

Understanding Apple and Google brand and product sentiments

# Sentiment Analysis

USING NATURAL LANGUAGE PROCESSING

# Summary & Findings

- **iPad Launch:** most frequently talked about
- **Design:** mix of negative and positive sentiments
- **Google Map:** 10 positive tweets for each negative
- **Marissa Mayer:** high number of positive mentions

# Business Problem



**Find out which sentiments are connected to which brand and product**

**Provide recommendations how to handle negative and positive tweets identified**

**Predict sentiment of a tweet as positive, negative or neutral**



# DATA AND METHODOLOGY



Over 9000  
tweets  
from  
SXSW  
2011



# TEXT PREPROCESSING

## Original Tweet

@wesley83 I have a 3G iPhone. After 3 hrs tweeting at #RISE\_Austin, it was dead! I need to upgrade. Plugin stations at #SXSW.

## Remove Patterns

wesley83 i have a 3g iphone after 3 hrs tweeting at riseaustin  
it was dead i need to upgrade plugin stations at sxsw

## Tokenization

'wesley83', 'i', 'have', 'a', '3g', 'iphone', 'after', '3', 'hrs',  
'tweeting', 'at', 'riseaustin', 'it', 'was', 'dead', 'i', 'need', 'to',  
'upgrade', 'plugin', 'stations', 'at', 'sxsw'

## Remove Stopwords

'wesley83', '3g', 'iphone', '3', 'hrs', 'tweeting', 'riseaustin',  
'dead', 'need', 'upgrade', 'plugin', 'stations', 'sxsw'

## Lemmatization

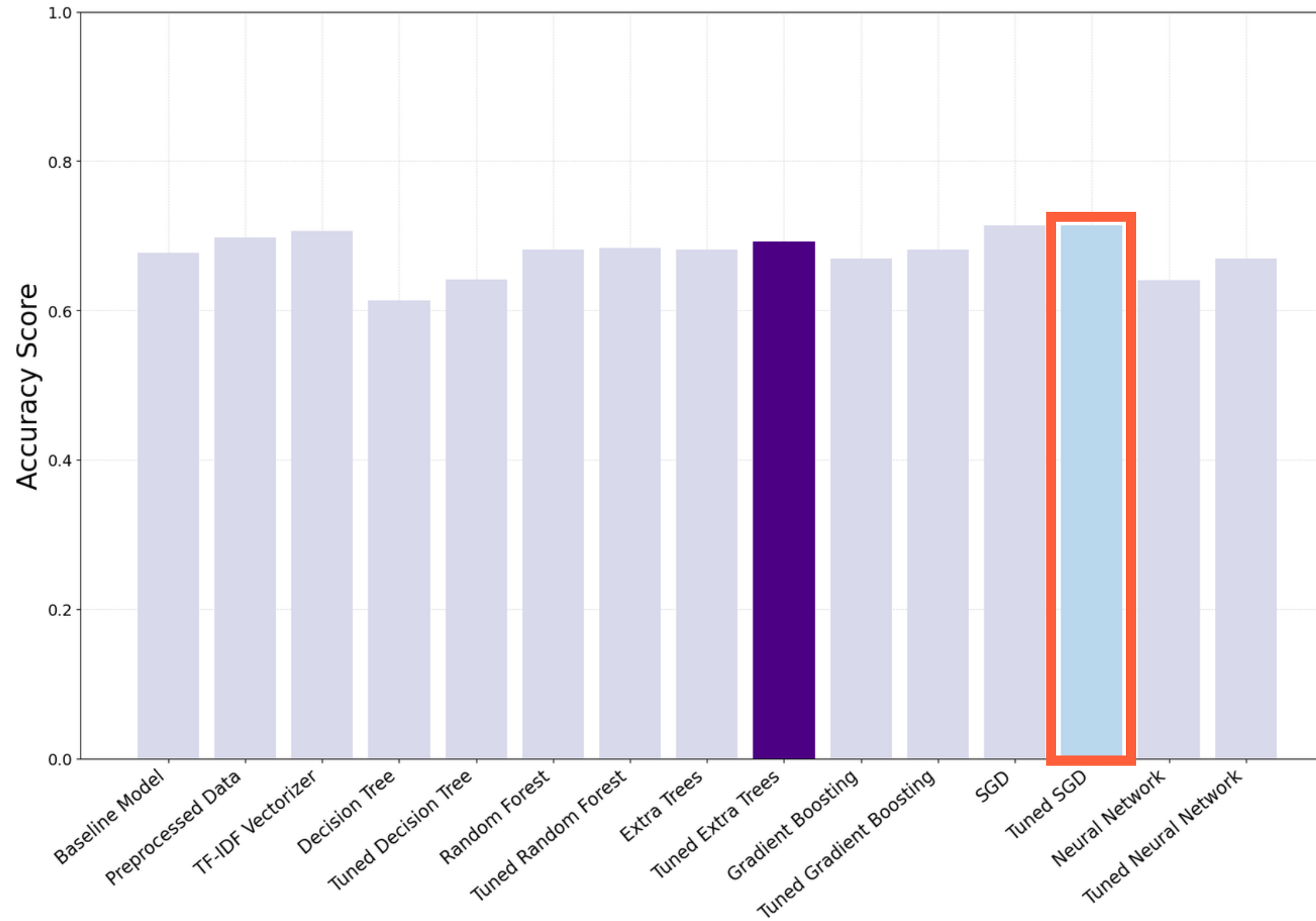
'iphone after tweeting rise austin dead need upgrade plugin  
station sxsw'

