
Twitter x Tesla

Stock Sentiment

Analysis Project



Agenda

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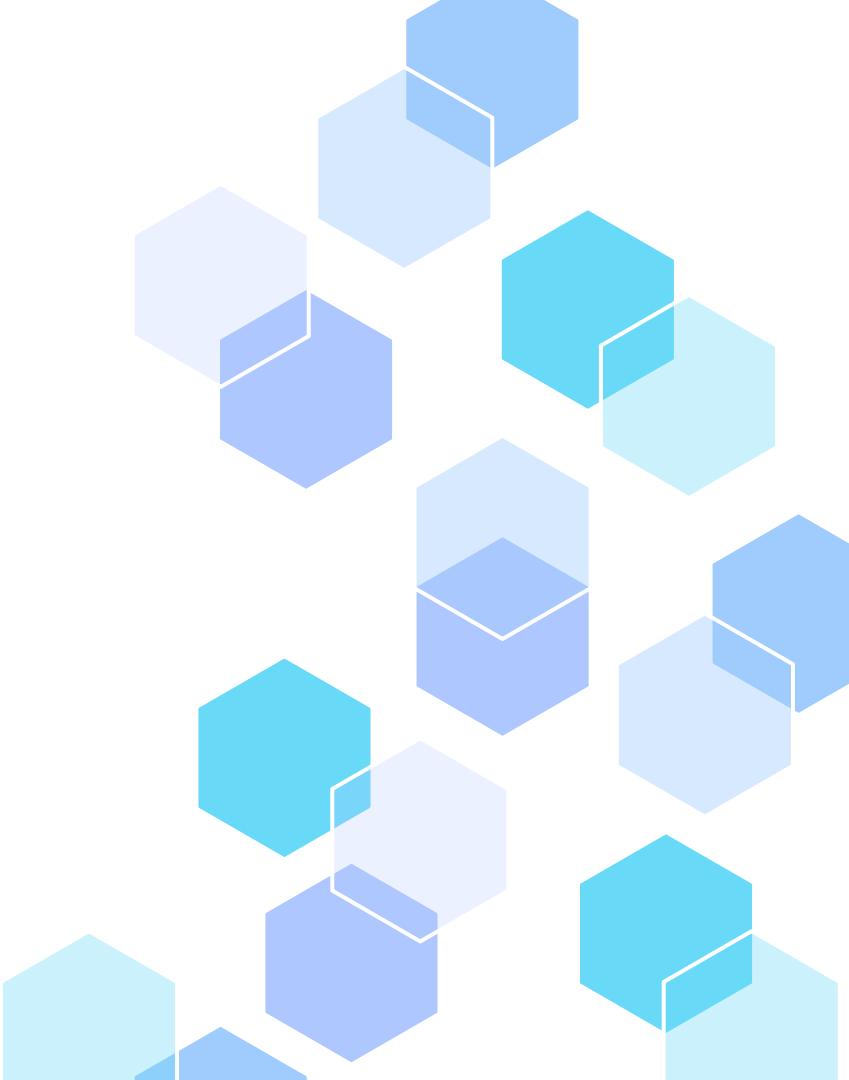
Conclusion & Future Improvements

