



# **News Article Sentiment Analysis Dashboard**

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# Business Case

- ❑ Built dashboard to track hourly changes in sentiment based on news articles, number of mentions, and key words
- ❑ Designed for advertisers and PR teams:
  - ❑ Understand how the media perceives your brand
  - ❑ Make informed decisions on which campaigns are resonating the most with customers
  - ❑ In an era where public image needs to be pristine, ensure visibility to gain insights and reduce reputational risk

# Purpose

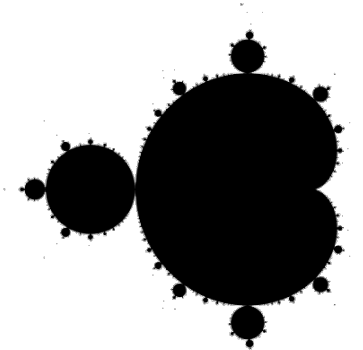
- ❑ Elevate transparency of public opinion
- ❑ Home in on which topics are influencing your brand in a positive or negative direction
- ❑ Track how opinion is changing over time and course correct if necessary

# Methods

- ❑ Use newsapi to source article and filter out low quality sources from over 80,000 sources
- ❑ Build test model using VADER and TextBlob on Kaggle dataset and optimize for accuracy
- ❑ Use Random Forest Classifier to extract feature importance for interpretation to generate insights
- ❑ Implement into dashboard to track changes over time

# The Model Used to Extract Sentiment

- ❑ Combination of unsupervised machine learning models: VADER & TextBlob
  - ❑ VADER: Trained on social median comments and returns a polarity and subjectivity score
  - ❑ TextBlob: Trained on IMDB movie review corpus
- ❑ Achieved 60% accuracy on a multiclass label problem using unsupervised sentiment analysis



**TextBlob**

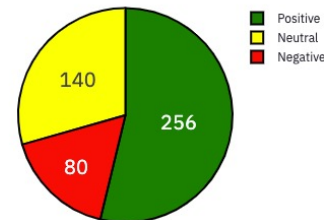
# Dashboard Capabilities

- ❑ Track changes over time
- ❑ Analyze which words have the most impact on sentiment
- ❑ Filter between positive, neutral, and negative news articles and see which words are appearing most often

Apple Sentiment Graph



How did people feel about Apple on June 15, 2021?

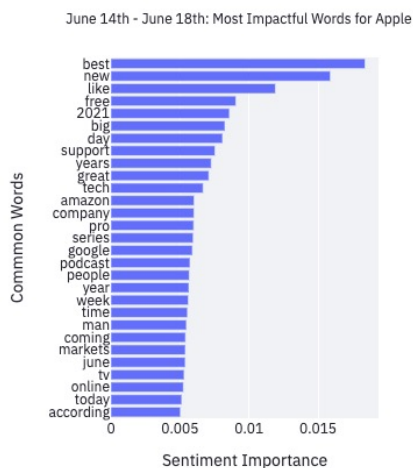


Here were the most polarizing Apple articles from June 15, 2021

	publishedAt	Headline
85	2021-06-15T15:13:00-04...	Best true wireless ear...
86	2021-06-15T15:14:34-04...	TVLine Items: Dr. Deat...
87	2021-06-15T15:16:48-04...	Windows 11 leaks onlin...
88	2021-06-15T15:25:54-04...	Life As You Knew It Is...
89	2021-06-15T15:33:02-04...	Racist Morgan Stanley ...
90	2021-06-15T15:33:30-04...	Airbus-Boeing deal eas...
91	2021-06-15T15:34:16-04...	Three App Store classi...
92	2021-06-15T15:34:37-04...	Airbus-Boeing deal eas...
93	2021-06-15T15:41:46-04...	Toronto-based Snowman ...
94	2021-06-15T15:41:49-04...	Ex-Women's NBA star Sh...
95	2021-06-15T16:00:00-04...	The 10 Best Deals of t...

# Using the Dashboard Pt. 1

Feature importance provides insights on which words have the most impact in driving sentiment



