Bayesian Ballers Present Superbowl Ad Breakdown: Who Won the Battle on X?

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1. Abstract

This whitepaper presents an in-depth analysis of Super Bowl advertisements using Twitter data to evaluate brand performance in the highly competitive advertising landscape. By examining engagement metrics, sentiment analysis, ad content, duration, and quarterly trends, we identify key factors that drive audience interaction. While the precise financial impact of advertisements cannot be directly measured, we explore potential effects on return on investment (ROI) through stock performance analysis.

Our findings reveal that top-performing ads are typically longer, incorporate incentives, feature celebrity endorsements, and strategically target specific demographics to maximize engagement. This study delves into these insights and their broader implications for brand success following Super Bowl advertising.

This research offers valuable guidance for advertisers on crafting compelling commercials that enhance brand visibility and drive social media engagement during the Super Bowl. Additionally, we outline effective methodologies for leveraging social media analytics to assess campaign success and optimize future advertising strategies. Ultimately, our study highlights the critical role of social media engagement in shaping brand perception and its potential impact on ROI.

2. Introduction

2.1 Background

Why the Super Bowl Matters for Advertising

The Super Bowl is more than just a football game; it's a cultural and commercial event that brings together over 100 million viewers, making it one of the most valuable platforms for advertisers (News.Illinois.edu, 2025). As traditional TV advertising declines in effectiveness, the Super Bowl remains one of the few events where brands can still reach a massive live audience, making ad slots highly competitive.

The Appeal of Super Bowl Ads

Companies invest in Super Bowl advertising primarily due to its massive audience size. As the most-watched TV event in the United States, the Super Bowl offers an unparalleled chance for companies to reach a massive and engaged demographic. Research from Kantar indicates that 1 in 4 viewers watch the Super Bowl primarily for commercials rather than the game itself, making it a rare instance where ads become part of the entertainment experience rather than an interruption (Kantar.com, 2025). However, Super Bowl ads extend beyond the game itself.

Because of the rise of social media and digital engagement, successful ads generate millions of Google searches, social media impressions, and earned media coverage, creating a halo effect that reinforces brand messaging for weeks (TheDaily.Case.edu, 2025). This post-game conversation is crucial to maximizing advertising ROI.

With this level of attention, it's no surprise that the cost of a 30-second Super Bowl ad reached a record $8 million in 2025—a massive increase from $37,500 in 1967 (VisualCapitalist.com, 2025). The return on investment (ROI) for Super Bowl ads varies significantly, but research suggests they are 20 times more effective than standard TV commercials at influencing consumer brand perception (Kantar 2022 Report).

2.2 Objective

Our objective was to uncover key insights that can help brands make data-driven decisions regarding their Super Bowl advertisements. By analyzing X's engagement, sentiment trends, ad content, and length, we aimed to identify factors that drive audience interaction and brand recall. Additionally, we explored how ad timing within the game influences engagement and examined potential links between ad performance and stock market impact. Our findings provide advertisers with actionable strategies to optimize their Super Bowl ad campaigns, enhance audience connection, and maximize return on investment (ROI).

2.3 Team Structure

The team responsible for creating this white paper consists of four individuals with complementary skill sets, each contributing to different aspects of the project.
- Prachi was responsible for data analysis, data cleaning, and examining engagement trends across different quarters. She also contributed significantly to the white paper by ensuring data-driven insights were well-documented.
- Tobias and Jack led sentiment analysis and visualization efforts, applying natural language processing (NLP) techniques to assess audience reactions while designing compelling infographics to effectively communicate trends. They also created the infographic for the analysis.
- Nick focused on financial analysis, specifically evaluating the return on investment (ROI) and potential stock market impact of Super Bowl advertisements. He also played a key role in structuring the white paper.
- The Entire Team collaboratively defined the strategy, planned and refined the data pipeline, and worked together to produce an informative and well-structured analysis.

Prachi , Jack, and Tobias, all Data Science majors, focused on the data-driven aspects of the project, including data cleaning, analysis, sentiment assessment, and visualization. Meanwhile, Nick, coming from a business background, specialized in financial analysis, particularly evaluating ROI and stock market trends.

By leveraging our diverse skills and expertise, we aimed to provide advertisers with a comprehensive understanding of Super Bowl ad performance and its broader impact on brand perception and consumer behavior.

3. Analyzing Data

3.1 Overview of Raw Data

The raw dataset for this year contained 123,147 tweets, a significant decrease from last year's volume. The dataset included 36 columns, covering metadata such as timestamps, tweet content, engagement metrics, and user interactions.

Additionally, we gathered all Super Bowl ad transcripts from YouTube to analyze their semantic performance. These transcripts allowed us to examine linguistic patterns, themes, and messaging strategies used in the most successful ads.

Given the reduction in tweet volume, it was crucial to focus on data quality and filtering to extract meaningful insights from a smaller dataset.

3.2 Key Performance Metrics

To evaluate the impact and effectiveness of Super Bowl advertisements, we identified six key performance indicators (KPIs) that provide insights into audience engagement, content effectiveness, and overall reach. These KPIs help assess which brands successfully captured public attention and generated discussions on Twitter.

1. Ad Length

This study examines whether shorter or longer ads generate higher engagement and positive sentiment. To identify trends in audience reactions, advertisements are grouped into common time slots (e.g., 15s, 30s, 45s, 60s, and extended versions). Additionally, ad length is further analyzed based on the total word count in the transcript, providing a deeper understanding of how duration influences viewer response.

2. Ad Sentiment

Sentiment analysis is performed on tweets mentioning specific ads to determine public perception. Using natural language processing (NLP) techniques, we classify tweet sentiment into positive, neutral, or negative categories. This helps gauge whether an ad resonated well with the audience or received backlash. It also helps gauge audience response by demographic and response to celebrities.

3. Ad Content

We categorize ads based on their content type, including:

- Celebrity endorsements
- Humor-based vs. emotional storytelling
- Social messages or activism
- Tech, automotive, and food & beverage industries

By comparing content types against engagement levels and sentiment, we identify which storytelling approaches were most effective.

4. Quarterly Distribution

Super Bowl ads are aired at different points during the game (Q1, Q2, Q3, Q4). We analyze the distribution of ad placements across quarters and examine whether earlier or later ads receive more attention. This helps determine if ad placement timing impacts audience engagement and sentiment.

5. Engagement Metrics

Engagement is a critical measure of an ad's reach and impact. We track the following engagement indicators:

- Likes, Retweets, and Replies – Indicating audience interaction levels.
- Cost per Engagement (CPE) – Estimating efficiency by comparing engagement to ad spend.
- Hashtag Popularity – Analyzing branded hashtags to determine viral reach.

6. Volume of Tweets

The total number of tweets mentioning an ad provides a raw measure of its reach. We assess tweet volume over time, identifying spikes in discussions and correlating them with ad airing times. This metric helps distinguish between ads that generated sustained discussions versus those that had only momentary attention.

3.3 Data Preparation

To ensure the accuracy and reliability of our analysis, we performed a thorough data cleaning process, refining the dataset for meaningful insights. The key steps included:

- Filtering Unnecessary Columns – We removed irrelevant attributes to focus on critical engagement metrics, sentiment trends, and financial analysis.

- Handling Duplicates and Missing Data – Duplicate tweets were eliminated, and missing values were addressed to maintain dataset integrity.

- Standardizing data formats for timestamps, engagement metrics, and brand mentions.

- Aggregating by Game Quarters – To identify engagement trends over time, we structured the data by Q1, Q2, Q3, and Q4, aligning it with Super Bowl ad placements.

