



Text Analysis of Tweets on Net Neutrality

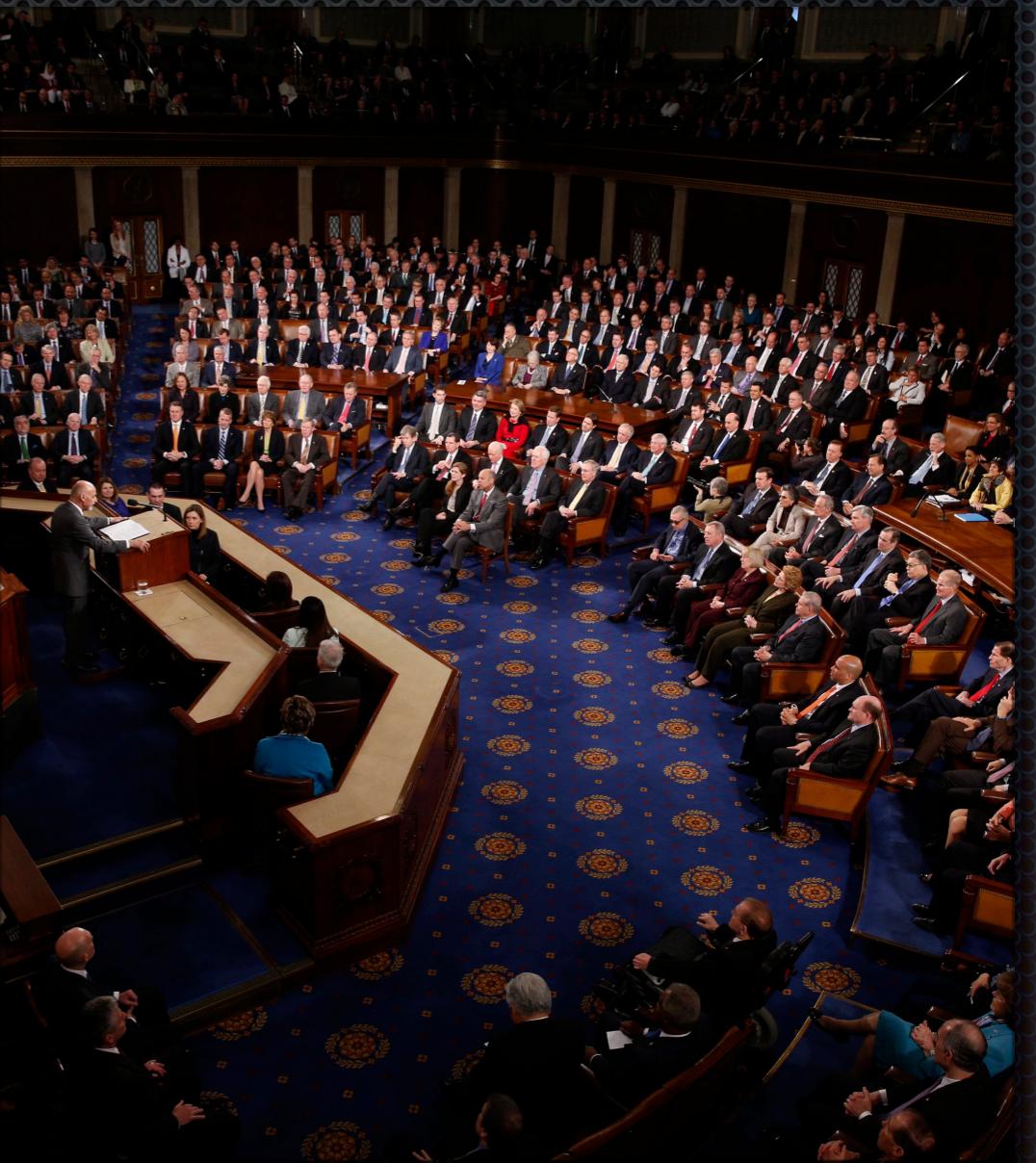
Springboard Capstone Project 2
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What is Net Neutrality?

