

Twitter influencers' influence on their followers' behaviour

Siu Yat Fung (3036065185)

April 30, 2023

Section 1

Background

Background

- 2016 US election
- Twitter: platform to express ideology & attack opponent¹
- Spread ideology by retweeting
- Major factor triggering January 6 US Capitol attack²

To what extent does Twitter influencers affect their followers' behaviour?

Section 2

Methodology

Methodology

Analyse correlation of tweets between 4 Twitter influencers and their followers in terms of

- affinn³ values
- nrc⁴ emotions
- entity appearance
- context appearance

Section 3

Data

Data

Retrieved tweets twice using Twitter API on 20-4-23 and 27-4-23

- ① Choose 4 accounts from Social Blade <https://socialblade.com/twitter/top/100>
 - @CNN
 - @elonmusk
 - @HillaryClinton
 - @JoeBiden
- ② Request 3000 followers for each influencer account
- ③ request 5000 tweets for each set influencer account followers

Total

- 53053 followers
- 65990 tweets

Section 4

Results

Results

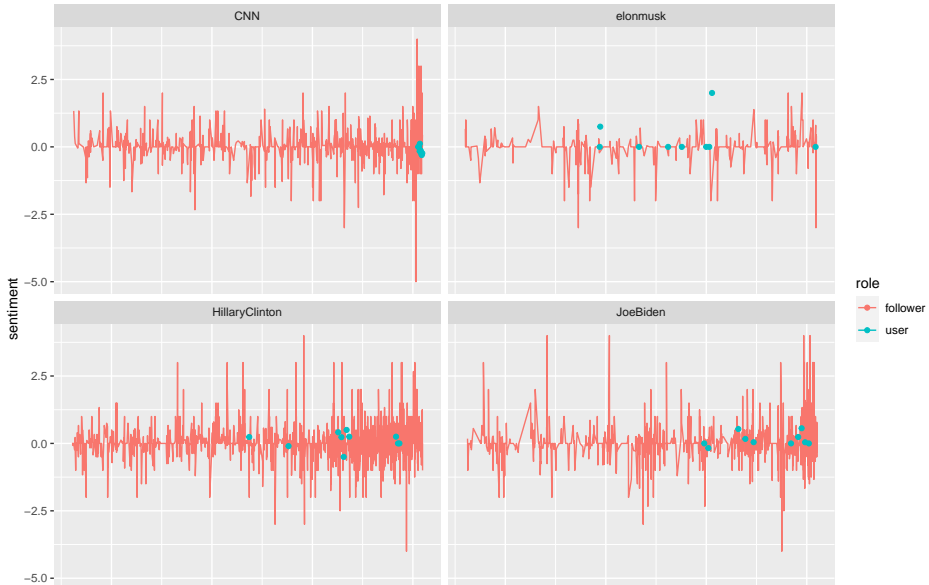
- Analysis performed twice
- Retrieved on 20-4-23 and 27-4-23 separately