- Extracting Hashtags and Mentions – We categorized brand discussions by analyzing hashtags and user mentions, helping uncover patterns in audience interactions.

This data refinement allowed us to extract actionable insights and build a strong foundation for evaluating Super Bowl ad performance.

3.4 Tools and Technologies Used

Tools and Technologies Used:

- Python (pandas, NLTK, scikit-learn) – Used for data cleaning, preprocessing, creating visuals, and filtering to remove unnecessary columns like author_id and other redundant metadata.

- GPT-4 – Used to extract transcripts of all ads from YouTube for semantic analysis and programming assistance.

- Alteryx – Used primarily for financial analysis, ensuring proper structuring of ROI and stock impact data.

- R Studio – Used for sentiment analysis on both ad content and tweet content using natural language processing (NLP) techniques.

- Tableau & Power BI – Used for visualizing engagement trends, sentiment distribution, and quarterly analysis of brand performance.

3.5 Data Analysis

To begin our analysis, we first explored fundamental engagement metrics, such as top hashtag counts, total brands mentioned, and overall interaction statistics, to gain an initial understanding of the dataset.

a. Exploratory Data Analysis (EDA) and Correlation Matrix

EDA started out by finding ground facts:
Before diving into specific brand performances, we analyzed key demographic and engagement metrics to establish foundational insights.

- Demographics: We identified the states with the highest number of tweets per capita, with Alaska, Delaware, Missouri, Indiana, and Pennsylvania ranking in the top five. Missouri and Pennsylvania stood out as they were among the most active in terms of tweets per capita and states with participating teams in the Super Bowl.

- Languages: The most common language used was English, while the most unique was Icelandic which only has ~330,000 speakers globally. In total, 51 languages were represented in the dataset.

We identified all the unique brands that aired during the Super Bowl as well.

Figure 3.1 All Brands Aired

We then create the correlation network graph which revealed strong associations:

Correlation Network Graph of Engagement Metrics
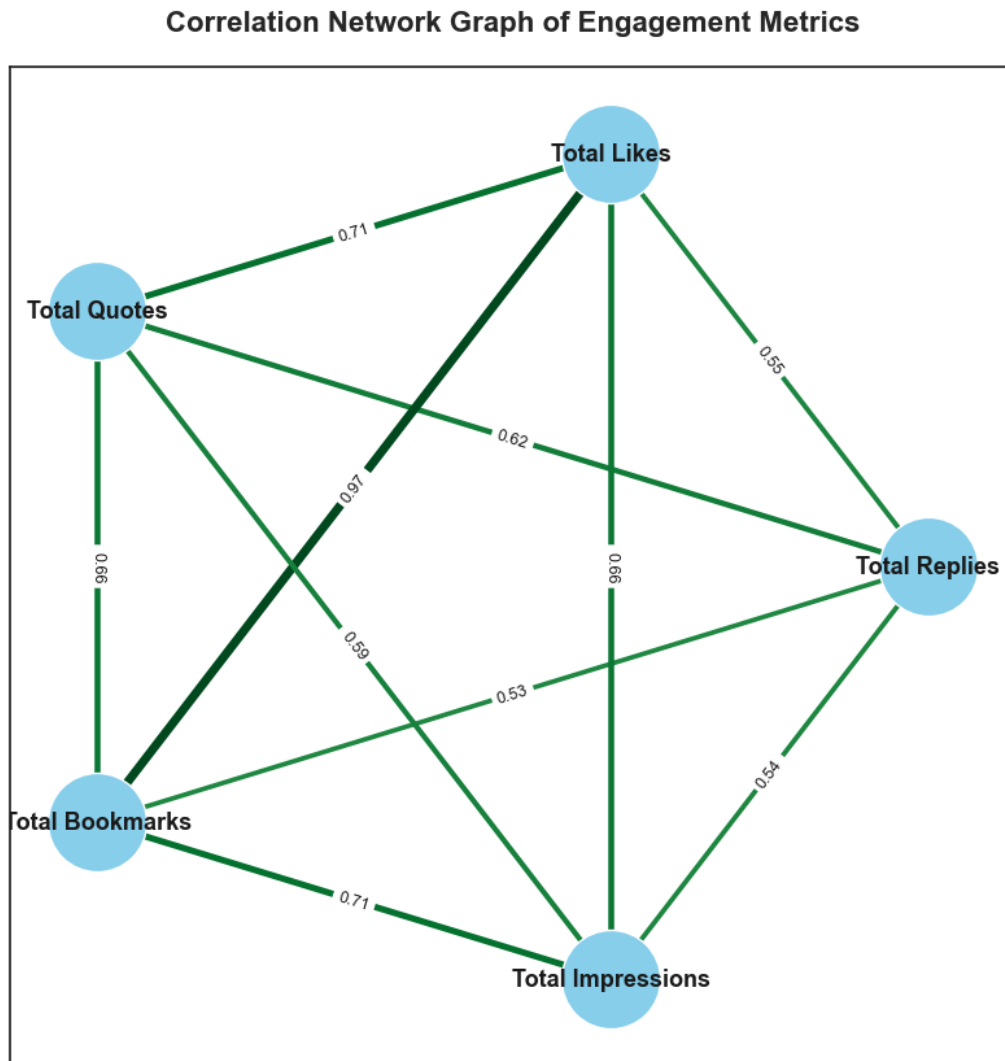
Figure 3.2 : Network graph showing the correlation between engagement metrics

These correlations suggest that users who bookmark tweets are also more likely to like them. It also suggest that likes are somewhat predictive of total replies and impressions. Understanding these relationships helped us refine our approach to measuring engagement.

b. Total Tweet Volume Per Brand

We analyzed tweet volume per brand to assess overall visibility. The brands with the highest number of tweets were:

1. TurboTax – 13,949 tweets

2. Bud Light – 12,622 tweets

3. Dunkin' – 10,791 tweets

4. Disney – 10,397 tweets

5. Lays – 9,864 tweets

This initial ranking gives us a sense of which brands generated the most buzz, but to measure true engagement (virality), we needed to look deeper.

c. Engagement Metrics for Determining Virality

To measure how well brands performed beyond just tweet volume, we examined:

- Total Likes

- Total Retweets

- Total Replies

- Total Quotes

- Total Bookmarks

By assessing these dimensions, we identified top 5 brands led in each engagement category.

Metric	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Tweet Volume	TurboTax (13,949)	Bud Light (12,622)	Dunkin' (10,791)	Disney (10,397)	Lays (9,864)
Likes	TurboTax (1,241,838)	NFL (285,534)	Tubi (241,626)	Disney (116,770)	Hims & Hers (58,868)
Retweets	Disney (29,171,068)	Homes.com (22,308,430)	Google (19,836,576)	Nike (18,099,946)	NFL (16,573,908)
Replies	Lays (34,603)	TurboTax (34,559)	Michelob Ultra (17,815)	Doritos (8,109)	NFL (7,613)
Bookmarks	TurboTax (35,076)	NFL (6,570)	Tubi (5,831)	Disney (5,069)	Google (2,351)
Quotes	TurboTax (27,210)	NFL (6,178)	Tubi (2,876)	Disney (1,286)	Hims & Hers (692)

Figure31.3 Visualization showing all of the metrics

Key Takeaways from Engagement Metrics:

Disney won in terms of overall engagement, dominating the retweets category with over 29 million retweets, which far surpassed all other brands. This highlights that Disney's Super Bowl campaign had the highest organic reach and virality, making it the most engaging brand of the event.

