

The Grinchometer: Twitter Holiday Sentiment Analysis

Floridians have been through a lot this year – red tide and Hurricane Michael are just a couple that come to mind. Just those events alone can create an emotional tailspin that rivals any gut-drop reaction induced by the rides in the state’s theme parks. However, there is often some reprieve with the holiday season.

During the holidays, we engage in traditions and celebrations which boost holiday spirit and give us inspiration to face the challenges of the coming year. Holiday spirit evokes feelings of joy, generosity, kindness, forgiveness, and love. It’s a time to reconnect with our loved ones and show our commitment to one another through acts of giving and receiving.

With the holiday season in full swing, we wondered if Floridians have been able to muster any holiday spirit at all, or did the chaos of 2018 sneak in like the Grinch and steal it right out from under us? The Haas Center has employed the data analytic technique of opinion mining, or sentiment analysis, to Twitter data to find out the answer to this question.

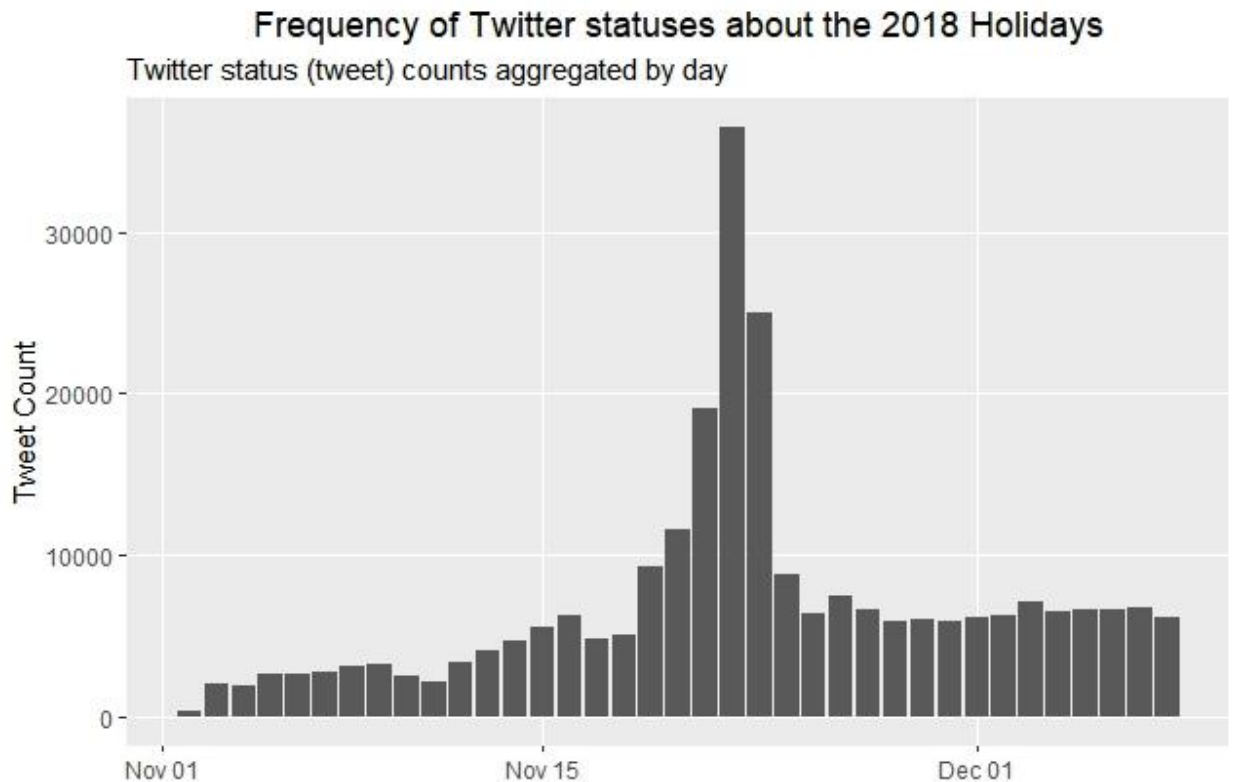
In our digital age, social media is omnipresent. There are over 290,000 updates to Facebook statuses and 450,000 tweets posted every minute. Sentiment analysis of social media is the process of analyzing texts to gain an understanding of the underlying emotions, attitudes, and opinions expressed about a person, product, service, event, or idea. The Haas Center conducted sentiment analysis of tweets by analyzing the 140-character strings of texts and classifying them into sentiments using lexicon-based methods. The statistical software R was used to extract the tweets from Twitter and perform the analysis.