## Processed Text

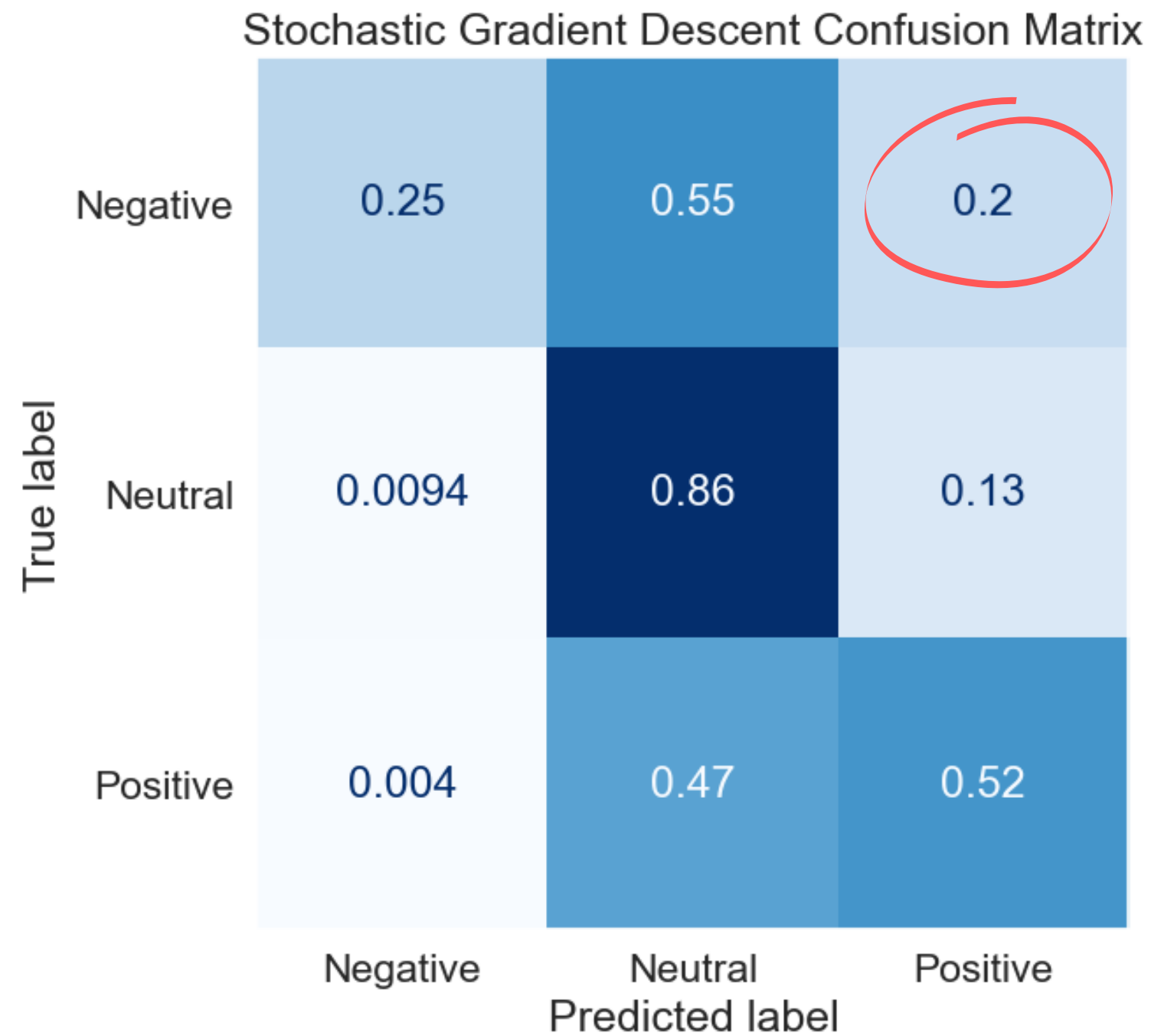
**iphone after tweeting rise austin dead need upgrade  
plugin station sxsw**