On the other hand, TurboTax performed well across almost all engagement metrics, leading in likes, quotes, bookmarks, and replies. This was largely driven by its sweepstakes campaign, which encouraged high user participation and interaction.
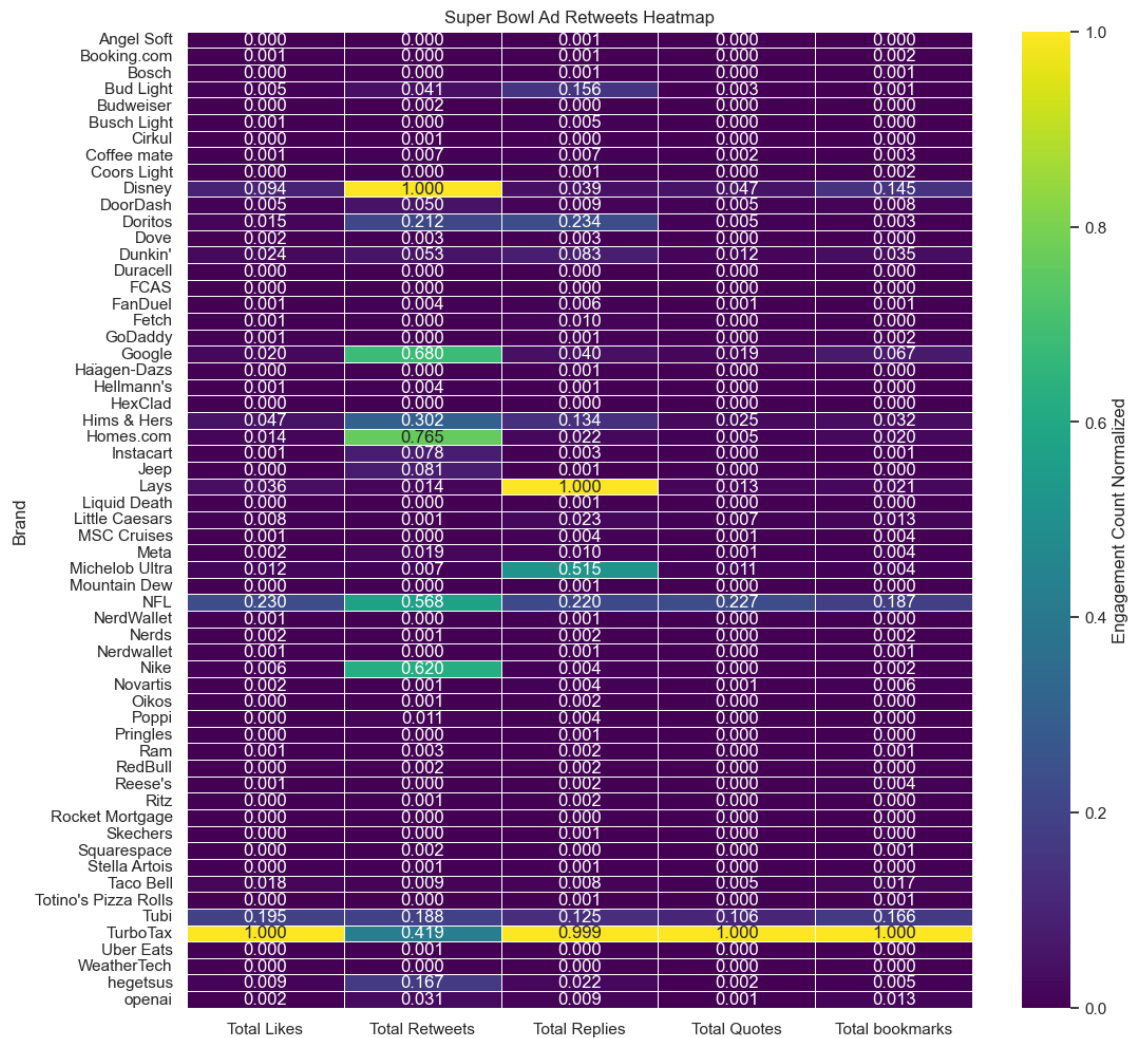
Brand	Total Likes	Total Retweets	Total Replies	Total Quotes	Total bookmarks
Angel Soft	0.000	0.000	0.001	0.000	0.000
Booking.com	0.001	0.000	0.001	0.000	0.002
Bosch	0.000	0.000	0.001	0.000	0.001
Bud Light	0.005	0.041	0.156	0.003	0.001
Budweiser	0.000	0.002	0.000	0.000	0.000
Busch Light	0.001	0.000	0.005	0.000	0.000
Cirkul	0.000	0.001	0.000	0.000	0.000
Coffee mate	0.001	0.007	0.007	0.002	0.003
Coors Light	0.000	0.000	0.001	0.000	0.002
Disney	0.094	1.000	0.039	0.047	0.145
DoorDash	0.005	0.050	0.009	0.005	0.008
Doritos	0.015	0.212	0.234	0.005	0.003
Dove	0.002	0.003	0.003	0.000	0.000
Dunkin'	0.024	0.053	0.083	0.012	0.035
Duracell	0.000	0.000	0.000	0.000	0.000
FCAS	0.000	0.000	0.000	0.000	0.000
FanDuel	0.001	0.004	0.006	0.001	0.001
Fetch	0.001	0.000	0.010	0.000	0.000
GoDaddy	0.001	0.000	0.001	0.000	0.002
Google	0.020	0.680	0.040	0.019	0.067
Häagen-Dazs	0.000	0.000	0.001	0.000	0.000
Hellmann's	0.001	0.004	0.001	0.000	0.000
HexClad	0.000	0.000	0.000	0.000	0.000
Hims & Hers	0.047	0.302	0.134	0.025	0.032
Homes.com	0.014	0.765	0.022	0.005	0.020
Instacart	0.001	0.078	0.003	0.000	0.001
Jeep	0.000	0.081	0.001	0.000	0.000
Lays	0.036	0.014	1.000	0.013	0.021
Liquid Death	0.000	0.000	0.001	0.000	0.000
Little Caesars	0.008	0.001	0.023	0.007	0.013
MSC Cruises	0.001	0.000	0.004	0.001	0.004
Meta	0.002	0.019	0.010	0.001	0.004
Michelob Ultra	0.012	0.007	0.515	0.011	0.004
Mountain Dew	0.000	0.000	0.001	0.000	0.000
NFL	0.230	0.568	0.220	0.227	0.187
NerdWallet	0.001	0.000	0.001	0.000	0.000
Nerds	0.002	0.001	0.002	0.000	0.002
Nerdwallet	0.001	0.000	0.001	0.000	0.001
Nike	0.006	0.620	0.004	0.000	0.002
Novartis	0.002	0.001	0.004	0.001	0.006
Oikos	0.000	0.001	0.002	0.000	0.000
Poppi	0.000	0.011	0.004	0.000	0.000
Pringles	0.000	0.000	0.001	0.000	0.000
Ram	0.001	0.003	0.002	0.000	0.001
RedBull	0.000	0.002	0.002	0.000	0.000
Reese's	0.001	0.000	0.002	0.000	0.004
Ritz	0.000	0.001	0.002	0.000	0.000
Rocket Mortgage	0.000	0.000	0.000	0.000	0.000
Skechers	0.000	0.000	0.001	0.000	0.000
Squarespace	0.000	0.002	0.000	0.000	0.001
Stella Artois	0.000	0.001	0.001	0.000	0.000
Taco Bell	0.018	0.009	0.008	0.005	0.017
Totino's Pizza Rolls	0.000	0.000	0.001	0.000	0.001
Tubi	0.195	0.188	0.125	0.106	0.166
TurboTax	1.000	0.419	0.999	1.000	1.000
Uber Eats	0.000	0.001	0.000	0.000	0.000
WeatherTech	0.000	0.000	0.000	0.000	0.000
hegetsus	0.009	0.167	0.022	0.002	0.005
openai	0.002	0.031	0.009	0.001	0.013

