



Team E presents

ANTI-VAX IN TODAY'S SOCIETY

Social Network Analysis
Group Presentation

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TEAM E: ANTI-VAX

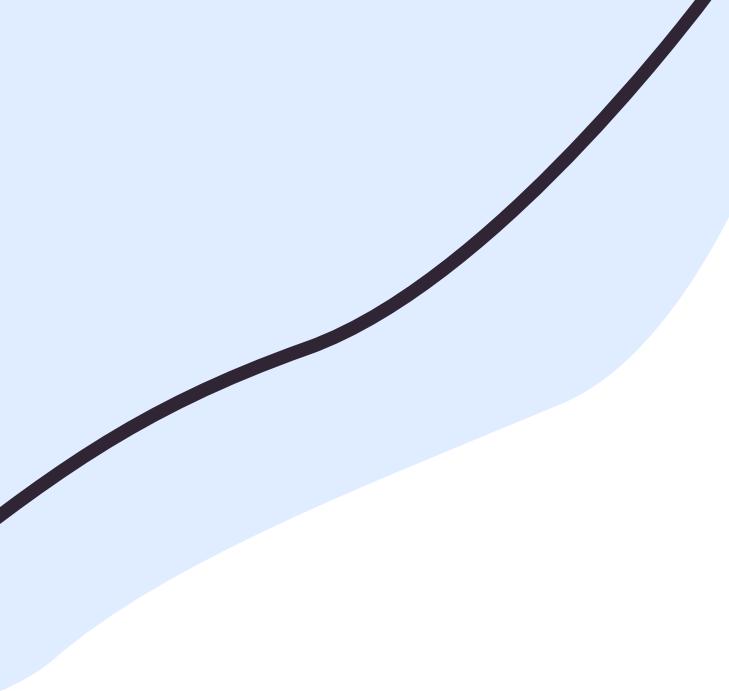




ANTI-VAX

Overview

- Edward Jenner: Smallpox Vaccination
- Andrew Wakefield: Lancet MMR Vaccination and Autism
- Immune Compromised Individuals
- World Health Organization
- COVID-19 Vaccination



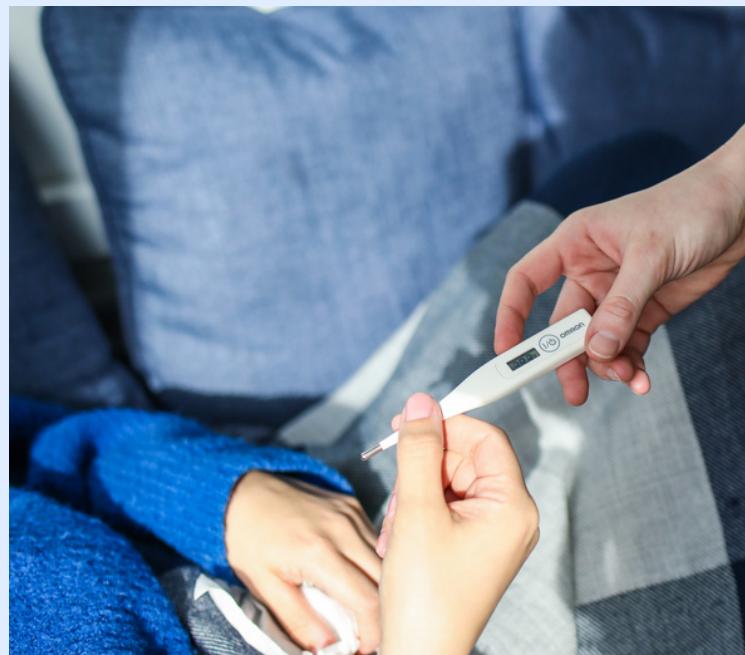
Keep In Mind:

Anti-vaccination has been identified as one of the top 10 global health threats of 2019 and WHO even had the first infodemiology conference in Summer 2020.

World Health Organization



OBJECTIVES



Anti-Vax

Identify problems regarding Anti-Vaccination.

Twitter

Scrape Twitter API
#Hashtags
Data Cleaning
Python & NLP Technique

Extracted Information

Limit the spread of misinformation and effectively push more accurate information to the Anti-Vax community.