Fast Facts

- ✓ **Sentiment Analysis** is analyzing texts to gain an understanding of the underlying emotions
- ✓ **255,316 unique tweets** collected from Nov. 1 to Dec. 8
- ✓ Holiday related tweets are overwhelmingly **positive** -- about **79%**.
- ✓ **Joy, anticipation, and trust** outweigh all other emotions expressed in holiday tweets
- ✓ Positive sentiment is **growing**
- ✓ **Thanksgiving** saw a rise in positive tweets, followed by a spike in negative tweets on Black Friday
- ✓ The word **parade** shows up in top-fifteen word lists for both positive and negative tweets
- ✓ Top **positive** words:
 - Happy
 - Tree
 - Thankful
 - Gift
 - Hope

Methodology

From November 1 to December 8, tweets were extracted from Twitter and filtered by locations in Florida. Each tweet contained one or more of the search terms - Thanksgiving, Black Friday, Turkey Day, Hanukkah, Kwanzaa, Xmas, Christmas, Christmas Eve, Christmas Holidays, Holiday Season, or the Holidays. After cleaning the data, a total of 255,316 unique tweets were extracted over the 37-day period, with average of 6,900 tweets collected per day. On Thanksgiving Day, activity increased 5 times the average daily amount and peaked with 35,865 tweets being posted. The chart below shows that tweets about the 2018 holidays have gradually increased as the season gets underway, and another peak is anticipated around Christmas Day.



