorish  
"o" represents overround

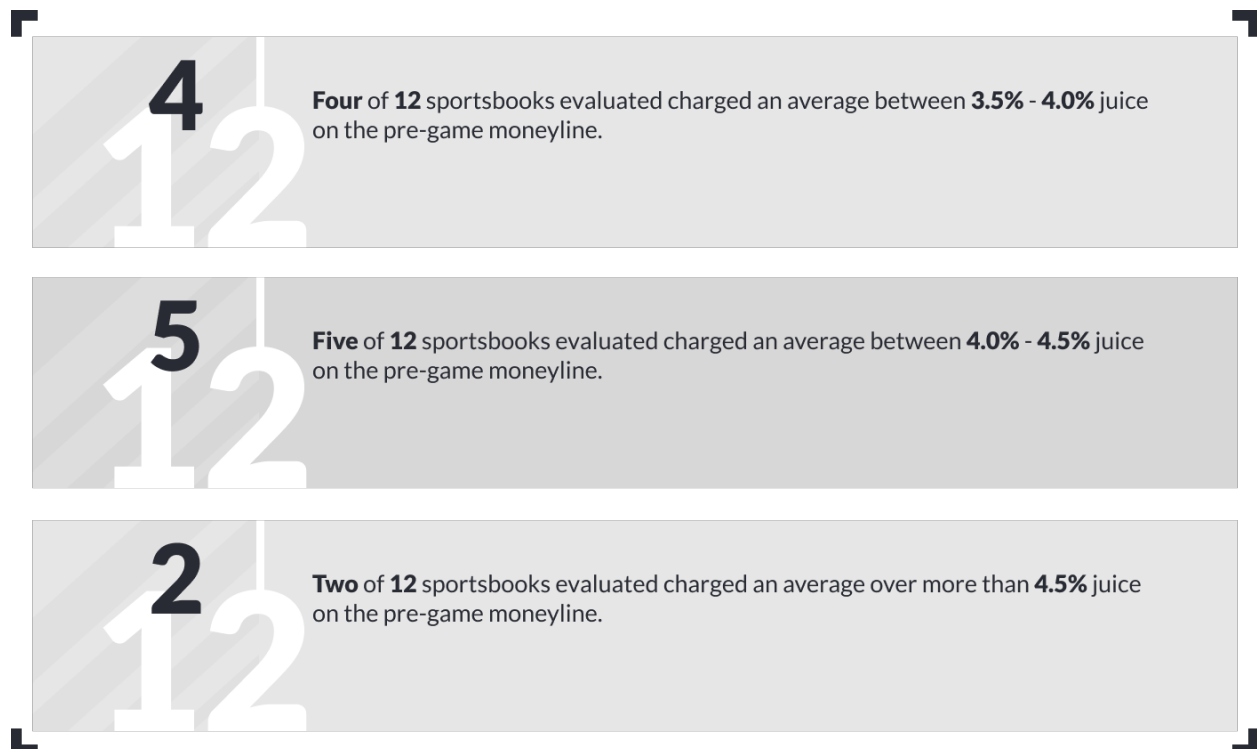


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## Moneyline Pre-Game Juice

The 12 sportsbooks evaluated exhibited a relatively small degree of variance in terms of pre-game juice charged on the moneyline. Ranging from 3.61% - 5.04%, most casual bettors likely would not be concerned with the small differences seen in moneyline juice.

That said, it's fair to assume that sharp or professional bettors who make their living on margins of just 1% - 2% will be extremely interested in even these minor differences, as they can amount to thousands or even hundreds of thousands of dollars in additional profits when considered at scale. Ultimately, the degree to which a bettor cares about the vigorish rate is determined by the amount of money they plan to wager over the long run.



The average amount of pre-game juice charged on the moneyline across all sportsbooks evaluated was 4.21%. Considering the relatively low degree of variance and lack of outliers in the data set, this number can be considered a reliable industry standard for pre-game moneyline juice.