SCRAPING TWITTER API



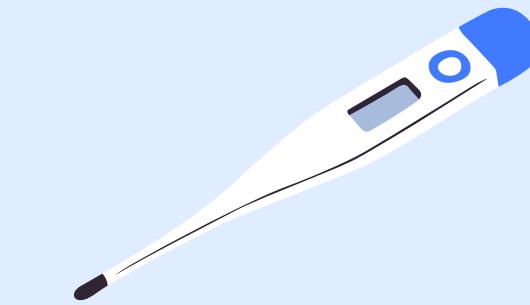
Anti-Vax Hashtags & Limitations



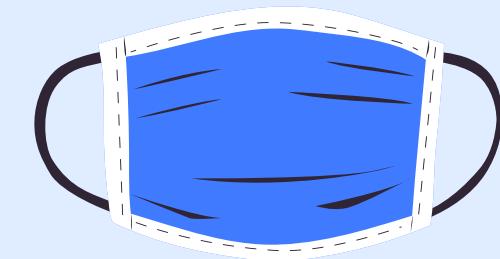
#CDCwhistleblower
#cdcfraud



#vaccineinjury



#NOVAX



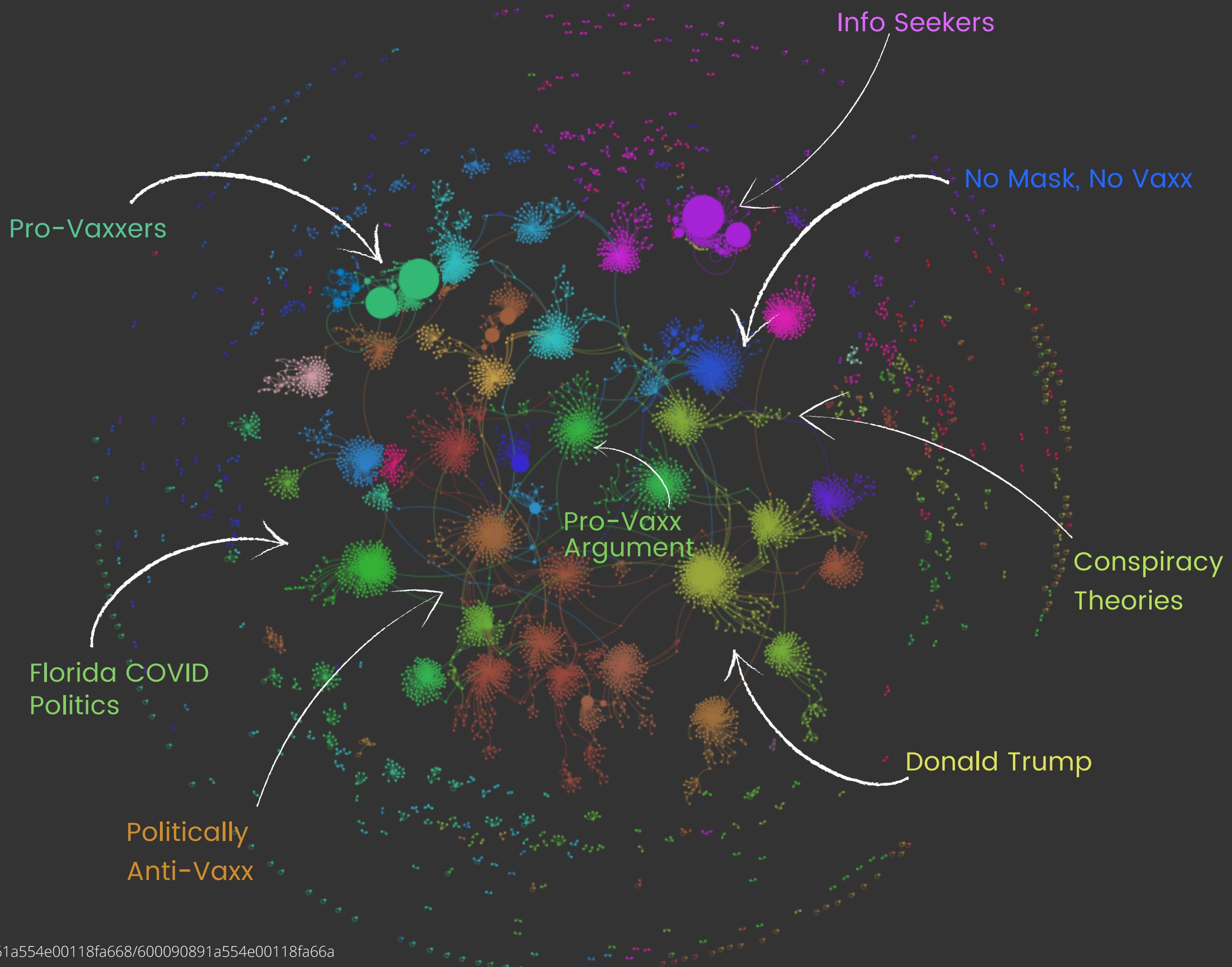
#Antivax



#vaxed

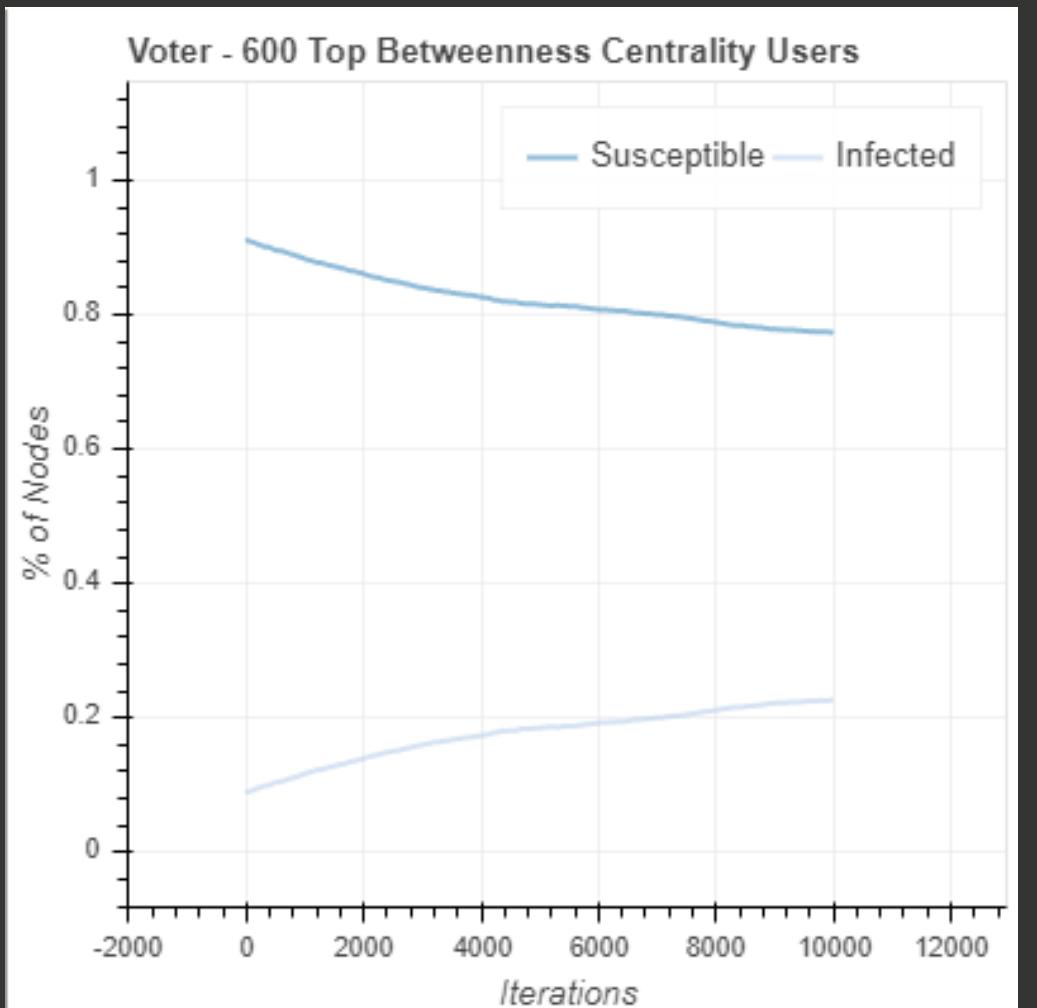
