

Gameday Analytics Challenge

Four Guys - Team 38

Hung Duong | Minh Le | Phuc Do | Khang Nguyen

Introduction

The Super Bowl isn't just the biggest night in football—it's the most coveted stage for advertisers worldwide. With over 127 million viewers, brands invest hundreds of millions to create ads that leave a lasting impression. Beyond the excitement of the game, audiences eagerly anticipate these commercials, making it a prime opportunity for companies to reinforce their identity, captivate consumers, and drive brand loyalty¹.

This year, the Super Bowl continues to attract legacy advertisers like Disney, Anheuser-Busch, and Doritos, known for their creative and memorable campaigns. In 2025, the cost of a 30-second Super Bowl ad soared to \$8 million²—approximately \$266,666 per second—demonstrating the event's unparalleled reach and influence.

These brands keep pouring in millions, setting records—breaking advertising budgets year after year. Their continued investment highlights the Super Bowl's value as a premier marketing stage, where massive viewership and high engagement justify the soaring costs, making it a must-have for top brands aiming to stay ahead.

Objective

In this paper, we aim to conduct a **comprehensive analysis** of Twitter data to provide insights and nuances into the Super Bowl advertising landscape and identify this year's **top-performing advertisers** based on our defined success metrics. Ultimately, our goal is to **deliver strategic recommendations** that enable advertisers to optimize their marketing efforts and maximize their impact.

With these goals in mind, we set out to answer 4 key questions:

- Which brands emerged as the winners of the 2025 Super Bowl?
- How can brands maximize their engagement?
- Which quarter should be invested in?
- How can brands maximize their return on investment?

Key Performance Indicators

We have chosen these metrics to measure an advertisement's effectiveness after looking at the four main questions above:

¹ <https://www.statista.com/statistics/216526/super-bowl-us-tv-viewership/>

² <https://www.statista.com/statistics/217134/total-advertisement-revenue-of-super-bowls/>

- + **Engagement Rate:** The total number of likes, retweets, replies, and quotes is used to determine how engaged a tweet is. By dividing the engagement by the number of impressions, we can get a tweet's engagement rate using the engagement metric.
- + **ROI:** By dividing the number of engagements a tweet received by the amount of money spent on it and the length of the advertisements, we can determine the ROI of a particular tweet.
- + **Sentiment of Tweets:** Analyze the sentiment score of each tweet and classify those as positive and negative to indicate why sentiment affects the ad performance.

Data Cleaning

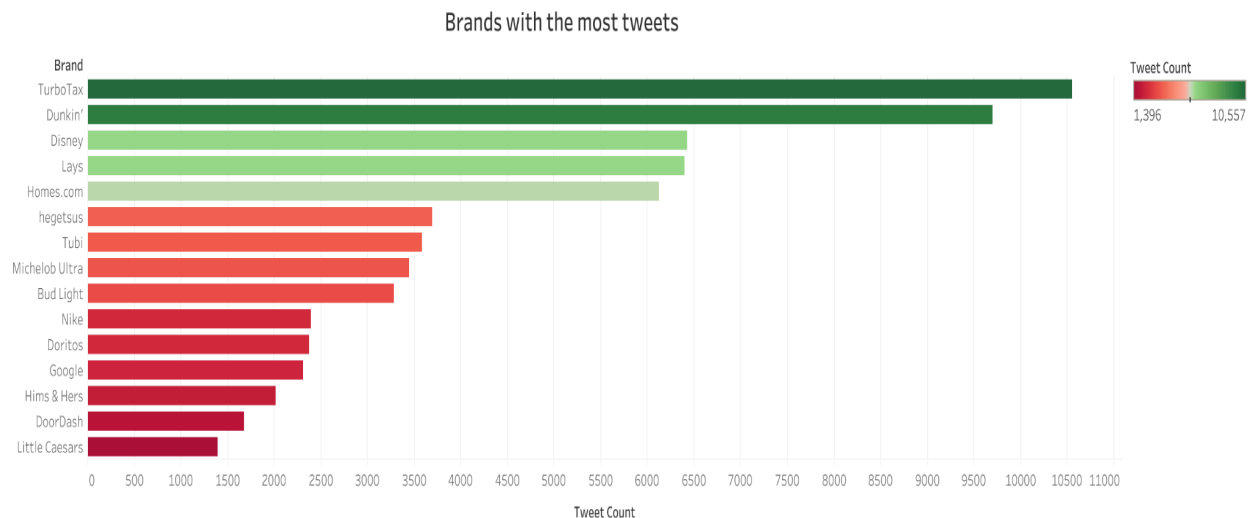
Purging features

We processed and arranged a dataset of **123,147 tweets and 33 features** obtained through the **Twitter API** using **Python and pandas in Google Colab**. To guarantee quality, we first reviewed every feature and eliminated columns with **more than 80% missing values**, like the almost empty ``geo.coordinates.coordinates``.