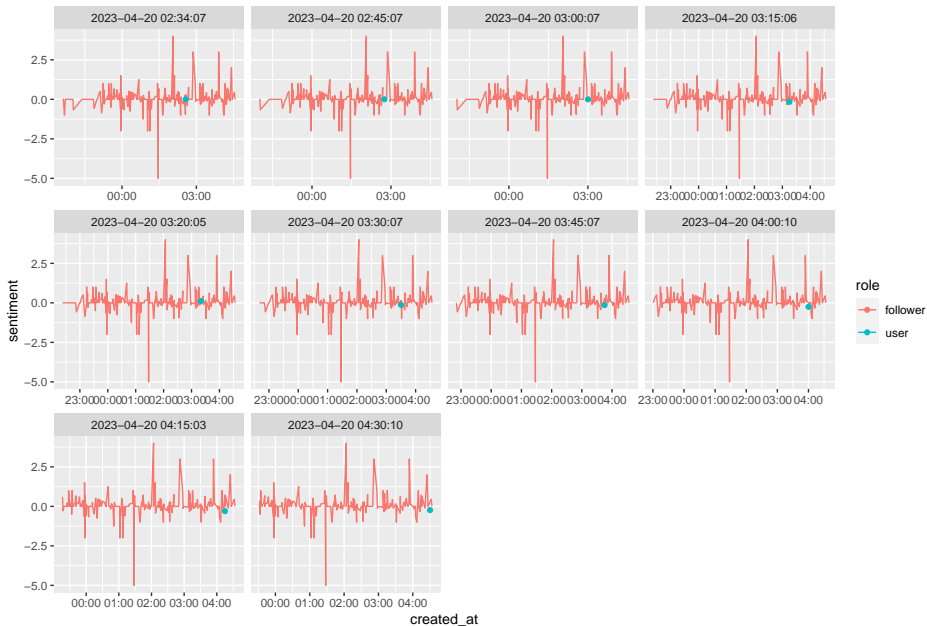
Subsection 1

20-4-23

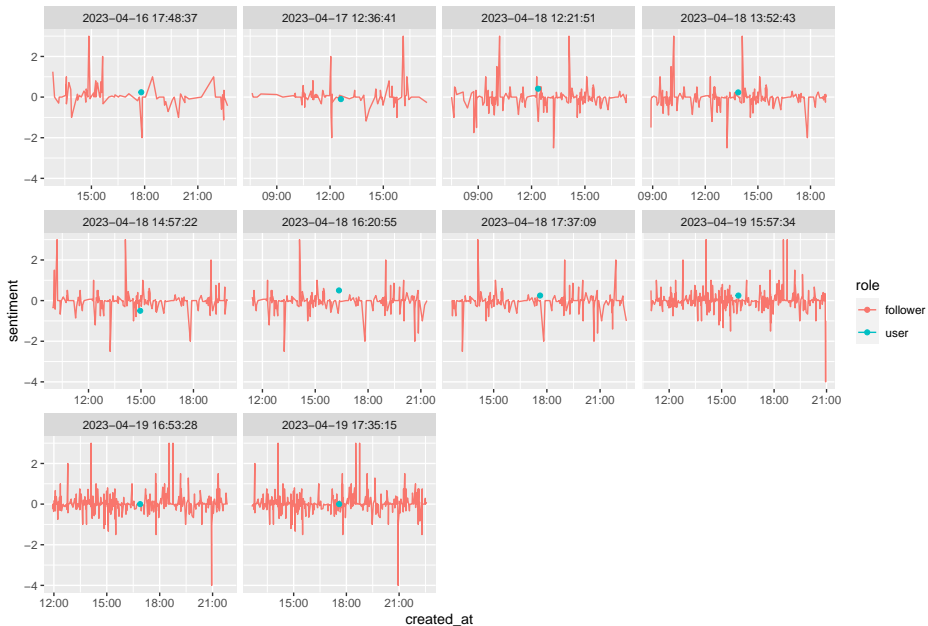
Afinn

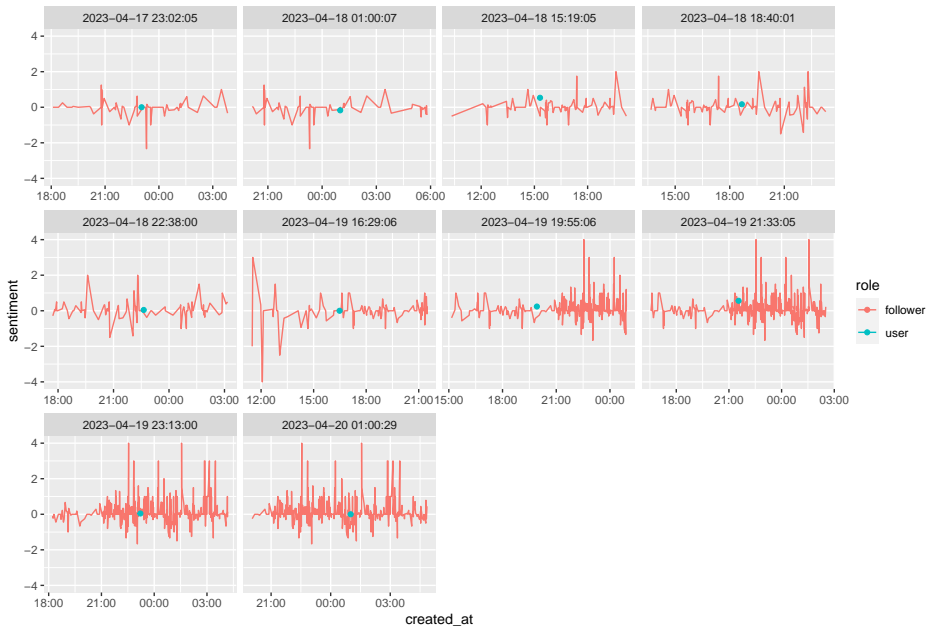
Sentiment values of follower tweets in 7 days