## Point Spread Pre-Game Juice

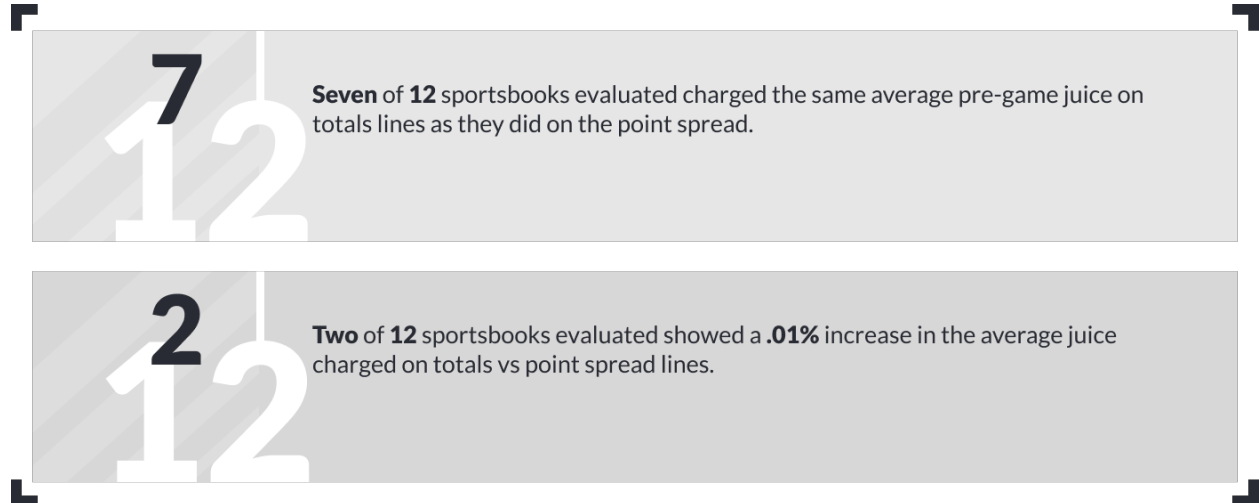
We observed even less variance in the amount of juice charged on pre-game point spread odds. Ranging from 4.53% - 4.95%, the difference seen here would likely be of interest to only the highest volume bettors.



The average amount of pre-game juice charged on the point spread across all sportsbooks evaluated was 4.61%. Considering the remarkable degree of conformity within this dataset, this number can be considered a reliable industry standard for pre-game point spread juice.

## Totals Pre-Game Juice

The amount of juice charged on pre-game totals lines also showed very little variation, ranging from 4.35% - 4.95%. It's unlikely that this difference would be considered significant by anyone but the highest volume bettors.



The average amount of pre-game juice charged on totals lines across all sportsbooks evaluated was 4.58%. This number can be considered a reliable industry standard thanks to the high degree of conformity seen in this data set.

## Evaluating Live Game Juice

Online sportsbooks possess a competitive advantage in their ability to quickly serve odds on game outcomes and events as they unfold in real time. Live betting is growing in popularity, with many sportsbooks and other gambling companies focusing their marketing efforts exclusively on mobile, in-game wagering.<sup>2</sup>

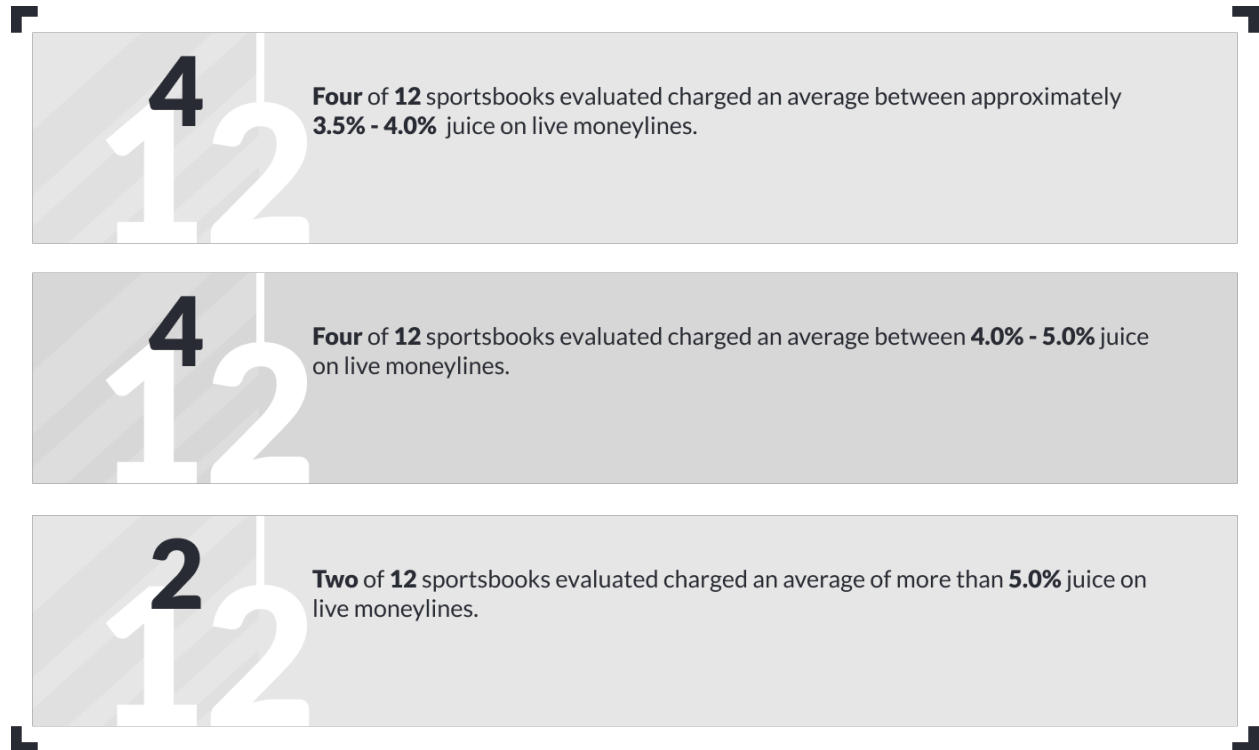
Demand for in-game wagering is high, and sportsbooks have been successful in capturing this fledgling market. In fact, one sportsbook reported that a staggering 80% of their overall sports betting revenue comes from live, in-game bets.<sup>3</sup> The nature of live betting differs from traditional pre-game wagers in terms of style of play, and the business model is different as well. This study evaluates live game juice, allowing for a direct comparison between sportsbooks and with the industry standard for traditional wagering.