Due to a hashtag mix-up between Budweiser and a Japanese TV show, we **filtered out non-English tweets** to preserve relevancy. Additionally, to concentrate only on the most important data for our research, we eliminated superfluous metadata fields like ``username`` and ``edit_controls.is_edit_eligible``.

High-Level View

After the initial clean-up, we started our analysis by looking at the number of tweets per brand. We filter the **top 15 brands** with the most tweets and retweets to grasp the overview of the dataset. TurboTax, Dunkin's, and Disney were the top 3 brands with the most tweets. Interestingly, two out of the top 3 most tweeted brands had below 1M followers on X.com.



NFL and X.com

Finally, we also decided to remove the brand **NFL** from our analysis because we believe that they possess an unfair advantage since their brand is essentially represented and promoted by any football league in America.

According to an **X.com** executive, sports-related content on the platform amassed approximately **272 billion impressions** over the past year, marking a **5% increase** from the previous year. However, the NFL dominates sports discussions, accounting for nearly **40% of all sports-related conversations**. Video plays a crucial role in this, with one in three sports-related videos viewed on X being about the NFL. This trend has only intensified with the new season, as **NFL-related posts surged by 19%**, and video views **climbed by 29%** compared to the same period last year.³

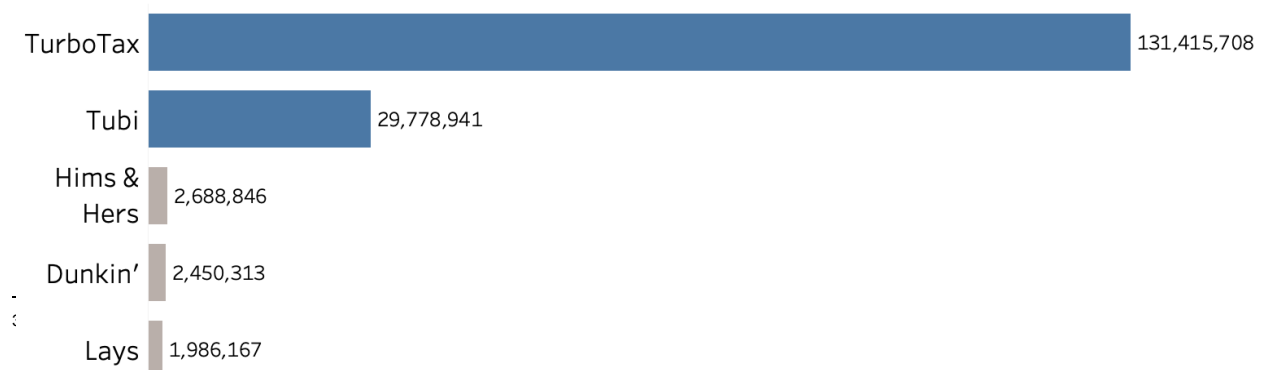
This overwhelming presence makes the NFL disproportionately influential in any sports-related dataset. With **nearly 40% of all discussions** revolving around the league, its inclusion would create a severe imbalance, drowning out conversations about other sports. Our goal is to analyze a diverse and representative sample of sports content in X.com, excluding the NFL is essential to prevent bias.

Additionally, **X.com's** direct partnership with the **NFL** ensures the league's content receives amplified visibility and engagement. This artificial boost means that including NFL data wouldn't just reflect organic trends but rather a platform-engineered priority. To maintain fairness and analytical integrity, excluding the NFL is the only way to ensure a more balanced and unbiased dataset.

