Abstract

This paper is the first to compare how major gambling brands are using the popular social media platform Twitter, looking at how gambling brands vary in the frequency of their messages, the content of their tweets and engagement with their Twitter activity. 63,913 tweets were collected from seven well known British gambling brands (Bet365, Betfair, Betfred, Coral, Ladbrokes, Paddy Power, William Hill) and their associated Twitter accounts (Total Number of Accounts = 22) via the Twitter Application Program Interface (API) on the 1st August 2018. Companies varied in their approach to Twitter, some posting from a single account whereas others segmented their tweets by topic or purpose. Frequency analysis of tweets showed that on average major gambling brands tweeted anywhere between 89-202 tweets a day. Sentiment analysis of tweets showed a positivity bias with the language in tweets being associated with positive emotions like anticipation, trust and joy. Paddy Power, Bet365 and Coral produced the content that received the highest number of likes or shares from other twitter users. This study highlights the extent to which companies are using Twitter; followers could potentially be receiving hundreds of messages per day.

Key words: Twitter, Advertising, Gambling, Betting, Sports

Abstract Word Count: 190

Manuscript Word Count: 5,240

Twitter is a microblogging social media platform where users such as the general public, academics, celebrities, politicians and companies share posts containing text, images, videos and hyperlinks that have 280 or fewer characters (previously 140). Twitter users share content to their network of 'followers', who have opted in to be shown new posts (or 'tweets') from that user on their news feed. Tweets can also be directed at specific accounts using the '@' operator (Honeycutt & Herring, 2009), and be linked to specific topics using the '#' operator (boyd, Golder, & Lotan, 2010). Tweets can be 'liked', where a user saves a tweet to a timeline on their profile, or 'retweeted', where the tweet is broadcast across the user's own network of followers (boyd et al., 2010).

Twitter has been widely used to attempt to capture sentiment to predict outcomes to varying degrees from topics such as the economy and the stock market (Bollen, Mao, & Zeng, 2011), political fortune (Gayo-Avello, 2013) and sporting events (Schumaker, Jarmoszko, & Labedz, 2016; Sinha, Dyer, Gimpel, & Smith, 2013) using millions of tweets from Twitter's voluminous userbase, using API's such as Firehose. It has also been used to study specific groups of people, such as those from a specific nationality (Bruns, Moon, Münch, & Sadkowsky, 2017), journalists (Hanusch & Bruns, 2016), or figures in higher education (Kimmons, Veletsianos, & Woodward, 2017) by accessing data from targeted profiles.

The gambling industry is one of many kinds of businesses that use Twitter. What is not known is how gambling companies use Twitter, when they use it, and what approaches they take toward generating further custom and engaging with gamblers and the general public. This paper outlines for the first time how British gambling operators, primarily in the betting sector, use Twitter to advertise their products to a wider audience with particular reference to when companies use Twitter, the content of their tweets, the language they employ and how many likes and retweets different gambling brands twitter activities have received. In doing

so, we combine approaches to measuring sentiment used on large volumes of Twitter data with targeting our analysis to a restricted number of accounts from the British betting industry.

The United Kingdom has a comparatively liberalised environment for advertising, following the implementation of the 2005 Gambling Act in 2007. The 2005 Act represented a shift in regulatory opinion toward gambling, including advertising, moving away from limiting demand to treating gambling as another part of the entertainment sector (Hörnle & Carran, 2016), albeit with groups (e.g. problem gamblers and youth) that might need to be protected from harm. The consequence of this was an increasing freedom for gambling companies to advertise their products on TV and radio, with some industry sponsored restrictions such as a 9pm 'watershed' which gambling adverts are not shown prior to, so long as it is not during a sporting event.

This has been recently revised, as advertising codes have been amended to restrict adverts from certain practices (Woodhouse, 2018), although it has been found that many adverts pertaining to the World Cup held later in 2018 did not meet these guidelines (Newall, Thobhani, Walasek, & Meyer, 2018). The Act also relaxed restrictions on sponsorship of sporting products, with many English soccer clubs now being sponsored by gambling companies. In addition to 'traditional' media avenues, there has also been a growth in advertising on the internet and social media, as the implementation of the Act coincided with the emergence of the latter as a medium. Consequently, most gambling companies have active presences on social media, using platforms such as Twitter to reach a large number of people (Gainsbury, Delfabbro, King, & Hing, 2016). Although this analysis is primarily concerned with gambling companies that operate in the UK it should be recognised that many of them have international Twitter accounts that extend to countries like the United States, Australia, Belgium, Italy etc. This means that while there is a wealth of data available, it has

generally not been used thus far.

One of the purposes of this paper is to consider the extent to which gambling companies' activity on Twitter is purely marketing, or whether there are additional functions Twitter is used for. However, it is necessary first to explore the relationship between advertising and the people it reaches. There is an extensive literature on gambling advertising that can be broadly subdivided into two strands. The first is the impact of gambling advertising on gamblers and the general public. This has looked at the attitudes and opinions held toward gambling advertising, and whether advertising affects gamblers' propensity to gamble. The former line of research has typically found that gamblers with greater problem gambling severity scores report greater exposure or sensitivity to gambling adverts (Binde & Romild, 2018; Clemens, Hanewinkel, & Morgenstern, 2017), that they had more positive opinions of them, and that they increased their gambling behaviour as a result of the advert (Hing, Cherney, Blaszczynski, Gainsbury, & Lubman, 2014; Hing, Lamont, Vitartas, & Fink, 2015).

The second line of research, and of more central interest to this paper, has looked at the content of the gambling adverts themselves, predominantly using qualitative and mixed methods approaches to derive the key themes embedded in gambling advertisements. Gambling adverts unsurprisingly present gambling in a positive light, by portraying gambling as a glamorous and exciting activity, and by the ease of winning and winning money (Derevensky, Sklar, Gupta, & Messerlian, 2010; Gainsbury et al., 2016). Adverts also highlight the ease of use and accessibility of their products, often demonstrating how to gamble in them (Gainsbury et al., 2016; McMullan & Kervin, 2012). Gambling adverts often seek to normalise gambling as a leisure activity, for instance by tying it to popular culture or sport, or by embedding it within social events such as socialising with friends or drinking alcohol (Abarbanel, Gainsbury, King, Hing, & Delfabbro, 2017; Deans, Thomas, Daube, Derevensky, & Gordon, 2016; Lopez-Gonzalez, Guerrero-Sole, & Griffiths, 2017; McMullan

& Miller, 2010). Adverts in some sectors such as betting also exhort gamblers to bet as quickly as possible (Newall et al., 2018), and are designed to target specific sectors of the population, namely young men (Deans et al., 2016). However, while these studies have found common themes in the content of gambling advertising, this study aims to go further by examining differences in approaches to advertising on Twitter between gambling brands.

Twitter and gambling advertising

Despite the popularity of Twitter as a social media platform and its use by gambling companies, there is little research on how these companies use Twitter to build their followings and promulgate their business. Previous research looking at Twitter has tended to compare content across multiple forms of social media (Abarbanel et al., 2017; Gainsbury et al., 2016). However, there are some features of Twitter that may make it distinctive from other types of social media.

One of the potential benefits for companies using Twitter is its timeliness (Gainsbury, King, Hing, & Delfabbro, 2015); while a company using TV or radio adverts to promote live odds will have to wait until a break in the match, Twitter is designed in a way to continuously feed content to its users. This might be especially important for betting, because alongside its cognitive dimension there is also a behavioural literature that suggests bettors might become sensitive to the underlying temporal structure behind a reward (Dickerson, 1979). Therefore, as it appears the messaging of adverts focuses on the timeliness of betting (Newall et al., 2018), Twitter is potentially the optimal social media platform to take advantage of this as it emphasises presenting users with a constant stream of content.