Figure 1.4 Turbo Tax Dominated in most categories

While Disney's success was fueled by organic audience engagement and shareability, TurboTax strategically maximized engagement through incentives, making it one of the strongest performing brands across multiple metrics.
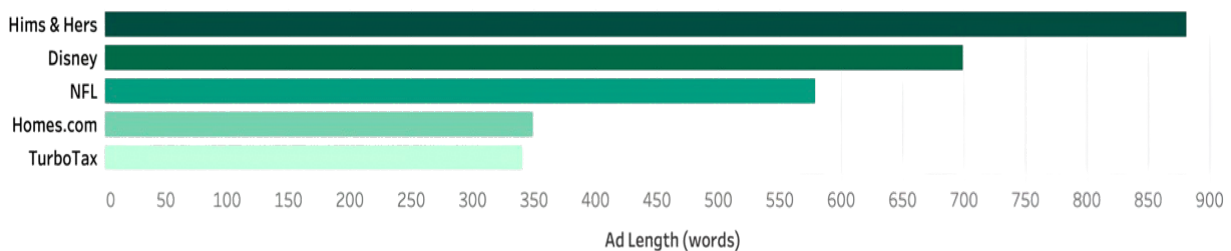
Figure 3.5 Winner in terms of Engagement
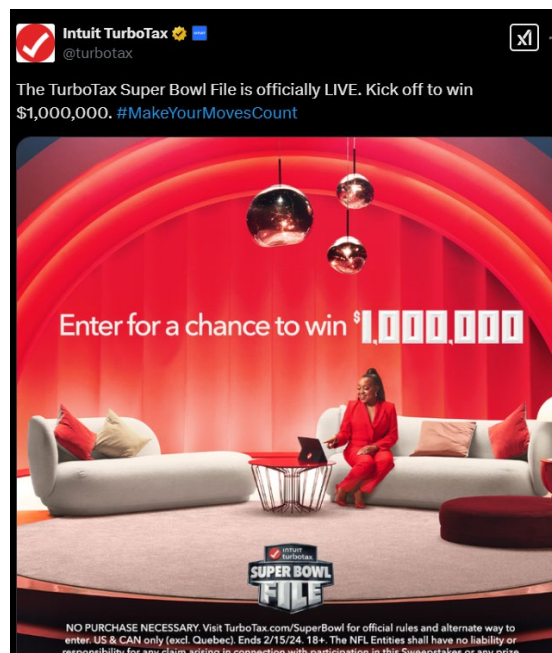
Figure 3.6 TurboTax Sweepstake tweet

d. Ad Length as a Factor in Engagement

We also examined whether ad length played a role in brand engagement. The chart below shows the top five brands by total engagement compared to the duration of their Super Bowl ads.

Figure 3.7 Ad Length of Each Brand and the total tweets

Hims & Hers had the longest ad yet received high engagement, suggesting that longer ad duration may contribute to sustained audience attention. Disney followed closely behind, reinforcing the idea that longer ads allow for richer storytelling, which may have contributed to its top performance in overall engagement.

NFL and Homes.com had moderate-length ads but still generated significant engagement, possibly due to brand recognition and audience loyalty. TurboTax had a relatively shorter ad compared to other top brands, yet it performed well in multiple engagement categories, likely due to its sweepstakes-driven strategy.

Key Takeaways:

Longer ads may enhance engagement by providing more time to connect with viewers, as seen with Disney and Hims & Hers. However, ad length alone is not the determining factor—TurboTax's high engagement with a shorter ad suggests that campaign strategy and incentives can drive significant interactions in addition to duration. The combination of ad content, length, and brand strategy plays a crucial role in maximizing engagement rather than ad length alone.

e. Sentiment Analysis

When looking at general numbers of retweets, replies, likes, quotes, impressions, and tweet count, it can be difficult to conclude whether a company did well just based on engagement alone.

Conducting a sentiment analysis provides valuable insights into public opinion on a given topic. With millions of viewers tuning in to the game, advertisers have a unique opportunity to engage with a broad and diverse audience. Understanding audience reactions to advertisements can help brands measure the success of their campaigns, refine messaging strategies, and anticipate public sentiment shifts. By analyzing social media data, brands can determine which ads resonated most with viewers and identify areas for improvement.

e.1. Methodology:
We preprocessed the text data by removing punctuation, converting text to lowercase, and tokenizing words. We also removed non-relevant characters, emojis, and links to minimize noise in sentiment classification. We classified tweets as positive, negative, or neutral using a lexicon-based approach, which assigns sentiment scores based on predefined positive and negative words. Tweets with more positive words than negative were classified as positive, and vice versa. Neutral tweets either had equal positive and negative words or lacked sentiment-indicating terms. We then aggregated classified tweets by brand, fan base, and celebrity endorsements to analyze sentiment trends.

Figure 3.8 Word Clouds for Positive Tweets from Missouri and Pennsylvania

e.2. Sentiment Analysis by Brand

To measure how different brands were perceived, the proportion of positive, negative, and neutral tweets was calculated for each advertiser. These values were determined using the following formulas:

• Positive Sentiment = Positive Tweets for Brand / Total Tweets for Brand

• Negative Sentiment = Negative Tweets for Brand / Total Tweets for Brand

• Neutral Sentiment = Neutral Tweets for Brand / Total Tweets for Brand

By comparing sentiment distributions across brands, advertisers can identify which companies received the most favorable or unfavorable reactions.

Top 10 Biggest Winners (Highest Positive Sentiment)

