Political Ads and Social Media Response

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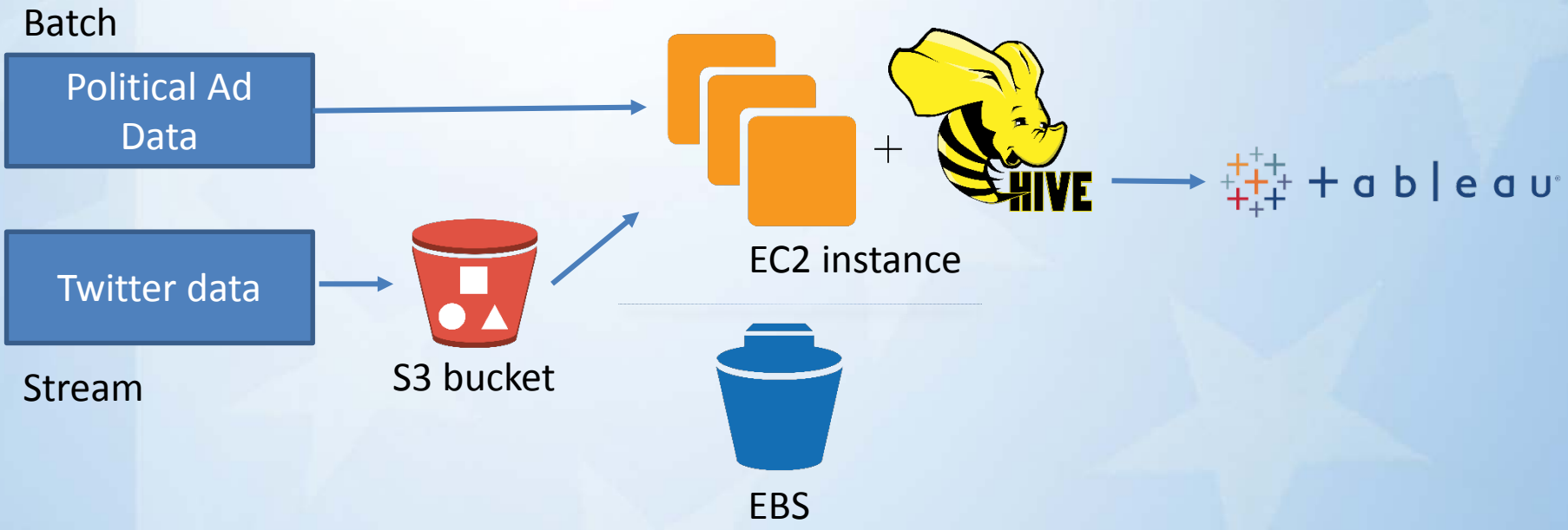
The Big Question

- Does TV advertising impact social media response about elections?
- Should political candidates continue to buy ad spots?
- Are some ads more effective at spurring Twitter activity than others?

Architecture



System Scale and Considerations

Considerations:

- S3 - scalable and cost effective
- Hive - familiarity and easy connectivity to Tableau
- Tableau - custom geographies to draw DMAs

Scale:

- S3 will scale automatically, we can delete aged data to save cost
- Can add more EC2 nodes to the cluster to handle large data volumes

Challenges

- Twitter stream data volume
- Parsing nested JSON format of tweets
- Tweet location data mapping to DMA (Designated Market Area)
- Time attribution of tweets to political Ads

Special Tech

- DMA name matching - *difflib.SequenceMatcher*
- Sentiment Analysis - TextBlob:sentence.sentiment.polarity
- Bot Detection - *BotOrNot by Truthy*
- Tableau polygons for DMAs