Engagement Rate

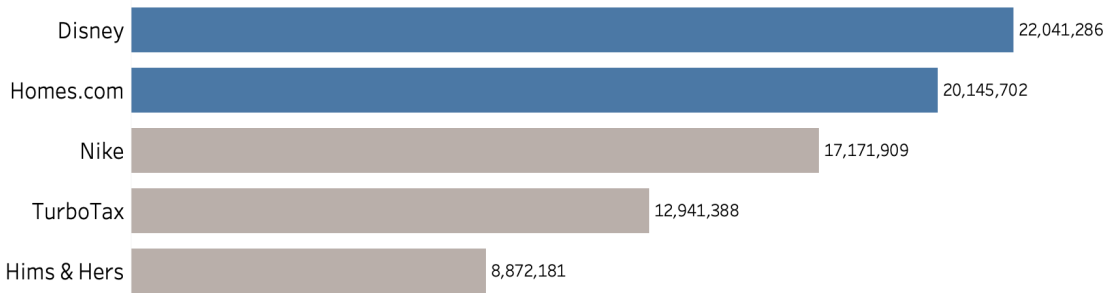
Firstly, our analysis of Key Performance Indicators involves measuring the **total impressions** for each brand. TurboTax holds a clear lead, surpassing the second brand, Tubi, by approximately 77%.

Top Brands with Total Impression



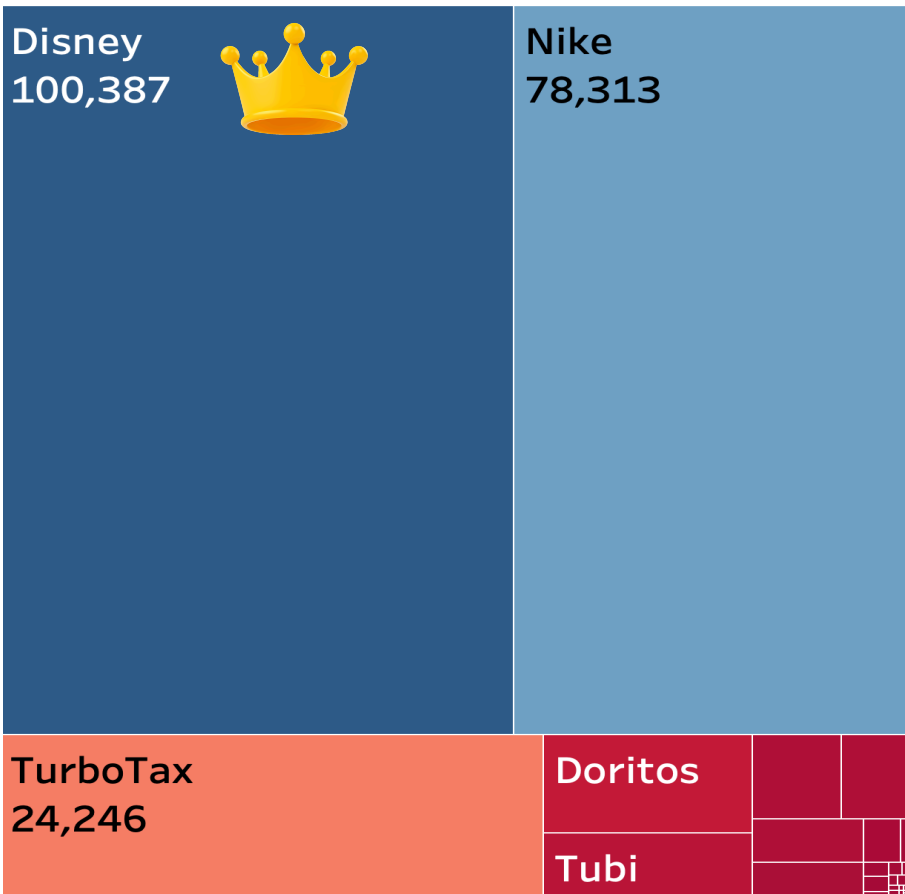
Secondly, the top advertisers by engagement count of the Super Bowl ad this year are Disney and Homes.com; with much closer differences.

Top Brands with Total Engagament



While we were tempted to rely solely on impressions and engagement, we believe these metrics alone don't paint a full picture. Instead, **we chose engagement rate**—calculated by dividing total engagement by impressions—as a better measure of ad success because it highlights how well a post resonates with its audience, providing a clearer view of its impact. This metric values meaningful interactions over sheer reach, allowing even smaller advertisers to stand out through genuine audience engagement.