- The principle that Internet service providers should enable access to all content and applications regardless of the source, and without favoring or blocking particular products or websites
- The Federal Communications Commission (FCC) has for several years classified the internet as a telecommunications service in order to protect net neutrality
- In January 2018, net neutrality was rescinded by the FCC under a new presidential administration
 - Public comments were taken by the FCC in 2017; subsequent analysis shows a large proportion were fake pro-repeal

Is This the End of Net Neutrality?

- The US Congress can still act to legislate net neutrality
- Individual states, including Montana and New York, already have
- With the FCC public comments debunked, what is the public view on this subject?



Twitter

- Twitter is an online news and social media platform with approximately 330 million active users
- Given that users of Twitter are by its very nature users of internet services, sentiment analysis of tweets could provide a strong case for lawmakers trying to understand the true public consensus on the subject or how their constituents wish the issue to be handled



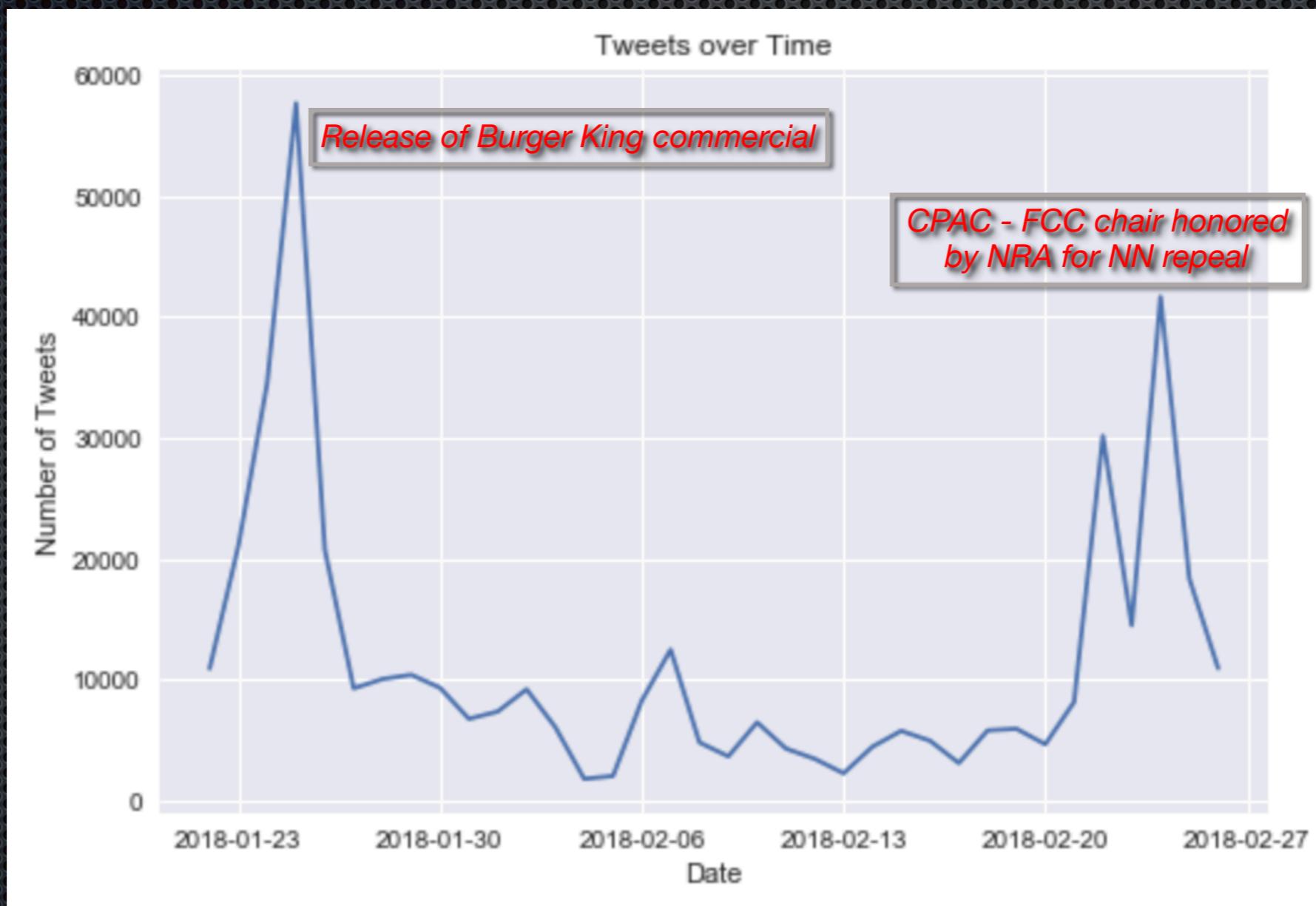
Twitter Data

- Tweets were collected:
 - Search terms #NetNeutrality and Net Neutrality
 - Dates: January 22, 2018 through February 26, 2018.
- This includes not only the text of the tweets but also user information such as username, location and any profile description