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Acknowledgements

01

Introduction



Our team



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Goals

Market Trend

Analyze Tesla's stock price trends over a defined period

Musk Sentiment

Extract and study sentiment from Elon Musk's tweets

Tesla Sentiment

Evaluate public Twitter sentiment toward Tesla

Correlation

Identify any correlation between tweet sentiment and stock price fluctuations

Insights

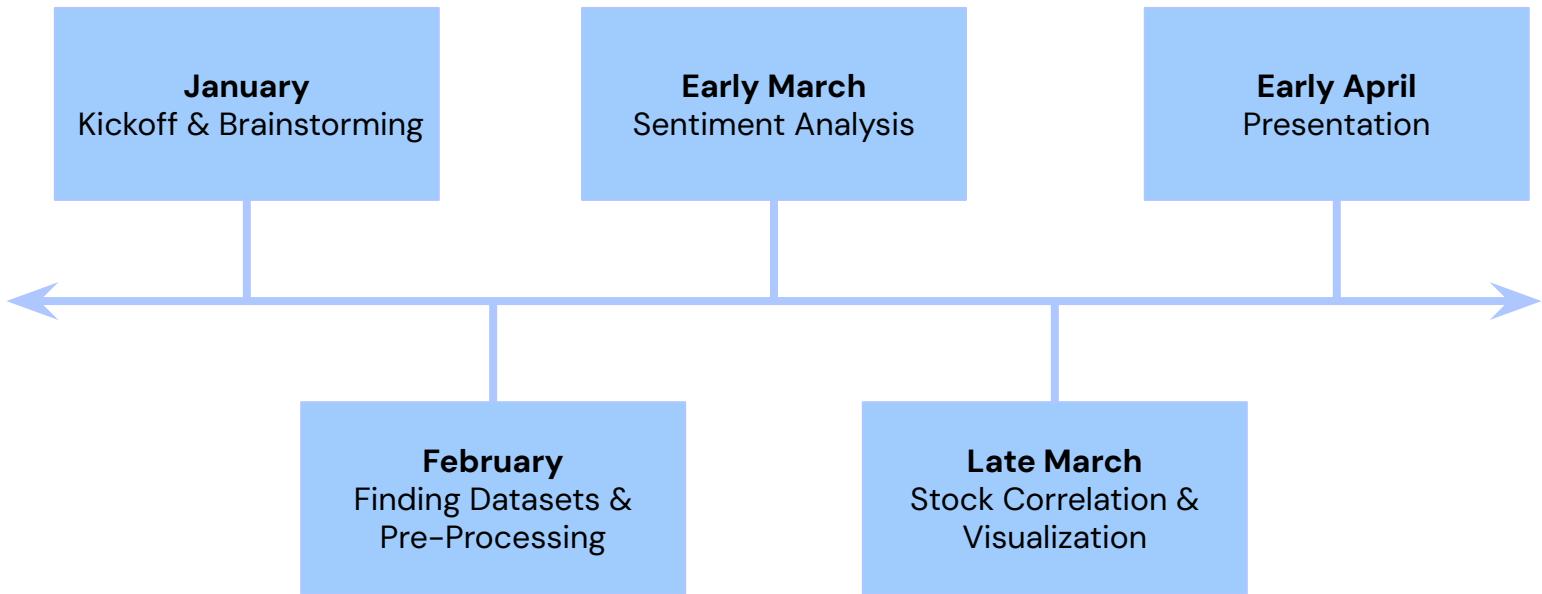
Gain insights into how social media activity impacts financial markets

