Flatiron Capstone Project

Analysis of former reddit the_donald

Angelo Turri

Stakeholder

- A social media communications team for the Republican Party wants me to extract meaningful insights from Reddit data
  - Goal: have a better grasp of the sentiment within their voter base
- Reddit: r/the_donald (no longer exists)

Data

- Origin: https://the-eye.eu/redarcs/
- Dataset properties
  - Date range: 2015–2020
  - 48 million posts
  - Reduced to 2.1 million due to excessively large dataset size

Cleaning

- Removing:
  - Bot posts
  - Spam (any post containing numerous consecutive duplicate words or phrases)
  - Stop-words
    - Commonly used words with little meaning that make very small contributions at best to models

Spam example

D:

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In [36]:
# Example of removed_posts
removed_posts[removed_posts.joined.str.contains('isis isis isis')].post.iloc[0]
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Out[36]: 'ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISIS ISI
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Feature Engineering (Bag of Words)

- Three levels of analysis
  - Unigrams (single words)
  - Bigrams (two-word phrases)
  - Trigrams (three-word phrases)
- Limited vocabulary to top-100 unigrams, bigrams, or trigrams
- Every sentence including one or more of these words/phrases was used for modeling

How is a sentence represented?

Vocabulary: 5 words - [‘Donald’, ‘Trump’, ‘became’, ‘President’, ‘apple’]

“Donald Trump became President”

is_donald	is_trump	is_became	is_president	is_apple
1	1	1	1	0

All Target Variables

- Post score (upvotes - downvotes)
- VADER sentiment score (engineered)
  - “Valence Aware Dictionary sEntiment Reasoner”
  - “I’m very angry” – scored < 0
  - “I’m very happy” – scored > 0

Type of model used: Linear Regression

- Highly interpretable model: it provides the values of coefficients
  - Lets us know which words the model thought negatively impacted sentiment and which ones positively impacted it
- I will create a separate linear regression model for each set of features, so that unigrams, bigrams and trigrams can be analyzed separately