Engagement Rate per Brand



Cost per Engagement

We found that determining the winner of the 2025 Super Bowl ad landscape felt incomplete without identifying which advertisers achieved the best return on investment for their engagement. Since the exact ad spend per company is often not publicly disclosed, we estimated the

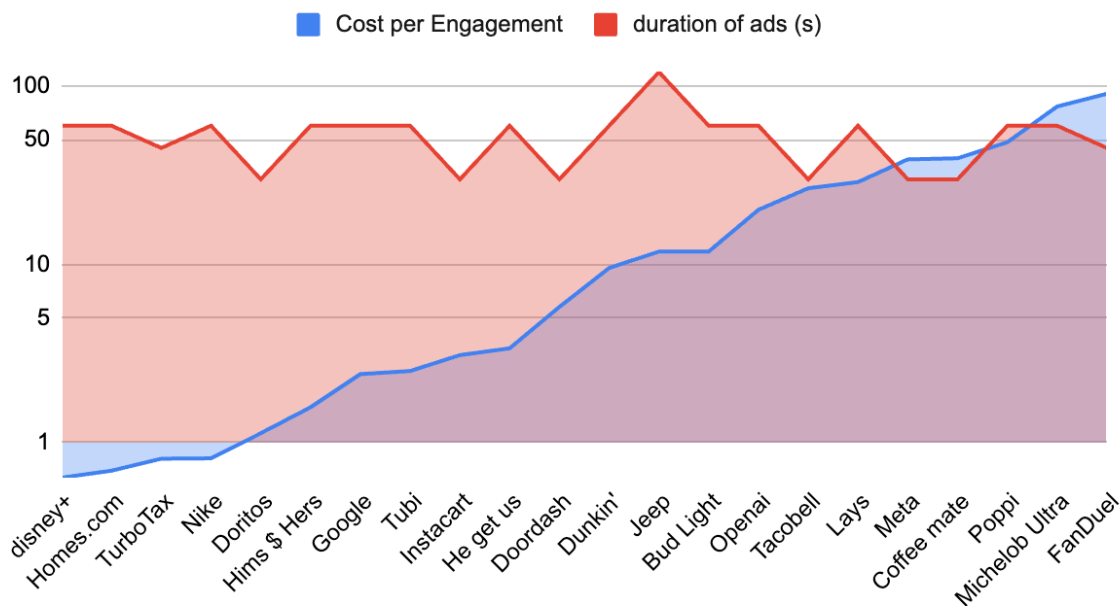
brand	engagement	duration of ads(s)	Investment	Cost per Engagement
Disney+	22041286	60	\$14,000,000	\$0.63517
Homes.com	20145702	60	\$14,000,000	\$0.69494
TurboTax	12941388	45	\$10,500,000	\$0.81135
Nike	17171909	60	\$14,000,000	\$0.81529
Doritos	6204196	30	\$7,000,000	\$1.12827
Hims \$ Hers	8872181	60	\$14,000,000	\$1.57797
Google	5782823	60	\$14,000,000	\$2.42096
Tubi	5555288	60	\$14,000,000	\$2.52012
Instacart	2261910	30	\$7,000,000	\$3.09473
He gets us	4142728	60	\$14,000,000	\$3.37942
Doordash	1213185	30	\$7,000,000	\$5.76994
Dunkin'	1466597	60	\$14,000,000	\$9.54591
Jeep	2374045	120	\$28,000,000	\$11.79422
Bud Light	1185417	60	\$14,000,000	\$11.81019
Openai	691288	60	\$14,000,000	\$20.25205
Tacobell	261716	30	\$7,000,000	\$26.74655
Lays	483287	60	\$14,000,000	\$28.96829
Meta	180226	30	\$7,000,000	\$38.84012
Coffee-Mate	177,710	30	\$7,000,000	\$39.39002
Poppi	288749	60	\$14,000,000	\$48.48502
Michelob Ultra	182054	60	\$14,000,000	\$76.90026
FanDuel	115800	45	\$10,500,000	\$90.67358

investment based on the duration of their ads, using a rate of \$7,000,000 for every 30 seconds. With this Excel table, we presented only the **top advertisers with the lowest Cost per Engagement**.

We initially assumed that shorter ad durations would result in a lower cost per engagement for advertisers. However, our analysis reveals nuances, where **brands with the lowest cost per engagement, all prioritize storytelling with longer ads over shorter ones.**

Evidently, top-performing brands like Disney, Homes.com, TurboTax, and Nike all invested in longer ad slots of 45 seconds or more, using compelling narratives to maximize their return on investment.