02

Project Timeline



Project Timeline



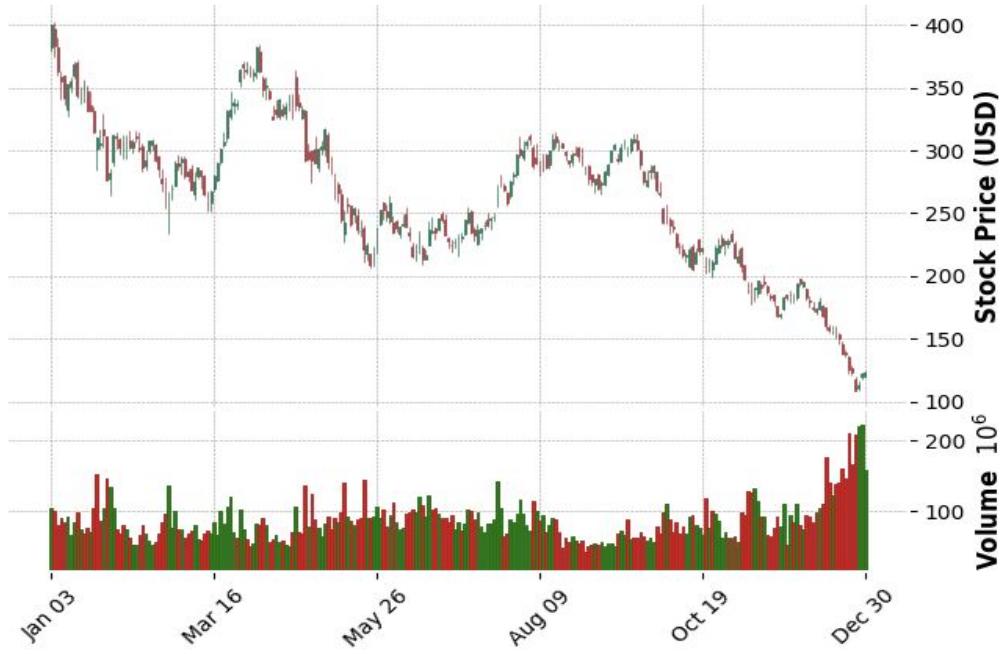
03

Tesla Stock & Tweet Sentiment Analysis

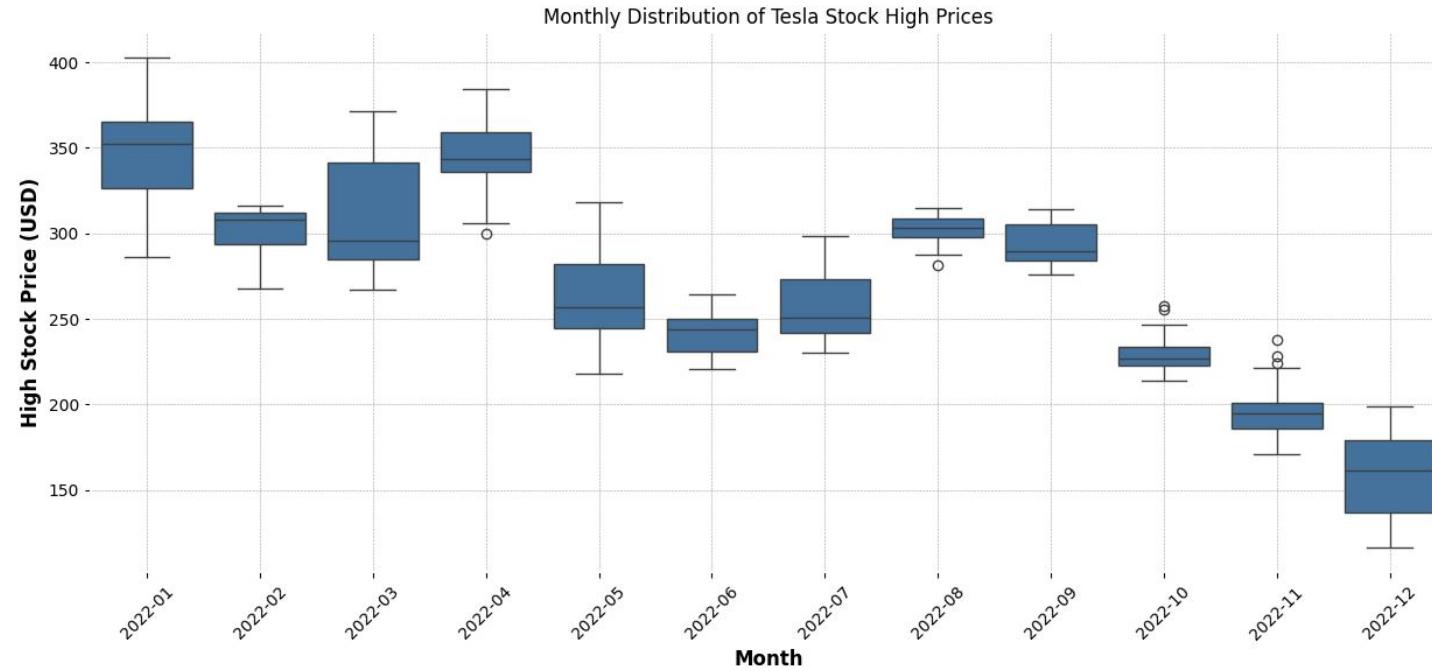


Insights on Tesla Stock Data

Tesla Stock Candlestick Chart



Insights on Tesla Stock Data



Musk Tweets Sentiment

```
from textblob import TextBlob

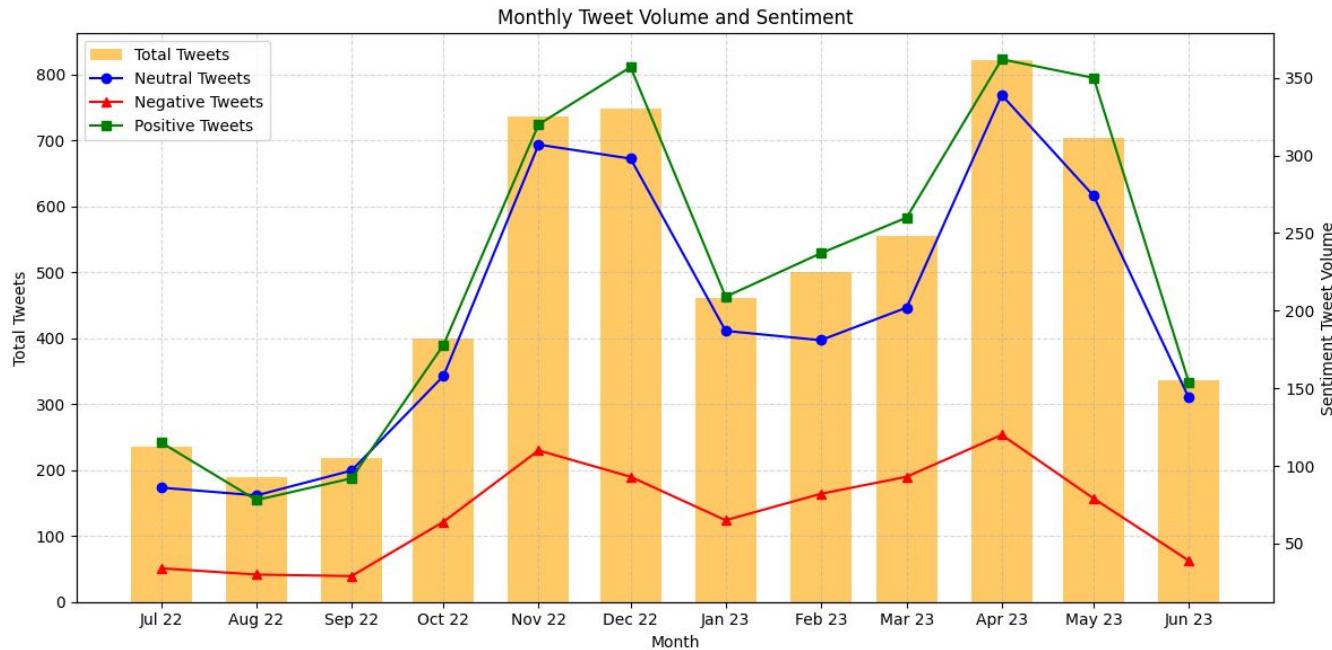
def analyze_sentiment(text):
    sentiment = TextBlob(text).sentiment
    if sentiment.polarity > 0:
        return sentiment.polarity, "Positive"
    elif sentiment.polarity < 0:
        return sentiment.polarity, "Negative"
    else:
        return sentiment.polarity, "Neutral"

def add_sentiment_to_processed(input_csv, output_csv):