<sup>2</sup>Killick, E.A. & Griffiths, M.D. Int J Ment Health Addiction (2018). <https://doi.org/10.1007/s11469-018-9896-6>

<sup>3</sup>Jackson, L. (2015). Live betting explosion at Bet365. Online-Betting.me.uk

## Moneyline Live Game Juice

Ten of 12 sportsbooks evaluated for this study offered live betting on the moneyline during the 2018 NFL season. They exhibited a greater degree of variance than was observed on the pre-game moneyline, ranging from 3.49% - 7.40%.



The average amount of juice charged on live moneylines across all sportsbooks evaluated was 4.40%. It is worth noting that if you remove a significant outlier, this average goes down to 3.66% which is significantly lower than the average 4.21% charged on pre-game moneylines at the same sportsbooks.

## Point Spread Live Game Juice

Eleven of the 12 sportsbooks evaluated offered live betting lines on the point spread during the 2018 NFL season. The amount of juice charged on live point spread lines was also consistently higher than that charged on pre-game moneylines; all books evaluated took a higher percentage on the spread versus the moneyline, ranging from 4.13% - 8.24%.



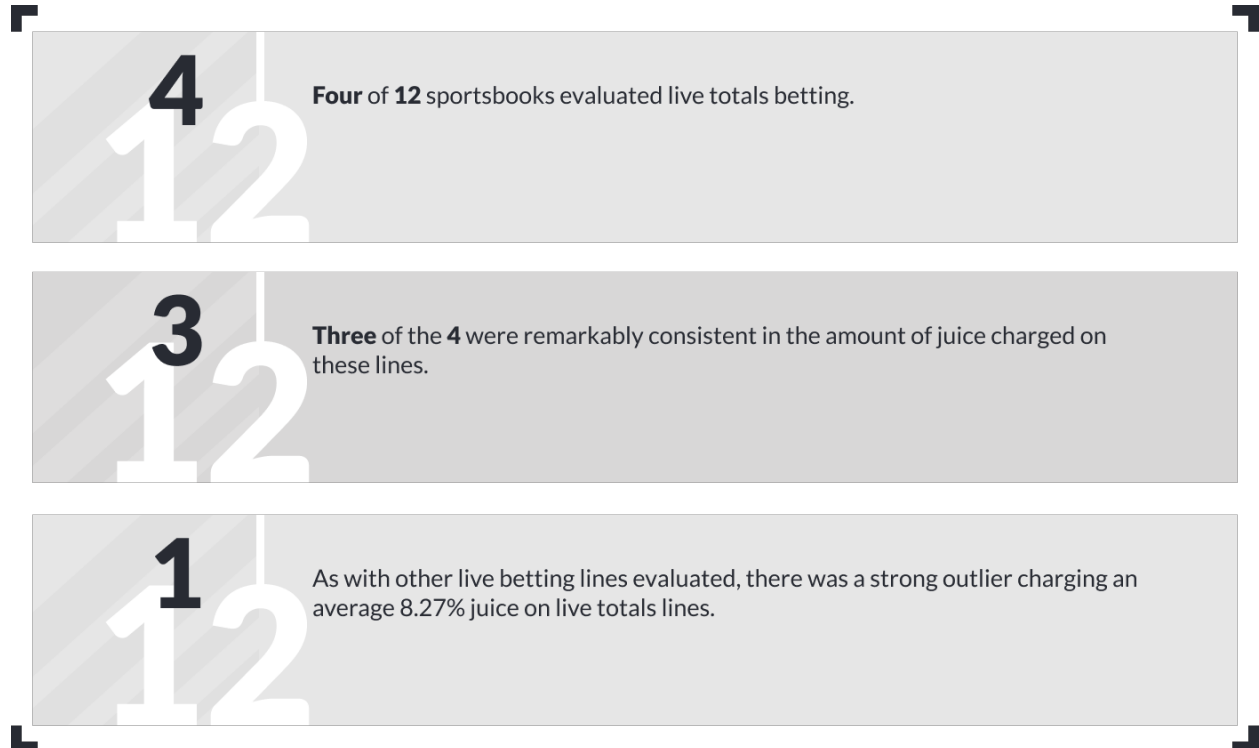
The average amount of juice charged on live point spreads across all sportsbooks evaluated was 4.99%. If you remove one significant outlier, this average goes down to 4.67%, which can be considered an industry standard for point spread live juice. This is only slightly higher than the industry standard for pre-game point spread juice at 4.61%.