The other advantage is the potential reach of Twitter. Twitter is designed to be used to share content; users can reply, like or retweet other people's posts, each of which can show the original post on the timeline of the user's followers. This means that popular content can

reach a much wider audience. This also ties into some of the content in gambling advertising, as by harnessing popular culture and humour (Gainsbury et al., 2016; Sklar & Derevensky, 2010), gambling companies can use Twitter to reach segments of the population that might not be as engaged with gambling as other groups where advertising is common (i.e. sports fans).

Current Study

The current study adds to the literature by investigating for the first time how large gambling brands are using Twitter to engage with their customers and advertise their products. This paper explores the frequency with which gambling brands tweet their followers. It also investigates the content of tweets by looking at the number of pictures, URL's and hastags included in messages, as well, as exploring the emotion framing of messages via sentiment analysis. Finally, this paper assesses the number of likes and retweets different gambling brands have received on their twitter activity.

Method

Sample

A total of 63,913 tweets were collected from seven well known gambling brands (Bet365, Betfair, Betfred, Coral, Ladbrokes, Paddy Power, William Hill) and their associated Twitter accounts (Total Number of Accounts = 22) via the Twitter Application Program Interface (API) on the 1st August 2018. Up to 3,200 tweets were collected from each of the gambling brands Twitter accounts. This was because Twitter's API only allows the most recent 3,200 tweets to be pulled from each account. The exact numbers from each account vary due to the idiosyncrasies of the Twitter API. Of the 63,913 tweets 7, 367 (12%) tweets are retweets (reposting another users content) meaning 56,546 (88%) are generated by the gambling brands. The time periods the tweets covered varied from 17 days in the case of

William Hill to 1,695 days for Paddy Power Politics (see Table 1.). The average number of tweets sent a day also varies substantially from 1.88 tweets from Paddy Power Politics to 188 tweets from William Hill. At the time of data collection, the smallest account had 1,667 followers and the largest account had 642, 023 followers.

[Insert Table 1]

Data Collection

Data collection was divided into two stages: first, we sought to identify which companies and associated Twitter accounts to collect and second, how to practically acquire the tweets.

Identifying Gambling Companies' Twitter Accounts

To get an overview of how gambling companies are using Twitter to advertise their products in the UK we decided to look at the biggest five gambling companies (Ladbrokes-Coral Plc, William Hill, Paddy Power Betfair Plc, Bet365 Group Ltd and Betfred) identified by total revenue (Online Betting, 2018). These five companies are actually seven brands due to mergers between Ladbrokes and Coral, as well as, Paddy Power and Betfair. Each of these seven gambling brands were searched for on Twitter for their associated accounts. To avoid fake accounts not associated with the company each account had to pass six criteria: It had to have over 1,000 tweets, over 1,000 followers, used official corporate logos, had actively posted in the last month, was based in the UK, and advertised gambling products on the account (see Appendix A for full table of search results).

Acquiring tweets from Twitter

Data was collected using the 'rtweet' package in R (Kearney, 2018). First an application was set up in Twitter to receive keys and access tokens to allow R to access

Twitter's API (see Galarnyk, 2017 for more details). Next, a Twitter token is created using the create_token function and the keys and access token received from the Twitter application. Once a token has been created this can be passed to the 'get_timelines' function to acquire the timelines of each of the seven gambling companies and their 22 Twitter accounts. For access to the full script please see: https://bit.ly/2JYBob2.

Pre-Analysis

Frequency analysis was done at the brand level which means that some brands like Coral only had one account whilst others like Betfair had multiple accounts. Due to Twitter providing only the most recent 3,200 tweets per account some accounts are very active posting a lot each day meaning that the duration of time over which the tweets are collected is small (i.e. William Hill tweets only cover 17 days) whilst less active accounts like Paddy Power Politics extend over longer periods of time (i.e. 1,695 days). This would distort the frequency analysis since a company like Coral with only one well used account would have an average tweet per day of 106.67 (3200 tweets / 30 days) whilst William Hill which has two accounts (William Hill and William Hill Help) would have an average message per day of 53.78 (6400 tweets / 119 days). To get a fair reflection of the average frequency at which brands were tweeting across all their accounts the frequency analysis is conducted on the time period where we have data from all the accounts (16th July 2018- 1st August 2018). This means the frequency analysis is conducted on 15, 419 tweets.

Sentiment analysis is a method of analysing words, phrases, documents or in this case tweets to explore the emotional content of the text particularly in relation to its positive or negative polarity. We use the National Research Council (of Canada) (NRC) emotional lexicon (Mohammad & Turney, 2013) that contains over 10,000 human annotated words (crowdsourced using Amazon's Mechanical Turk), which were used in around 25,000

different senses (contexts) with each word being rated as either positive, negative or neutral (Mohammad & Turney, 2010, 2013). Each word also has ratings with the strength of associations (rated on a four point scale from not associated, to weakly, moderately, or strongly associated) to Plutchnik's eight basic emotions (Joy, Sadness, Anger, Fear, Trust, Disgust and Surprise) (Plutchik, 1980). Each of the words and senses were rated by five different MTurk users, and were shown to have strong inter-rater reliability. In the Syuzhet package (Jockers, 2017), sentiment is operationalized as the count of the number of words in a tweet that are associated with an emotion, where association in turn is defined as being non-emotive (i.e. not associated or weakly associative) or emotive (moderately or strongly associated).

Sentiment analysis relies on the assumption that different words express different emotions for example, congratulate and exquisite are words associated with joy just like inconsequential and rainy are associated with sadness (Mohammad & Turney, 2013). The emotional content of words can change within the context they are used within, but in the case of this lexicon words were validated across the number of different senses the word could be used in. This method of looking at the emotionality of words within tweets can be a good starting point to assess the overall broad patterns of emotionality within tweets created by large gambling brands. Sentiment analysis was done in R using the Syuzhet package (Jockers, 2017). Comparisons between brands were conducted using a one-way analysis of variance (ANOVA), using the 'aov' function in *R*'s base package (R Core Team, 2018). Effect sizes (η^2) was calculated using the Collection of Convenient Functions for Common Statistical Computations ('sjstats') package (Lüdecke, 2019), and post-hoc comparisons (Tukey's Honestly Significant Difference) was conducted using the TukeyHSD function in *R*'s base package.

Analysis and measurements

Gambling brands' use of Twitter was examined in three stages. First, we examined the frequency of tweeting over a 16-day period between the 15th July 2018 and 1st August 2018. This period was chosen because it was the interval where all of the account activity for all of the accounts could be obtained using Twitter's API. In this period, the number of tweets per day, the days of the week the tweets were posted, and the times of the day where the tweets were posted were compared across the different gambling brands. The second stage compared the content of the tweets across the different brands, using all of the tweets gathered using Twitter's API. We compared the proportion of tweets using different kinds of content (URL's, photo's), the hashtags employed, and the emotional content of the tweets across the different brands. Finally, the third phase looked at different kinds of engagement across the brands. The number of likes and retweets were pulled from each tweet collected, which were then compared across the brands.

Results

The analysis of gambling brands use of Twitter is broken down into three sections reflecting the frequency of Twitter use, the content of created tweets and the way in which Twitter users engaged with the tweets.

Frequency of Tweets

Frequency analysis on the 15, 419 tweets made between 15th July to 1st August showed that gambling brands, including all their gambling accounts, varied substantially in the average number of tweets made per day (see Table 1). William Hill tweeted the most on average with 202.76 tweets per day whilst Coral tweeted the least with 89.06. The gambling brands showed similarities with few tweets being made in the late evening or early morning (see Figure 1). Some gambling brands like William Hill and Bet365 have notable increases

throughout the day with peaks at 11.00, 15.00 or 16.00 whilst other brands like Betfred are more consistent with their tweeting throughout the day. Looking at activities across the different days of the weeks shows that a number of companies (William Hill, Bet365, and Ladbrokes) tweeted most frequently on Sunday, which may be due to the World Cup final that took place on Sunday 15th July 2018.