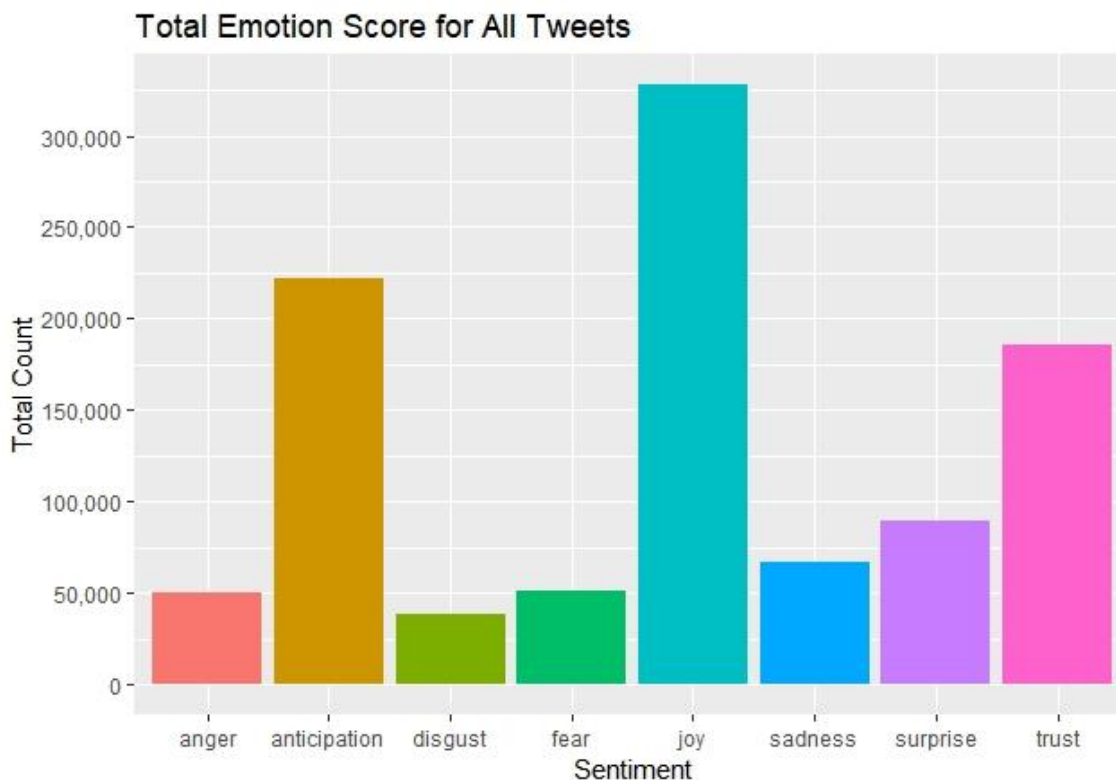
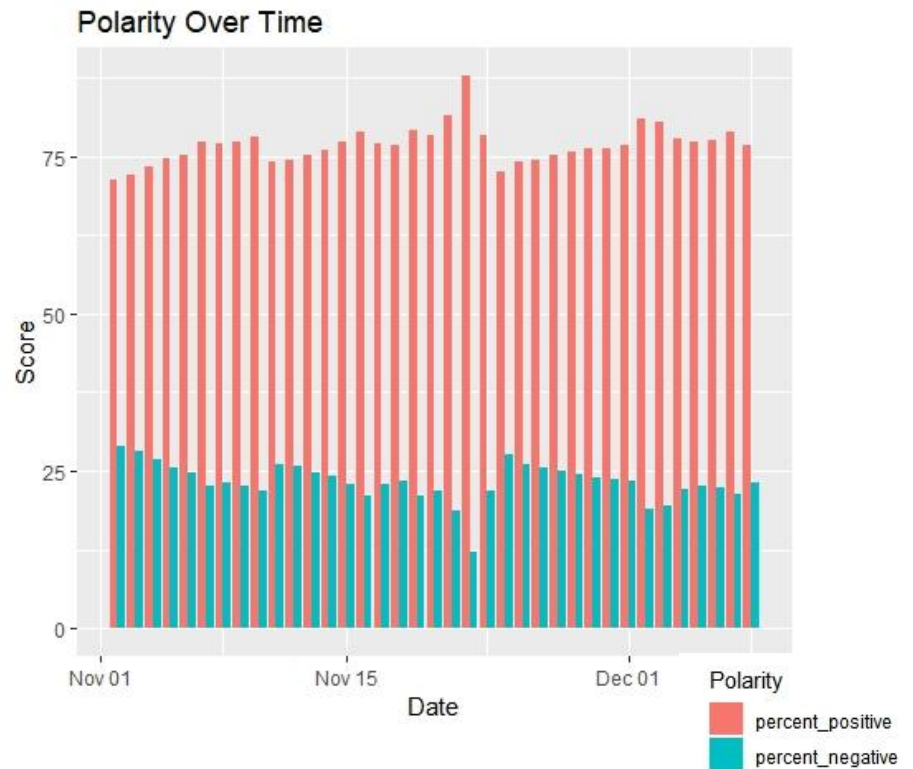
Source: Data collected from Twitter's REST API via rtweet Nov 1 thru Dec 8, 2018

Using data analytic software, the text of each tweet was assigned an associated emotion - anger, fear, anticipation, trust, surprise, sadness, joy, and disgust. In addition, each word was given assigned a positive or negative sentiment score ranging from 5 to -5. Negative scores indicate negative sentiment and positive scores indicate positive sentiment.