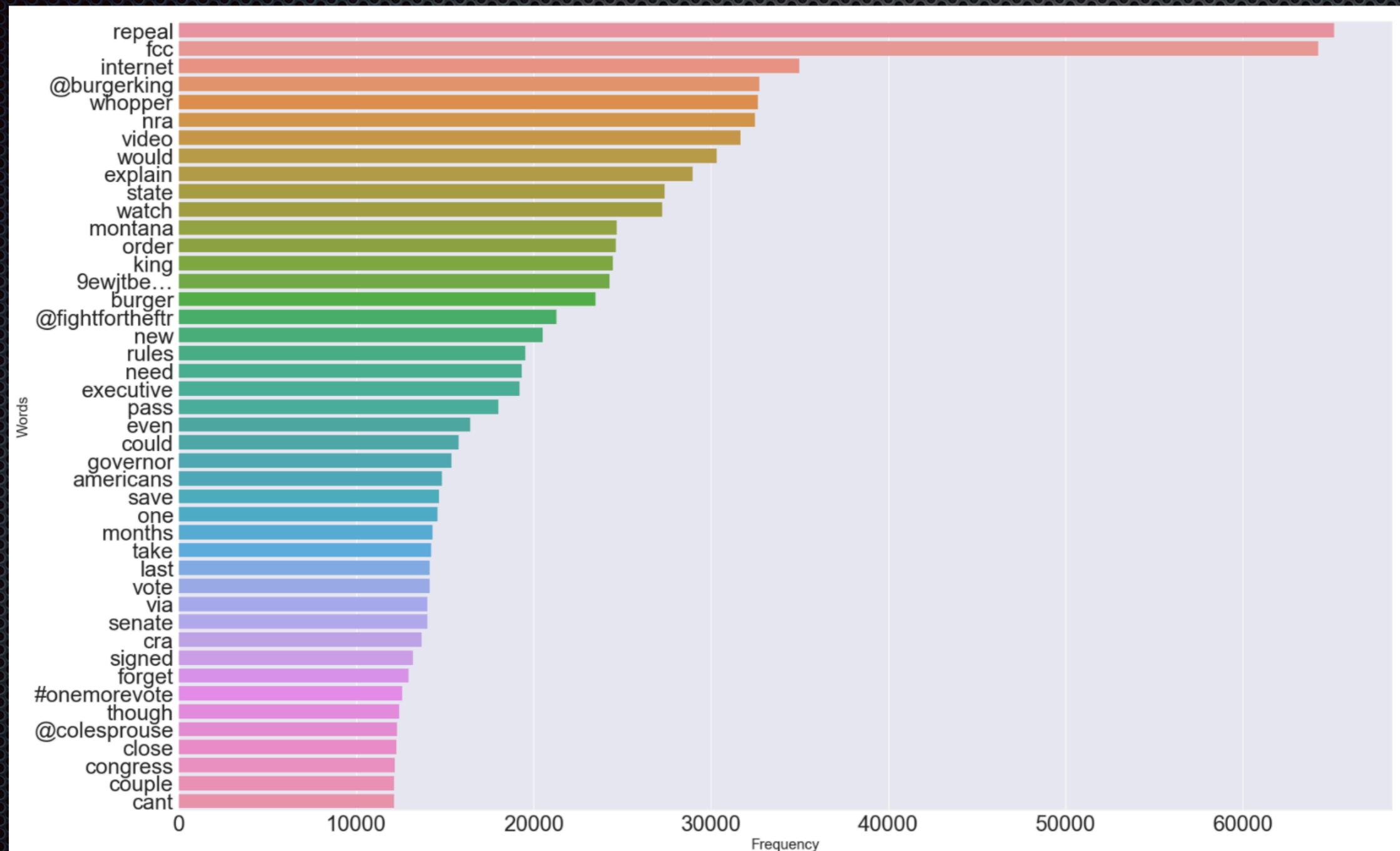
Data Wrangling

- Twitter files were downloaded via Python and the Tweepy app in chunks per the Twitter API terms and appended to JSON files
- Dataframe was generated with the selected features from the Twitter json files
- Duplicate tweet IDs were removed
- Final size: 421,316 observations with 14 features

Data Exploration - Chronological Events



Data Exploration - Most Frequent Words



Text Analysis - Text Clusters

signed executive order