Choose 1 of  
6 companies

Select 1 of 2 weeks

Select Company

Apple

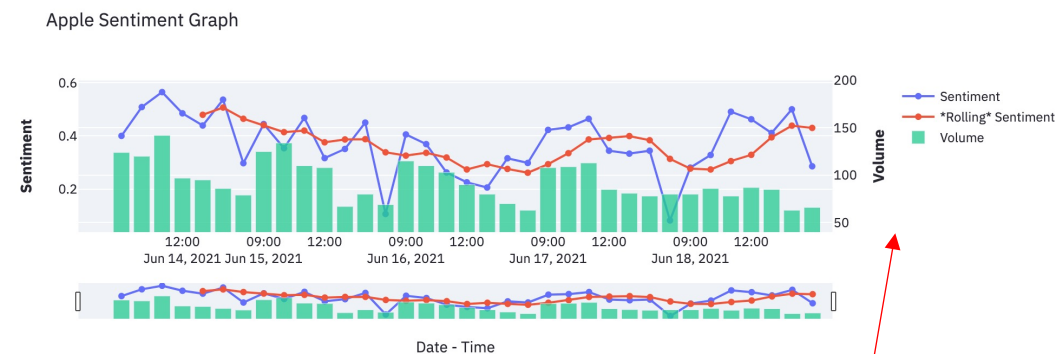
Select Week

June 14th - June 18th

## Sentiment Tracker

## Explore the sentiment of different companies

Choose between Apple, Facebook, Microsoft, Amazon, Netflix, and Google



Choose positive, neutral, or negative sentiment

Analyze number of article mentions, hourly sentiment, and rolling average

Select a Sentiment

Positive

# Using the Dashboard Pt. 2

Choose a weekday to further inspect

Please choose a weekday to further inspect

Date input

2021/06/14

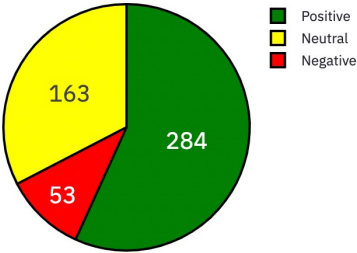
Previous

Next

	Headline	Source	Sentiment
2021-06-14T09:00:00-04:00	Lululemon (NASDAQ: LULU) Lines Up For A Run At Highs	MarketBeat	1
2021-06-14T09:00:00-04:00	'The Morning Show' Season 2 Teaser Reveals the Fallout From Alex and Bradley's On-Air Bombshell (Video)	TheWrap	-1
2021-06-14T09:00:02-04:00	Fitbit Luxe review: A luxury fitness tracker for fashion-forward folks	Android Central	1
2021-06-14T09:00:26-04:00	We can't believe how cheap these Apple products are before Prime Day	Digital Trends	1

Feature importance provides insights on which words have the most impact in driving sentiment

How did people feel about Apple on June 14, 2021?



Here were the most polarizing Apple articles from June 14, 2021

	publishedAt	Headline
0	2021-06-14T09:00:00-04...	'The Morning Show' Sea...
1	2021-06-14T09:04:52-04...	At least seven shot - ...
2	2021-06-14T09:14:29-04...	The Onus Of Security: ...
3	2021-06-14T09:30:00-04...	Podcast Episode #1072:...
4	2021-06-14T09:33:09-04...	Deals: Apple's 256GB W...
5	2021-06-14T09:51:29-04...	The next problem for t...
6	2021-06-14T09:58:51-04...	Jennifer and Reese Spl...
7	2021-06-14T09:59:54-04...	US Justice Department ...
8	2021-06-14T10:00:31-04...	How Design Thinking Le...
9	2021-06-14T10:05:31-04...	Which Apple iPad shoul...
10	2021-06-14T10:17:59-04...	'The Morning Show' Sea...

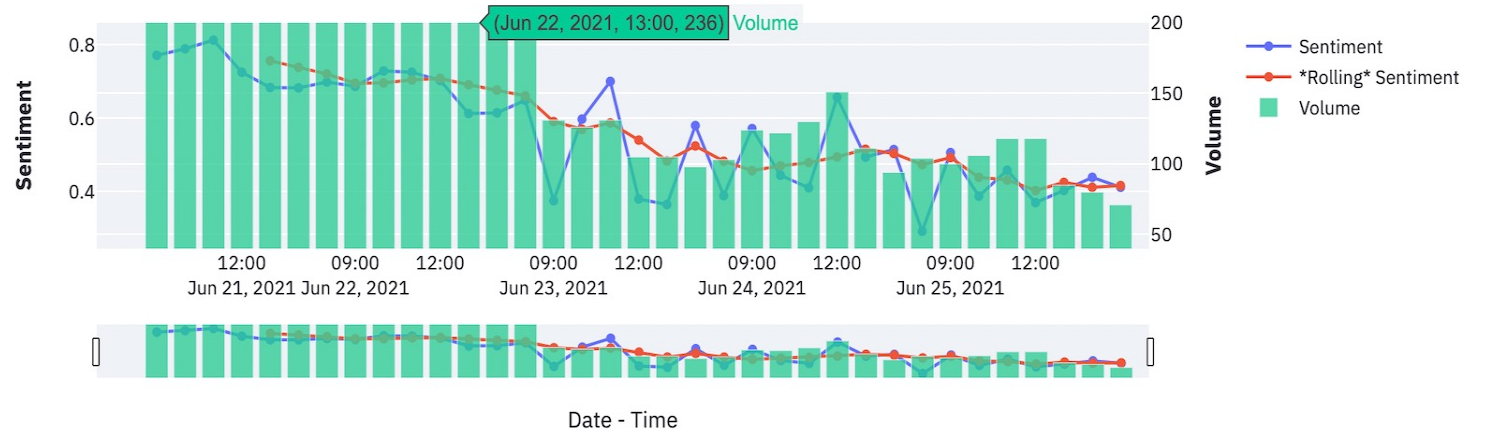
Display time of publish, headline, source, and sentiment score