Log of Ads duration and cost per engagement of the top 20 brands



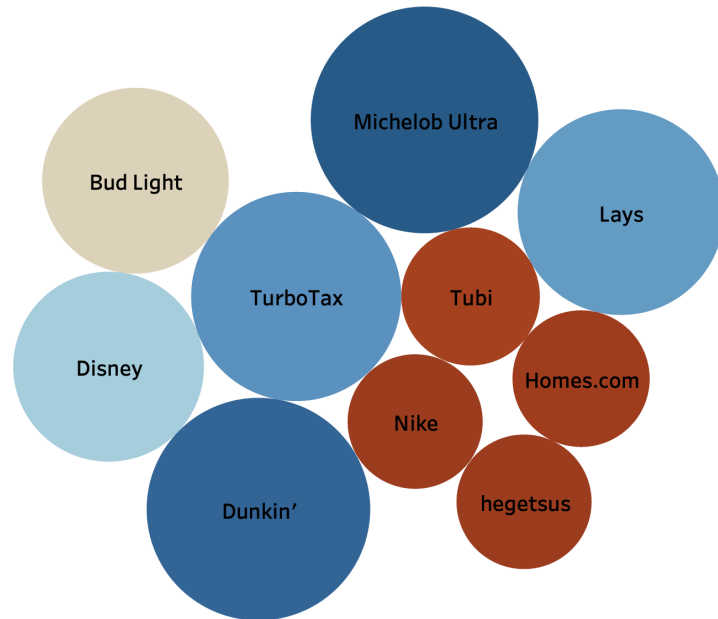
We found it worth noting that the opposite is not evident, where spending more for longer ad slots would guarantee better spending per engagement. **But simply to have one of the best ROI, advertisers need to spend more and connect it to a compelling story.** Where our sentiment analysis will go into deeper detail.

Sentiment Analysis

A complete picture of an advertisement's total performance is frequently not obtained by merely examining its duration and engagement metrics (likes, replies, retweets, quotes, etc.). We used sentiment analysis, which helps advertisers determine which advertisements connected with audiences and which did not, to acquire a deeper understanding of public opinion. Brands can monitor audience reactions more precisely by analyzing elements like language emotion and tweet tone. The **NLTK** toolkit, which uses **artificial intelligence** and natural language processing to evaluate Twitter sentiment, was used in our study. We then used Python's **Matplotlib** to augment the dataset with a "sentiment" feature and **Tableau** to show our results.

The text content of tweets was subjected to sentiment analysis. The NLTK package was used to analyze each sentence, producing a sentiment score that was subsequently added to our dataset as a new column. We determined which advertisements had the most impact—those that

Top Brands by Sentiment Score



successfully evoked strong emotions in viewers—by looking at the difference (delta) between positive and negative sentiment scores. Plotting the positive and negative sentiment values for each brand's tweets for comparison allowed for the calculation of the delta.

Among all brands, **Michelob ULTRA** dominated in positive sentiment. Their strategy incorporated popular actors like **Willem Dafoe** and **Catherine O'Hara**, references to **pickleball**—the fastest growing sport in four consecutive years, and viral internet memes associated with these actors.

Additionally, their use of a **#Sweepstakes** campaign on X (**Twitter**) contributed to a surge in positive engagement. A similar approach was employed by **Bud Light**, which also **leveraged sweepstakes** to boost interaction.

Other brands, such as **Homes.com**, **TurboTax**, and **Tubi**, relied on humor-driven campaigns. TurboTax and Homes.com effectively utilized celebrity endorsements to increase reach, while Tubi created a bizarre yet memorable concept featuring the “Cowboy Head” character, which left a lasting impression on audiences.

In contrast, **Nike**, **Lay's**, and **He Gets Us** used an emotionally engaging storytelling technique to elicit powerful audience responses. The touching story of a young girl raising a potato tree that Lay's struck a strong chord with the audience. To arouse religious sentiment, He Gets Us used pictures of thankfulness and near-death experiences. Nike used motivating language and strong calls to action to excite audiences by capitalizing on its affiliation with renowned athletes.

One particularly interesting case was **Dunkin' Donuts**, which took a bold marketing approach. Not only did they feature high-profile celebrities, but they also playfully targeted **Starbucks**, their competitor. While this move generated a significant amount of negative sentiment, it also drove high engagement, making Dunkin' one of the most talked-about brands during the event.