Top 10 Biggest Losers (Highest Negative Sentiment)
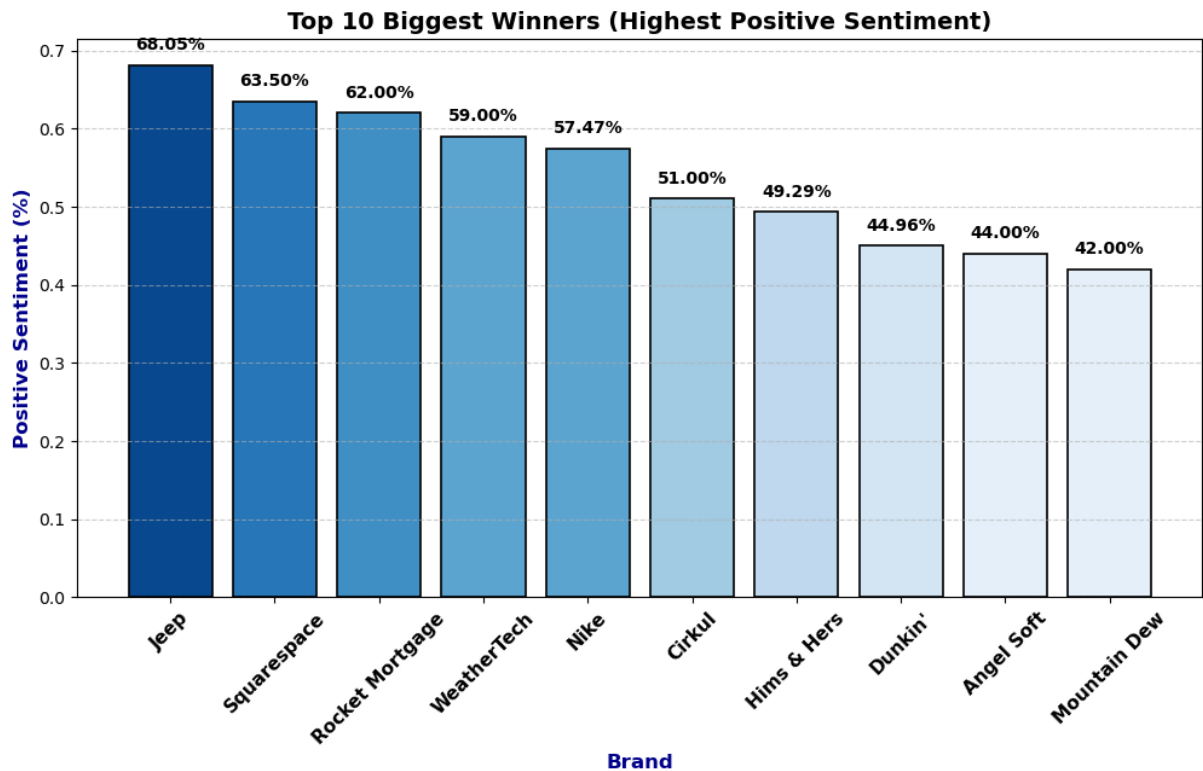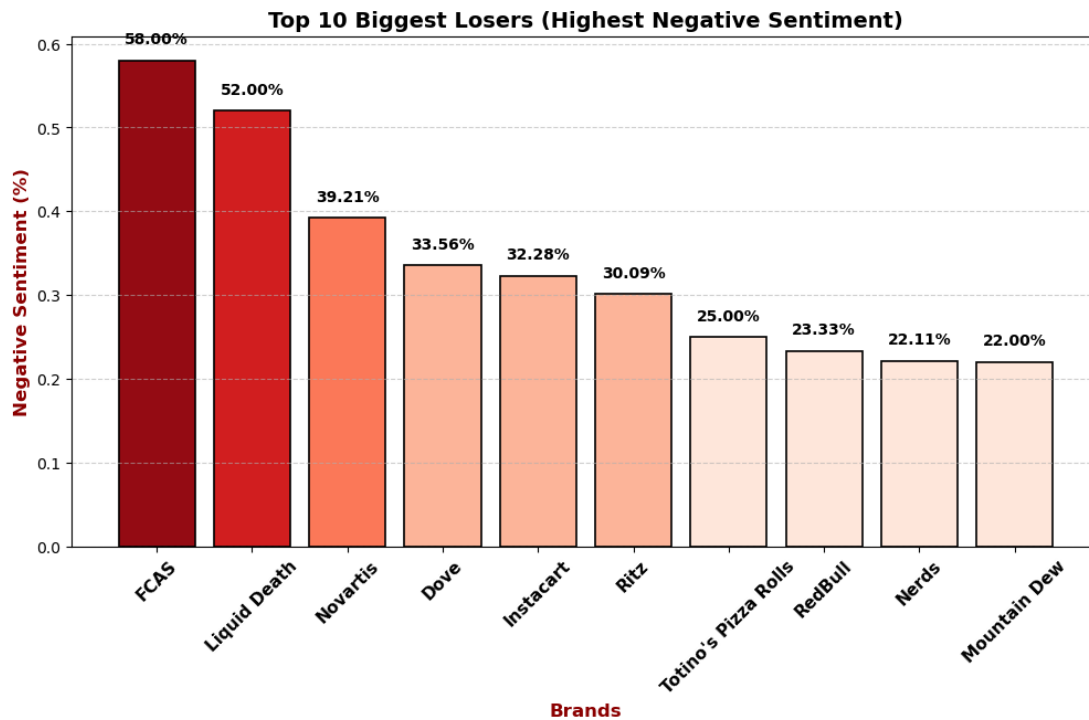
Figure 3.9 Bar Graphs showing brands with the highest positive and negative sentiment percentile

e.3. Sentiment by Fan Base

To analyze how sentiment varied across the two competing fan bases (Chiefs and Eagles), tweets were grouped based on location as it can be assumed that the largest quantity of Chiefs fans are in Missouri and Eagles fans in Pennsylvania. This analysis of sentiment percentile as a function of location helped determine which fan bases were more positive, negative, or neutral toward advertisements. A stacked bar chart was used to visualize the sentiment breakdown of each fan base, allowing brands to understand which demographics responded well to their campaigns and which were more critical. Overall, Chiefs fans (Missourians) were far more positive.
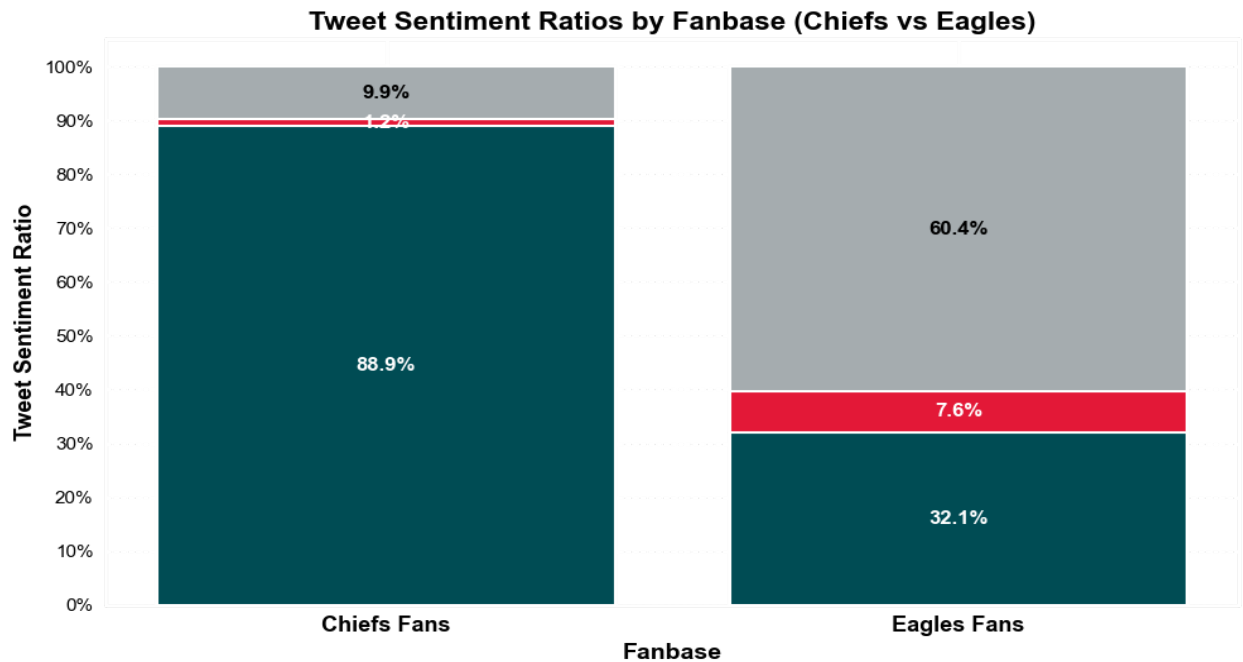
Figure 3.10 Stacked Bar Graphs showing the distribution of sentiment in the competing fan bases