Sentiment values of CNN follower tweets within ± 5 hr time period

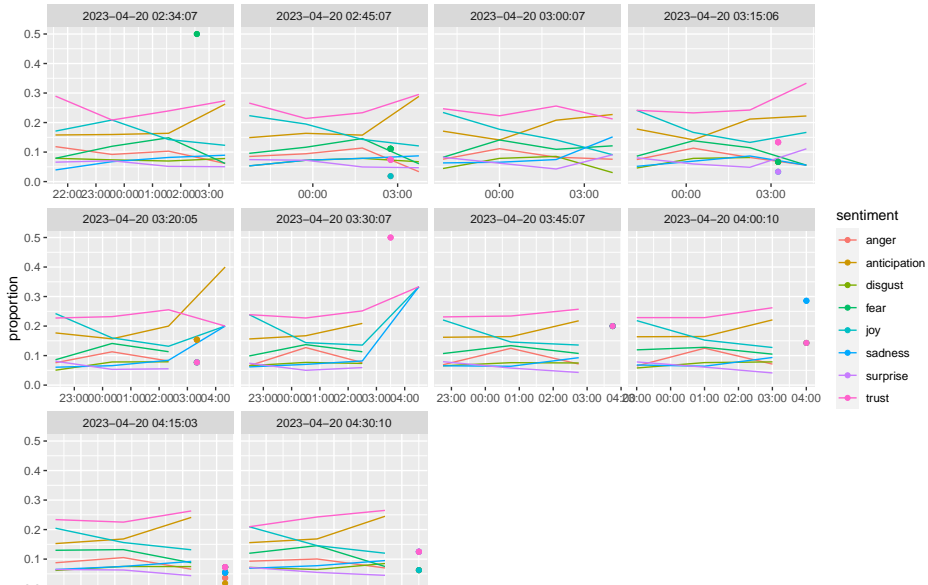
Sentiment values of elonmusk follower tweets within ± 5 hr time period