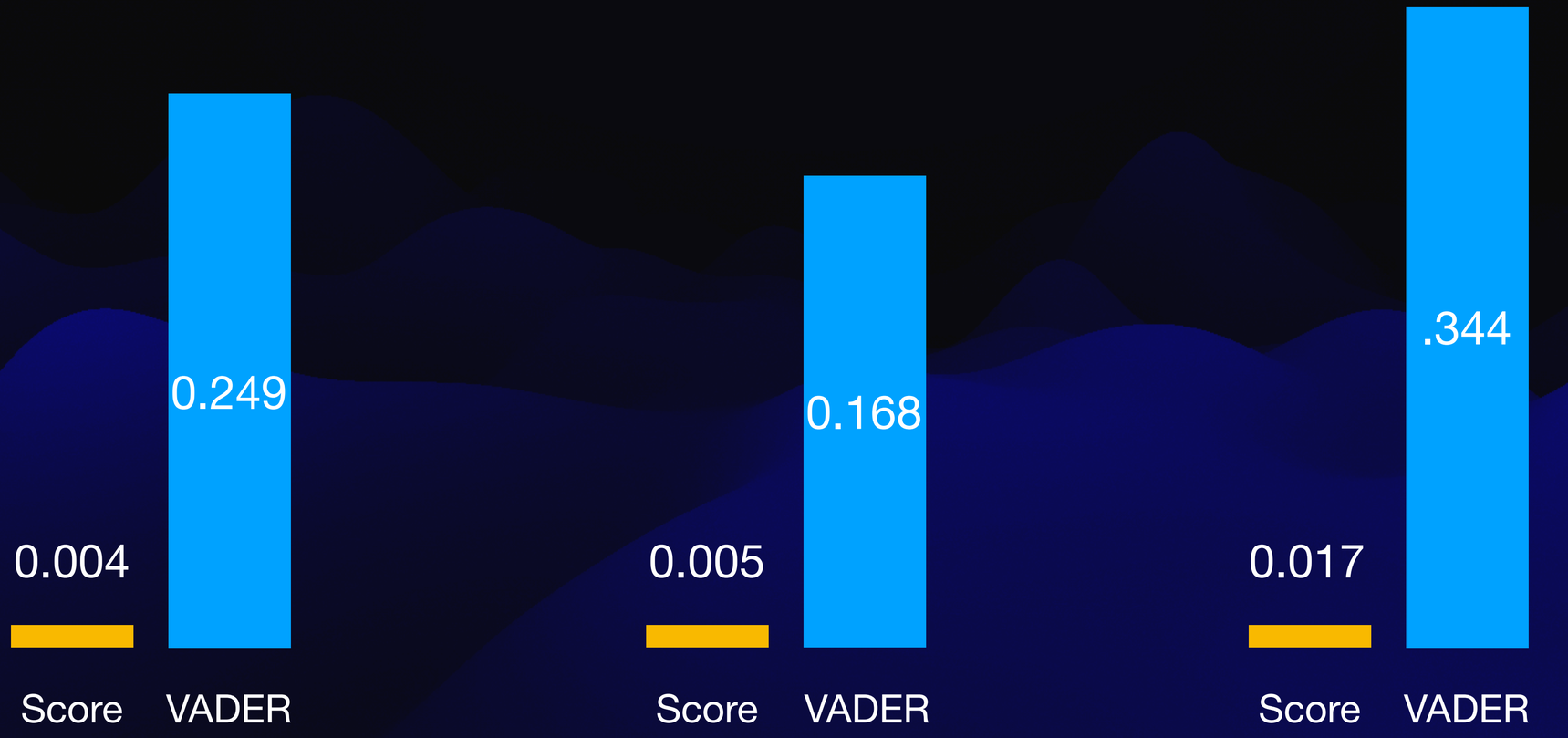
Target Variable: Score

- Abysmal results across the board
- R-squared < 0.1 for unigrams, bigrams and trigrams models
  - R-squared ranges from 0 to 1
- Models categorized negative words as positive
- Models categorized positive words as negative

Target Variable: VADER sentiment

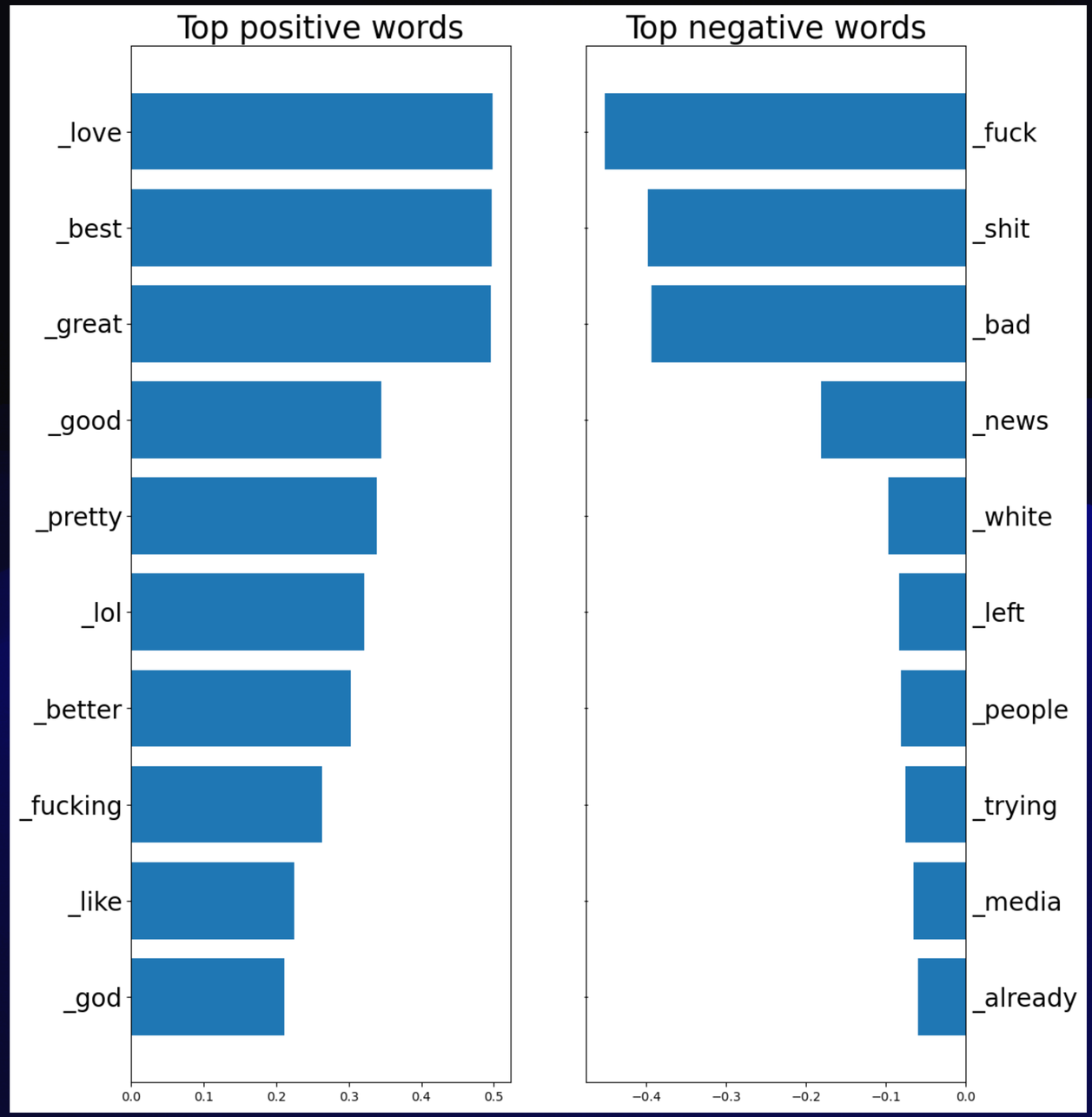
- Much better results
- R-squared of 0.243, 0.169, and 0.333 for unigrams, bigrams and trigrams respectively
- The broad sentiment of the top positive words and negative words was what you'd expect.
- Off on average by 0.33, 0.433, and 0.363 for unigrams, bigrams and trigrams respectively
    - VADER sentiment ranges from -1 to 1