# DATA MODELING



# SGD Confusion Matrix



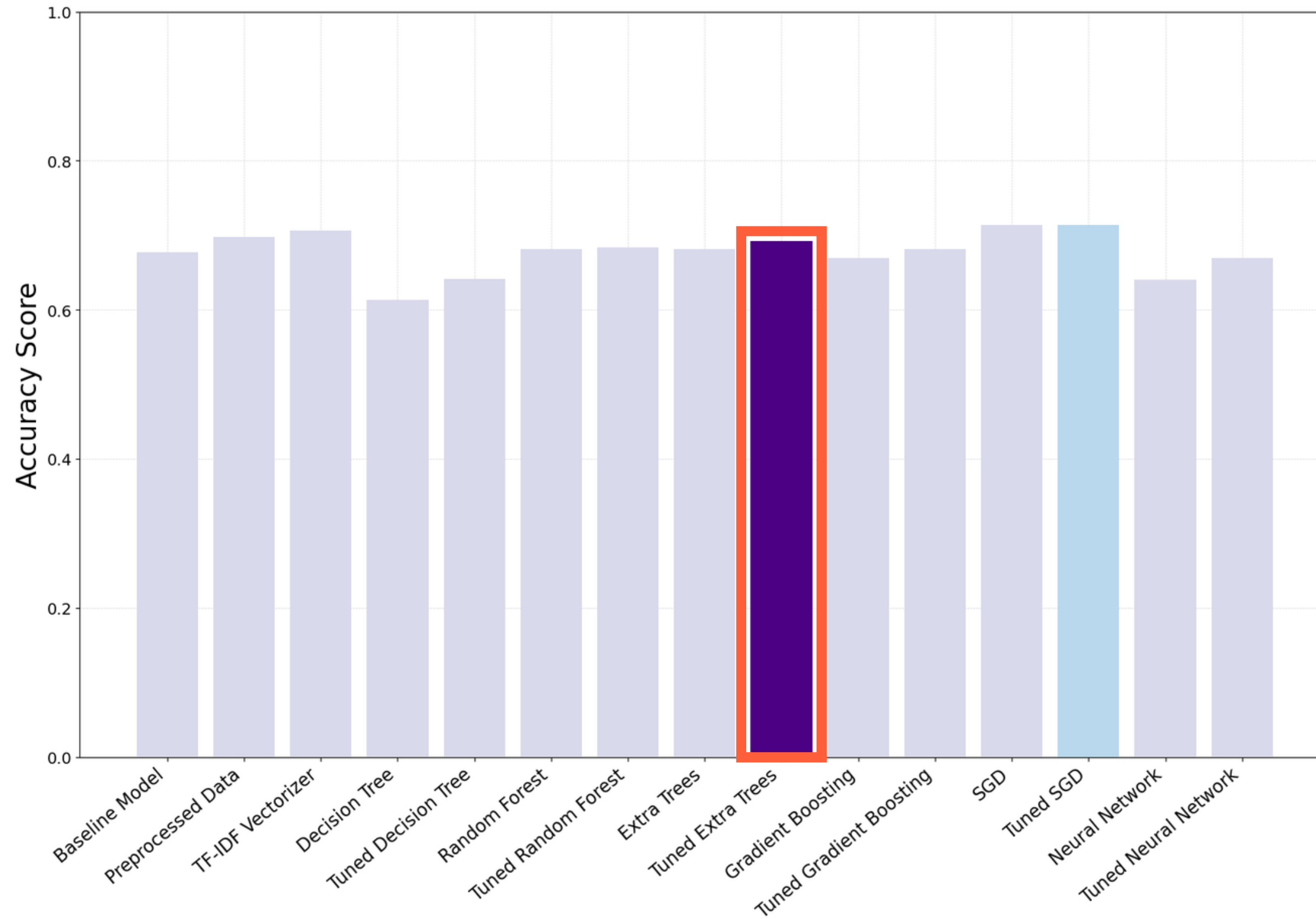
**Accuracy**

**71%**

**Negative Emotion  
Predicted Positive**

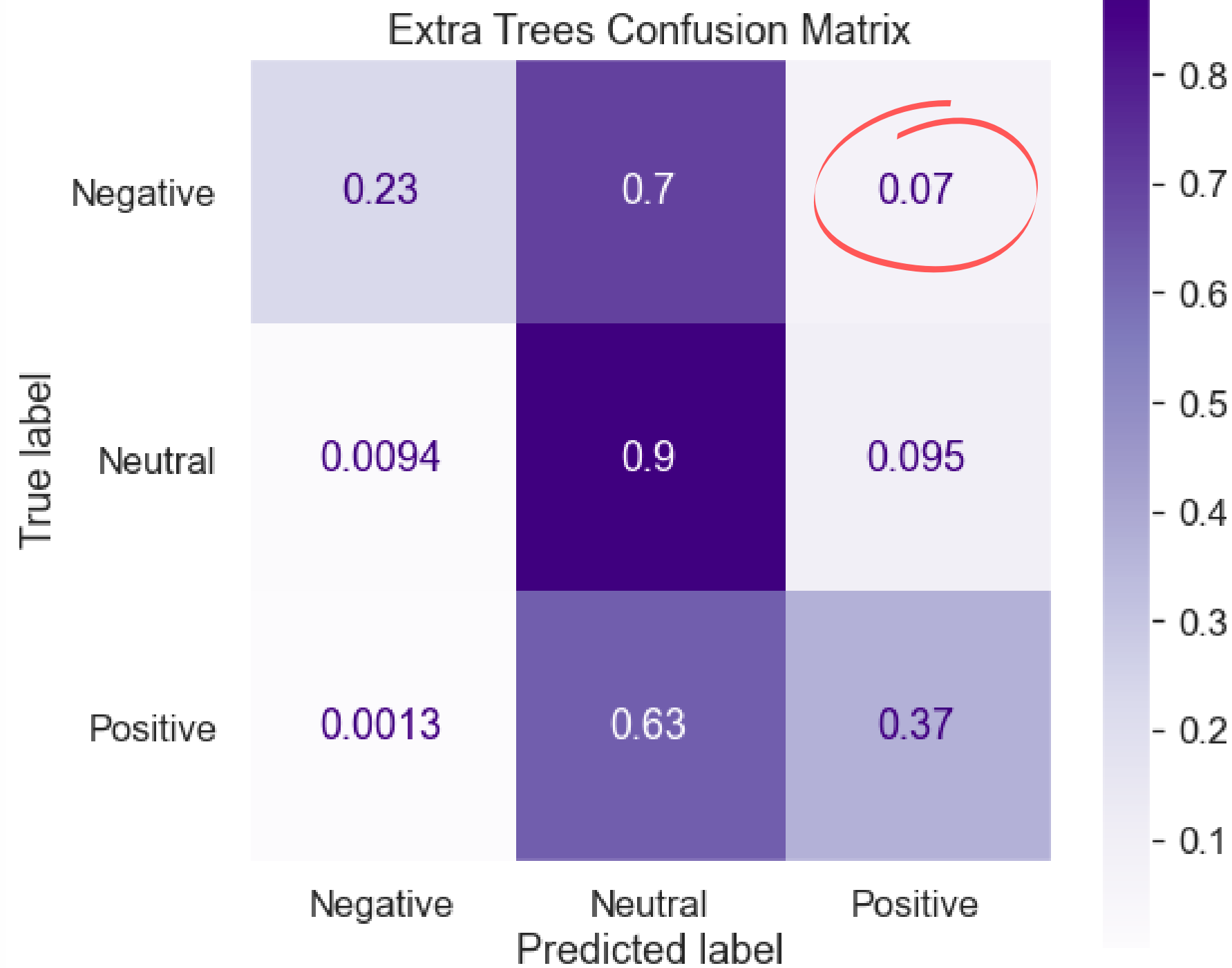
