

# Analyzing Voter Sentiment through 2020 U.S. Election Twitter Data

## Text Analysis Project

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# Overview

- ▶ Motivation: How to understand political polarization and voter sentiment with social media comments?
- ▶ Research Question: how voter sentiment and Twitter language differ for different political stances and political topics.
  1. Predicting political stance
  2. Topic modelling
  3. Sentiment analysis
- ▶ Finding: Most Twitter sentiments are polarized and tend to be negative.
  - Censorship scandal and Social Security: almost no positive sentiments
  - Biden-leaning tweets talk more about the Final Presidential Debate and Racism; Trump-leaning tweets talk more about censorship and ballot polls.

# Data and Methods

## ► Data Sources:

- Kaggle's U.S. ELection 2020 Dataset, cleaned to a remaining 266k tweets from period 10/15 – 11/18.
- Georgetown University's 'Knowledge Enhance Masked Language Model for Stance Detection'. 2500 tweets pre-labeled with stance

## ► Methods and Evaluation:

- Multinomial Logit-lasso regression: group to 3 dummies, for-Trump/against-Biden, neutral, for-Biden/against-Trump
- LDA: setting to 20 political topics, spit out key words identified to topics like censorship and social security
- Huggingface's Tweet-roBERTa algorithm: identify the percentages of positive, neutral, and negative language use.

# Results

## ► Multinomial Logit accuracy score of 0.779

	word	coef
1	maga	-6.584186
2	democrat	-4.653874
3	kag	-3.281676
4	red	-1.999995
5	best	-1.795547
6	americafirst	-1.578382
7	makeamericagreatagain	-1.113084
8	year	-1.071948
9	new	-0.876847
10	try	-0.805163

Table 1: Top 10 words predictive of Trump-supporting/Biden-opposing

	word	coef
1	votebluetosaveamerica	17.437117
2	voteblue	10.586887
3	dumptrump	6.271283
4	demconvention	5.228915
5	gop	3.796428
6	votebluenomatterwho	3.787613
7	joebiden	2.492431
8	trump	2.229823
9	votebluetoendthisnightmare	2.156522
10	debate	2.074056

Table 2: Top 10 words predictive of Biden-supporting/Trump-opposing

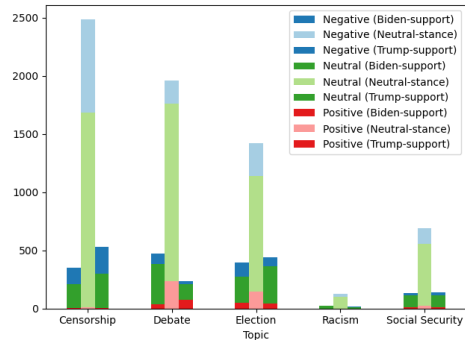
## ► 5 main topics

Table 4: Top words of the most mentioned political topics.

<b>Social Security(12)</b>	<b>Racism(14)</b>	<b>Media Censorship(13)</b>	<b>Presidential Debate(7)</b>	<b>Election/Ballot Progress(2)</b>
Tax	President	Medium	Watch	election2020
Healthcare	Trump	hunterbiden	Townhall	Arizona
Democracy	Black	Twitter	ABC (news)	GA (Georgia)
Pay	Woman	censorship	Tonight	Pennsylvania
Social Security	Racism	News	trumpmeltdown	everyvotecounts
Election	Vote	Ukraine	President	campaign

# Final Results and Conclusion

- ▶ Biden supporters tweet more about the final Presidential debate
- ▶ Trump supporters tweet more about Biden's media censorship scandal and ballot progress
- ▶ Very low share of positive tweets in clearly Trump and Biden camp tweets
- ▶ Biggest share of negative tweets in media censorship



**Figure:** Three bars from left to right: Biden-support, neutral, Trump support. Stacked bars from top to bottom: negative, neutral, positive