    with open(input_csv, mode='r', encoding='utf-8') as infile, open(output_csv, mode='w', encoding='utf-8', newline='') as outfile:
        reader = csv.DictReader(infile)
        fieldnames = reader.fieldnames + ['sentiment_score', 'sentiment'] if 'sentiment' not in reader.fieldnames else reader.fieldnames
        writer = csv.DictWriter(outfile, fieldnames=fieldnames)
        writer.writeheader()

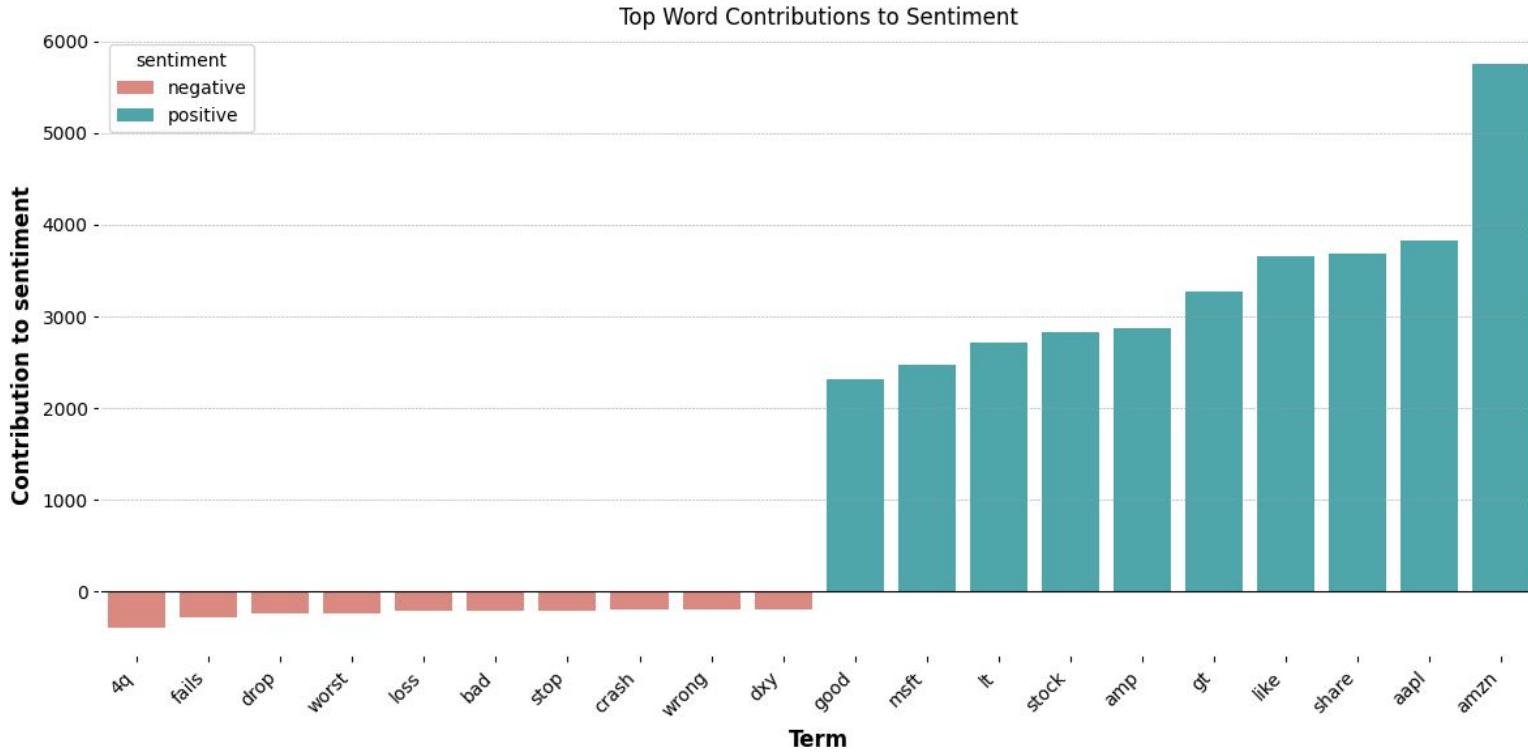
        for row in reader:
            sentiment_score, sentiment_label = analyze_sentiment(row['text'])
            row['sentiment_score'] = sentiment_score
            row['sentiment'] = sentiment_label
            writer.writerow(row)

add_sentiment_to_processed('processed_tweets.csv', 'final_tweets.csv')
```