**20%**

# DATA MODELING





# Extra Trees Model



Accuracy

**69%**

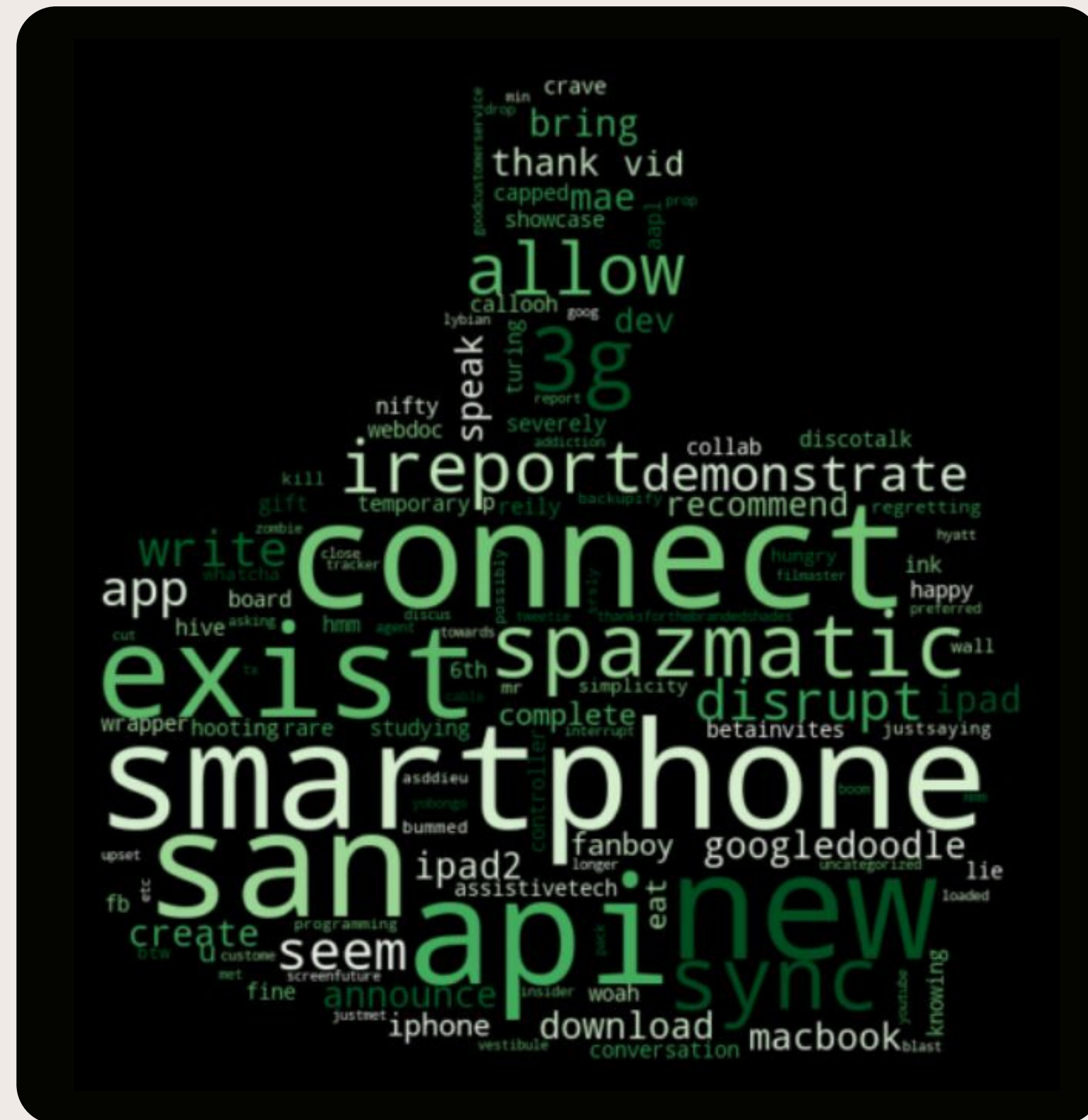
**Negative Emotion  
Predicted Positive**