e.4. Celebrity Sentiment Analysis

Many ads feature celebrity endorsements, which can significantly influence public perception. To assess how different celebrities were received, the advertisement transcripts and tweets were analyzed to extract mentions of celebrity names. Those referencing celebrities were then classified into positive, negative, or neutral sentiments. A bar chart was used to highlight the most frequently mentioned celebrities and the ratio of positive, negative, and neutral tweets including that celebrities' names. Through this analysis we can quickly see which celebrities are received well and which are not. Brands must be wise as to who endorses them since poorly received celebrities may damage brand reputation.
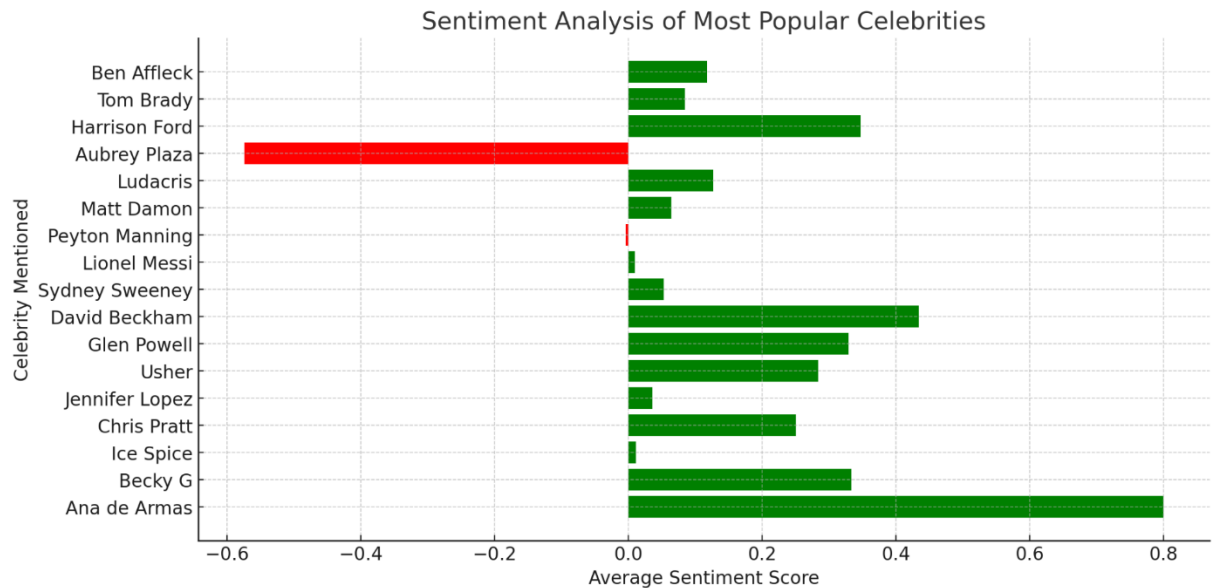
Figure 3.11 Butterfly Plot showing overall sentiment surrounding celebrities who appeared in at least one ad.

e.5. Geographical Sentiment Analysis

To explore regional differences in sentiment, tweets were grouped by state based on location data. A choropleth map was created to visualize tweet engagement per state and sentiment by region. This analysis helps brands identify which states were most engaged and whether sentiment varied geographically. Through this analysis, brands can better gauge what demographic they should focus their attention on.
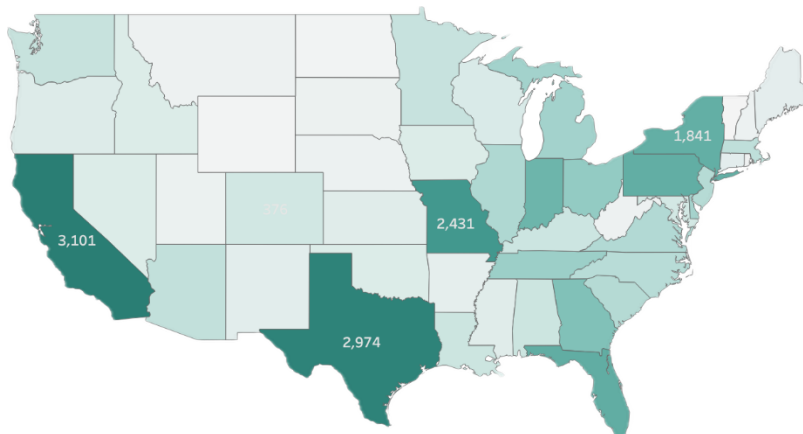
Figure 1.12 Map showing highest engagement in the U.S. (Missouri and Pennsylvania both ranked among the top five in tweets per capita)

Positive Sentiment Ratio Across US States
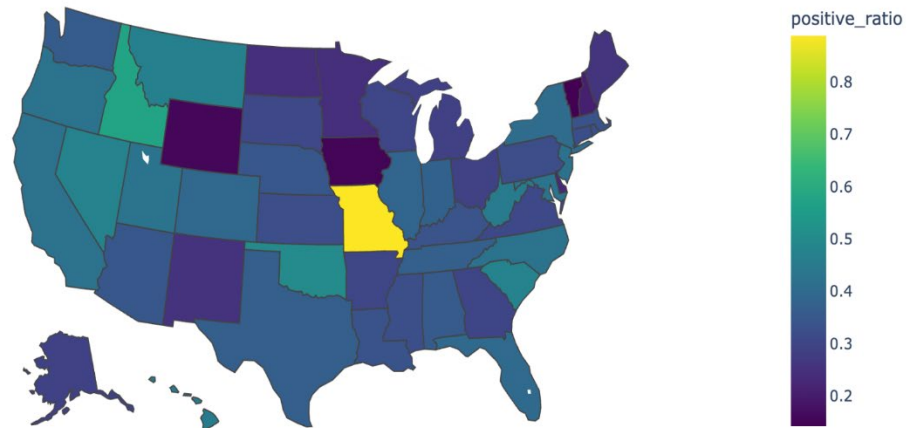
Negative Sentiment Ratio Across US States
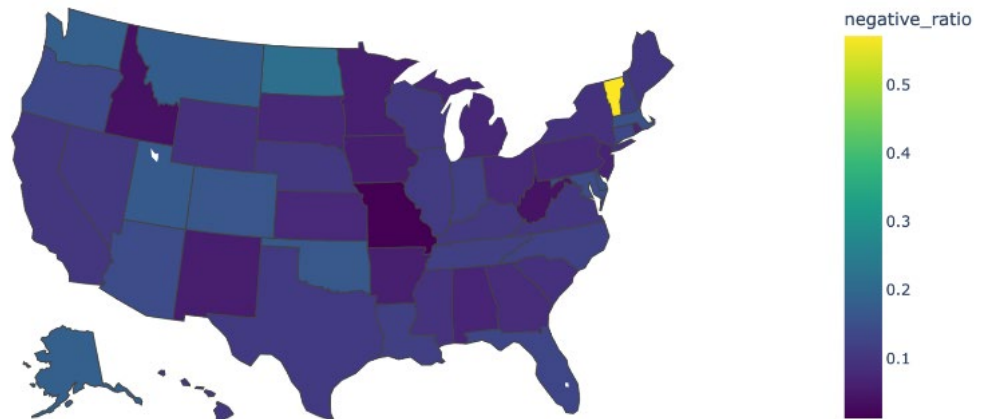
Figure 3.13 Maps showing distribution of negative and positive sentiment in U.S.