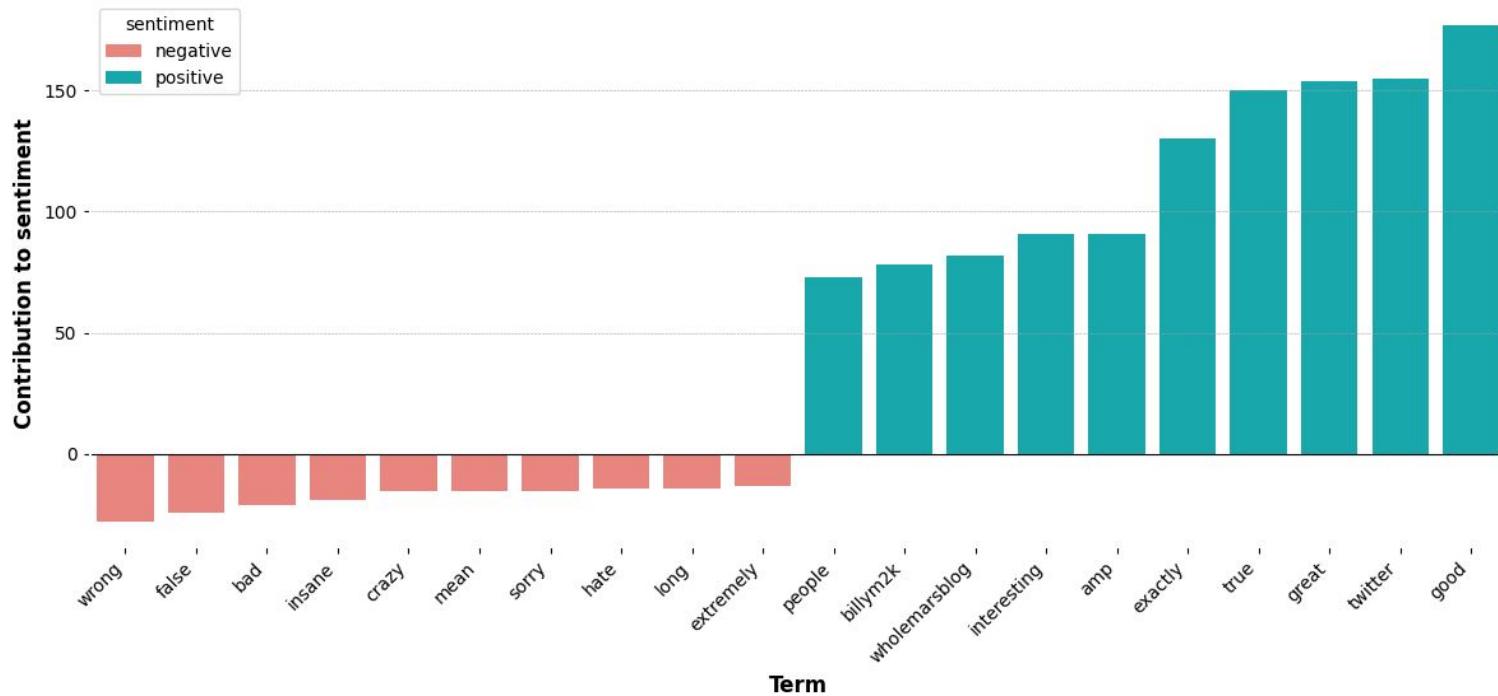
Insights on Elon Musk Tweets



Tesla Tweets Sentiment

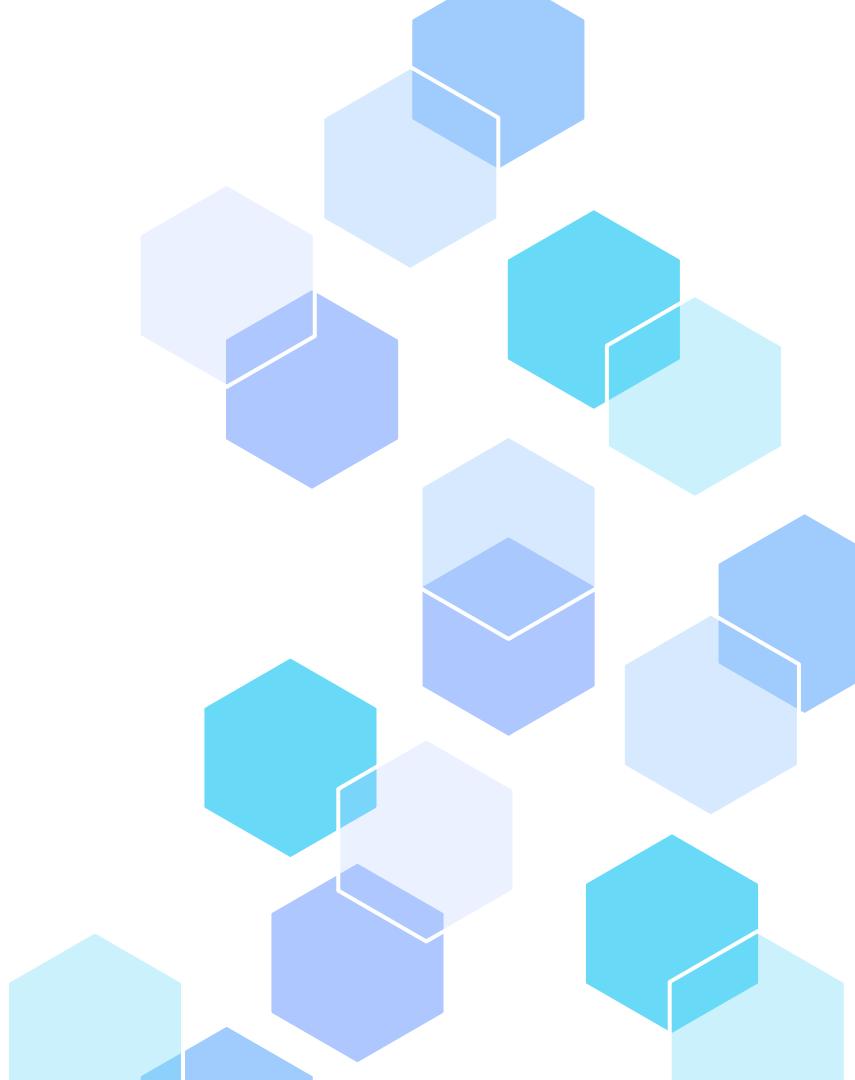


Elon Musk Tweets Sentiment

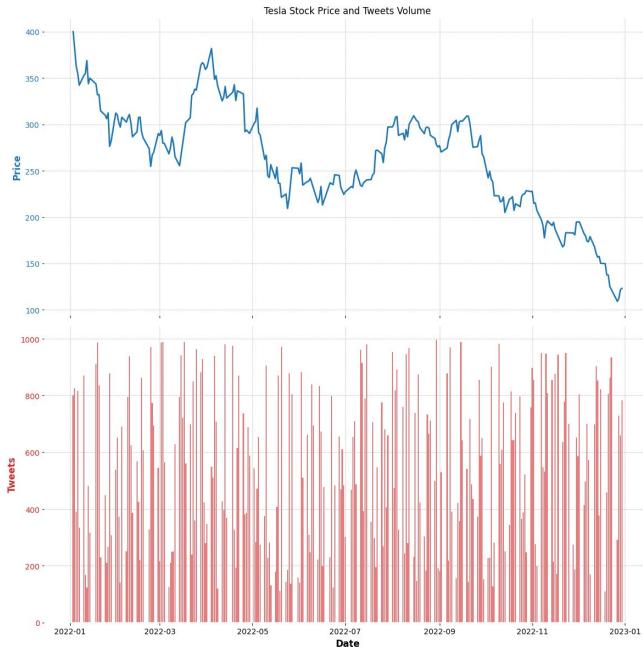


04

Key Findings & Results



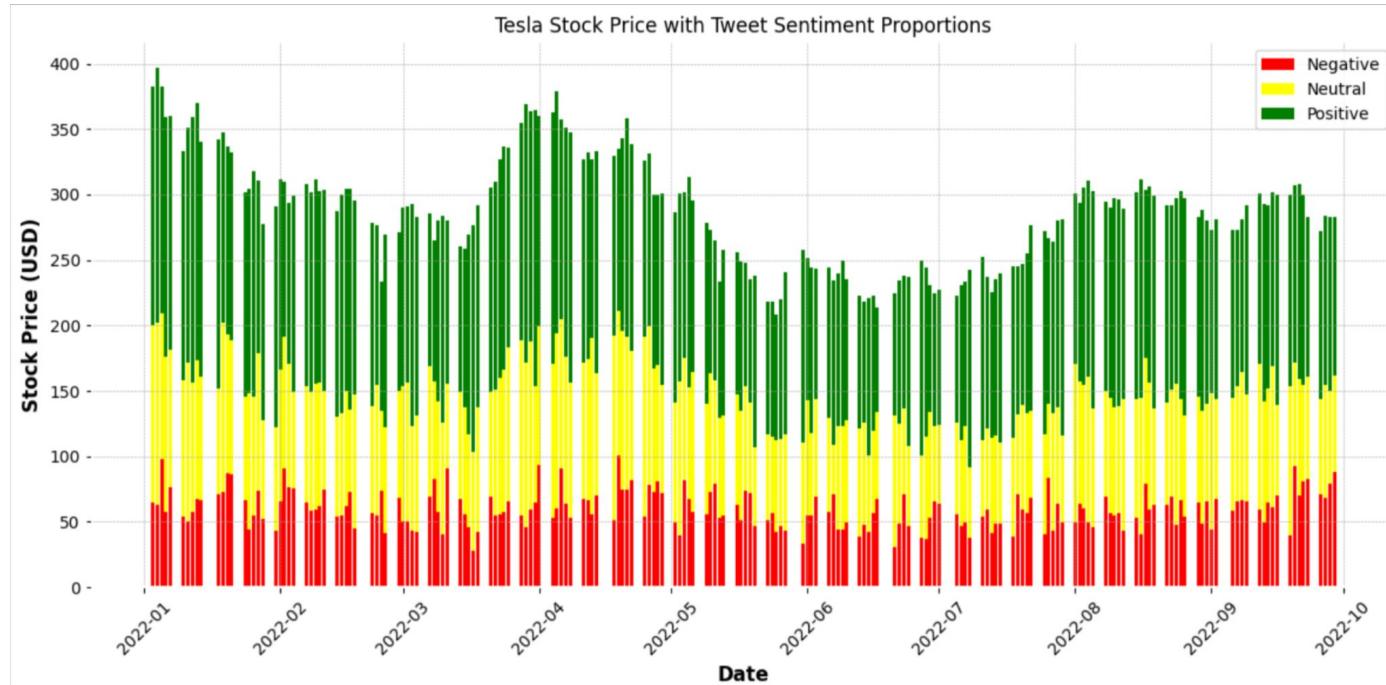