[Insert Figure 2]

[Insert Figure 3]

Content of Tweets

The content of tweets varied across the seven gambling brands. For example, Bet365 and Coral have made their content more visual with 68% and 52% of their tweets containing photo's (see Table 2). Paddy Power more than any other company includes URL's in their tweets (see Table 2). The majority of William Hill and Ladbrokes messages are actually replies to user requests most likely to their 'youroddds' or 'getaprice' hashtags where users can create their own bets and receive odds for them (see Table 3).

[Insert Table 2]

[Insert Table 3]

Table 3 shows 'yourodds' and 'getaprice' were the two most frequently used hashtags out of all of the hashtags used by the seven gambling brands. Except for the CS (customer service) hashtag used by Ladbrokes all the other most frequently used hashtags are either individual brands own create your own bets service (i.e. 'yourcall' hashtag by Coral or 'whatsoddpaddy' by Paddy Power) or major sporting events like the World Cup or The Ashes. Table 4 shows the Top 5 hashtags for each of the seven gambling brands. Betfred, Betfair and Coral have a number of hashtags that all relate to topical sporting events like the

World Cup, The Open, Cheltenham Festival, Wimbledon and The Ashes whilst brands like William Hill and Ladbrokes use one or two hashtags almost exclusively with very few other hashtags being used that frequently. Interestingly, a number of the hashtags like '365higherorlower', '365chipcount' and 'paddypileup' all relate to tweets where brands have set up competitions which offer users the chance of gaining free casino currency to bet with. For example, the '365chipcount' run by Bet365 poker account asks followers to guess the number of poker chips present within a picture they tweet with the correct answer winning free stake money to be used in their next poker game. As Table 5 shows none of the gambling brands, with the possible exception of Betfair, use the responsible gambling hashtag 'whenthefunstopsstop' that frequently. However, this does not discount the possibility that responsible gambling information is not disseminated in other forms like embedding messages within images.

[Insert Table 4]

[Insert Table 5]

Sentiment analysis using the NRC emotional lexicon conducted on the 63,913 tweets showed that gambling companies predominately use words associated with positive emotions than words associated with negative emotions within their tweets (see Figure 3). In particular, words associated with anticipation, trust and joy were commonly used within tweets from many of the major gambling brands. Interestingly, the words used by William Hill tweets had less emotional association in comparison to the other gambling brands who seem to use more emotional language. This might be because many of their tweets were responding to bet requests from customers. Statistical analysis revealed that the companies significantly differed on all eight emotions (see Table 6), as well as overall positivity and negativity (p's < .001), but the effect sizes were small, with η^2 ranging from .008 (disgust) to .031 (joy) (see

Table 7). Differences between the brands were greater for positive than negative emotions, which was borne out in effect sizes for overall positivity ($\eta^2 = .044$) and negativity ($\eta^2 = .019$). This is in part because the use of negative emotions was generally rare in the companies' tweets.

[Insert Figure 3]

[Insert Table 6]

[Insert Table 7]

Tweet engagement

In order to assess the extent to which the public are engaged with a gambling brands Twitter activity, we analysed the number of retweets (reposting another user's tweet so that people you follow can see that content) and likes (a way of bookmarking the message for easy viewing later) that their tweets receive. For a proportion of the tweets (n = 7,637), the gambling companies had retweeted other users content, which in some cases had already been shared thousands of times and had already gone viral. The 7,637 retweets were filtered out before analysing favourite and retweets since it is more informative to know how popular a gambling brands own generated content is than finding out that they retweet popular messages. Table 2 shows that brands like Paddy Power, Bet365 and Coral are creating content that Twitter users wish to share with others. Similarly, Table 2 shows that it is the same three brands that are creating content that users have enjoyed and decided to like.

Discussion

The frequency analysis shows that the least active brand (Coral) still on average tweeted 89 times a day with more active brands like William Hill and Bet365 tweeting far more often. The level of frequency at which tweets were sent suggests that people who follow

gambling companies on Twitter are potentially being sent a considerable amount of content per day. The exact number of tweets received by followers will depend upon the mechanics of Twitters timeline algorithm. Receiving a large number of tweets per day could be problematic for Twitter followers of these brands if they are trying to reduce their gambling behaviour as it means they could be receiving continuous reminders of gambling odds or sporting events that they can bet on. A number of studies have suggested that seeing advertisements for gambling related products could act as a trigger to begin gambling which is particularly true for problem gamblers or for those wishing to stop (Binde, 2009; Hing et al., 2014; Hing, Vitartas, & Lamont, 2013). Continuous reminders and information about gambling could also be problematic as it can make followers of these gambling brands very aware of gambling opportunities, which is a factor that is associated with more harmful levels of gambling (Binde, 2007).

Unlike conventional forms of advertising through print, radio and television advertising through social media sites like Twitter allows viewers of the advertisement to very quickly and easily see an advert in a tweet, click on a URL and place a bet. There have also been suggestions that frequent and ever present gambling advertisements could help with the normalisation of gambling as an everyday part of normal life (Binde, 2007; Gainsbury et al., 2016; McMullan & Miller, 2010). A productive avenue for future research would be to explore how gambling companies twitter behaviour effects their followers' behaviours. The frequency analysis also showed that brands did vary with their level of Twitter activity throughout the day and over the course of a week with some brands like William Hill having an increased frequency of tweets coinciding with major sporting events like the world cup football final on Sunday at 15.00. This fits with content and thematic analyses of other gambling related advertisement where sport has also been a dominant theme (Derevensky et al., 2010; Gainsbury et al., 2015).

Brands also differ in the content of their Twitter messages, with Bet365 and Coral having more visual tweets with more pictures in their tweets whilst Paddy Power was the most likely brand to include URL's in their tweets. Brands varied substantially in their use of hashtags with two brands using one or two hashtags very frequently like William Hill (i.e. #yourodds) and Ladbrokes (i.e. #getaprice). Typically, these hashtags allowed users to create their own bets and get odds from the companies on these. Other brands like Betfred, Betfair and Coral used hashtags focussed on major sporting events like the World Cup, The Open and The Ashes. If we look at these hashtags we can gain insights into the individual strengths of each brand with Betfair using the #cheltenhamfestival hashtag for the Cheltenham Horse Racing Festival. Betfair is also the only brand that has an official Twitter account that purely focusses on horse racing. Bet365 and Paddy Power also uses hashtags that connect to and promote competitions they run for free stake money (i.e. #higherorlower365 or #paddyppileup). For example, Bet365 has a competition to guess the number of chips presented in a photo with the closest guess earning them free chips to use in Bet365 online poker site.

Taking the content of the messages and the hashtags together, they suggest that gambling brands are using quite different strategies to marketing their products. This further indicates that previous studies that have taken Twitter content as being relatively homogenous may be missing important differences between companies in their marketing strategies (Gainsbury et al., 2016; Sklar & Derevensky, 2010). In addition to marketing, some companies appear to be using their social media to build on their relationships with existing customers (i.e. a large proportion of the output from some companies was based around responding to requests for bets), whereas other appear to be far more outward focussed (i.e. creating viral content), using humorous and informative posts to reach a wider audience. While the latter increases brand recognition, it is not so much about the direct marketing of

betting products. We find for the first time that some gambling companies are using social media to hold competitions, with casino currency offered as a prize. These have some similarities to the use of inducements by gambling companies, such as free bets or introductory bets with generous odds, which typically require further betting to release winnings. For example, if an introductory bet is successful, this is converted into credits which can be used for free bets, where the winnings minus the free bet can be cashed out.