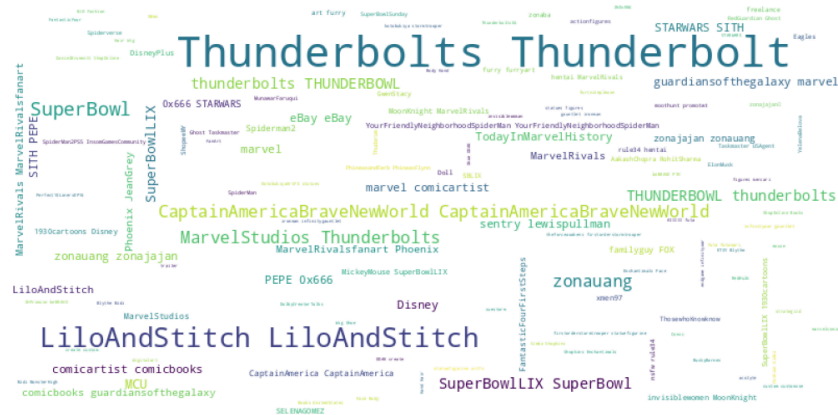
Ultimately, while each brand employed different strategies to maximize the impact of their extended ad slots, they all shared one key characteristic: **every successful ad was longer than 30 seconds**. This strongly reinforces our previous argument that **investing in longer ads leads to higher engagement and lower cost per engagement**, making it a worthwhile strategy for advertisers.

One particularly interesting analysis was examining hashtag usage for each brand. Top-performing brands in engagement, such as TurboTax and Homes.com, did not associate on a concentrated set of hashtags. For instance, a word cloud of TurboTax's hashtags included a diverse mix like #SuperBowl, #KendrickLamar, and even other brand-related tags like #PlayForULTRA.

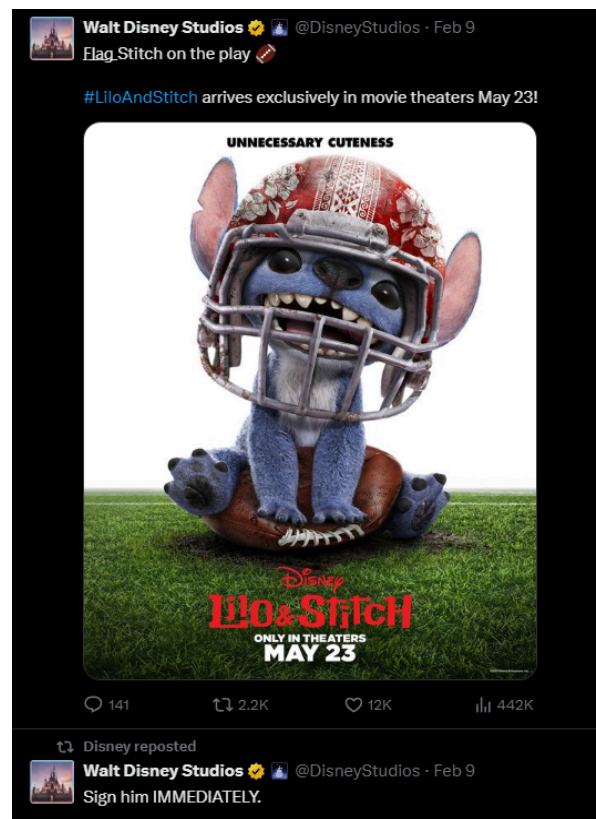
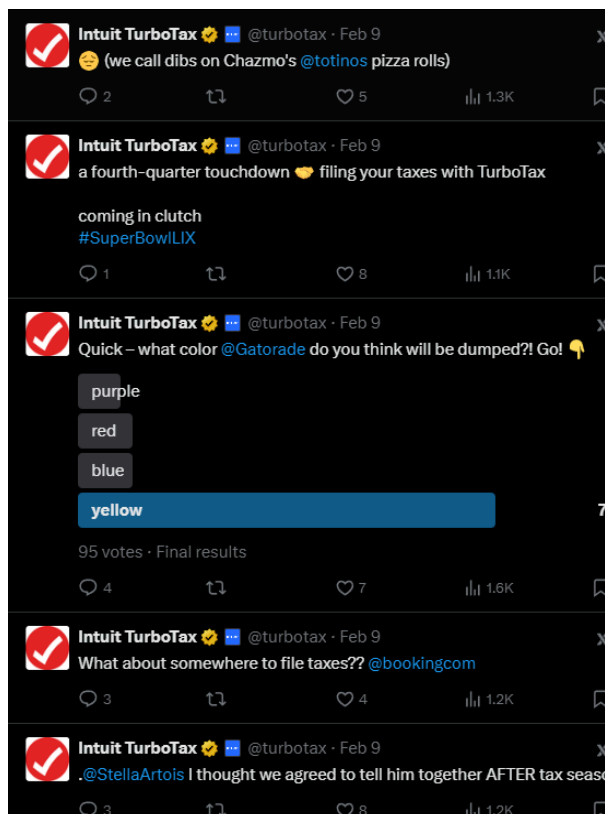
[illegible]

Unlike TurboTax or Homes.com, brands like Nike and Disney **have a minimal hashtag crossover** with other brands or even the Super Bowl itself. For example, Disney's word cloud is centered on promoting its upcoming movies, featuring hashtags like #LiloAndStitch and #Thunderbolts.

