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Twitter Sentiment Analysis of Major US Topics

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Project Description

- Collected tweets over a variety of relevant US political topics using tweepy python library to access Twitter API.
- Analyzed tweets over a variety of topics using VADER sentiment analysis tool and text2emotion libraries in nltk (natural language tool-kit).
- Discussed the correlations between real-life events and public opinion based on those events.

Motivation

- To unearth any significant changes in public opinion in real time in correlation to major US events.
  - Included both planned events such as the US election, and relatively unplanned events such as the 2021 Storming of the US Capitol.

Why Twitter

- Easy to categorize information with the use of search keywords and hashtags.
- Free public access to Twitter API.
- Very large userbase of 340 million users that is very active
  - Over 500 million tweets posted per day.
- Over 71% of users say they use it to get their news.
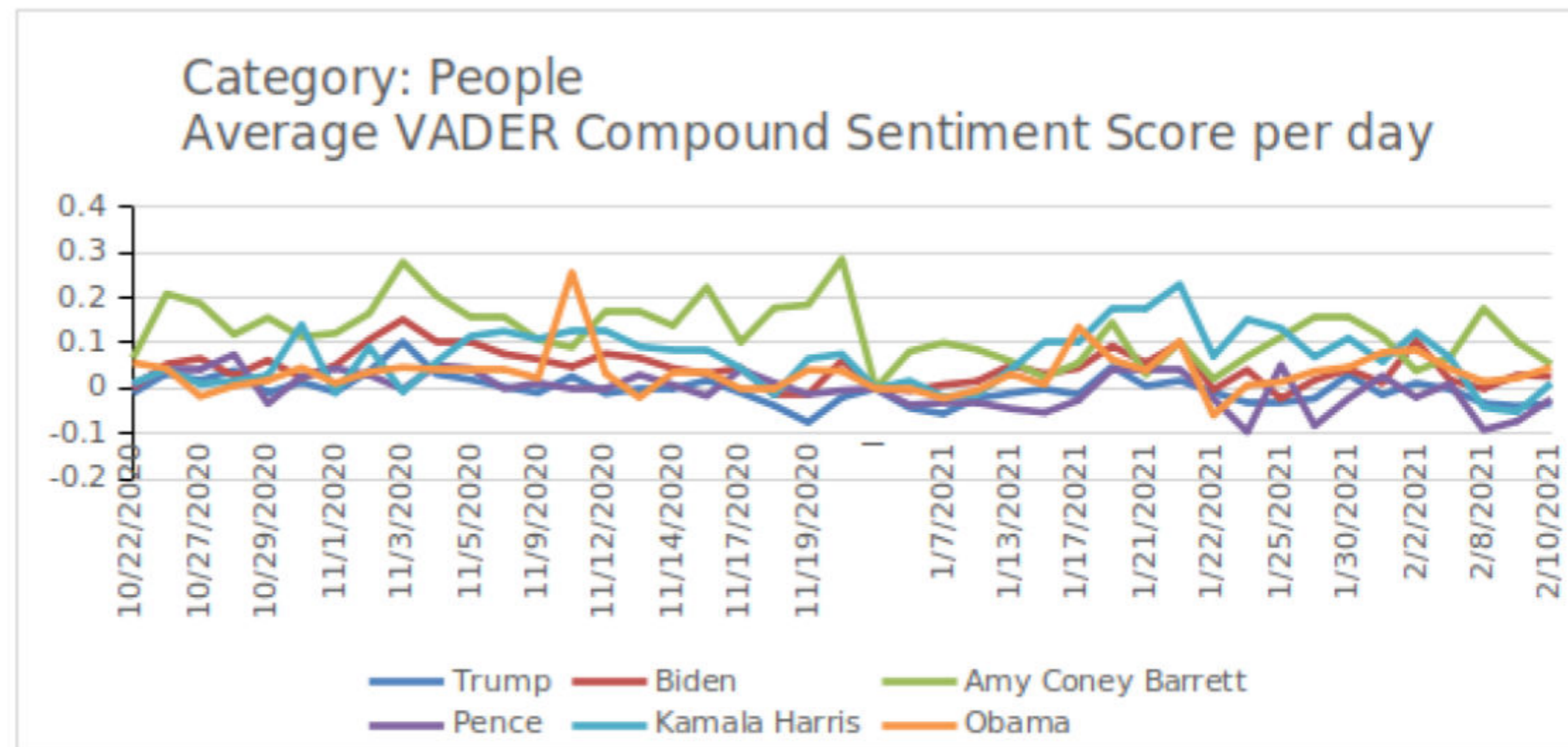
Analysis

Figure 1: Average VADER Compound Sentiment Score per day for people category

```
Day with angriest sentiment:       2021-01-25 0.13
Day with most fearful sentiment:   2020-11-20 0.37042
Day with happiest sentiment:       2021-01-13 0.13254000000000002
Day with saddest sentiment:        2021-01-30 0.2635600000000001
Day with most surprise sentiment:  2021-02-02 0.3658108108108108
```

Figure 2: Days with the highest text2emotion score for each emotional state

Methods

- The following terms were used as search keywords to collect tweets: Trump, Biden, BLM, Black Lives Matter, Amy Coney Barrett, Socialism, Pence, Kamala Harris, ACAB, climate change, liberal, conservative, mask, COVID, corona, coronavirus, COVID-19, Green New Deal, Mail Voting,
- The Twitter search key-words were categorized into different overarching topics
  - People, policy/policy issues, ideologies, COVID-19, and Black Lives Matter.
- The VADER sentiment analysis library was used for its high accuracy in analyzing sentiment of social media posts.
- The text2emotion library was used to gather a different perspective on the sentiment of the tweets.

Discussion

- Amy Coney Barrett has an overall higher sentiment despite her controversial appointment.
- Kamala Harris Has a rise in her sentiment score around the time of her inauguration as Vice-President.
- Trump and Pence are very slightly below Biden and Harris. Both dipped below a compound score of 0 starting Jan. 6, 2021.
- Trump also suffered a noticeable dip in sentiment score on Nov. 19, 2020 when he first claimed election fraud.
- Obama was fairly consistent with everyone else except Nov. 11. 2020.

Future Works/Conclusion

- Very noticeable impacts on real-life events on public opinion
- Research may have been too broad.
- Gap in data collection.
- Potential future works include prediction of elections or other major events (sporting events) based on public sentiment.

Acknowledgements