The sentiment analyses on the words used within tweets revealed that the emotionality of the language differs between gambling brands with William Hill using very neutral language whilst brands like Coral and Ladbrokes are using words that are associated with positive emotions like anticipation, joy and trust. Across all gambling brands the use of negative words associated with anger, sadness, fear and disgust were very infrequent whilst words that are associated with positive emotions where more frequent which supports the idea that gambling advertisements contain a positivity bias (Binde 2007; Hing et al. 2014; Kim et al. 2017).

The analysis of retweets and likes shows clearly that three brands: Paddy Power, Bet365 and Coral were very effective at creating content that their followers enjoyed so much so they wanted to like or repost their tweets to others. Paddy Power is well known for its use of humorous and on occasion provocative tweets which may well explain why it has so many tweets liked and retweeted (Litsa, 2016). All three brands that produced the most likeable content also happen to have the largest number of followers so it is difficult to know whether they have the most liked content because it goes out to the most people or their content is of a standard that people decide to follow them.

Limitations and future directions

Twitter's API only allows the last 3,200 tweets to be taken from each account, meaning that

for more active accounts, or companies that only use one account, some of the content covers a smaller period of time. Moreover, because this period coincided with the 2018 World Cup, some of the content may be less representative than the regular output from these accounts. It is unclear whether the activities of the betting sector generalise to other forms of gambling, although many of these companies now have gaming operations and many of these were included in this analysis. While the sentiment analysis employed in this study uses a broader range of emotions than others taken from Twitter (Bollen et al., 2011; Schumaker et al., 2016), the approach can be insensitive to instances where certain words are used in humorous contexts, especially using irony or sarcasm. While the NRC lexicon attempts to overcome this by validating different senses in which a word is used, this remains a weakness of using non-qualitative approaches to process textual data.

The findings of this study are primarily descriptive, looking at the volume of tweeting activity, the extent to which the tweets are engaged with by the general public, and the emotional content among the language used. This highlights the need for prospective research, conducted longitudinally, that can explore Twitter behaviour further, particularly into the odds offered by betting companies and the factors that modulate how these change over time. Because we take data from multiple companies' accounts, this could be compared with real time sports events to see how different companies' odds change in relation to events occurring within the sporting fixture.

Another key direction is to look outwards at the gamblers themselves. Twitter data has been shown to be effective at estimating underlying attributes such as demographics, and political orientation. Moreover, given that Twitter has a substantial community of users affected negatively by gambling, there is clear cause to hypothesize that there are multiple overlapping populations that might be reached by gambling tweets. Thus, analyses of the networks of followers to gambling websites is warranted (Bruns et al., 2017; Guerrero-Solé,

2017), in particular to determine whether there are groups that are unique to specific companies' accounts, or there are networks of people engaged with these tweets for different reasons. Further, because it has been established that demographic details can be estimated from relatively sparse information (around 200 tweets) from users' Twitter profiles (Morgan-Lopez, Kim, Chew, & Ruddle, 2017), this could be used to segment followers to a gambling companies profiles based on their demographics, which in turn are broadly predictive of their likelihood to gamble.

Conclusions

Major gambling brands are active Twitter users with many of them each day sending over a 100 tweets. Different gambling brands have different strategies whilst using Twitter with Paddy Power, Bet365 and Coral producing very visual and humorous content that receives a lot of likes or retweets to William Hill and Ladbrokes who use Twitter a lot to respond to user requests for odds on their own customized bets. This indicates some companies are primarily using Twitter for outward marketing, focusing on brand recognition, whereas other are using Twitter inwardly, focusing on existing customers. Sentiment analysis showed that all brands, with the exception of William Hill, were using positive language in their tweets with emotions of anticipation, trust and joy being particular prevalent. Finally, a novel finding from the analysis of hashtags was that some brands were using Twitter to run competitions with winners of the competition receiving free money to use in their online betting accounts.

Conflicts of Interest

Funding Sources

The authors did not receive funding for this research.

Competing Interests

The authors declare no competing interests.

Compliance with Ethical Standards

This study was a secondary analysis of publically available data. For this type of study formal consent is not required.

Constraints on publishing

There were no constraints on publishing.

References

Abarbanel, B., Gainsbury, S. M., King, D., Hing, N., & Delfabbro, P. H. (2017). Gambling Games on Social Platforms: How Do Advertisements for Social Casino Games Target Young Adults? *Policy and Internet*, *9*(2), 184–209. https://doi.org/10.1002/poi3.135

Binde, P. (2007). Selling dreams—causing nightmares? On gambling advertising and problem gambling. *Journal of Gambling Issues*, *20*(20), 167–192. https://doi.org/10.4309/jgi.2007.20.5

Binde, P. (2009). Exploring the impact of gambling advertising: An interview study of problem gamblers. *International Journal of Mental Health and Addiction*, *7*(4), 541–554. https://doi.org/10.1007/s11469-008-9186-9

Binde, P., & Romild, U. (2018). Self-Reported Negative Influence of Gambling Advertising in a Swedish Population-Based Sample. *Journal of Gambling Studies*, (0123456789). https://doi.org/10.1007/s10899-018-9791-x

Bollen, J., Mao, H., & Zeng, X. (2011). Twitter mood predicts the stock market. *Journal of*

Computational Science, *2*(1), 1–8. https://doi.org/10.1016/j.jocs.2010.12.007

boyd, D., Golder, S., & Lotan, G. (2010). Tweet, tweet, retweet: Conversational aspects of retweeting on twitter. In *43rd Hawaii International Conference on System Sciences* (pp. 1–10). IEEE. https://doi.org/10.1109/HICSS.2010.412

Bruns, A., Moon, B., Münch, F., & Sadkowsky, T. (2017). The Australian Twittersphere in 2016: Mapping the Follower/Followee Network. *Social Media and Society*, *3*(4). https://doi.org/10.1177/2056305117748162

Clemens, F., Hanewinkel, R., & Morgenstern, M. (2017). Exposure to Gambling Advertisements and Gambling Behavior in Young People. *Journal of Gambling Studies*, *33*(1), 1–13. https://doi.org/10.1007/s10899-016-9606-x

Deans, E. G., Thomas, S. L., Daube, M., Derevensky, J., & Gordon, R. (2016). Creating symbolic cultures of consumption: An analysis of the content of sports wagering advertisements in Australia. *BMC Public Health*, *16*(1), 1–11. https://doi.org/10.1186/s12889-016-2849-8

Derevensky, J., Sklar, A., Gupta, R., & Messerlian, C. (2010). An empirical study examining the impact of gambling advertisements on adolescent gambling attitudes and behaviors. *International Journal of Mental Health and Addiction*, *8*(1), 21–34. https://doi.org/10.1007/s11469-009-9211-7

Dickerson, M. G. (1979). Fi Schedules and Persistence at gambling in the U.K. betting office., *3*(3), 315–323.