**7%**

**Percentage  
decrease**

**13%**

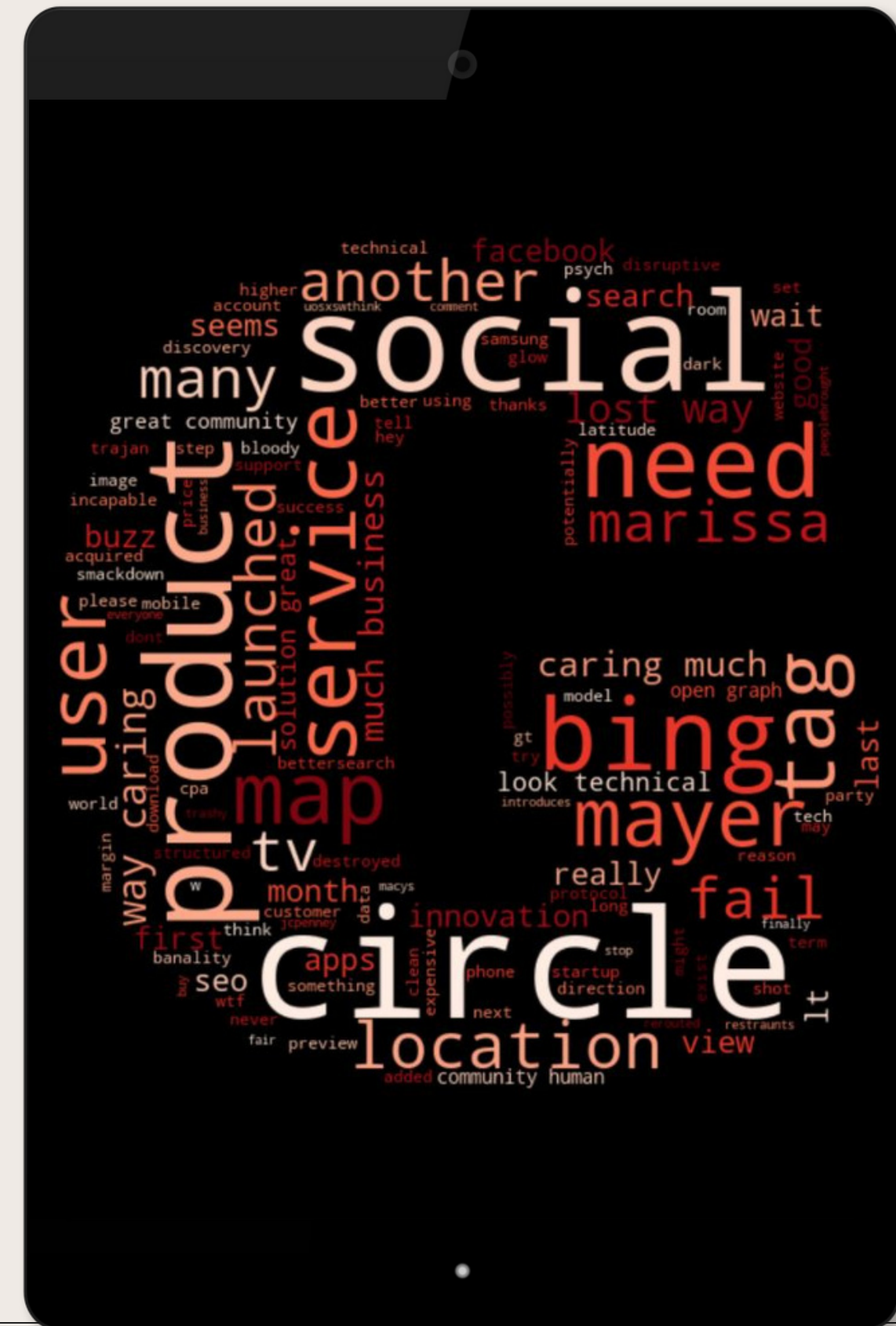
# Positive Word Cloud



# Positive Google



# Negative Google

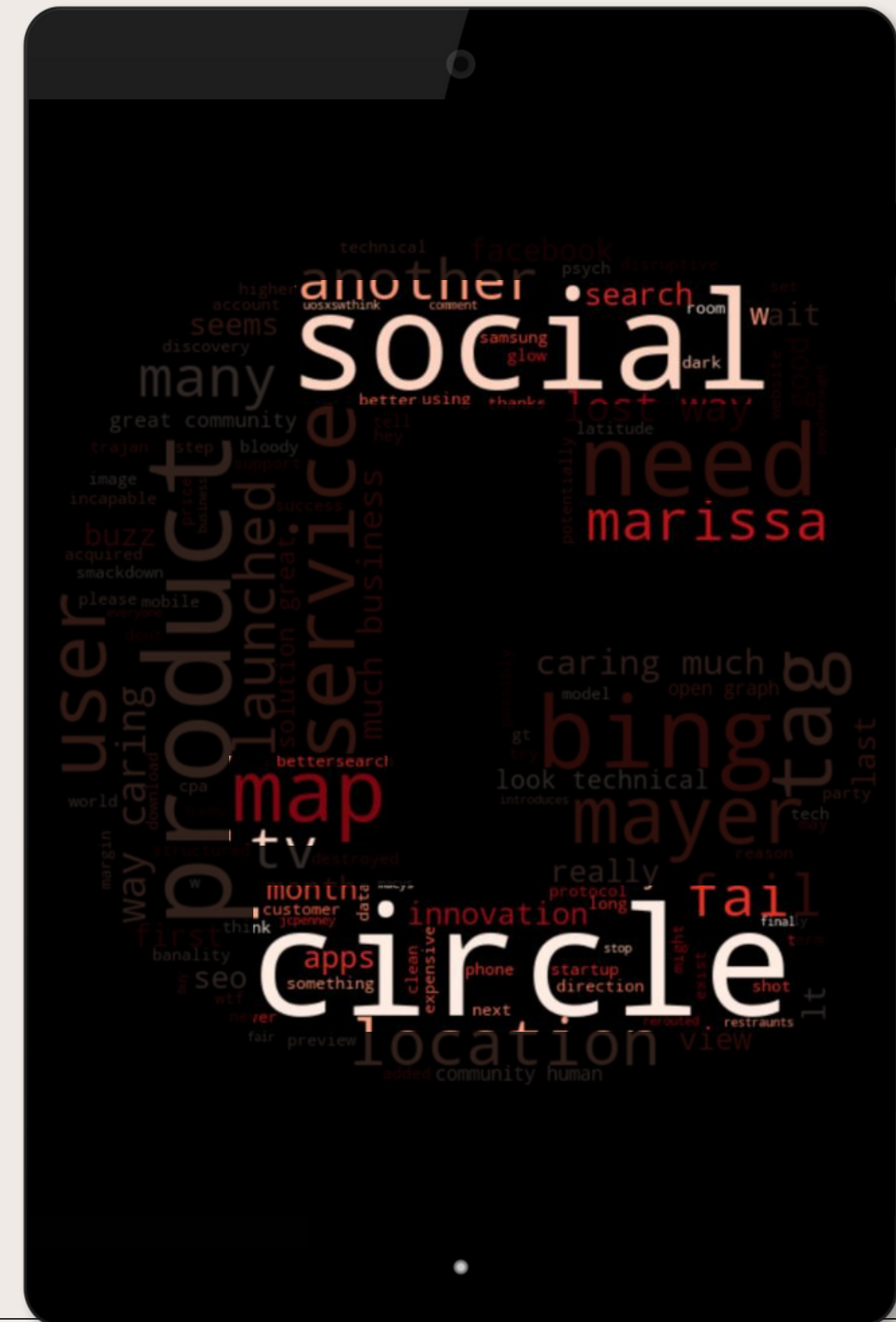




# Positive Google

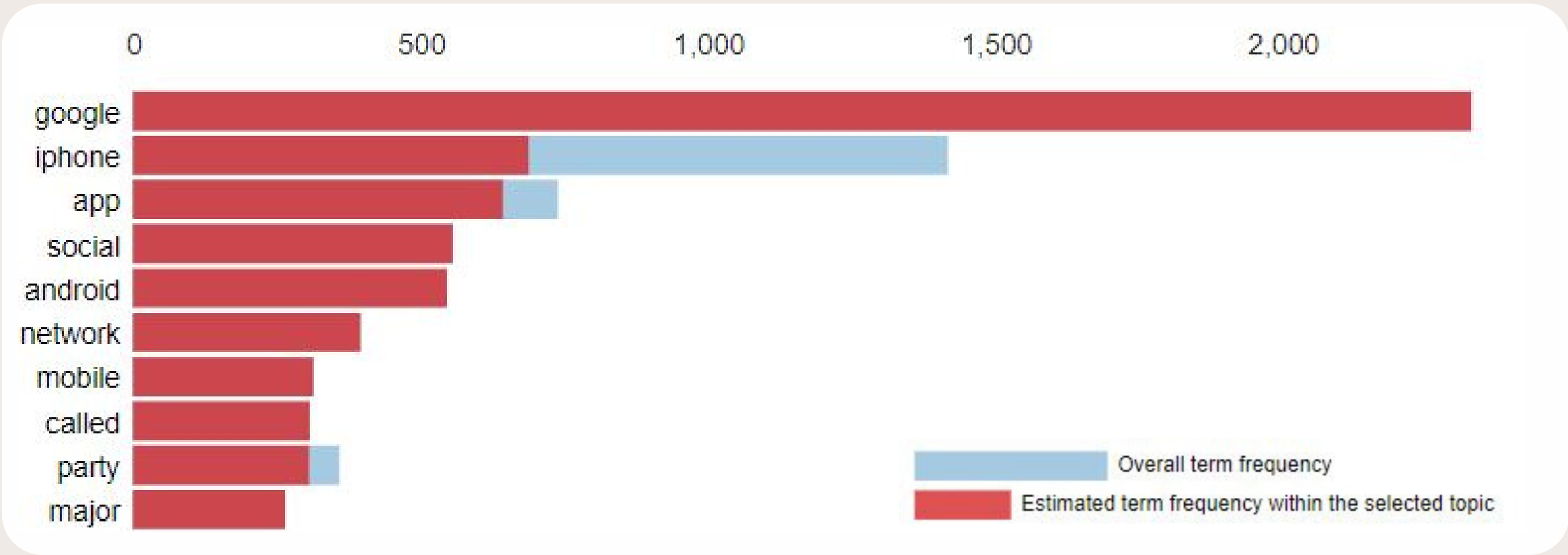


# Negative Google

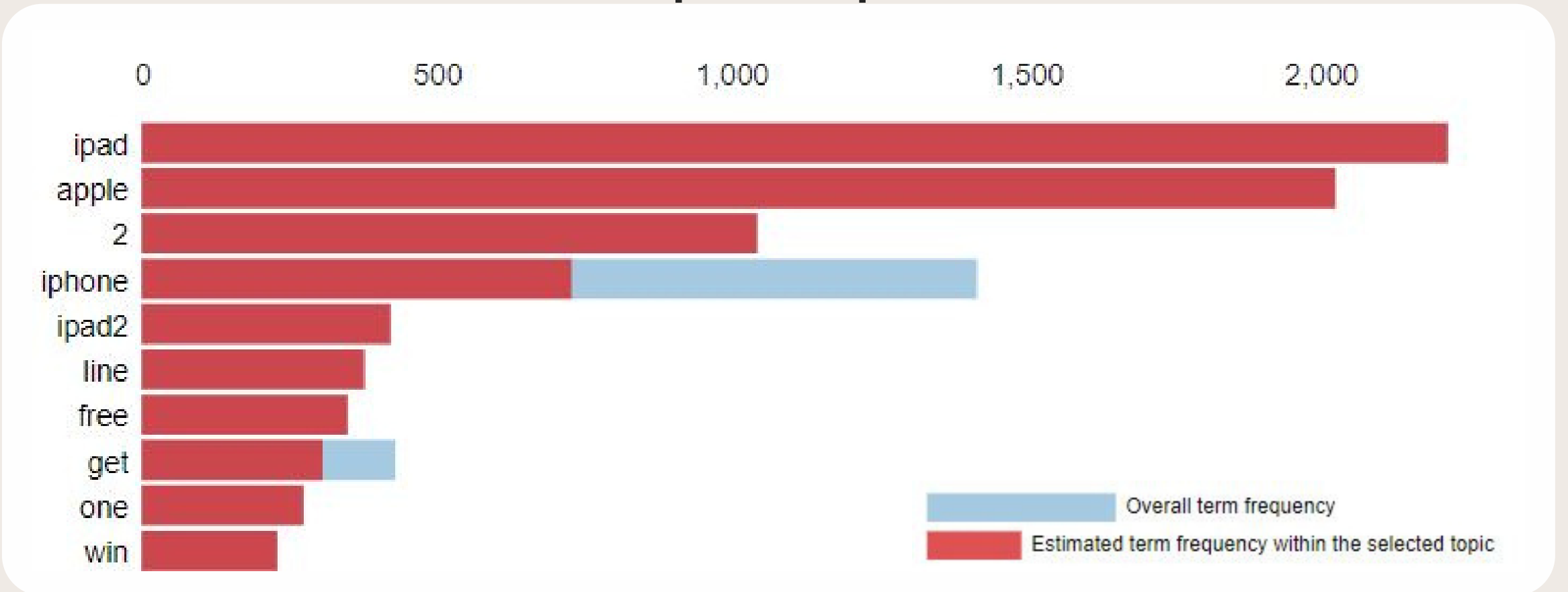


# LDA Topic Selection

Google Topic



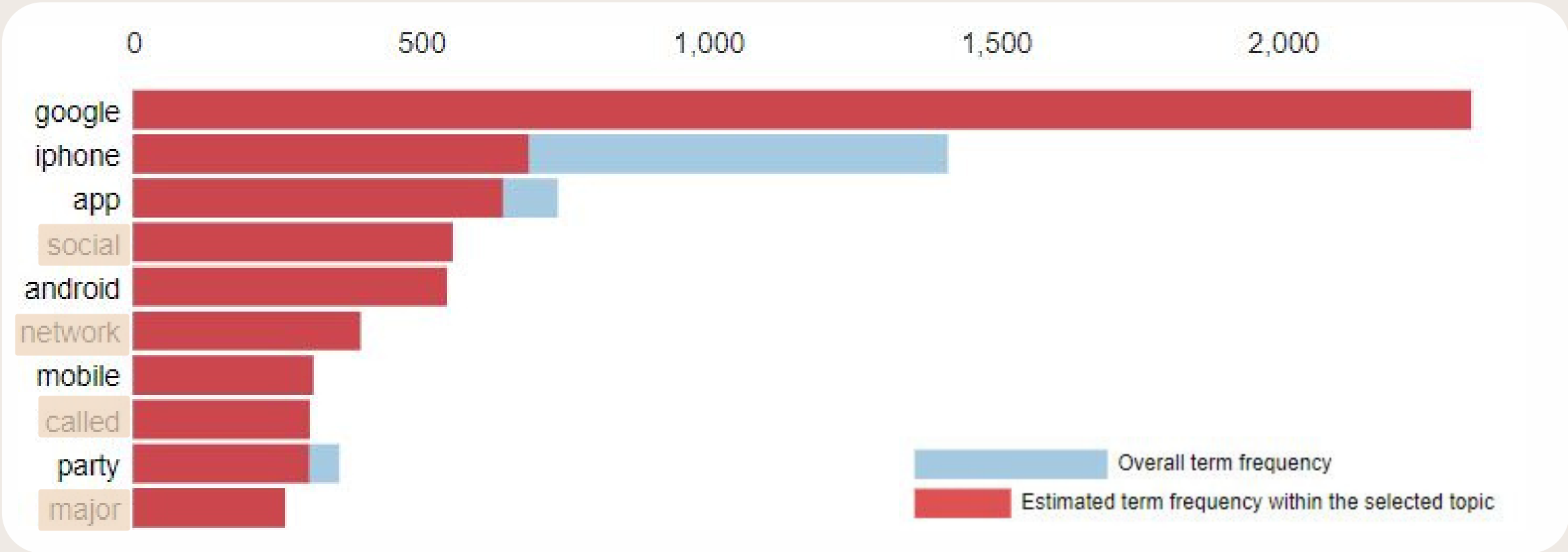
Ipad Topic



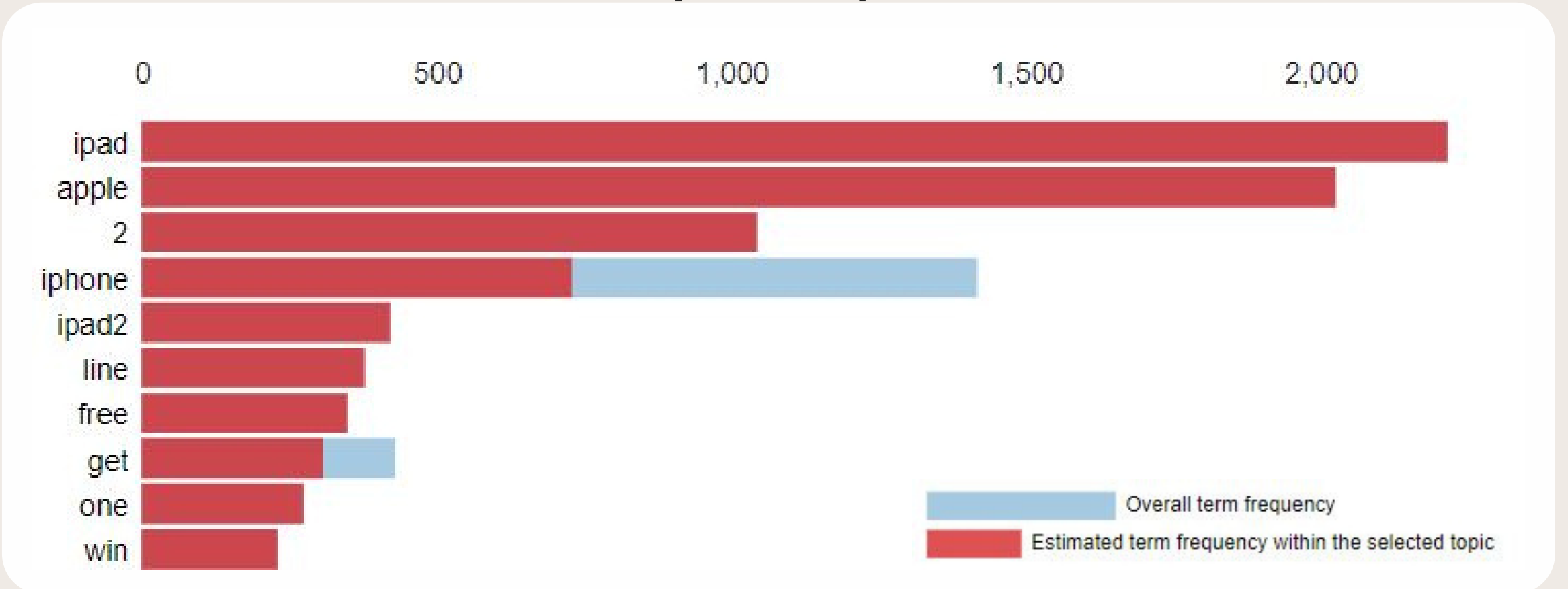