Sentiment values of HillaryClinton follower tweets within ± 5 hr time period

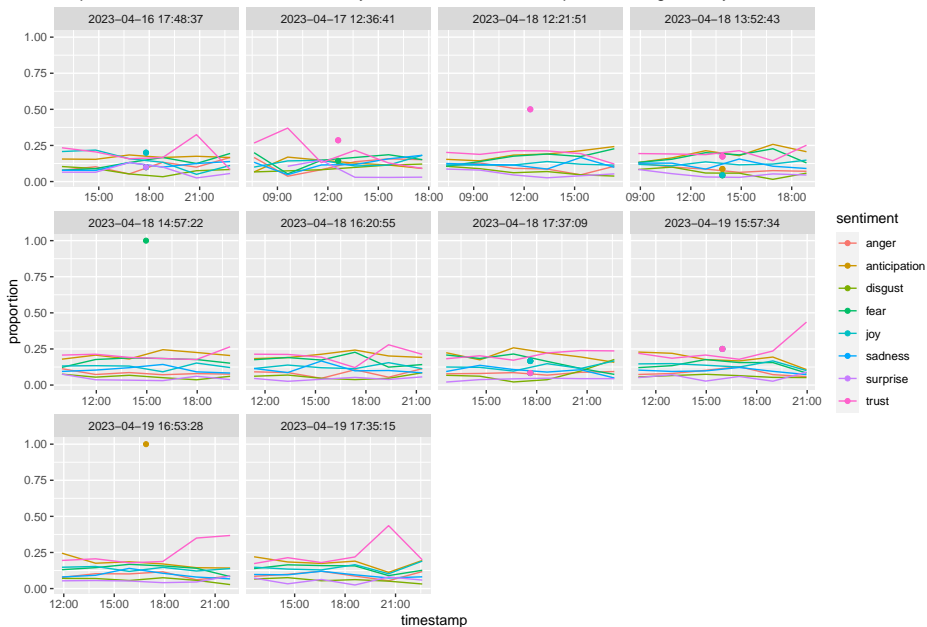
Sentiment values of JoeBiden follower tweets within ± 5 hr time period

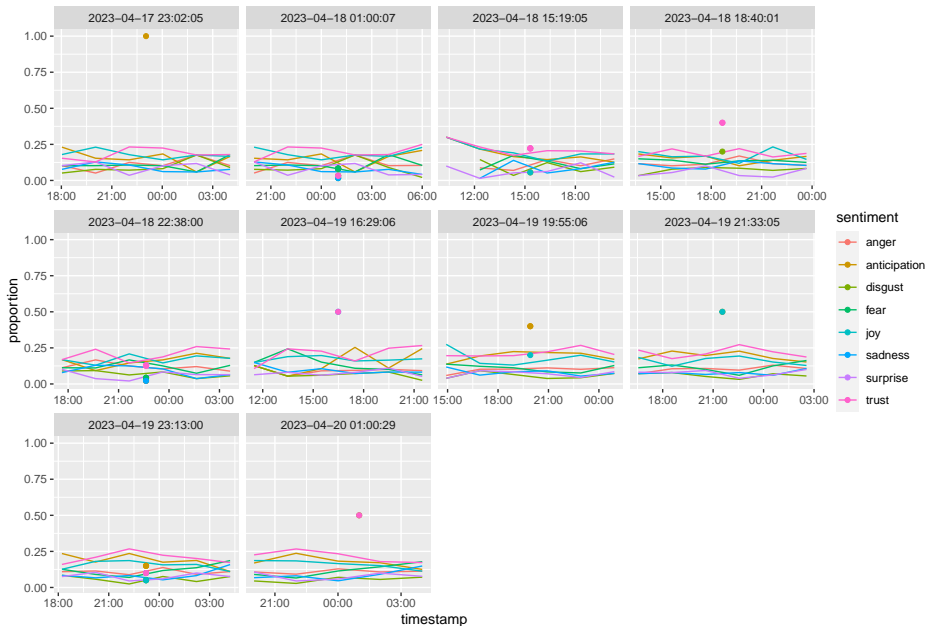
Not much correlation

NRC

Proportion of emotions in tweets of CNN followers in ± 5 hr period averaged every 2hrs

Proportion of emotions in tweets of elonmusk followers in ± 5 hr period averaged every 2hrs

Proportion of emotions in tweets of HillaryClinton followers in ± 5 hr period averaged every 2hrs

Proportion of emotions in tweets of JoeBiden followers in ± 5 hr period averaged every 2hrs

Not much correlation either

Tweet annotations

According to documentation by Twitter:

Tweet annotations offer a way to understand contextual information about the Tweet itself. Though 100% of Tweets are reviewed, due to the contents of Tweet text, only a portion are annotated. ⁵