**Disney hashtag word cloud*



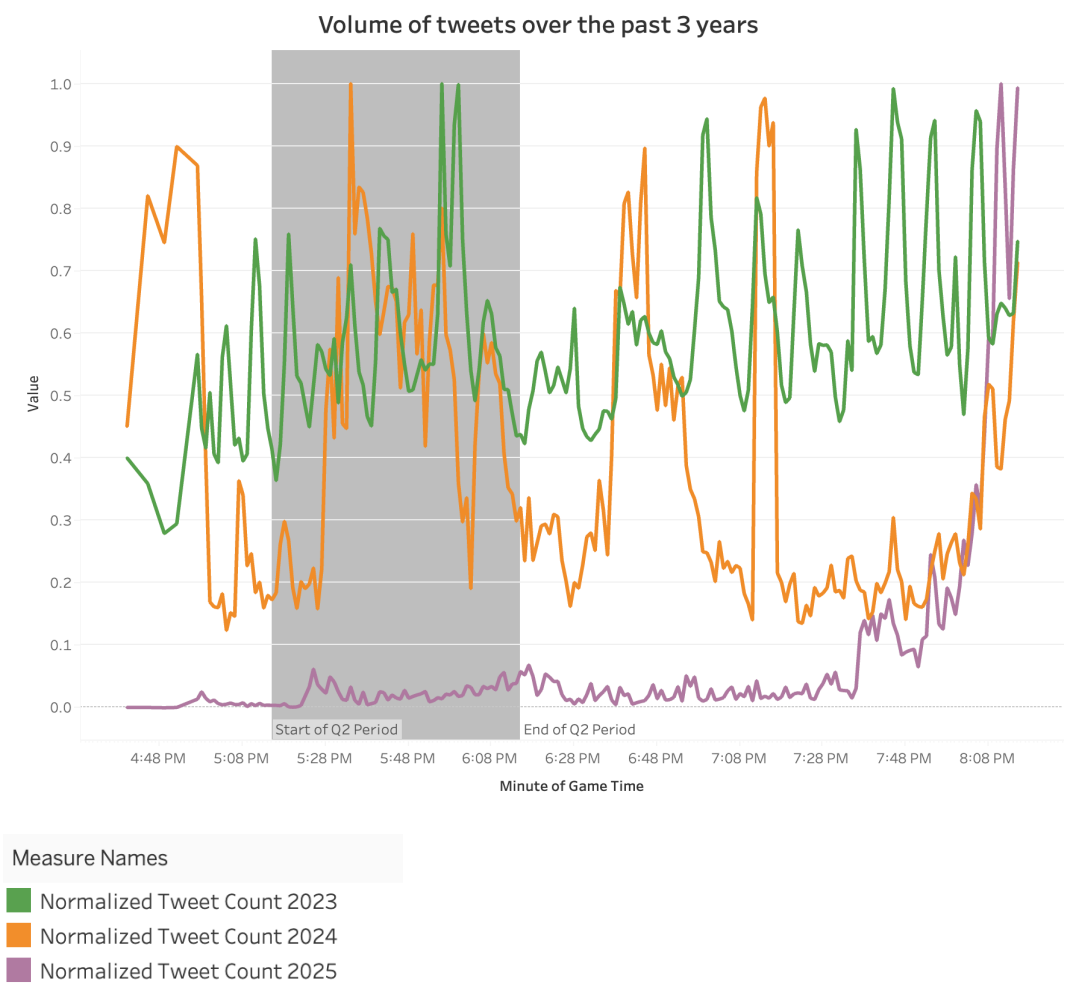
Through extensive research, we found that this trend largely originates from the brands themselves. Companies like Disney and Nike appear to be much less active during the Super Bowl, possibly because their already massive follower base allows them to maintain engagement without relying on event-driven trends. In contrast, smaller and mid-sized brands must be highly engaging to maximize their Super Bowl investment. They actively leverage hashtags, participate in trending conversations, and mention celebrities to boost visibility and engagement, ensuring their brand gains traction in the highly competitive Super Bowl advertising space.



Quarter Activity

Originally, our analysis of Twitter data from this year’s Super Bowl advertisers revealed a **peak in Tweet activity during the Fourth Quarter of the game**. This finding directly contradicts insights from previous years' whitepapers, which generally recommended that advertisers invest in the **Second Quarter**, as it historically saw the highest volume of Tweets.