By leveraging this comprehensive sentiment analysis, advertisers can gain valuable insights into audience reactions, allowing them to refine messaging strategies, adjust future campaigns, and optimize celebrity endorsements to maximize engagement.

f. Quarterly Analysis: Does Timing Matter?

The timing of an advertisement during the Super Bowl can impact audience engagement and sentiment. Some brands strategically place their ads during high-attention moments, such as right before halftime or in the final quarter when viewers are deeply invested in the game. Our analysis aimed to understand whether the quarter in which an ad aired influenced engagement levels and sentiment.

f.1. Engagement by Quarter:
From the engagement distribution, 41% of total engagements were for brands that aired their ads in the third quarter, making it the most engaging quarter. The fourth quarter followed with 26.84%, while the second and first quarters had significantly lower engagement levels. The halftime slot had the least engagement, likely due to audiences being more focused on the halftime show than advertisements.
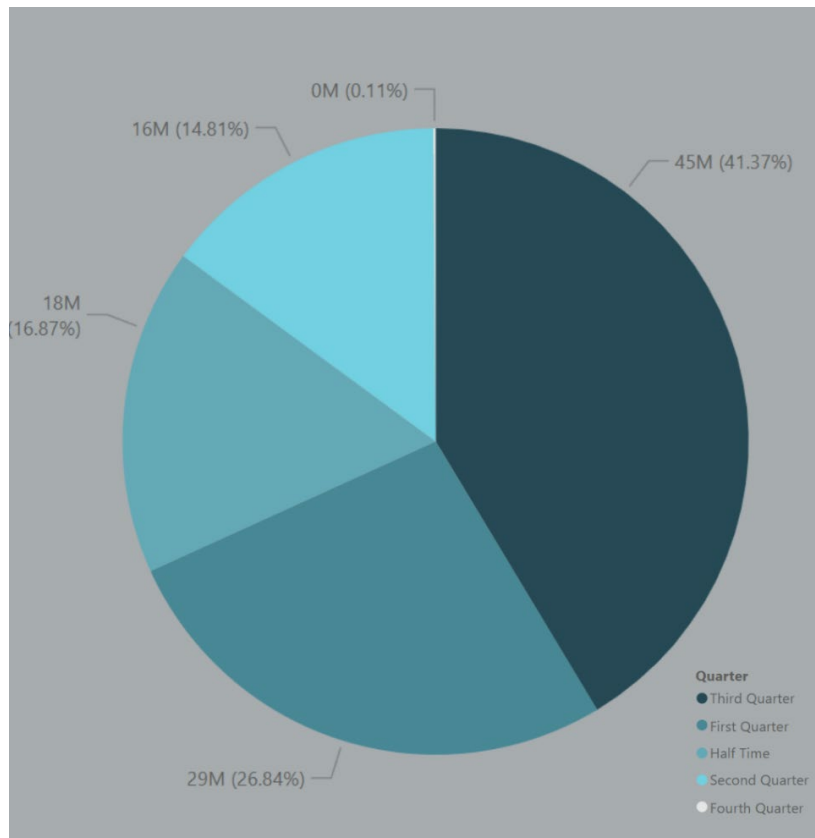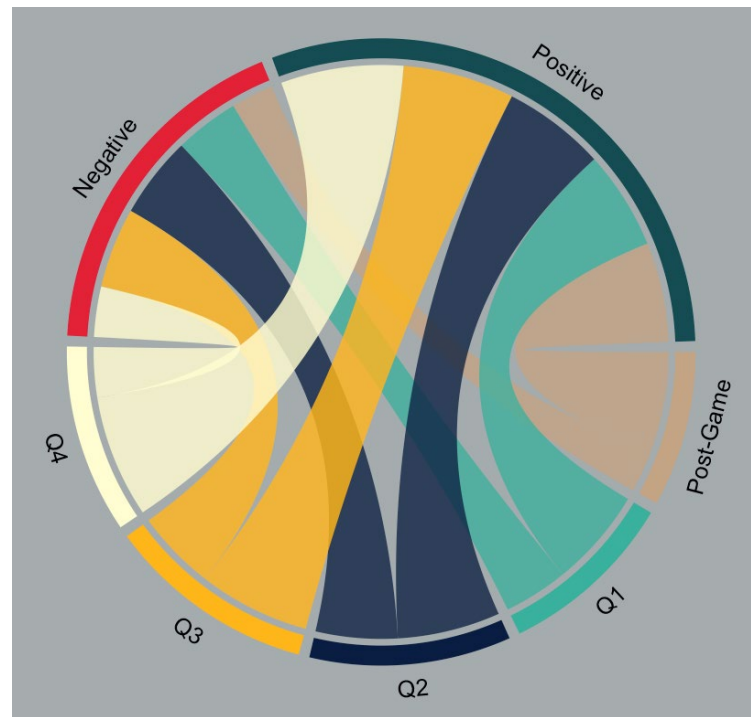

Figure 3.14 Engagement by Quarter Distribution

Despite engagement variations, the quarter in which an ad aired had no significant correlation with sentiment. As seen in the sentiment flow diagram, positive and negative sentiments were distributed across all quarters without

a clear trend. This suggests that ad content and brand perception played a more significant role in shaping sentiment than the timing of the ad itself.

Figure 1.15 Quarter Distribution for Sentiment

f.2. Key Takeaways:

Third-quarter ads generated the most engagement, possibly due to viewers settling into the game and being more active on social media. Halftime ads had the lowest engagement, indicating that the halftime show may overshadow advertisements. Timing had no significant impact on sentiment, reinforcing that ad effectiveness depends more on creative execution, messaging, and audience targeting rather than just when it airs.

This analysis suggests that brands should focus more on content strategy than ad placement timing, as high engagement is achievable regardless of the quarter if the ad resonates with the audience.

g. ROI and Stock Market Analysis

To assess the financial impact of Super Bowl advertisements, we focused on two primary areas: Return on Investment (ROI) and stock market performance. While engagement and sentiment provide a strong indication of ad effectiveness, a critical measure of success for publicly traded brands is their stock performance post-Super Bowl. A well-executed campaign can boost investor confidence, leading to an increase in share prices, whereas a poor-performing ad—or controversy—can have the opposite effect.

Using a structured approach, we calculated changes in stock value before and after the Super Bowl in order to help determine ROI.

g.1. Methodology:

To determine how those ads affected the stock of brands that produced ads in the Super Bowl, we looked at two metrics. The stock price of a brand on February 7th, the Friday before the Super Bowl, and the stock price of that same brand on February 14th, the Friday following the Super Bowl. Using those metrics we then determined the total percent change in stock price since the Super Bowl and used those values to assess ROI.