Tesla Prices Stock and Tweet Volume



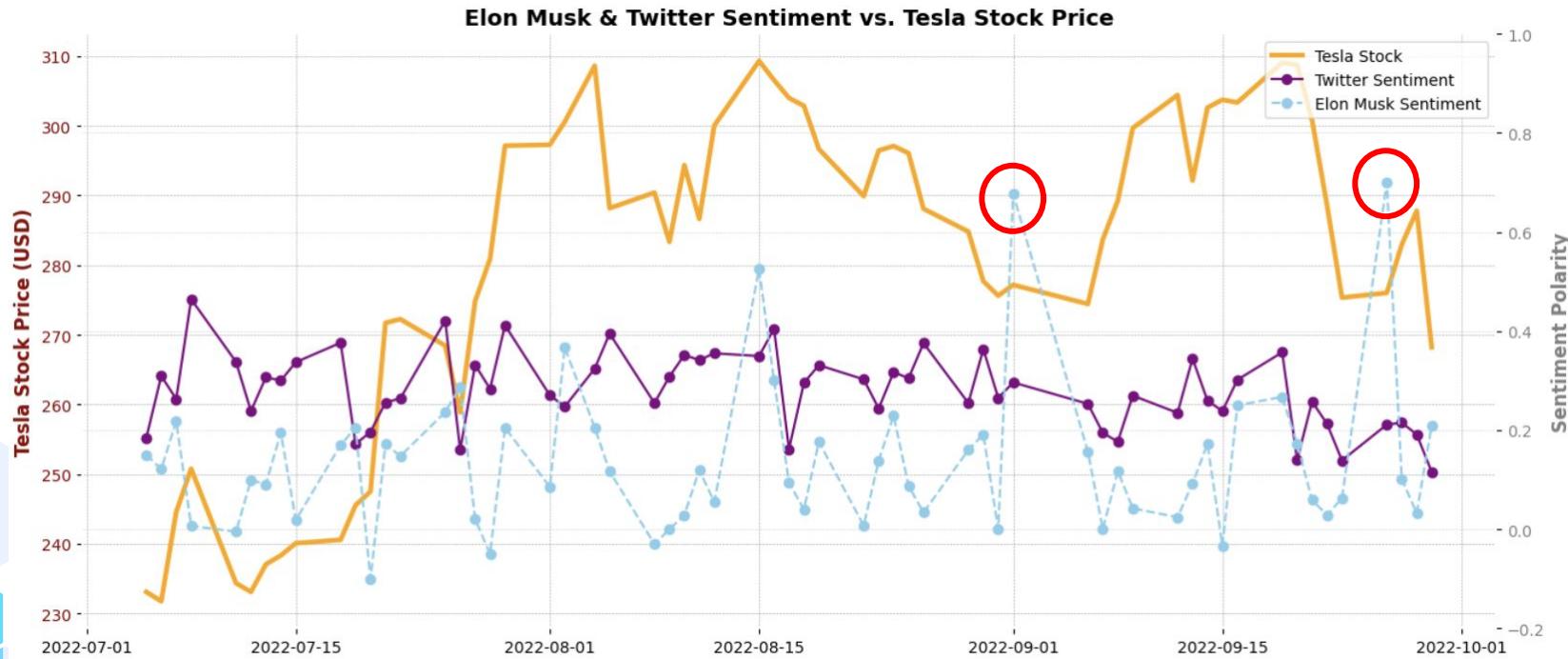
Key Insights :

- Significant downward trend observed, with prices peaking over \$400 at the start of the year before falling around \$100 at the end
- No consistent correlation, but notable tweet volume spikes sometimes align with stock price shifts
- Tweet volume peaks may reflect Tesla events that impact stock price; making these events a confounding factor
- Spikes in tweet volume may coincide with increased Tesla stock volatility, warranting deeper analysis of impactful tweets