- Entity annotations (named-entity recognition)
- Context annotations

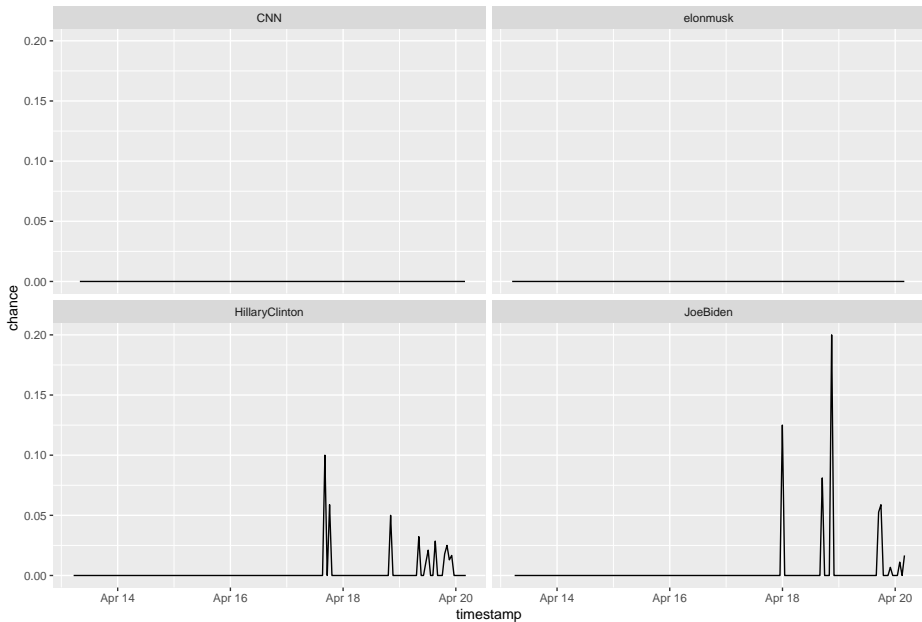
Entity

Twitter documentation:

Entity annotations (NER): Entities are comprised of people, places, products, and organizations. . . . They are programmatically assigned based on what is explicitly mentioned (named-entity recognition) in the Tweet text. ⁵


```
{
  "created_at": "2023-04-19T23:13:00.000Z",
  "text": "When Speaker McCarthy went to Wall Street, ...",
  "entities": {
    "annotations": [
      ... ,
      {
        "start": 30,
        "end": 40,
        "probability": 0.9516,
        "type": "Place",
        "normalized_text": "Wall Street"
      }
    ]
  },
  "id": "1648827065242640384",
  "context_annotations": [ ... ]
}
```

Chance of any entities found in follower tweets only after influencer tweeted the entity



Some influence found in political figures

Context

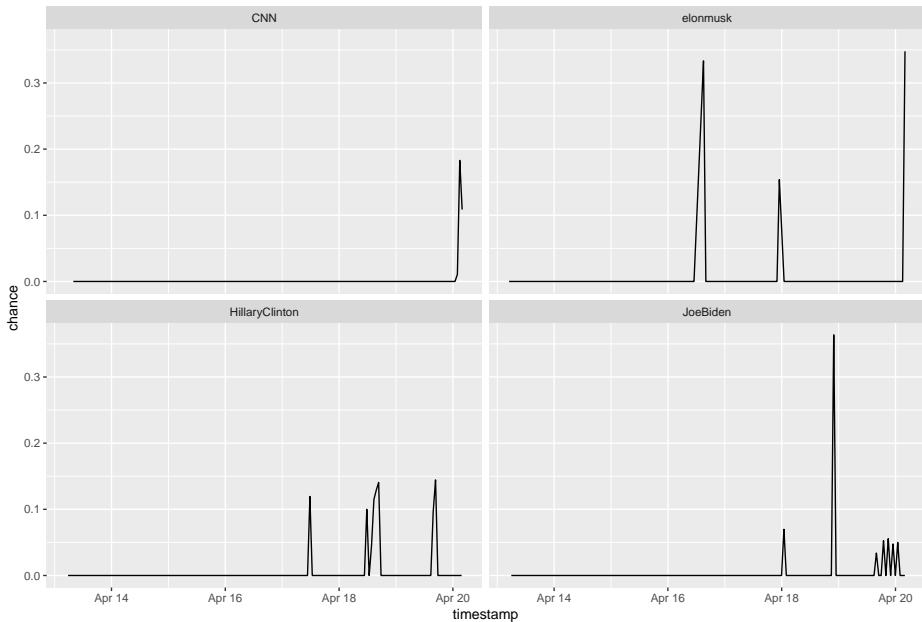
Twitter documentation:

Context annotations: Derived from the analysis of a Tweet's text and will include a domain and entity pairing which can be used to discover Tweets on topics that may have been previously difficult to surface. At present, we're using a list of 80+ domains to categorize Tweets. ⁵

Currently 144753 available context annotation entities⁶

```
[
  {
    "domain": { ... },
    "entity": {
      "id": "1557697333571112960",
      "name": "Technology Business",
      "description": "..."
    }
  },
  {
    "domain": { ... },
    "entity": {
      "id": "808713037230157824",
      "name": "Elon Musk",
      "description": "Elon Musk"
    }
  },
]
```

Chance of context appearing in follower tweets with context accumulated



Higher correlation found in analysing context

Subsection 2

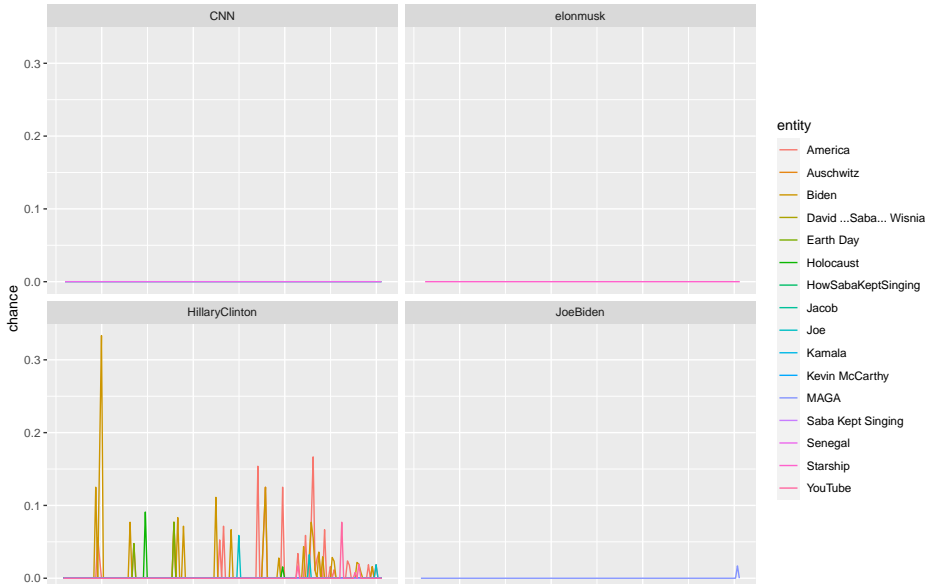
27-4-23

27-4-23

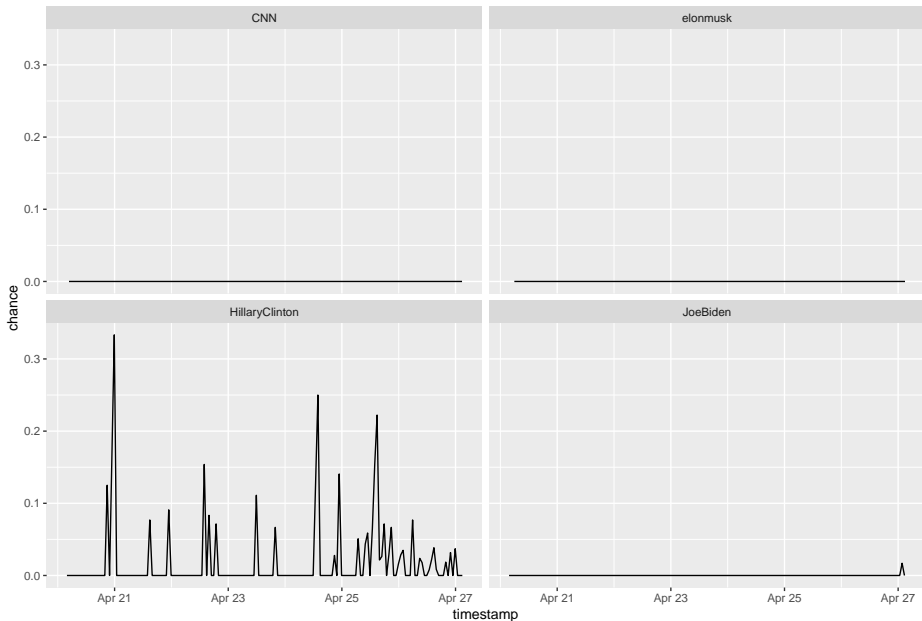
- affinn values and nrc emotions are still chaotic, no correlation between influencer account tweets and follower tweets
- Some correlation in terms of entity and context

Entity

Chance of entities from influencers appearing in follower tweet every hour

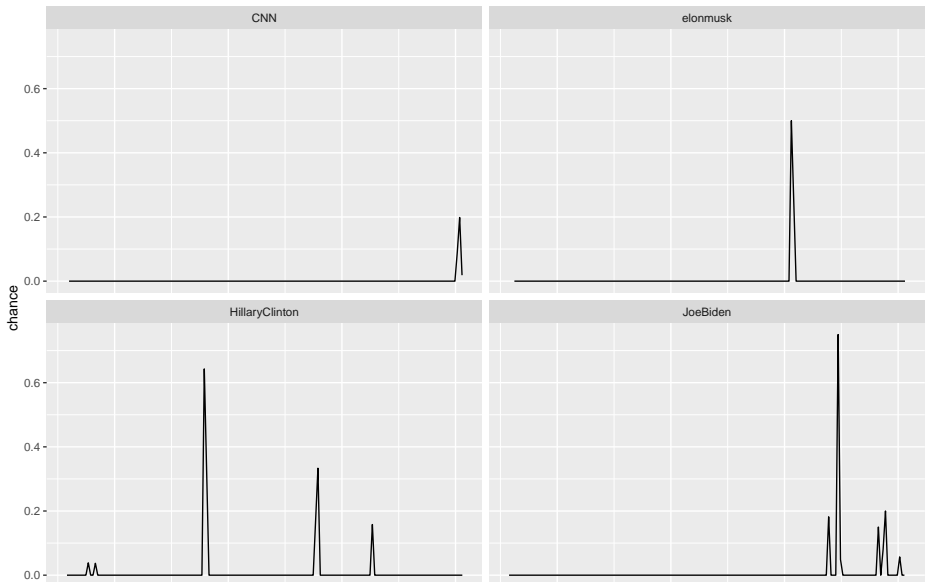


Chance of any entities found in follower tweets only after influencer tweeted the entity