To further investigate this discrepancy, we gathered additional Twitter data from the 2023 and 2024 Game Day Ad Analytics Competitions. The visualization below represents the normalized Tweet counts by time frame within the Super Bowl advertising landscape. The graph is scaled from 0 to 1, where 0 marks the lowest point of Tweet activity and 1 represents the peak engagement for each respective year.



The shift in peak engagement from the Second Quarter in previous years to the Fourth Quarter in 2025 can be largely attributed to the nature of the game itself. Examining data from the past two years, **we observed consistent spikes in tweet volume during the Second Quarter**, as well as a predictable surge at the end of the Fourth Quarter.

The **end-of-game spike** is expected, as fans frequently post reactions related to the game's outcome and the winning team. However, since this surge is **not ad-driven but game-dependent**, we disregard it in our analysis. Traditionally, during closely contested games, audiences engage throughout, often waiting until the game concludes to share their full thoughts instead of posting fragmented updates.

Because this year's game was **surprisingly completely one-sided**. We believe that it did not retain much viewers' attention and consequently, there was not much ad viewership. This is supported by the evidence in our graph in which the was almost completely flat until the end of the game.

Due to this very reason, we decided to use the previous years' dataset to explore the best quarter for ad activity. We can clearly see a trend in the last two years that the Second Quarter would produce the best-performing ads.

Since the intensity and competitiveness of a game are unpredictable, the **Second Quarter has historically been the safest and most strategic time for advertisers**, consistently generating higher engagement rates across multiple years.

Limitation and Future Research

First, our study primarily focuses on analyzing tweet engagement across different quarters to identify peak periods of activity. However, when visualizing the line chart, we observed a significant discrepancy between this year's data (2025) and the previous years (2023 and 2024). This variation introduced challenges in formulating a consistent recommendation strategy for optimal time-period investments, as engagement patterns appeared to shift unpredictably.

Additionally, the **dataset covers a limited time range, restricting our ability to capture long-term engagement trends**. While our analysis provides insights into engagement during the Super Bowl event, extending the dataset to include pre-game and post-game periods could offer a more comprehensive understanding of brand strategies. Future research should consider incorporating a broader temporal scope to uncover deeper patterns in audience interactions.

Lastly, our study relies solely on Twitter data, which, while valuable, represents only a subset of digital engagement. **Future studies could expand the analysis to other social media platforms—such as Instagram, TikTok, and Google Search trends—to provide a more**

holistic view of consumer interactions across multiple channels. This multi-platform approach could offer richer insights into how different audiences engage with brands beyond Twitter.

Findings

Our analysis of Engagement Rates reveals that Disney, Nike, TurboTax, Doritos, and Tubi emerged as the top-performing brands, with a highly competitive engagement rate among them. Capturing audience attention and driving interaction is no easy feat, yet these brands successfully resonated with viewers through compelling storytelling.

Our Sentiment Analysis further reinforces the impact of ad duration, showing that longer ads (45 seconds or more) consistently generate stronger audience sentiment. This finding highlights that extended storytelling plays a crucial role in enhancing engagement.

Meanwhile, our Hashtag Frequency Analysis uncovered a key difference in hashtag usage between brands with smaller and larger followings. For example, TurboTax (61K followers) saw a broader and more frequent hashtag spread, whereas Disney (6.7M followers) had less frequent but more brand-specific hashtags. This suggests that smaller brands may rely on hashtags to expand reach, while larger brands maintain a concentrated presence.

Our Recommended Strategy

Prioritize Second Quarter Ads – Historically, the Second Quarter has generated the highest impressions and engagement for Super Bowl advertisers, making it a strategic placement for ads.

Invest in Longer Ad Slots – Compelling storytelling through longer ad durations enhances audience connection. Our cost-per-engagement analysis confirms that higher spending could lead to better returns compared to others.

Expand and Leverage Online Presence – A larger follower base positively correlates with engagement. If growing a sizeable online presence is challenging, brands should actively post, engage, use hashtags like #SuperBowl, and mention celebrities to amplify reach and interaction.

In summary, our analysis of Twitter data highlights key strategies for maximizing Super Bowl ad impact. Prioritizing Second Quarter ads ensures higher impressions and engagement, while investing in longer ad slots enhances audience connection and ROI. Additionally, expanding and leveraging an online presence through active engagement and strategic hashtags can amplify reach. By applying these insights—along with careful sentiment analysis and interactive giveaways—brands can create effective campaigns that drive meaningful business outcomes.