Gainsbury, S. M., Delfabbro, P., King, D. L., & Hing, N. (2016). An Exploratory Study of Gambling Operators' Use of Social Media and the Latent Messages Conveyed. *Journal of Gambling Studies*. https://doi.org/10.1007/s10899-015-9525-2

Gainsbury, S. M., King, D. L., Hing, N., & Delfabbro, P. (2015). Social media marketing and gambling: An interview study of gambling operators in Australia. *International Gambling Studies*, *15*(3), 377–393. https://doi.org/10.1080/14459795.2015.1058409

Galarnyk, M. (2017). Accessing Data from Twitter API using R (part1). Retrieved from https://medium.com/@GalarnykMichael/accessing-data-from-twitter-api-using-r-part1-b387a1c7d3e

Gayo-Avello, D. (2013). *A Meta-Analysis of State-of-the-Art Electoral Prediction From Twitter Data*. *Social Science Computer Review* (Vol. 31). https://doi.org/10.1177/0894439313493979

Guerrero-Solé, F. (2017). Community Detection in Political Discussions on Twitter: An Application of the Retweet Overlap Network Method to the Catalan Process Toward Independence. *Social Science Computer Review*, *35*(2), 244–261. https://doi.org/10.1177/0894439315617254

Hanusch, F., & Bruns, A. (2016). Journalistic Branding on Twitter. *Digital Journalism*, *5*(1), 26–43. https://doi.org/10.1080/21670811.2016.1152161

Hing, N., Cherney, L., Blaszczynski, A., Gainsbury, S. M., & Lubman, D. I. (2014). Do advertising and promotions for online gambling increase gambling consumption? An exploratory study. *International Gambling Studies*, *14*(3), 394–409. https://doi.org/10.1080/14459795.2014.903989

Hing, N., Lamont, M., Vitartas, P., & Fink, E. (2015). Sports bettors' responses to sports-embedded gambling promotions: Implications for compulsive consumption. *Journal of Business Research*. https://doi.org/10.1016/j.jbusres.2015.03.003

Hing, N., Vitartas, P., & Lamont, M. (2013). *Gambling sponsorship of sport: An exploratory*

study of links with gambling attitudes and intentions. *International Gambling Studies* (Vol. 13). https://doi.org/10.1080/14459795.2013.812132

Honeycutt, C., & Herring, S. C. (2009). Beyond Microblogging: Conversation and Collaboration via Twitter. In *42nd Hawaii International Conference on System Sciences* (pp. 1–10). https://doi.org/10.1109/HICSS.2009.89

Hörnle, J., & Carran, M. (2016). A Sieve that Does Hold a Little Water – Gambling Advertising and Protection of the Vulnerable in the UK. *Ssrn*, *7*(October 2016), 1–20. https://doi.org/10.2139/ssrn.2858977

Jockers, M. (2017). Extracts Sentiment and Sentiment-Derived Plot Arcs from Text Version. Academic Press Inc. Retrieved from https://github.com/mjockers/syuzhet

Kearney, M. (2018). Package ‘ rtweet .’ Retrieved from https://cran.r-project.org/package=rtweet%0ABugReports

Kim, H. S., Wohl, M. J. A., Gupta, R., & Derevensky, J. L. (2017). Why do young adults gamble online? A qualitative study of motivations to transition from social casino games to online gambling. *Asian Journal of Gambling Issues and Public Health*, *7*(1), 6. https://doi.org/10.1186/s40405-017-0025-4

Kimmons, R., Veletsianos, G., & Woodward, S. (2017). Institutional Uses of Twitter in U.S. Higher Education. *Innovative Higher Education*, *42*(2), 97–111. https://doi.org/10.1007/s10755-016-9375-6

Litsa, T. (2016). How Paddy Power stands out from its rivals on Twitter.

Lopez-Gonzalez, H., Guerrero-Sole, F., & Griffiths, M. D. (2017). A content analysis of how ‘normal’ sports betting behaviour is represented in gambling advertising. *Addiction Research and Theory*, 1–23.

Lüdecke, D. (2019). sjstats: Statistical functions for regression models. https://doi.org/10.5281/zenodo.1284472

McMullan, J. L., & Kervin, M. (2012). Selling Internet Gambling: Advertising, New Media and the Content of Poker Promotion. *International Journal of Mental Health and Addiction*, *10*(5), 622–645. https://doi.org/10.1007/s11469-011-9336-3

McMullan, J. L., & Miller, D. (2010). Advertising the "new fun-tier": Selling casinos to consumers. *International Journal of Mental Health and Addiction*, *8*(1), 35–50. https://doi.org/10.1007/s11469-009-9201-9

Mohammad, S. M., & Turney, P. D. (2010). Emotions evoked by common words and phrases: using mechanical turk to create an emotion lexicon. In *In Proceedings of the NAACL-HLT 2010 Workshop on Computational Approaches to Analysis and Generation of Emotion in Text* (pp. 1–9). California. Retrieved from http://dl.acm.org/citation.cfm?id=1860631.1860635

Mohammad, S. M., & Turney, P. D. (2013). Crowdsourcing a word-emotion assocation lexicon. *Computational Intelligence*, *29*(3), 436–465. https://doi.org/10.1111/j.1467-8640.2012.00460.x

Morgan-Lopez, A. A., Kim, A. E., Chew, R. F., & Ruddle, P. (2017). Predicting age groups of Twitter users based on language and metadata features. *PLoS ONE*, *12*(8), 1–12. https://doi.org/10.1371/journal.pone.0183537

Newall, P., Thobhani, A., Walasek, L., & Meyer, C. (2018). *"Impulsiveness and urgency:" Gambling advertising and the 2018 soccer World Cup*. Retrieved from https://psyarxiv.com/3uc9s/

Online Betting. (2018). Biggest Bookies And The Distribution Of The Gambling Industry In

The UK. Retrieved from http://www.onlinebetting.org.uk/betting-guides/biggest-bookies.html

Plutchik, R. (1980). A general psychoevolutionary theory of emotion. In *Emotion: Theory, Research, and Experience* (Vol. 1, pp. 3–41).

R Core Team. (2018). R: A language and environment for statistical computing. Vienna, Austria. Retrieved from https://www.r-project.org/

Schumaker, R. P., Jarmoszko, A. T., & Labedz, C. S. (2016). Predicting wins and spread in the Premier League using a sentiment analysis of twitter. *Decision Support Systems*, *88*, 76–84. https://doi.org/10.1016/j.dss.2016.05.010

Sinha, S., Dyer, C., Gimpel, K., & Smith, N. A. (2013). *Predicting the NFL using Twitter*. *CEUR Workshop Proceedings* (Vol. 1969).

Sklar, A., & Derevensky, J. L. (2010). Way to Play: Analyzing Gambling Ads for Their Appeal to Underage Youth. *Canadian Journal of Communication*, *35*(4), 533–554. https://doi.org/10.1007/s10899-009-9141-0

Woodhouse, B. J. (2018). Gambling advertising : regulation in Great Britain, (7428), 1–12.

Table 1.

Descriptive information of Gambling Companies Twitter accounts.

Gambling Companies Twitter Accounts	Number of Posts	Duration	First Date	Last Date	Average per day	Number of Followers
Bet365	3200	23	01/08/2018	09/07/2018	139.13	377, 834
Bet365 Bingo	200	42	01/08/2018	20/06/2018	4.76	6, 599
Bet365 Gaming	3198	921	01/08/2018	23/01/2016	3.47	9, 933
Bet365 Poker	1033	670	31/07/2018	29/09/2016	1.54	4, 087
Betfair	3197	182	01/08/2018	31/01/2018	17.57	157, 222
Betfair Bingo	2503	804	09/09/2015	27/06/2013	3.11	3, 113
Betfair CS	3200	34	01/08/2018	28/06/2018	94.12	36, 138
Betfair Exchange	3198	412	01/08/2018	15/06/2017	7.76	108, 206
Betfair Poker	3198	1058	17/12/2016	24/01/2014	3.02	23, 912
Betfair Racing	3196	236	01/08/2018	08/12/2017	13.54	1,667
Betfred	2600	25	01/08/2018	07/07/2018	104.00	106, 121
Betfred Sport	3199	823	01/08/2018	30/04/2016	3.89	14, 924
Coral	3200	30	01/08/2018	02/07/2018	106.67	335, 344
Ladbrokes	3200	25	01/08/2018	07/07/2018	128.00	191, 832
Ladbrokes Care	3200	185	01/08/2018	28/01/2018	17.30	8, 705
Ladbrokes Politics	3200	676	01/08/2018	24/09/2016	4.73	13, 587
Paddy Power	3200	41	01/08/2018	21/06/2018	78.05	642, 023
Ask Paddy Power	3200	35	01/08/2018	27/06/2018	91.43	48, 541
Paddy Power Offers	3200	131	01/08/2018	23/03/2018	24.43	82, 630
Paddy Power Politics	3191	1695	10/07/2018	18/11/2013	1.88	6, 244
William Hill	3200	17	01/08/2018	15/07/2018	188.24	202, 091
William Hill Help	3200	119	01/08/2018	04/04/2018	26.89	6, 730

Table 2.