Tesla Stock Price + Tweet Sentiment



Tesla Prices Stock and Overall Sentiment

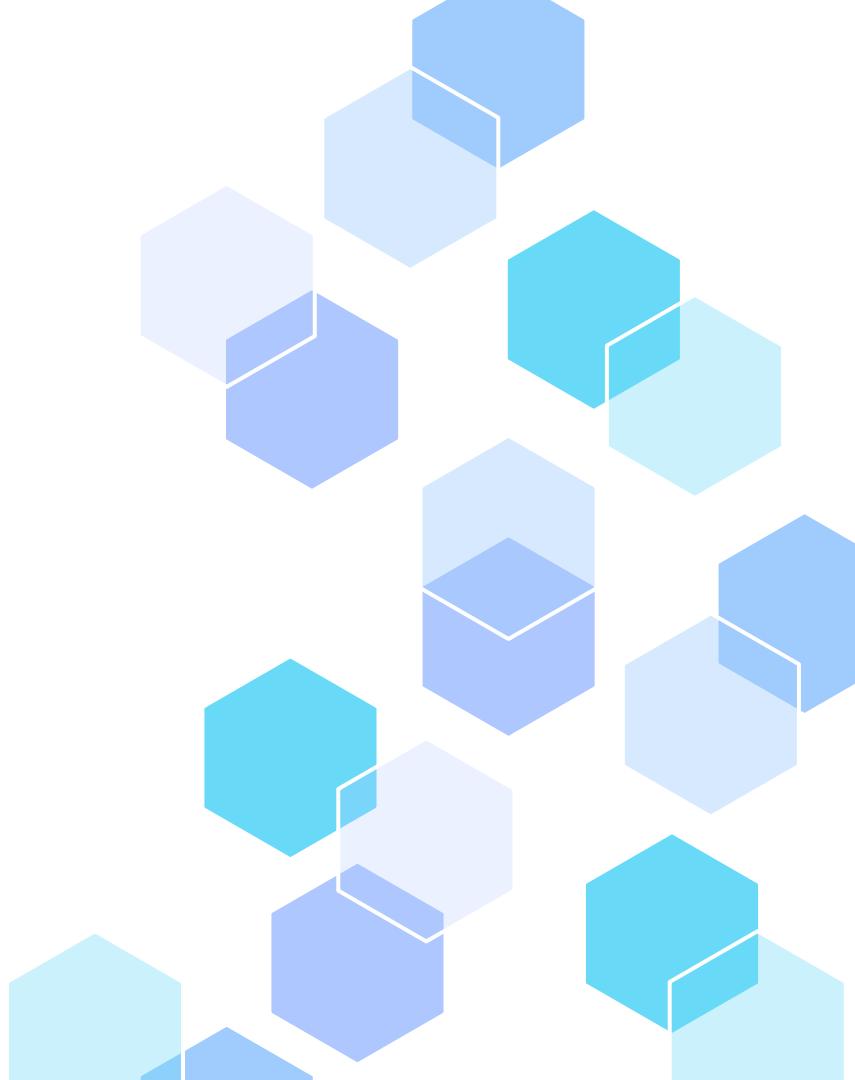


05

Conclusion &

Future

Improvements



Conclusion

Sentiment ≠ Stock Price

Stock price changes
are multifactorial

Volume Over Sentiment?

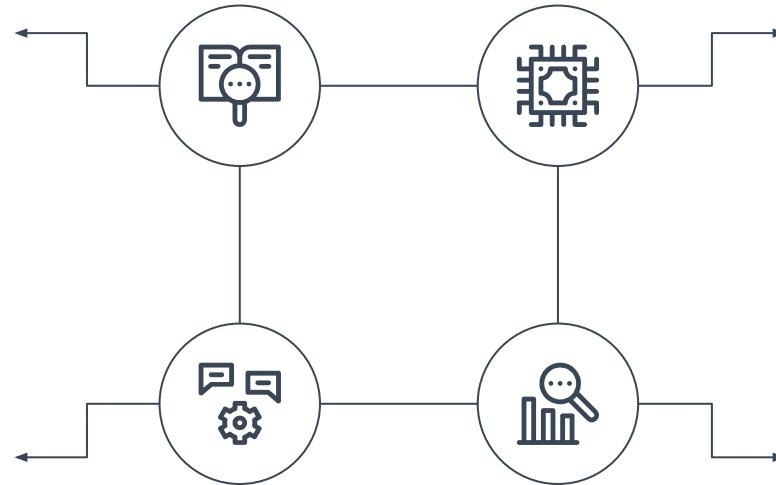
Tweet volume aligned
with fluctuations

Event-Based Patterns

Event context
influenced reactions

Uncovered Patterns, Not Predictions

Informative patterns,
limited generalizability



Advancing the Analysis



Sentiment vs Swings

Compare sentiment scores with stock volatility to identify potential trends



Investor sentiment and stock volatility: New evidence ★

Xue Gong ^a, Weiguo Zhong ^{a,b}, Junbo Wang ^c, Chao Wang ^a

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<https://doi.org/10.1016/j.irfa.2022.102028>



Expand data using APIs

Leverage Twitter and financial APIs to extract more recent tweets and real-time stock data for ongoing analysis



Control for confounding variables

(e.g., market-wide news, earnings reports) to better isolate the effect of tweets



Earnings Virality ★

Brett Campbell ^a, Michael Drake ^b, Jacob Thorbeck ^b, Brady Twedt ^c

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<https://doi.org/10.1016/j.jacceco.2022.101517>

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Acknowledgements



Thank you!