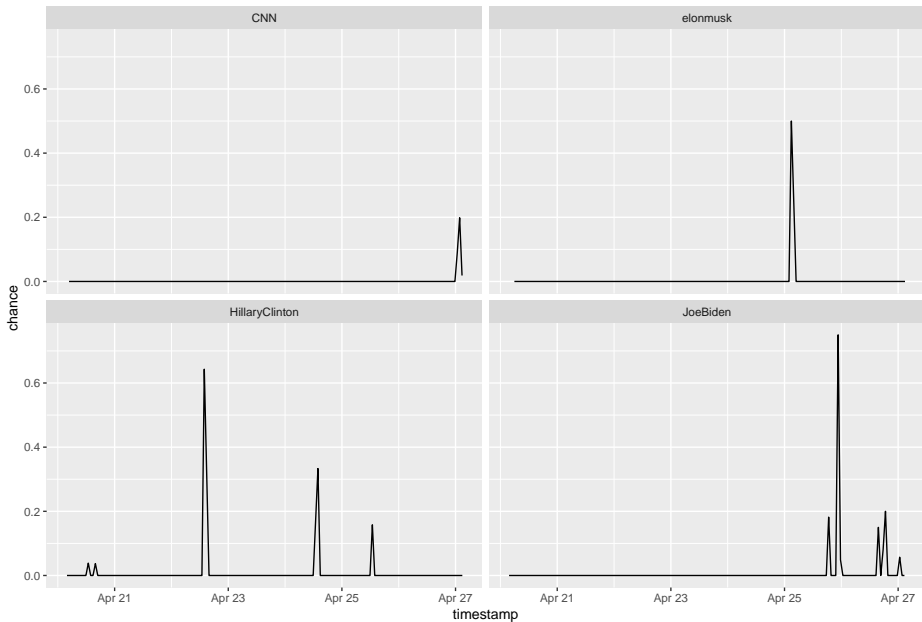


Context

Chance of context found in follower tweets in 1 hour time frames



Chance of context appearing in follower tweets with context accumulated



Section 5

Conclusion

Conclusion

- Some degree of influence in terms of tweet topics (is that true?)
- No direct influence in terms of emotions

Section 6

Limitations

Limitations

- Noise
 - Respective influencer is not followers' only source of tweets
 - Average following count 357.49562924934094
 - Max 66385
- Tweets do not always respond to influencer tweets
 - Post about daily life
- Filtered out retweets and replies
 - Scope of analysis only on how twitter users naturally tweets
- Not analysing attached media on tweets
 - Media sometimes contains most of the context
- Restricted amount of data
 - Using Twitter API with old 'Essential' tier
 - Can only retrieve tweets up to 7 days before time of retrieval
 - 500,000 tweets per month

Section 7

Future directions

Future directions

- More influencers
 - Group influencers and followers according to tweet topics
 - How multiple influencers may affect a group of followers
- Analyse retweet behaviour
 - How information and ideologies are spread from influencers and among followers
- Analyse attached media
 - Extract text from GIF, still image and videos
 - Abstract / Title of a website pointed by URL

Section 8

References

References

- ❶ Granberg-Rademacker, J.S., Parsneau, K. (2018). Tweet You Very Much: An Analysis of Candidate Twitter Usage from the 2016 Iowa Caucus to Super Tuesday. In: Galdieri, C., Lucas, J., Sisco, T. (eds) The Role of Twitter in the 2016 US Election. Palgrave Pivot, Cham. https://doi.org/10.1007/978-3-319-68981-4_3
- ❷ Fuchs, C. (2021). How Did Donald Trump Incite a Coup Attempt? TripleC, 19(1), 246–251. <https://doi.org/10.31269/triplec.v19i1.1239>
- ❸ Finn Årup Nielsen (2011), “A new ANEW: Evaluation of a word list for sentiment analysis in microblogs”, Proceedings of the ESWC2011 Workshop on 'Making Sense of Microposts': Big things come in small packages (2011) 93-98
- ❹ Saif M. Mohammad and Peter Turney. (2013), “Crowdsourcing a Word-Emotion Association Lexicon.” Computational Intelligence, 29(3): 436-465. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-8640.2012.00460.x>
- ❺ <https://developer.twitter.com/en/docs/twitter-api/annotations/overview>
- ❻ <https://github.com/twitterdev/twitter-context-annotations>
- ❼ <https://github.com/9tin9tin9/COMP2501-project>