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## Totals Live Game Juice

There are fewer data points to evaluate in terms of live totals betting. Considering the nature of totals betting, it becomes progressively easier for bettors to predict the game's final score as it progresses, making it a less attractive option for sportsbooks. Many sportsbooks choose to offer live totals lines on smaller portions of the game such as quarters, halves, or periods.

Vigorish charged on live totals lines ranged from 4.52% - 8.27%.



The average amount of juice charged on the live totals lines evaluated was 5.47%. If we remove the outlier, this number goes down to 4.54%. While there is currently not enough data to confidently assume this number as an industry standard, it is worth noting that it is quite consistent with the industry standard for juice charged on pre-game totals lines (4.58%).

# Average Juice Charged: Takeaways

There are some surprising takeaways when analyzing the data regarding both pre-game and live game juice. Many sports betting media outlets have cautioned bettors about live, in-game action, claiming that these lines always contain a higher amount of juice.<sup>4</sup>

The data evaluated here suggest that the average amount of juice charged is virtually the same on point spread and totals lines and is actually slightly lower on the moneyline. Including the outlier in the data skews these numbers, but the average amount of live betting juice charged there is *significantly* higher than all other books evaluated, suggesting that those data points should be removed when determining industry standards. This is welcome news for those who prefer to place their wagers as they watch the game.

**As a recap, here are the industry standards found for both pre-game and live game juice:**

Pre-Game Moneyline	<b>4.21%</b>
Pre-Game Point Spread	<b>4.61%</b>
Pre-Game Totals	<b>4.58%</b>
Live Moneyline	<b>3.66%</b>
Live Point Spread	<b>4.67%</b>
Totals	<b>Not Enough Data Available</b>

Our hope is that this data and analysis will be helpful to bettors looking to increase their edge when wagering at online sportsbooks, whether they prefer to do so before the game or as it progresses. Ultimately, each sportsbook offers a different consumer experience, and juice charged is only one factor that needs to be considered when shopping around for the best overall online betting site.

With so many options available, sports bettors have the opportunity to find an online betting site that fits their specific needs. SBD provides detailed reviews of major online sportsbooks that cater to a wide variety of specific betting experiences. Our goal when reviewing each site is not only to determine its overall reliability and value, but also to identify what type of bettors its features are best suited to.

Detailed reviews can be found at <https://www.sportsbettingdime.com/sportsbooks/>

<sup>4</sup>See <https://sharpside.com/sports-betting-dos-and-donts/>; <https://www.currentsportsbetting.com/live/>; <https://www.currentsportsbetting.com/guide/juice-and-vig/>

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# Conclusion

Following a thorough analysis of available odds from the 2018 NFL season, it is clear that bettors can expect to rely on certain industry standards when shopping around for an online sportsbook. The 12 online betting sites evaluated as part of this survey display a remarkable degree of similarity across all three factors evaluated: odds movement, line release times, and average juice charged.

Our goal at SBD is to foster a more informed community of online sports bettors. Research and awareness are crucial elements of the responsible betting behavior we advocate, and we strive to provide meaningful insights that help consumers and media understand the landscape of online sports betting to make smarter wagers and investments.

If you are interested in partnering with SBD on a future research project or are looking for more data regarding the state of the online sports betting industry, please do not hesitate to get in touch.





# Understanding Sportsbook Industry Standards: A Comprehensive Data Analysis of Line Movement, Line Release, and Vigorish