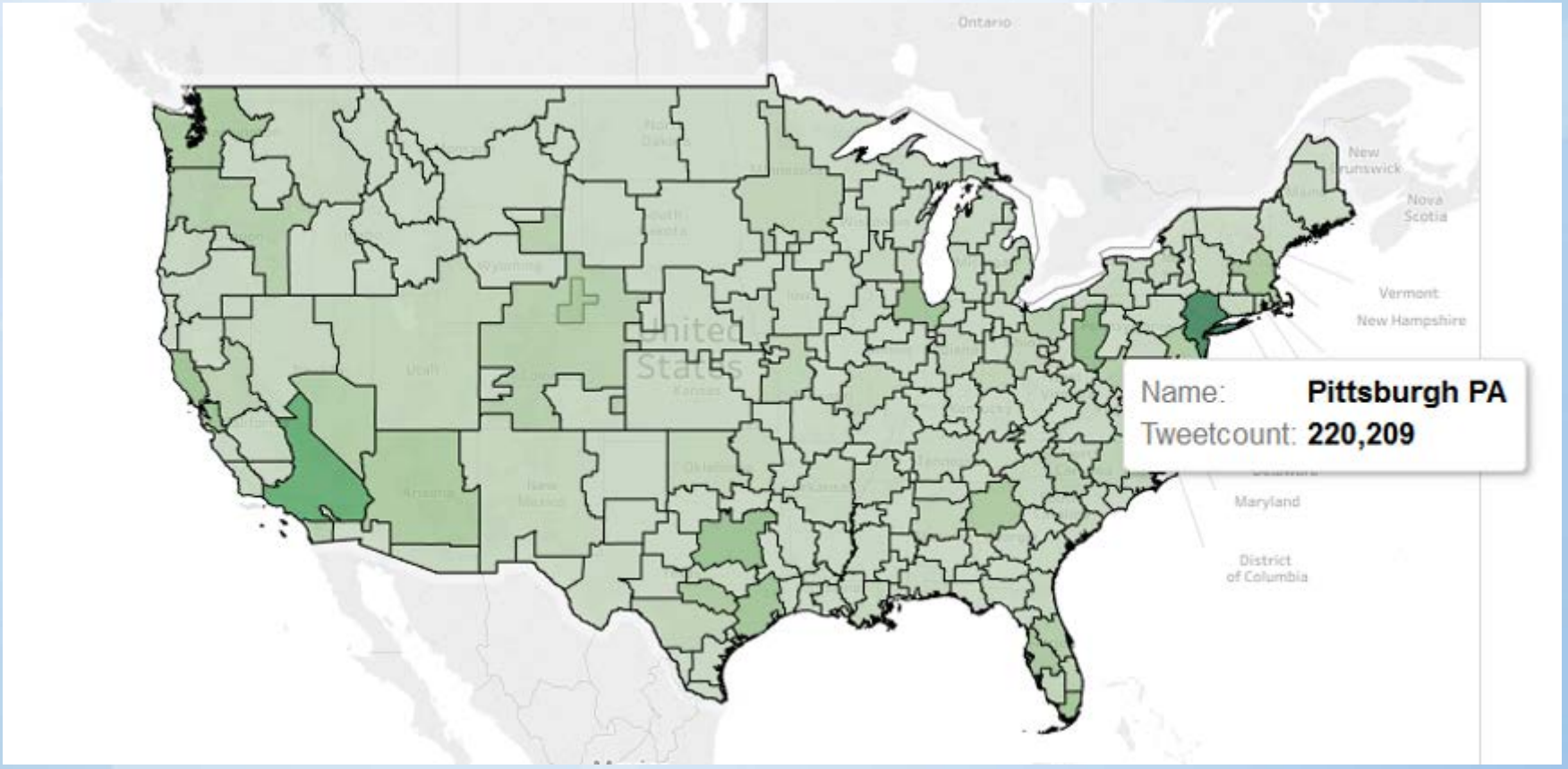
```
import botornot
import pandas as pd

twitter_app_auth = {
    'consumer_key': 'SwtSzHjTH7cUEH5MZLrturc
    'consumer_secret': 'Df9GaO2Qp8DJSKEvYxM
    'access_token': '799126415597715456-Yee
    'access_token_secret': 'i4y5xyXevTKoRjL
}

bon = botornot.BotOrNot(**twitter_app_auth)
```