Key Characteristics of how gambling companies have different tweet content and receive different levels of twitter engagement.

Measure	Bet365	Betfair	Betfred	Coral	Ladbrokes	Paddy Power	William Hill
			Tweet content				
Average tweets per day	151.35	110.44	104.65	89.06	124.88	137.71	202.76
% tweets with photo	67.6%	17.6%	33.5%	51.6%	27.8%	22.2%	10.3%
% tweets with URL	37.1%	28.4%	27.0%	34.9%	25.9%	47.7%	37.1%
			Tweet engagement				
Average number of likes	52.1	4.05	2.17	46.3	4.5	72.8	1.91
Average number of retweets	15.8	4.5	0.835	13.4	1.95	18.2	0.86

Table 3.

Top ten most frequently used Hashtags.

Gambling Company	Hashtags	Frequency
William Hill	yourodds	2107
Ladbrokes	getaprice	1203
Ladbrokes	cs	723
Paddy Power	paddyppileup	514
Coral	yourcall	463
Ladbrokes	worldcup	456
Betfair	ashes	367
Betfred	worldcup	322
Paddy Power	worldcup	280
Paddy Power	whatoddspaddy	277

Table 4.

Top 5 hashtags for each of the seven gambling brands.

Gambling Brands	Hashtags	n
Bet365	higherorlower365	156
Bet365	loveisland	143
Bet365	365chipcount	99
Bet365	theopen	66
Bet365	inplaywithray	29
Betfair	ashes	367
Betfair	worldcup	213
Betfair	cheltenhamfestival	162
Betfair	whenthefunstopsstop	151
Betfair	oddsonthat	106
Betfred	worldcup	322
Betfred	differentleague	140
Betfred	theopen	136
Betfred	pickyourpunt	131
Betfred	ilovesnooker	126
Coral	yourcall	463
Coral	worldcup	188
Coral	theopen	125
Coral	wimbledon	118
Coral	eng	65
Ladbrokes	getaprice	1203
Ladbrokes	cs	723
Ladbrokes	worldcup	456
Ladbrokes	eng	222
Ladbrokes	cro	199
Paddy Power	paddyppileup	514
Paddy Power	worldcup	280
Paddy Power	whatoddspaddy	277
Paddy Power	eng	191
Paddy Power	postcast	147
William Hill	yourodds	2107
William Hill	whenthefunstopsstop	39
William Hill	theopen	38
William Hill	worldmatchplay	28
William Hill	whyteparker	17

Note: Abbreviations and ambiguous hashtags – Eng = England (national soccer team), cs = customer service, cro = Croatia (national soccer team), whyteparker = boxing

match between Dillian Whyte and Joseph Parker (29th July 2018), worldmatchplay = Darts competition.

Table 5.

Gambling Brands that used Responsible Gambling Hashtag (i.e. #whenthefunstopsstop).

Gambling Brands	Hashtags	n
Betfair	whenthefunstopsstop	151
William Hill	whenthefunstopsstop	39
Ladbrokes	whenthefunstopsstop	37
Paddy Power	whenthefunstopsstop	35
Coral	whenthefunstopsstop	29

Table 6

Average number of emotive words in a tweet.

Emotion	Bet365	Betfair	Betfred	Coral	Ladbrokes	Paddy Power	William Hill	One-way ANOVA (IV = Brand)
Anger	0.127	0.182	0.170	0.151	0.133	0.192	0.05	F = 108.5, MSE = 0.174, p <.001, η^2 = .01
Anticipation	0.603	0.436	0.549	0.660	0.605	0.450	0.174	F = 318.4, MSE = 0.55, p <.001, η^2 = .029
Disgust	0.05	0.094	0.063	0.052	0.067	0.076	0.012	F = 86.33, MSE = 0.072, p <.001, η^2 = .008
Fear	0.153	0.205	0.181	0.164	0.256	0.173	0.057	F = 147, MSE = 0.193, p <.001, η^2 = .014
Joy	0.451	0.297	0.398	0.445	0.463	0.295	0.083	F = 343, MSE = 0.38, p <.001, η^2 = .031
Sadness	0.147	0.212	0.148	0.144	0.149	0.175	0.055	F = 119.5, MSE = 0.177, p <.001, η^2 = .011
Surprise	0.427	0.215	0.251	0.344	0.292	0.257	0.082	F = 277.6, MSE = 0.29, p <.001, η^2 = .025
Trust	0.486	0.447	0.486	0.510	0.619	0.448	0.173	F = 259.7, MSE = 0.51, p <.001, η^2 = .024
Positive	1.042	0.771	0.920	0.938	1.085	0.810	0.298	F = 494.9, MSE = 1.0, p <.001, η^2 = .044
Negative	0.322	0.415	0.315	0.311	0.249	0.338	0.123	F = 204.1, MSE = 0.38, p <.001, η^2 = .019

Note: Degrees of freedom on the model were 6 (Gambling companies) and 63906 (residual). Sentiment was assessed by the count of the number of emotive words from the NRC lexicon in a tweet.

Table 7

Direction of Tukey's Honestly Significant Difference tests (familywise corrected) comparing differences on Tweet sentiment between gambling brands.

	ANG	ANT	DIS	FR	JOY	SAD	SRP	TRU	POS	NEG
BTF-B365	>	<	>	>	<	>	<	<	<	>
BFR-B365	>	<		>	<		<		<	
CRL-B365		>					<		<	
LBR-B365			>	>			<	>		<
PP-B365	>	<	>	>	<	>	<	<	<	
WH-B365	<	<	<	<	<	<	<	<	<	<
BFR-BTF		>	<	<	>	<	>	>	>	<
CRL-BTF	<	>	<	<	>	<	>	>	>	<
LBR-BTF	<	>	<	>	>	<	>	>	>	<
PP-BTF			<	<		<	>		>	<
WH-BTF	<	<	<	<	<	<	<	>	<	<
CRL-BFR		>			>		>			
LBR-BFR	<	>		>	>		>	>	>	<
PP-BFR	>	<	>		<	>		<	<	
WH-BFR	<	<	<	<	<	<	<	<	<	<
LBR-CRL		<		>			<	>	>	<
PP-CRL	>	<	>		<	>	<	<	<	
WH-CRL	<	<	<	<	<	<	<	<	<	<
PP-LBR	>	<		<	<	>	<	<	<	>
WH-LBR	<	<	<	<	<	<	<	<	<	<
WH-PP	<	<	<	<	<	<	<	<	<	<

Note: Emotions – ANG = Anger, ANT = Anticipation, DIS = Disgust, FR = Fear, JOY = Joy, SAD = Sadness, SRP = Surprise, TRU = Trust, POS = Positive, NEG = Negative.

> = left brand has greater level of emotionality over right brand, < = right brand has greater level of emotionality than left brand.

