Republicans Were Supposed to Win Nevada's Senate Seat: What Can Twitter's Social Networks Tell Us about Influencers and Issues in the Election?

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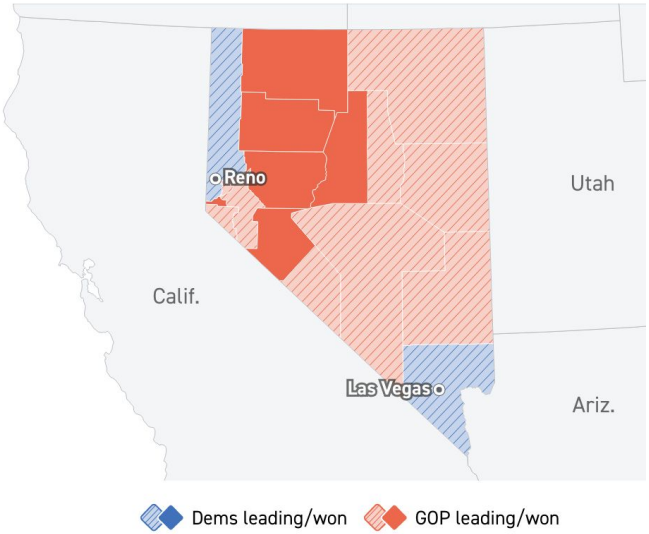
Audience

- Marketing plays a vital role within a political campaign
- Audiences:
  - Internal organizations within social media companies who want to understand the potential impact of social media campaign strategies
  - social media managers/PR representatives for political campaigns

Context



- The 2022 Nevada Senate election was extremely close:

U.S. Senator, Nevada — Dems held

Candidate	Votes	Pct.
✓ Catherine Cortez Masto* (D)	493,443	**48.9%**
Adam Laxalt (R)	484,436	**48.0%**
None of these candidates	12,217	**1.2%**
⊕ Other candidates	19,382	**1.9%**

*Incumbent — 99% of vote in

- Democratic upset: Republicans had prioritized this race to win a majority in the Senate
- Nevada offers a useful case study for swing states
- Twitter's political discourse can help us understand the influential people and issues behind this election

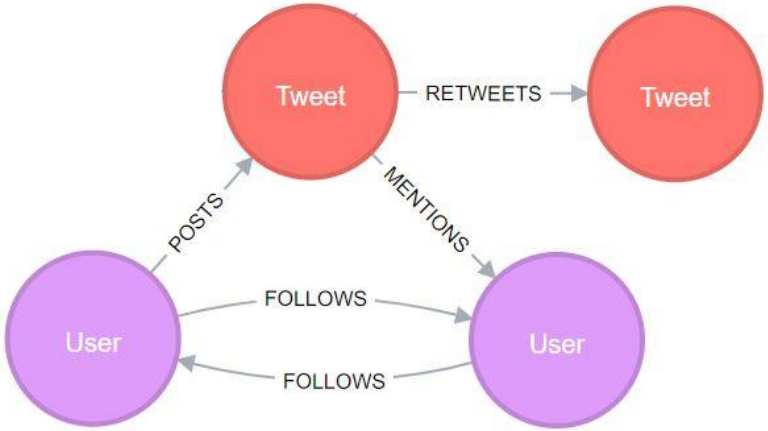
Research Questions

- Who were the key social media influencers in the Nevada Senate election?
  - How do we define an influencer? Investigating interaction rates between users can shed light on this.
- How did social clusters form around these influencers?
  - Who are they composed of? How large are they? What political affiliations are they associated with?
  - How did they form over the month preceding the election? What does this growth look like?
- What, if any, key political issues are clusters centered around?
  - We will use keywords or phrases as a proxy for broader political issues

Data

- Primary Dataset:
  - Twitter API using the Tweepy API Python package
  - Snowball sampling.
    - Starting with list of Senate candidate user accounts, we can construct networks with the Twitter users who retweet, follow, or mention candidate tweets or user