net neutrality rules
net neutrality repeal
executive order mandating
signed executive order mandating
internet service providers
cared net neutrality
becomes first state
montana becomes first
montana becomes first state

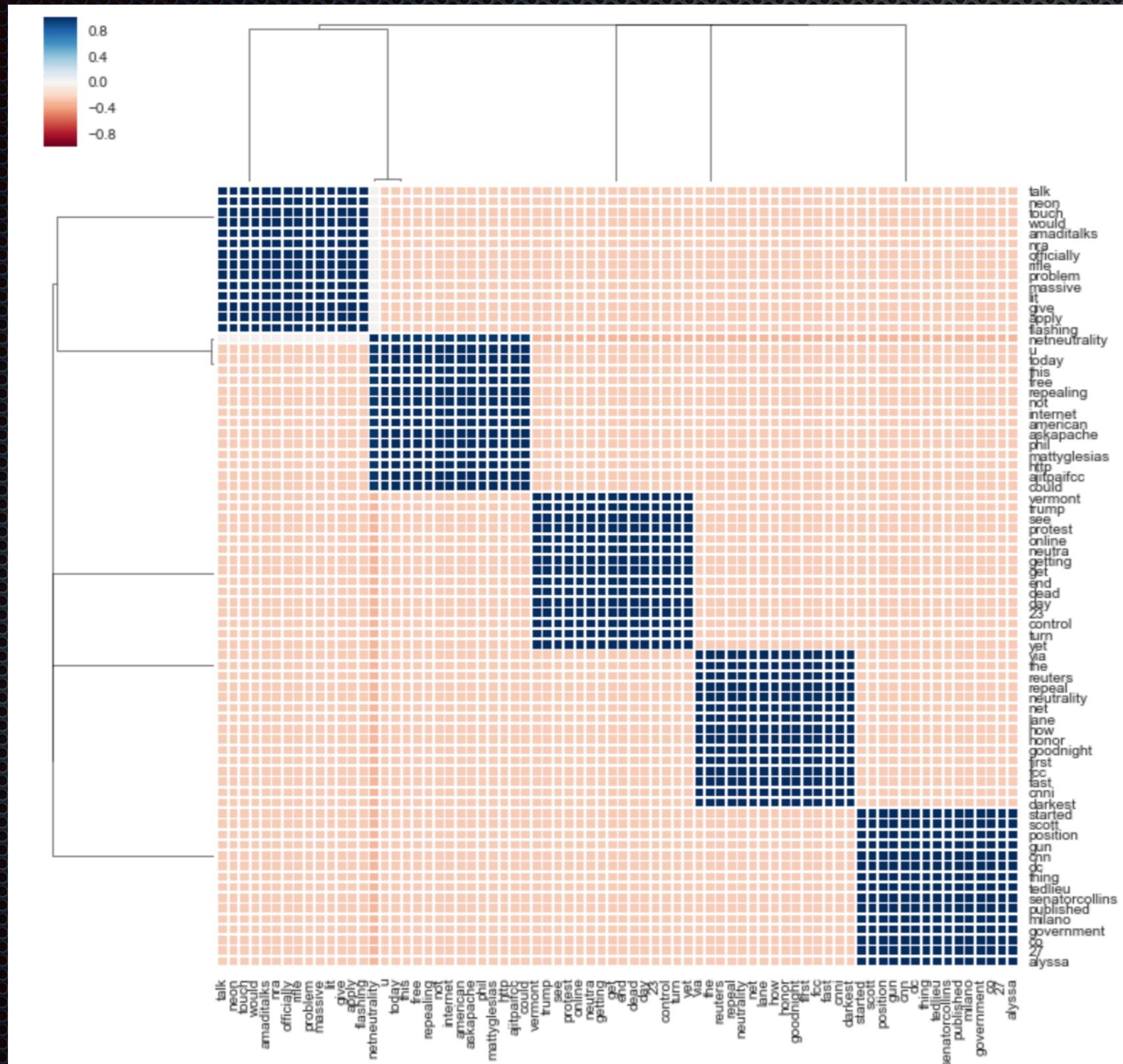
we whopper watch video
neutrality we whopper watch
we whopper watch
net neutrality we whopper
neutrality we whopper
whopper watch video
would explain repeal net
explain repeal net
explain repeal net neutrality
▪ repeal net neutrality we