Model R-squared improvement



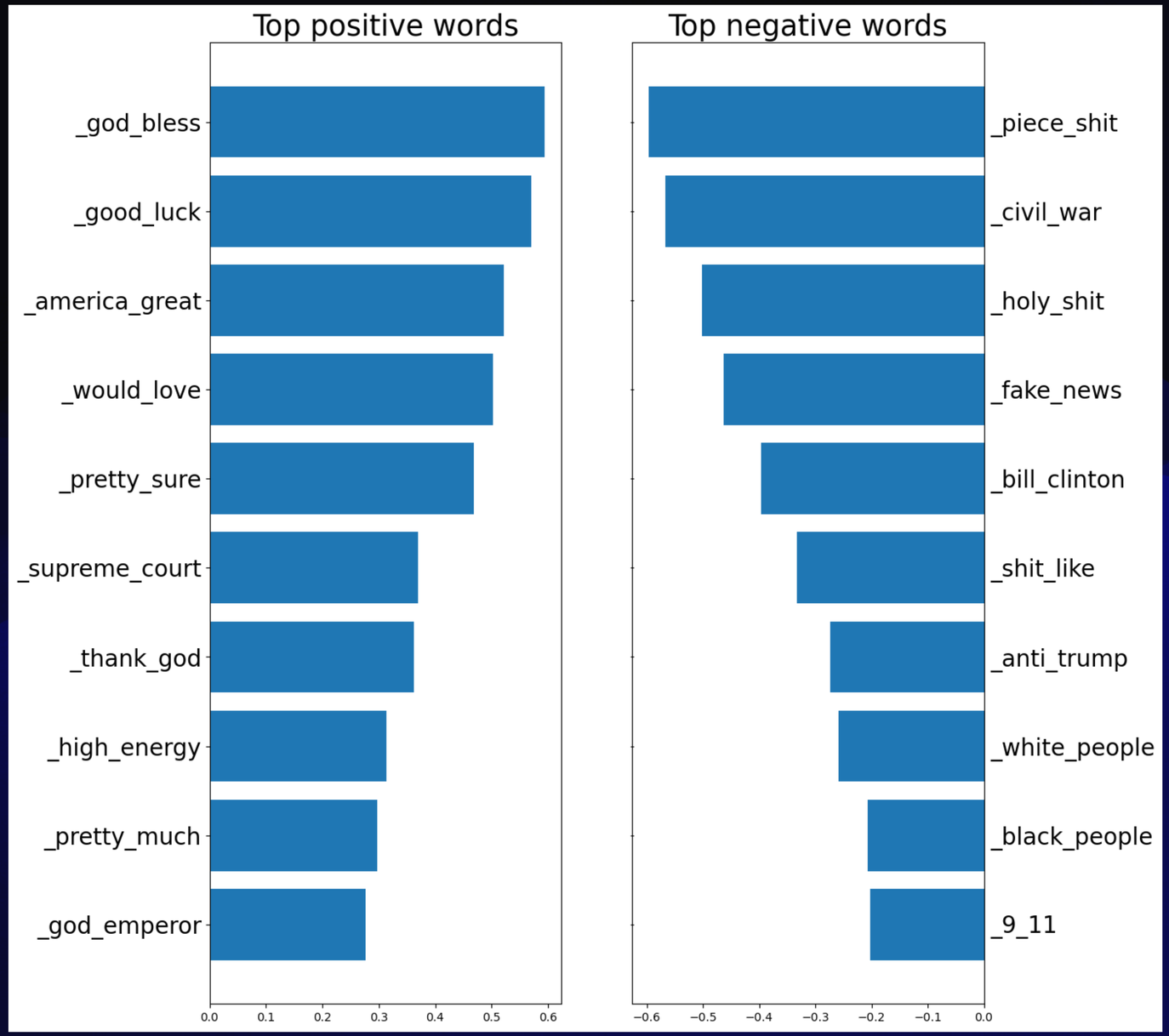
Top unigrams (single words)

- The longer the bar, the more emotionally charged that word/phrase
- Positive column: Best, God, Trump
- Negative column: News, media, Hillary
- *Only showing top 10 words/ phrases*



Top bigrams (two-word phrases)

- The longer the bar, the more emotionally charged that word/ phrase
- Positive column: God bless, America great, thank God, god emperor, United States, free speech
- Negative column: civil war, fake news, Bill Clinton, anti-Trump, Middle East, Deep State
- *Only showing top 10 words/ phrases*



Top trigrams (three-word phrases)

- The longer the bar, the more emotionally charged that word/phrase
- Positive column: God bless America, make America great, God emperor Trump
- Negative column: Bill Clinton rapist, orange man bad, CNN fake news, liberalism mental disorder
- *Only showing top 10 words/phrases*

Recommendations

- Cater to the base's religious tendencies. "God" appears in the most positive words and phrases – "God bless," "Thank God," "God bless America."
- Speak fondly of the US, since the base holds it in high regard. "America great", "United States", "God bless America," "make America great," and "making America great" appear in the positive columns.

Thank You!

- All questions are welcome.
- You may contact me here:
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