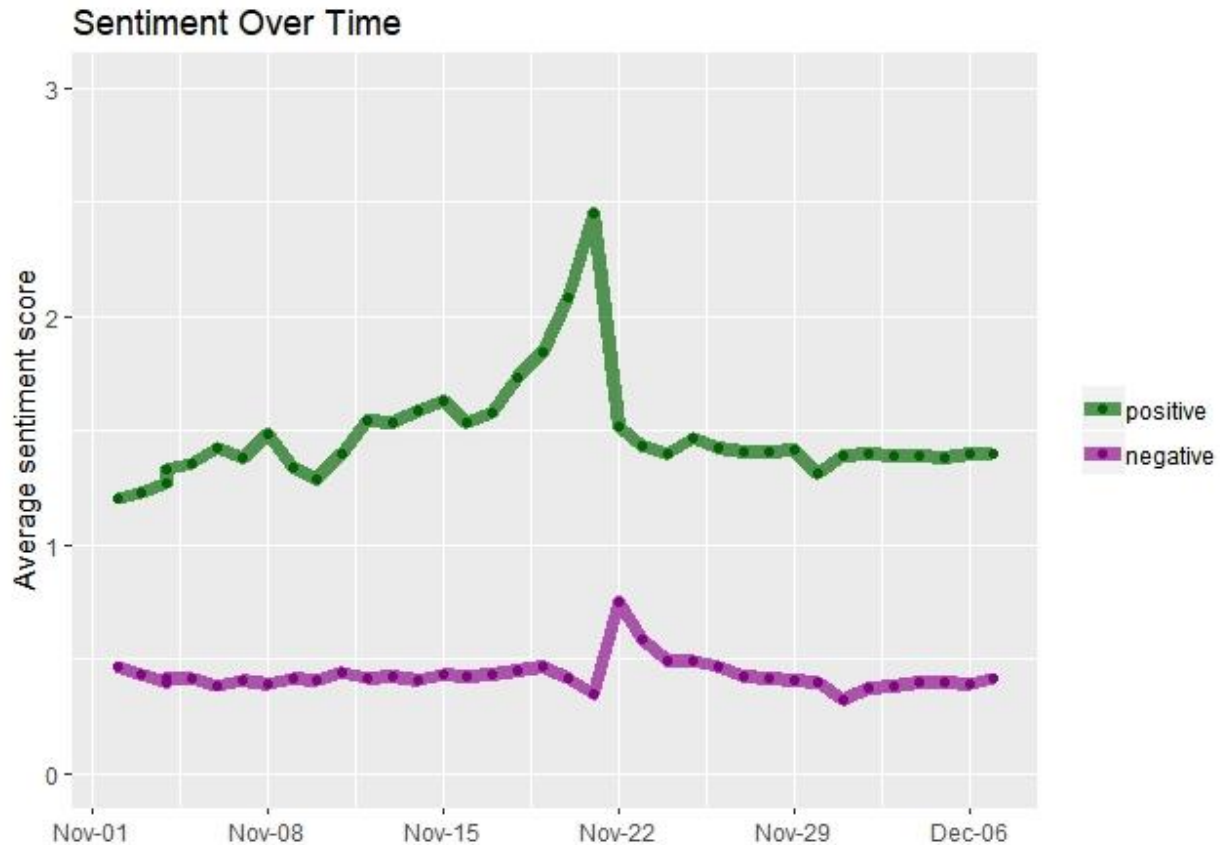
Results

Analysis of AFINN polarity scores show that users' tweets about the 2018 Holiday season are significantly more positive in sentiment than negative. The percentage of positive tweets averages about 79%, compared to just 21% for negative sentiment.

NRC scores for emotion were also calculated, revealing that the emotions of joy, anticipation, and trust outweigh all other emotions expressed in the tweets. Joy is six times more prevalent in holiday tweets than the emotions of disgust or fear.



The analysis shows that Floridians are feeling positive and excited about the upcoming holidays. Examining the prevalence of sentiment over time shows that positive sentiment has gradually increased since November 1st. As the holiday season progresses, the holiday spirit tends to grow.



There was a noticeable increase in positive sentiment on November 22, which is attributed to the celebration of the Thanksgiving holiday and the positive sentiments it evokes. Positive sentiment declined rather sharply the day after Thanksgiving, and it is highly suspected that frustrations with Black Friday crowds and holiday shopping contributed to that. Negative sentiment remained steady during the first part of November and saw a small decrease on Thanksgiving Day. It also showed a noticeable increase the day after the holiday, but it has gradually come back down and remains lower than it was during the first part of November.

Analysis of the top 15 words associated with each sentiment help us to gain understanding of some of the issues affecting our emotions. The top word on the negative sentiment list is “wait”, followed by “parade”, and “forget.” Frustrations with forgetfulness, waiting in long lines, and displeasure with holiday parades highlight some of the issues that are dampening Floridians’ holiday spirit. The top word associated with positive sentiment is “happy,” and that is not surprising since we just celebrated Thanksgiving and many users probably tweeted the sentiment ‘Happy Thanksgiving’ to others.