Based on our analysis, the top performing brands in terms of ROI were:

🥇 Hims & Hers – Achieved the highest engagement-to-spending ratio, maximizing returns with minimal ad placements.
🥈 Disney – Benefited from organic engagement and strong brand loyalty, generating high returns.
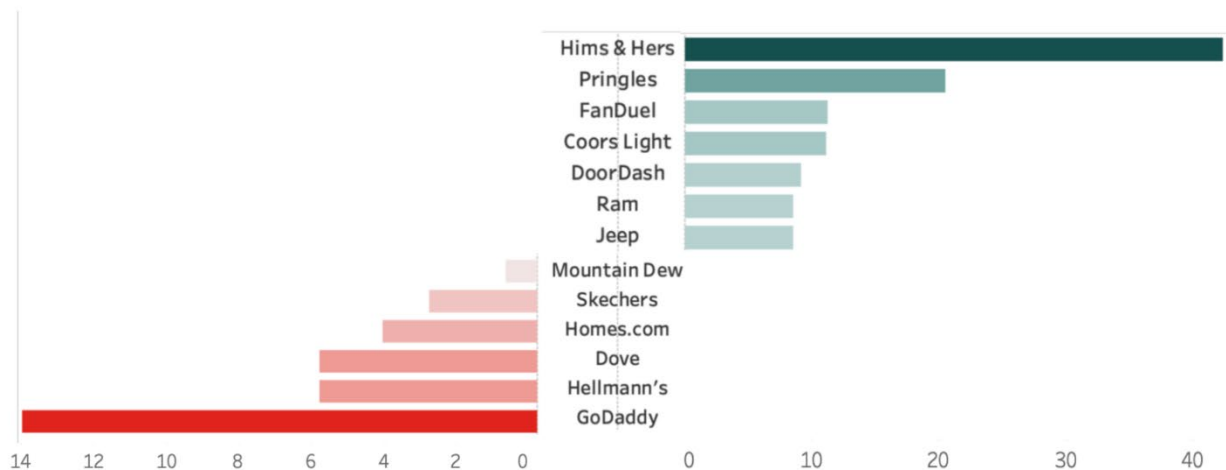🥉 Jeep – Effective campaign strategy led to strong engagement despite moderate ad spending.

Figure 3.16 ROI Top Performer Brands

g.2. Key Takeaways

Our analysis of pre- vs. post-Super Bowl stock prices revealed that brands with high engagement and positive sentiment often saw stock gains, while those with weaker campaigns or negative reception experienced declines. Hims & Hers emerged as the biggest winner, with the largest stock increase, reinforcing the effectiveness of its ad. Brands like FanDuel, DoorDash, and Jeep also saw gains, benefiting from strong audience engagement. In contrast, GoDaddy and Dove

experienced declines, likely due to weaker audience reception, while Hellmann's also dropped, suggesting minimal market impact.

However, high engagement doesn't always translate to high ROI—TurboTax generated massive engagement but spent significantly on multiple ads. In contrast, brands with highly shareable content and organic conversations, such as Hims & Hers and Disney, saw the best returns. Disney's stock showed a slight uptick post-Super Bowl, reflecting positive investor sentiment. This analysis highlights that a well-crafted, engaging ad can outperform heavy spending, leading to a stronger financial impact.

4. Conclusion

4.1 Summary of Findings

Our analysis of Super Bowl advertisements on Twitter (X) provided key insights into the effectiveness of different advertising strategies, engagement patterns, and factors influencing ad success. While tweet volume was lower this year compared to previous years, we focused on engagement metrics, sentiment trends, ad content, and timing to assess brand performance.

Top Engaging Brands:

- o Disney had the highest organic reach and virality, dominating the retweets category with over 29 million retweets, making it the most engaging brand.

- o TurboTax performed exceptionally well across multiple engagement metrics, leading in likes, replies, bookmarks, and quotes, largely due to its sweepstakes campaign, which encouraged high user participation.

- o Hims & Hers, NFL, and Homes.com also generated significant engagement, highlighting diverse approaches to successful advertising.

Ad Length and Engagement:

- o Longer ads generally led to higher engagement, as seen with Disney and Hims & Hers, which had extended durations and strong audience interaction.

- o However, TurboTax achieved high engagement with a shorter ad, indicating that ad length alone is not the key factor—content strategy matters more.

Sentiment Analysis:

- o Positive sentiment was associated with ads that had emotional storytelling or humor.

- o Ads featuring celebrity endorsements and social messages received mixed reactions, with some generating high engagement but also polarizing opinions.

Most Talked-About Brands by Tweet Volume:

- o TurboTax (13,949 tweets), Bud Light (12,622 tweets), Dunkin' (10,791 tweets), Disney (10,397 tweets), and Lays (9,864 tweets) led in terms of total brand mentions.

Financial Impact and ROI:

- o While it is difficult to measure direct ROI from social media engagement, our analysis suggests that brands with high engagement saw increased visibility and positive sentiment, which can translate to long-term brand benefits.

- o Super Bowl ads remain one of the most cost-effective ways to generate widespread brand awareness compared to traditional TV advertising.

Overall, our analysis highlights several key factors that drive successful Super Bowl advertising. Longer ads consistently generated higher engagement, suggesting that the additional investment in extended airtime is worthwhile, as it allows brands to build a stronger narrative and connect more deeply with audiences. Celebrity appearances played a crucial role in boosting engagement, reinforcing their value in advertising. However, the effectiveness of celebrity endorsements varied based on public perception, with some stars driving positive sentiment while others sparked mixed reactions.

Geographical targeting proved essential, as teams' home states showed the highest tweet engagement per capita. This suggests that brands can maximize their impact by tailoring campaigns to resonate with local fan bases, ensuring a more engaged audience. Finally, ad performance was influenced more by audience relevance than timing—meaning that crafting messages that appeal to the right demographic is far more critical than simply securing an expensive prime-time slot. These findings emphasize the importance of strategic storytelling, audience alignment, and precise targeting in creating successful Super Bowl ads.

4.2 Limitations of the Study

- Low Volume of Data: The dataset might not capture the full extent of public opinion due to limited access to Twitter/X data. The reliance on publicly available tweets may introduce bias.

- X (Twitter) Not Good for ROI Measurement: While Twitter engagement (likes, retweets, and sentiment) provides insights into brand perception, it is not a direct measure of Return on Investment (ROI). Sales impact, customer acquisition, and brand recall require additional data sources such as surveys or financial reports.

- Noise in Data: Many tweets may contain sarcasm, spam, or ambiguous language, making accurate sentiment analysis challenging.

- External Market Influences: Stock price movement is affected by earnings reports, macroeconomic trends, and Federal Reserve announcements, making it difficult to isolate the exact impact of a Super Bowl ad (Price Pre and Post Super Bowl Paper, 2025).

- Short-Term vs. Long-Term Gains: Short-term stock surges may not reflect long-term brand value growth, as speculative trading plays a role in post-Super Bowl stock movements (Bridgewise, 2025).

4.3 Future Scope

- Incorporating More Social Media Platforms: Expanding the study to platforms like YouTube, Instagram, and TikTok can provide a more holistic view of ad performance.

- Advanced Sentiment Analysis: Implementing deep learning models to improve sarcasm and sentiment detection.

- ROI Estimation Models: Exploring stock market reactions, web traffic data, and consumer surveys to estimate the actual business impact.

- Comparative Yearly Analysis: Studying Super Bowl ads across multiple years to identify long-term trends in advertising effectiveness.

- Demographic Insights: Analyzing how different age groups, regions, and interests react to ads.

5. Challenges Faced

- Lack of Direct ROI Metrics: Most companies don't publicly share how much revenue their Super Bowl ad generated, forcing us to estimate ROI using proxy metrics like sales lift, engagement trends, and historical ad performance.

- Difficulties in Isolating Stock Market Effects: Stock price fluctuations can result from multiple factors (earnings reports, economic news, investor sentiment), making it hard to pinpoint if Super Bowl ads directly influenced stock movement.

- Inconsistent Social Media Data: Some brands had significantly more Twitter mentions than others, which skewed comparisons. A highly tweeted-about brand didn't necessarily mean it had the most successful ad.

- Tweet Volume Reduction: Compared to past years, fewer Super Bowl-related tweets were available in our dataset. This forced us to focus on quality over quantity when analyzing engagement trends.

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Thank you!

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