Only displays the most polarizing news articles



## Example Use Case

- ❑ Amazon wants to assess if Amazon Prime (June 21<sup>st</sup>-22<sup>nd</sup>) Day is creating increased attention for the brand and if customers appear satisfied based on news articles
- ❑ Amazon article mentions were higher during Prime Day than non-Prime Day
- ❑ Sentiment began the week raised and dwindled as Prime Day ended
- ❑ Positive reviews are focused on Prime Day and the 'best deals'
- ❑ Negative reviews include words like 'fake review', 'investigation', and 'probe' although Prime Day still dominates the landscape

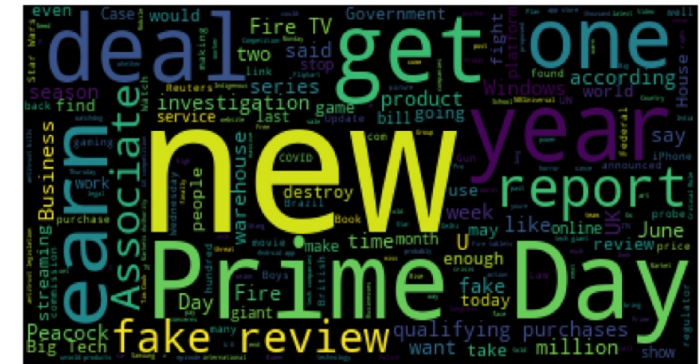


Select a Sentiment

Positive|



Negative



# What Can We Learn From This?

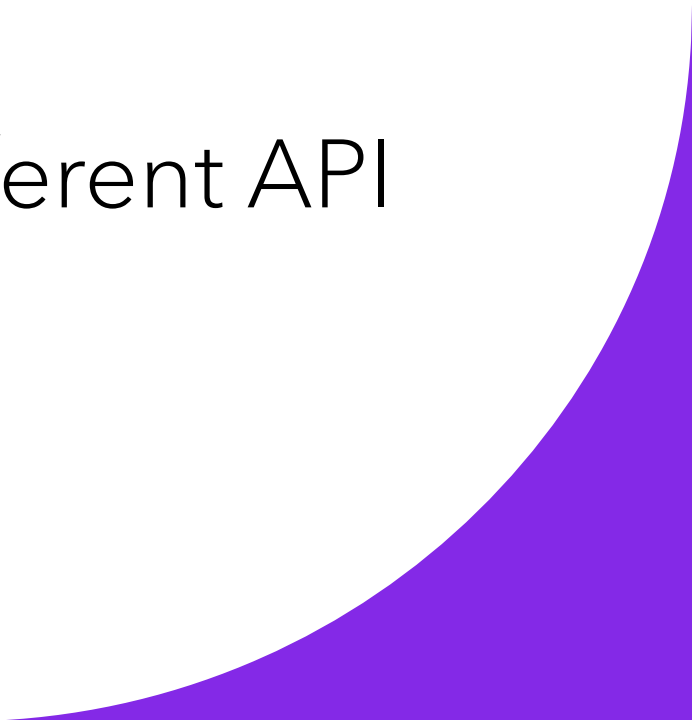
- ❑ Notable events increased the volume of mentions
- ❑ Ideally positive sentiment will increase when notable events occur, or new products are launched
- ❑ The most polarizing articles should be addressed in case there are specific customer concerns or red flags



# Conclusion

- ❑ The dashboard allows companies to seamlessly monitor how news outlets are reporting on companies by looking at volume, sentiment, and honing in on specific words with high frequency and impact
- ❑ Sentiment Analysis is still nascent because computers are only recently becoming adept at handling unstructured data
- ❑ Massive amounts of unstructured data can be harnessed to produce actionable insights
- ❑ Brand integrity needs to be at an all time high

# Further Work

- ❑ Topic Modeling with Latent Dirichlet Allocation
  - ❑ Livestream news articles using a different API
  - ❑ Integrate social media listening
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**Are there any  
further  
questions or  
comments?**

Thank you for listening