Companies – B365 = Bet365, BTF = Betfair, BFR = Betfred, CRL = Coral, LBR = Ladbrokes, PP = Paddy Power, WH = William Hill

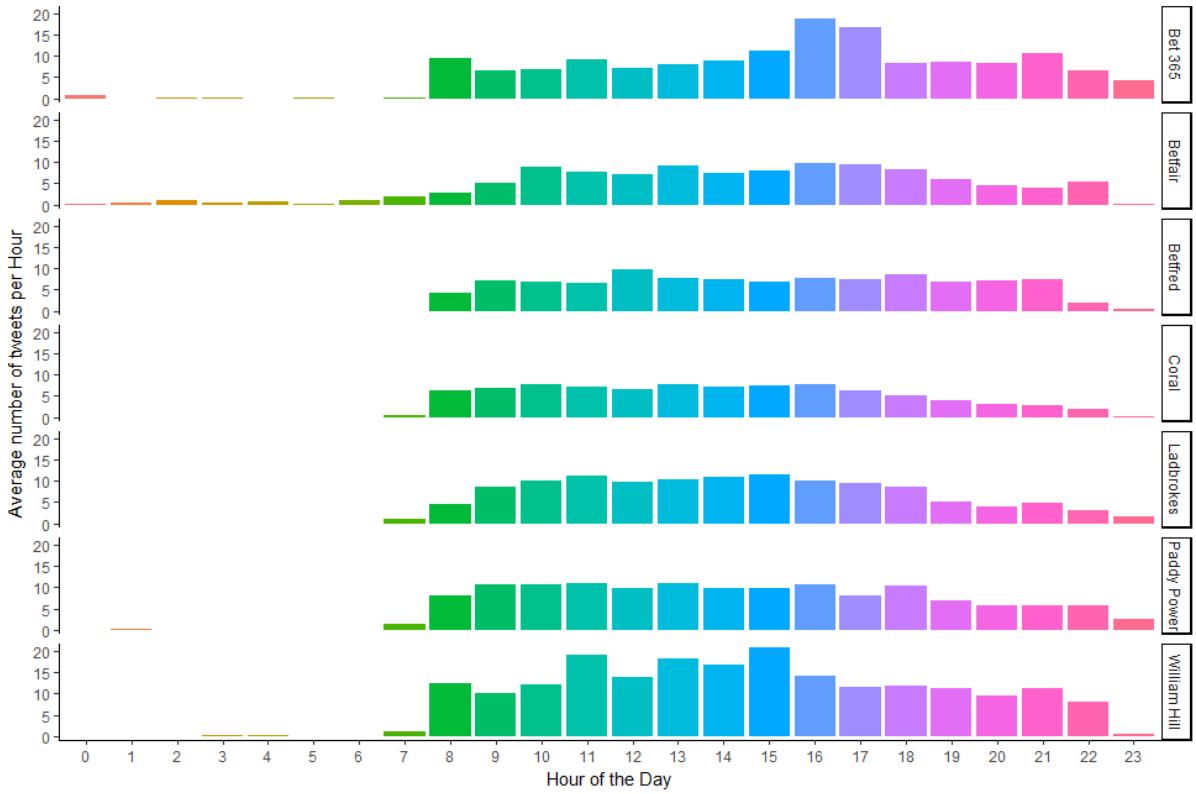

Figure 1. Average tweets throughout the day by gambling brand.

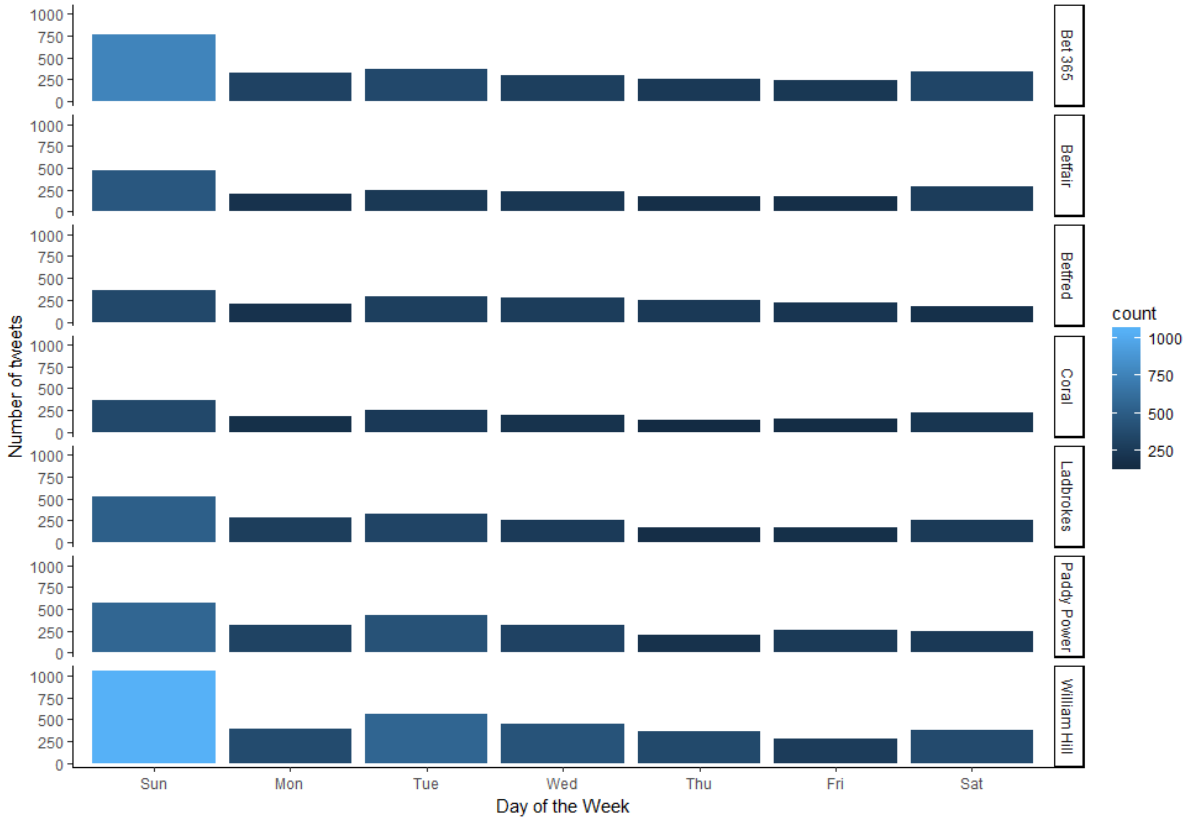

Figure 2.Total number of tweets for each gambling brand over the week.