# LDA Topic Selection

Social  
Network  
Called  
Major

Google Topic

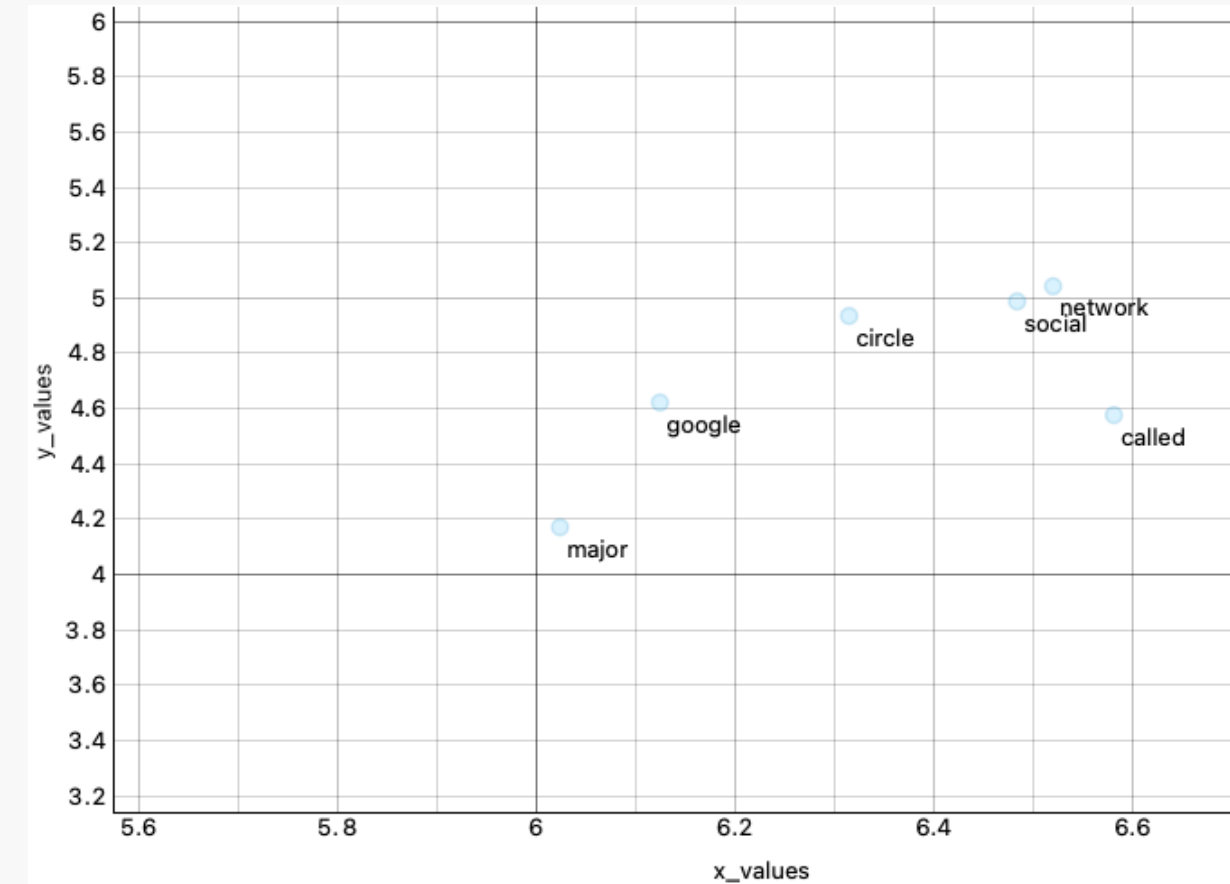


Ipad Topic





# Clustering Themes



# Recommendations

## Retweet Positive Tweets

The more people positive comments can reach, the better. A team of people retweeting relevant tweets could significantly increase their reach.

## Investigate Negative Tweets

Are these directed at a specific product? A Brand? A flaw in the organization of the festival? Finding the answers to those questions should open venues for improvement.

## Give Brands Sentiment Feedback

This could give the company a first layer of feedback so they can follow with more research on products shat people show bad sentiment towards.

# Next Steps

## **Correlate Sentiment with Sales**

Companies can see if sentiment towards a certain product have a correlation with said product sales. If it does, that could give them another tool to predict future sales based on sentiment.

## **Perform Sentiment Analysis Prior to and After an Event**

Gauging sentiment towards a brand or product before and after an event can give the company an estimation on how positive or negative that event was for that brand or product, allowing them to make changes to future events based on these findings.





# Contact Us

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