San Francisco-Oakland-San Jose, CA	San Francisco-Oakland-San Jose CA
Phoenix-Prescott, AZ	Phoenix (Prescott) AZ
Boston, MA/Manchester, NH	Boston MA (Manchester NH)
Cincinnati, OH	Cincinnati OH
Norfolk-Portsmouth-Newport News, NC	Norfolk-Portsmouth-Newport News VA
Greenville-Spartanburg, SC/Asheville-Anderson, NC	Greenville-Spartanburg SC-Asheville NC-Anderson SC

```
#Sentiment analysis of each tweet for subjectivity and polarity
load_df['subjectivity'] = [max([x.subjectivity for x in TextBlob(y).sentences]) for y in load_df['text']]
load_df['polarity'] = [max([x.polarity for x in TextBlob(y).sentences]) for y in load_df['text']]
```

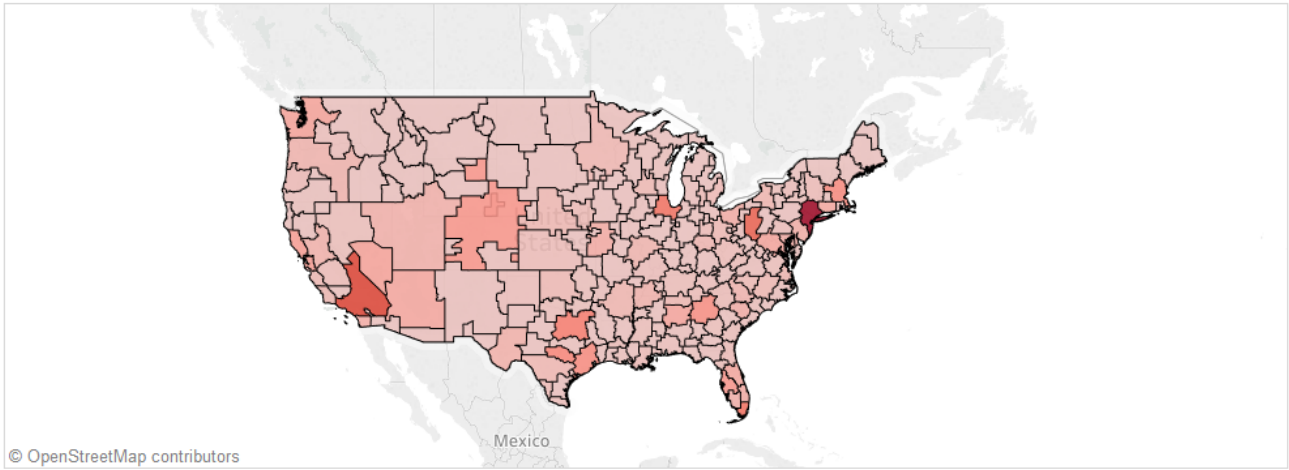
Data Analysis – Ads and Sentiment

Data Analysis – Markets and Tweets

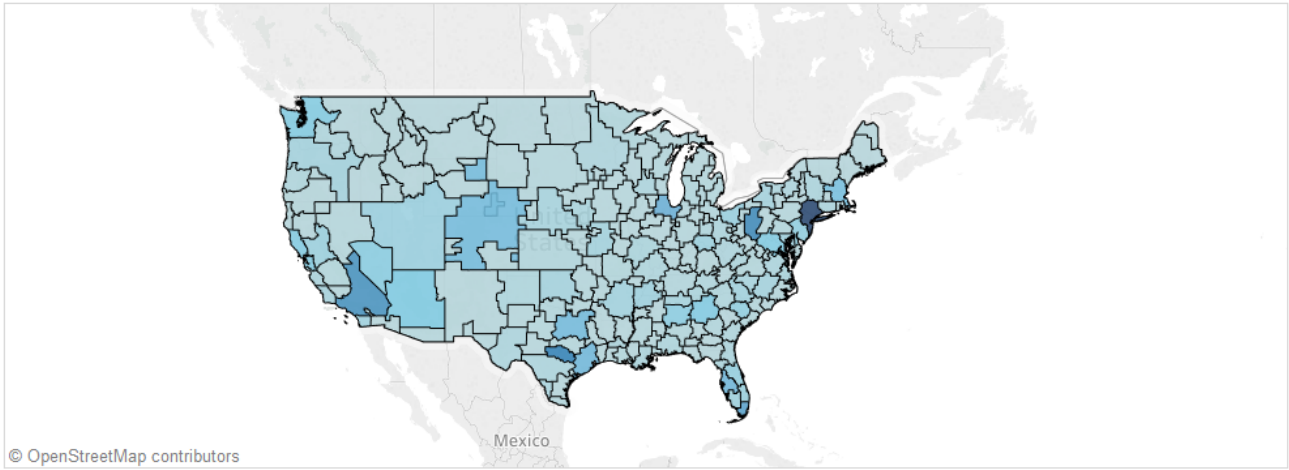


Data Analysis – Candidates and Bots

Trump Bot Tweets- Markets

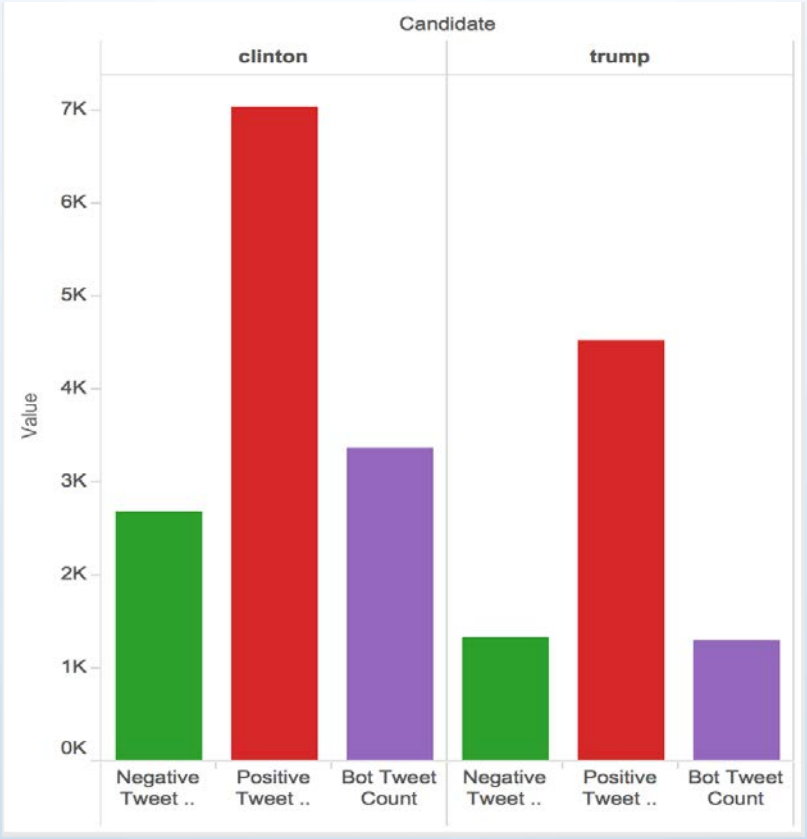