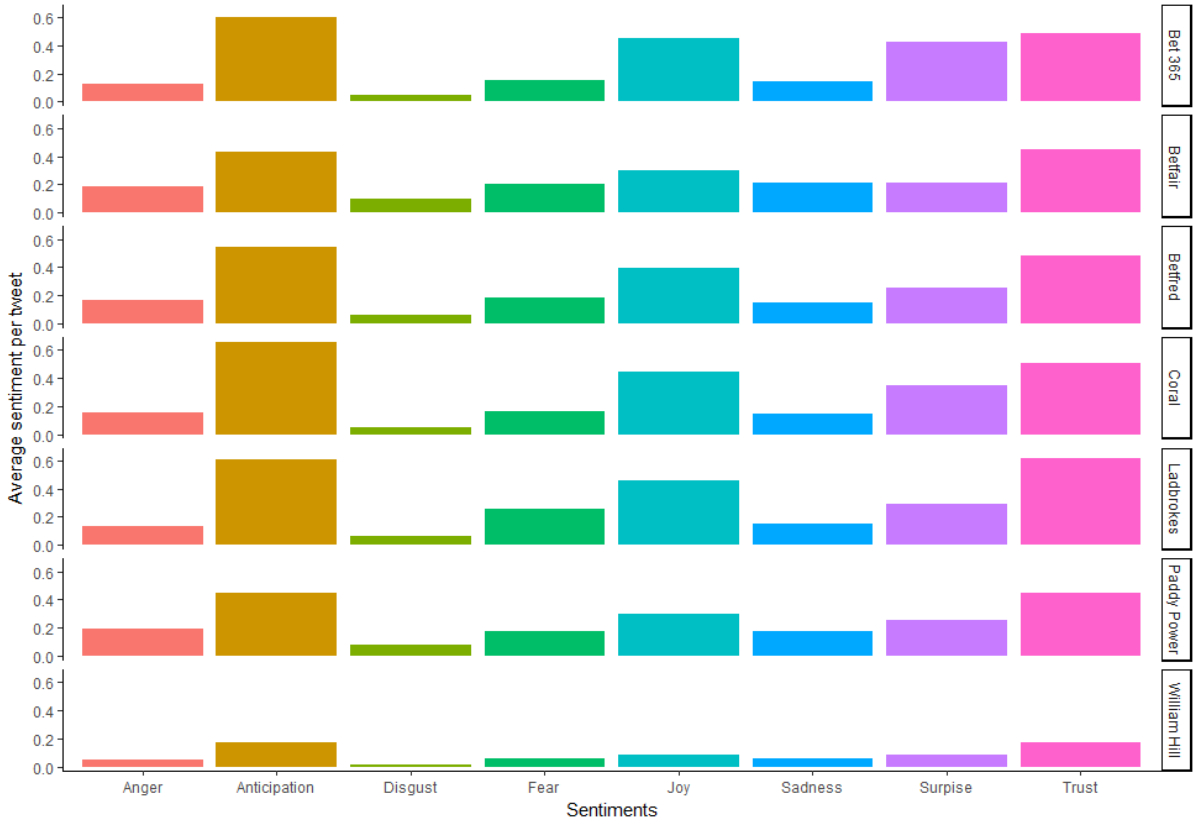

Figure 3. Sentiment Analysis showing the average level of sentiments per tweet for each of the gambling companies.

Appendices

Appendix A- Selecting Twitter accounts to collect tweets from.

Gambling Companies	Tweets	Followers	Official Brand?	Active (posted in last month)	UK	Gambling Related Advert	Included
Betfred	**212,000**	**106,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfred Bingo	75	242	Yes	No	Yes	Yes	No
Betfred Live	10,500	64	Yes	No	Yes	Yes	No
Super League	31,000	204,000	Yes	Yes	Yes	No	No
Betfred Sport	**28,100**	**14,900**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfred Boxing	21	48	No	No	No	Yes	No
Betfred Poker	138	48	Yes	No	Yes	Yes	No
Betfred Snooker	373	749	Yes	No	Yes	Yes	No
Betfred Golf	773	371	Yes	No	Yes	Yes	No
Bet365	**318,000**	**378,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Bet365 Bingo	**6,459**	**6,579**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Bet365 Gaming	**3,481**	**9,933**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Bet365 Poker	**1,033**	**4,085**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
In Play Tips Bet	82	287	No	No	Yes	Yes	No
Bet365 Affiliates	104	374	No	No	No	Yes	No
Bet365 Australia	32,900	5475	Yes	Yes	No	Yes	No
Betfair	**115,000**	**157,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfair CS	**369,000**	**36,100**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfair Racing	**58,800**	**52,800**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfair Protrader	1,203	3,754	No	Yes	Yes	Yes	No
Betfair Race Information	27,200	808	No	No	Yes	Yes	No
Betfair Football Information	1,034	1008	No	Yes	Yes	Yes	No
Betfair Australia	61,700	15,200	Yes	Yes	No	Yes	No
Betfair USA	11,300	7,454	Yes	Yes	No	Yes	No

Betfair Trader	1,173	3,105	No	Yes	Yes	Yes	No
Betfair Poker	**29,900**	**23,900**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfair Exchange	**127,000**	**108,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfair Poker Live	1,246	1,341	No	No	No	Yes	No
Betfair Bingo	**2,503**	**3,113**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Betfair Games	490	2,473	Yes	No	Yes	Yes	No
Betfair Casino	3,422	644	Yes	No	No	Yes	No
Coral	**267,000**	**335,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Ladbrokes	**167,000**	**192,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Ladbrokes Australia	31,600	21,000	Yes	Yes	No	Yes	No
Ladbrokes Belgium	14,000	2,882	Yes	Yes	No	Yes	No
Ladbrokes Care	**46,800**	**8,706**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Ladbrokes Games	236	682	No	No	Yes	Yes	No
Ladbrokes Park	8	506	Yes	No	No	Yes	No
The Challenge Cup	12,100	17,700	Yes	Yes	Yes	No	No
Ladbrokes Exchange	1,160	865	Yes	Yes	Yes	Yes	No
Ladbrokes Politics	**11,200**	**13,600**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Ladbrokes Greys	5	44	Yes	No	Yes	Yes	No
Ladbrokes Australia Politics	168	433	Yes	No	No	Yes	No
William Hill	**369,000**	**202,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
William Hill Help	**67,000**	**6,731**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Willhill Bet	117	193	Yes	No	Yes	Yes	No
William Hill US	6,942	21,500	Yes	Yes	No	Yes	No
Bet In Play	38,100	23,800	Yes	Yes	No	Yes	No
William Hill Italy	1,494	511	Yes	Yes	No	Yes	No
William Hill Australia	73,100	29,400	Yes	Yes	No	Yes	No
Scottish Cup	2,263	12,300	Yes	Yes	Yes	No	No

Paddy Power	**209,000**	**642,000**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
ask Paddy Power	109	199	Yes	No	No	Yes	No
Paddy Power Italy	23,400	13,900	Yes	Yes	No	Yes	No
Ask Paddy Power	**306,000**	**48,500**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Paddy Power Offers	**89,300**	**82,600**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Ask Paddy Power 2	85	72	No	No	Yes	Yes	No
Paddy Power EN	1	2	No	No	Yes	Yes	No
Paddy Power Politics	**5,517**	**6,244**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Paddy Power Spain	321	125	No	No	No	Yes	No
Paddy Power Affiliates	553	1109	No	No	Yes	Yes	No
Paddy Power USA	36	10	No	No	No	Yes	No

Note 1. Rows highlighted in Bold met the select criteria.

Appendix B

Significance values of Tukey's Honestly Significant Difference tests (familywise corrected) comparing differences on Tweet sentiment between gambling brands.

	ANG	ANT	DIS	FR	JOY	SAD	SRP	TRU	POS	NEG
BTF-B365	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.001	<.001	<.001
BFR-B365	<.001	<.001	.101	.004	<.001	1	<.001	1	<.001	.995
CRL-B365	.083	.005	1	.896	.999	1	<.001	.688	<.001	.977
LBR-B365	.956	1	.001	<.001	.865	1	<.001	<.001	.075	<.001
PP-B365	<.001	<.001	<.001	.028	<.001	<.001	<.001	.003	<.001	.541
WH-B365	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
BFR-BTF	.501	<.001	<.001	.007	<.001	<.001	<.001	.005	<.001	<.001
CRL-BTF	.003	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
LBR-BTF	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
PP-BTF	.388	.684	<.001	<.001	1	<.001	<.001	1	.012	<.001
WH-BTF	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
CRL-BFR	.385	<.001	.534	.556	.008	1	<.001	.733	.982	1
LBR-BFR	<.001	<.001	.974	<.001	<.001	1	<.001	<.001	<.001	<.001
PP-BFR	.019	<.001	.035	.889	<.001	.001	.987	.011	<.001	.212
WH-BFR	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
LBR-CRL	.348	.006	.101	<.001	.781	.999	<.001	<.001	<.001	<.001
PP-CRL	<.001	<.001	<.001	.949	<.001	.003	<.001	<.001	<.001	.270
WH-CRL	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
PP-LBR	<.001	<.001	.159	<.001	<.001	<.001	<.001	<.001	<.001	<.001
WH-LBR	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
WH-PP	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Note: Emotions – ANG = Anger, ANT = Anticipation, DIS = Disgust, FR = Fear, JOY = Joy, SAD = Sadness, SRP = Surprise, TRU = Trust, POS = Positive, NEG = Negative

Companies – B365 = Bet365, BTF = Betfair, BFR = Betfred, CRL = Coral, LBR = Ladbrokes, PP = Paddy Power, WH = William Hill