why nra position net
why nra position
mattyglesias why nra
mattyglesias why nra position
position net neutrality regulations
nra position net neutrality
nra position net
position net neutrality

touch overwhelming majority americans
touch overwhelming majority
could touch overwhelming
could touch overwhelming majority
overwhelming majority americans turns
nra could touch overwhelming
majority americans turns
nra could touch
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thought nra could touch

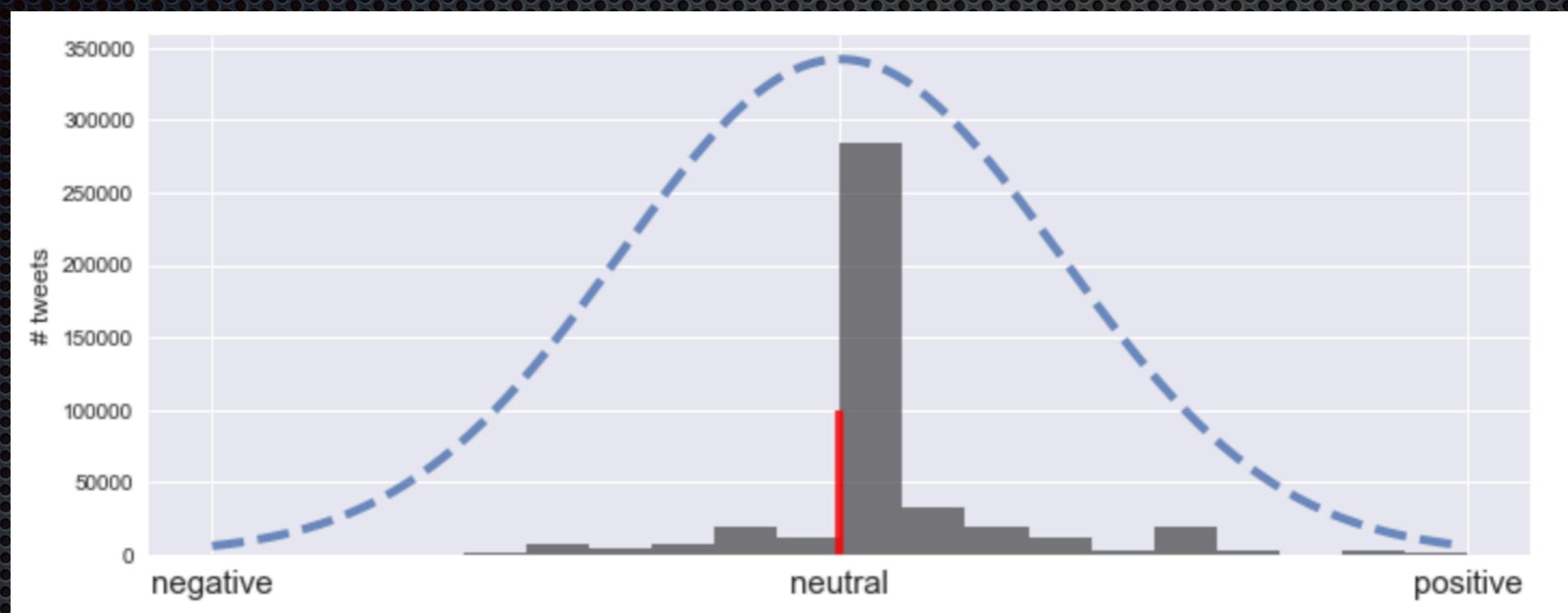
the government take away
the government take
government take away
government take away net
jackedyotweets the government
jackedyotweets the government take
away net neutrality guns
net neutrality guns
take away net neutrality

Text Analysis - Topic Modeling



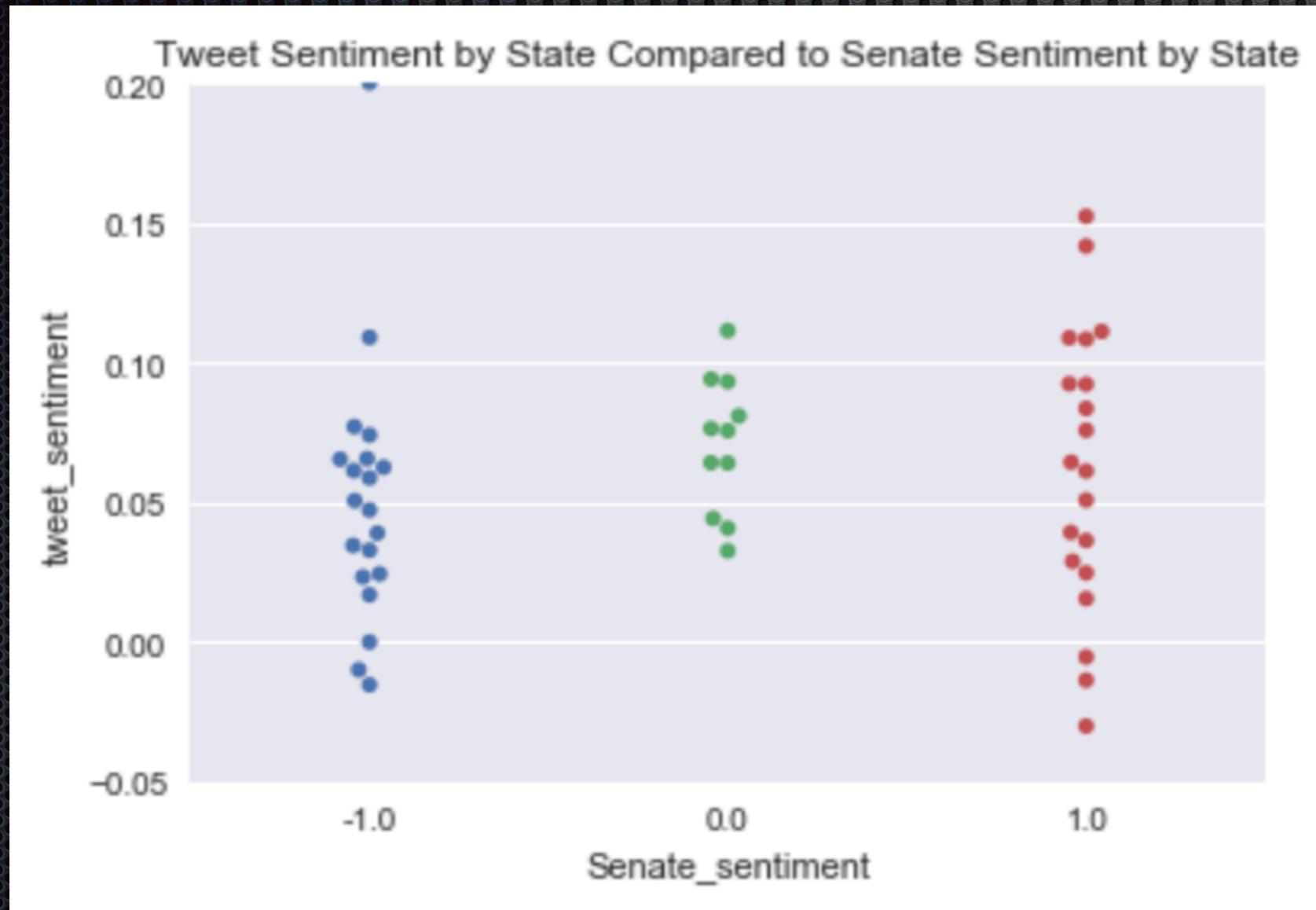
- Text Clusters and Topics focus on different aspects of net neutrality
- Very little overlap in the Twitter data between topics