Study Design/Methods

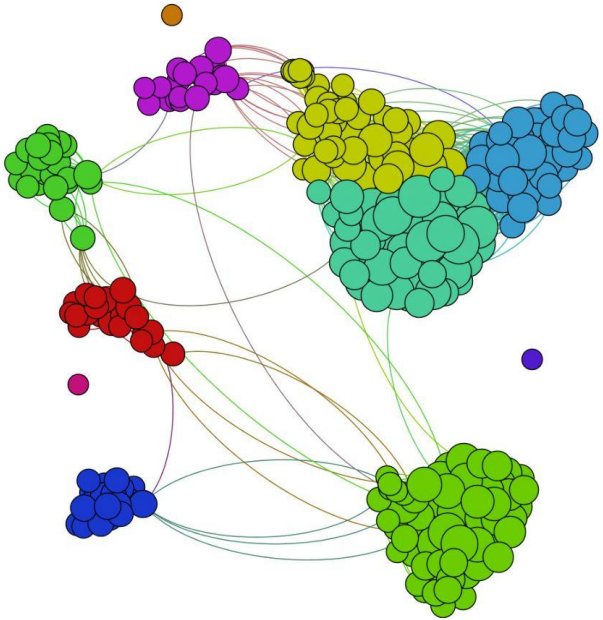


- Neo4j graph database as a representation of the social network of twitter users and tweets
  - Nodes: Individual users and tweets
  - Edges: Interactions between users and tweets
    - Follows, Mentions, Retweets, and Posts
    - We can weight the edges based on business intuition
    - E.g. a follow may be weighted higher than a mention as it represents a more meaningful connection

Identify influential users

- Graph algorithms can shed light on how interconnected users are
    - Degree centrality, Closeness centrality, Eigenvector Centrality
- We can cross reference users that score most highly in all three to identify the most influential users

Identify clusters of highly interconnected users



- Graph algorithms can illustrate highly interconnected clusters of users
  - If clusters are distinct: Betweenness Centrality of Clusters
  - If clusters are not distinct: Label Propagation Algorithm
- Clusters will be identified solely based on their connections without taking into account the content they tweet

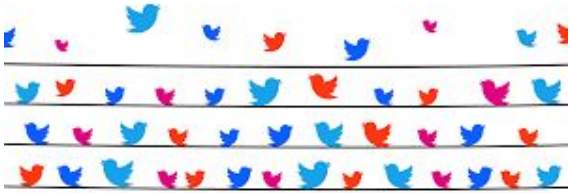
Identify key political terms

- Pass tweet content information into a LDA classification algorithm to determine what issues proliferate among Twitter users
    - We will simplify political concepts into certain keywords or phrases: e.g. MAGA
- At the highest level, performing this on all collected tweet information illuminates the most important topics for the entire Twitter network
- We can repeat this analysis at a cluster of users level to determine key terms associated that are bounced around in a particular cluster

Comparison to actual election data

- Feed twitter data into a Native Bayesian classification algorithm to classify users by party
  - Compare to data from the Politico API
  - We believe Twitter users are younger than greater Arizona voting population
- Similar analyses yielded results supporting the inference of political affiliation based on interaction algorithms
  - Chamberlain et al. (2021) used “Community detection” algorithms based on Twitter interaction networks, and not tweet content, to infer political affiliation of each member of Congress “with up to 98.8% accuracy in the House and 94.1% accuracy in the Senate”
  - We are using Tweet content as well, so we can reasonably expect to perform even better

Potential Risks



- Twitter users' data privacy is a potential ethical concern
  - Transparency in source and use of data in our design
- Public or political pushback: High-profile scandals have raised public concern about election manipulation through social media
  - Need for open discourse about how these strategies impact democratic systems
- Potential researcher bias in determining keywords used to represent political ideas and affiliations
  - Evidence that popular Twitter terms reflect real-life political events and topics (Yaqub et al., 2017)
- Twitter users may not be representative of general U.S. voting population (Wojcik & Hughes, 2019)
  - Our design integrates partisan classification of users to evaluate these limitations

Impact

- Political strategists and marketers can inform social media campaign strategies with an understanding of how social networks form for different candidate types.
- We will look to determine which influencers are more central to which campaigns.
- Furthermore, we will look to identify what key messages or ideas resonate with and proliferate among politically active Twitter users

References

Original research proposal: Stockham, J. (2022). The Republicans were supposed to the NV Senate Seat: Can twitter chatter help explain why they didn't?

(2022, November 27). *2022 Election Results*. Politico. https://www.politico.com/2022-election/results/senate/

Chamberlain, J. M., Spezzano, F., Kettler, J. J., & Dit, B. (2021). A network analysis of twitter interactions by members of the US congress. *ACM Transactions on Social Computing*, *4*(1), 1-22.

Jones, D. (2022, November 12). *Democrat Catherine Cortez Masto wins Nevada Senate race*. NPR. https://www.npr.org/2022/11/12/1130401107/nevada-senate-cortez-masto-laxalt-results

Shmargad, Y. (2022). Twitter influencers in the 2016 US congressional races. *Journal of Political Marketing*, *21*(1), 23-40.

Wojcik, S., & Hughes, A. (2019). Sizing up Twitter users. *PEW Research Center*, *24*.

Yaqub, U., Chun, S. A., Atluri, V., & Vaidya, J. (2017). Analysis of political discourse on twitter in the context of the 2016 US presidential elections. *Government Information Quarterly*, *34*(4), 613-626.