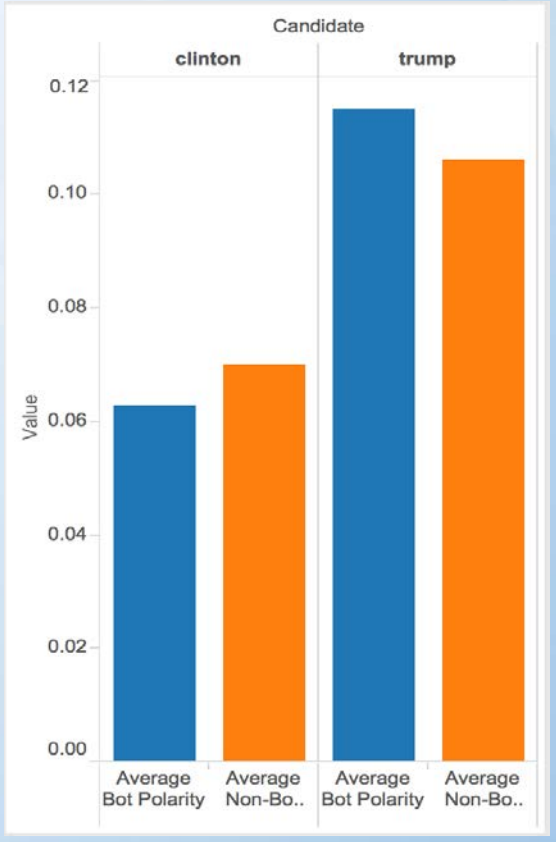
Hillary Bot Tweets - Markets



Data Analysis – Bot Bias

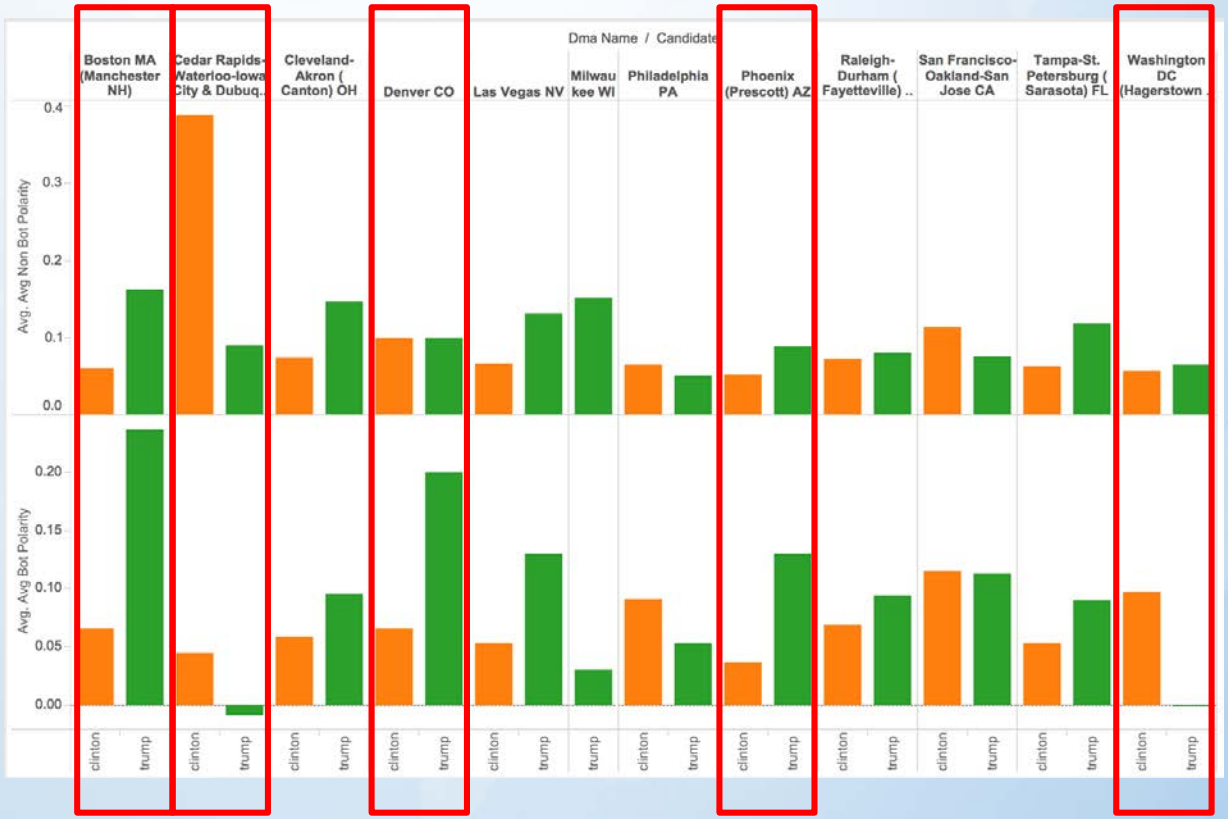
Clinton mentioned heavily by bots -- negatively





Data Analysis – Bot vs Non-Bot

Bot vs Non-Bot sentiment Polarity



Next Steps

- Collect other social media data like Facebook, blogs
- Customize the solution for other elections
- Improved Bot Detection
- Refined Sentiment Analysis