Text Analysis - Sentiment of Tweets



- Twitter user sentiment towards net neutrality is, on average, positive.
- Most negative texts were tweets against repeal
- Most positive texts were tweets in favor of strong net neutrality

Text Analysis - Tweet Sentiment vs Senate Sentiment



- Senate “sentiment” was calculated by state based on the expected votes at present time
- Senate sentiment has very little relation to the sentiment of Twitter users in each Senator’s state

Conclusions

- Defending a repeal of net neutrality in the United States is on its way to becoming a very costly battle:
 - 12 lawsuits pending against the FCC in federal court
 - Support is expected from The Internet Association, which lobbies on behalf of tech giants such as Facebook, Amazon and Google.
- This analysis provides a view into the public sentiment on net neutrality that contrasts with the fake-laden public comment set received by the FCC.

Client Recommendations

- Preliminary analysis of Twitter data as a surrogate for public opinion demonstrates that the American people favor preservation of net neutrality much like many of the firm's high tech clients. A strong media campaign should be undertaken to distribute this information.
- For each member of the Senate who is currently listed as a vote in favor of the net neutrality repeal, and those "on the fence:"
 - Present the data on sentiment across the country and by state.
 - Identify technology/internet companies in each "no" state that would stand to lose business opportunities if the net neutrality repeal is finalized and present those project losses in state revenue.
- For Senators in favor of preservation of net neutrality, schedule similar meetings to share the sentiment results and highlight that their vote matches the will of their constituents.
- Perform an analysis of economic benefits for the states that enacted their own net neutrality laws and use this to further the argument for prevention of a national repeal.
- Should the national effort to prevent a net neutrality repeal fail, enact the same strategy on an individual state basis.

Future Work

- This project provided perspective on the benefits and limitations of a real-time analysis of current events.
- Labeled data would have been incredibly useful to generate a predictive model and further evaluate the sentiment of fresh tweets on an ongoing basis.
- Unfortunately labeling over 400,000 tweets was not within the scope of this project.
- If such a set were available in the future, more extensive analysis and model testing could be performed.

Thank You

Especially to my mentor Liang Kuang