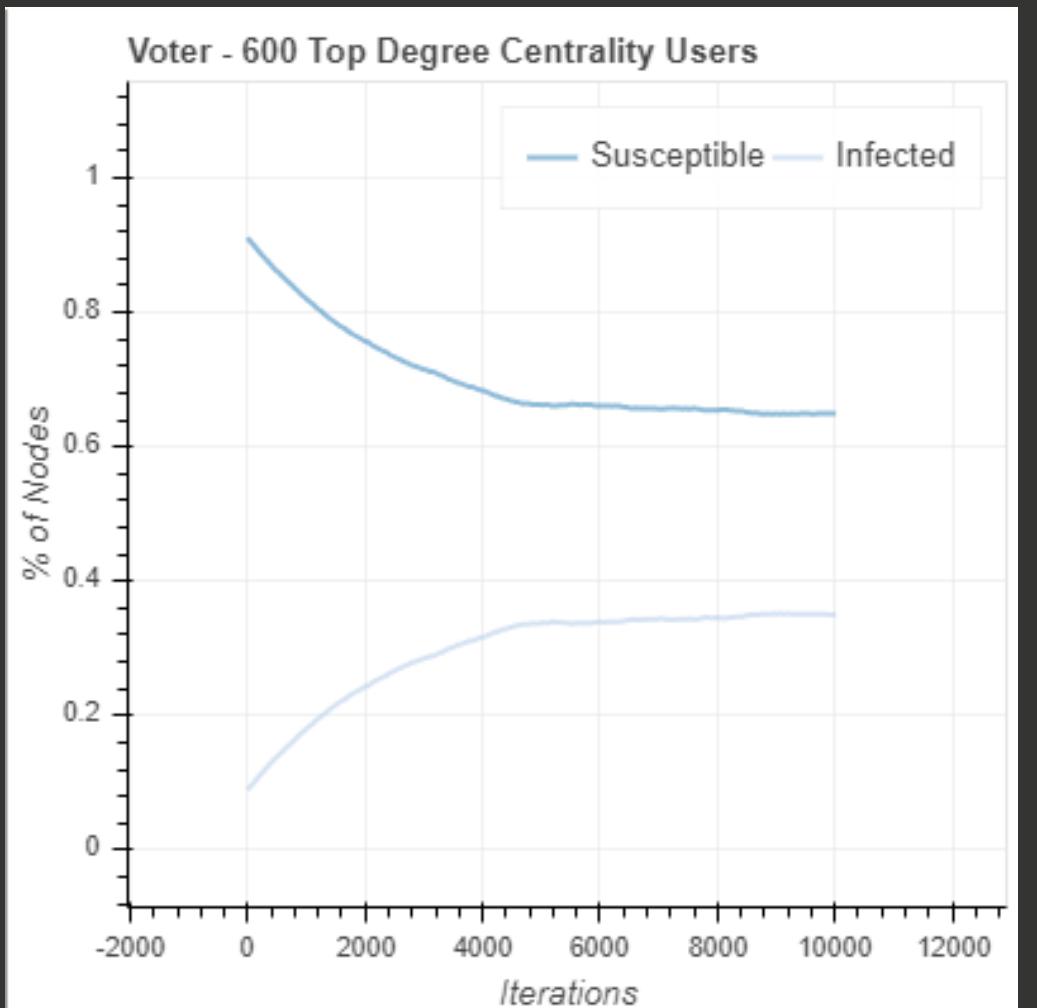
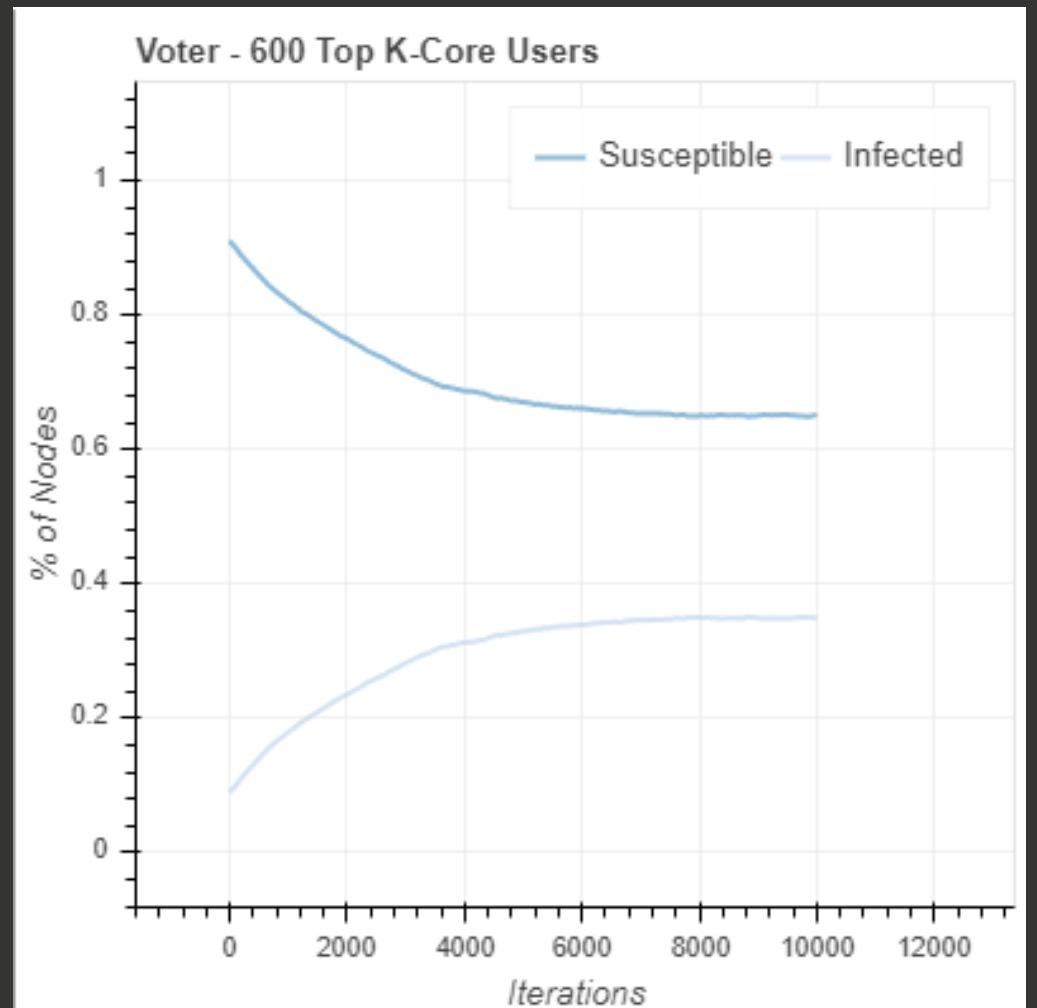
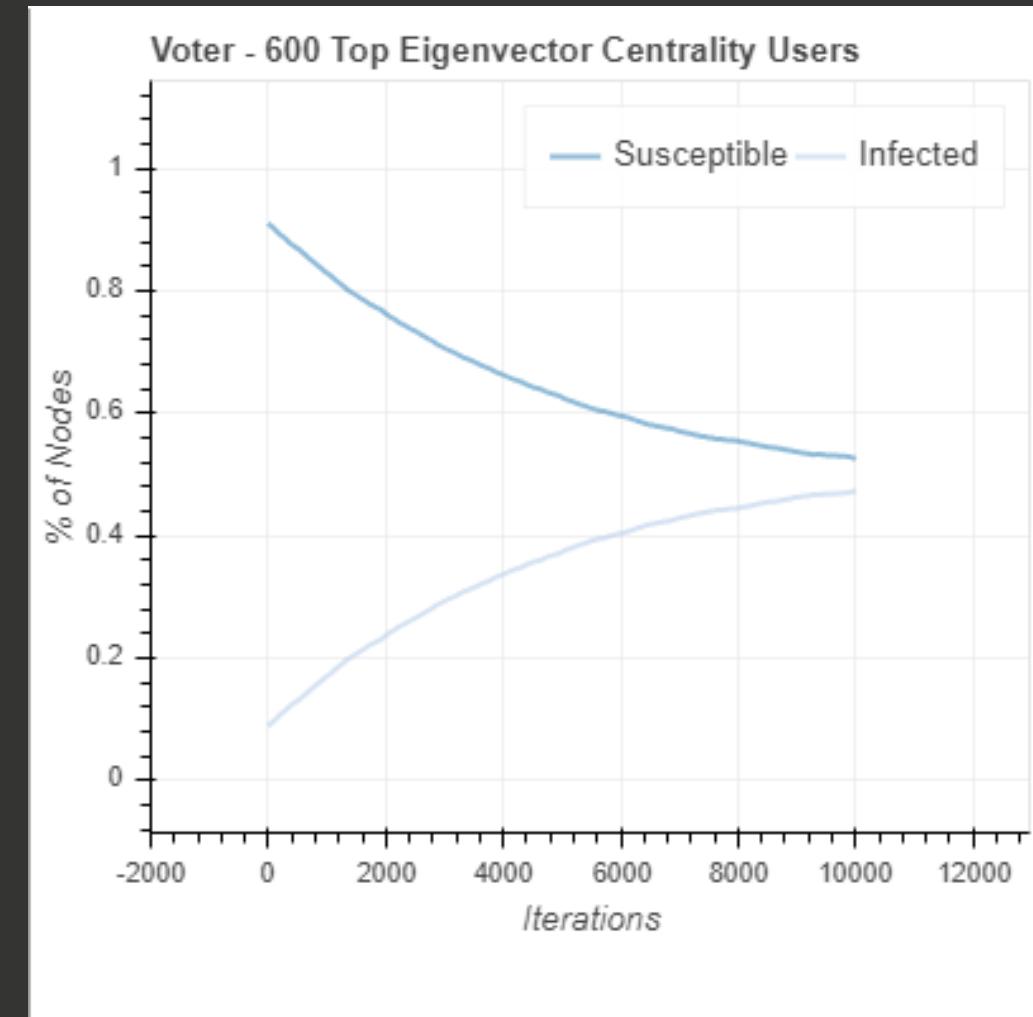
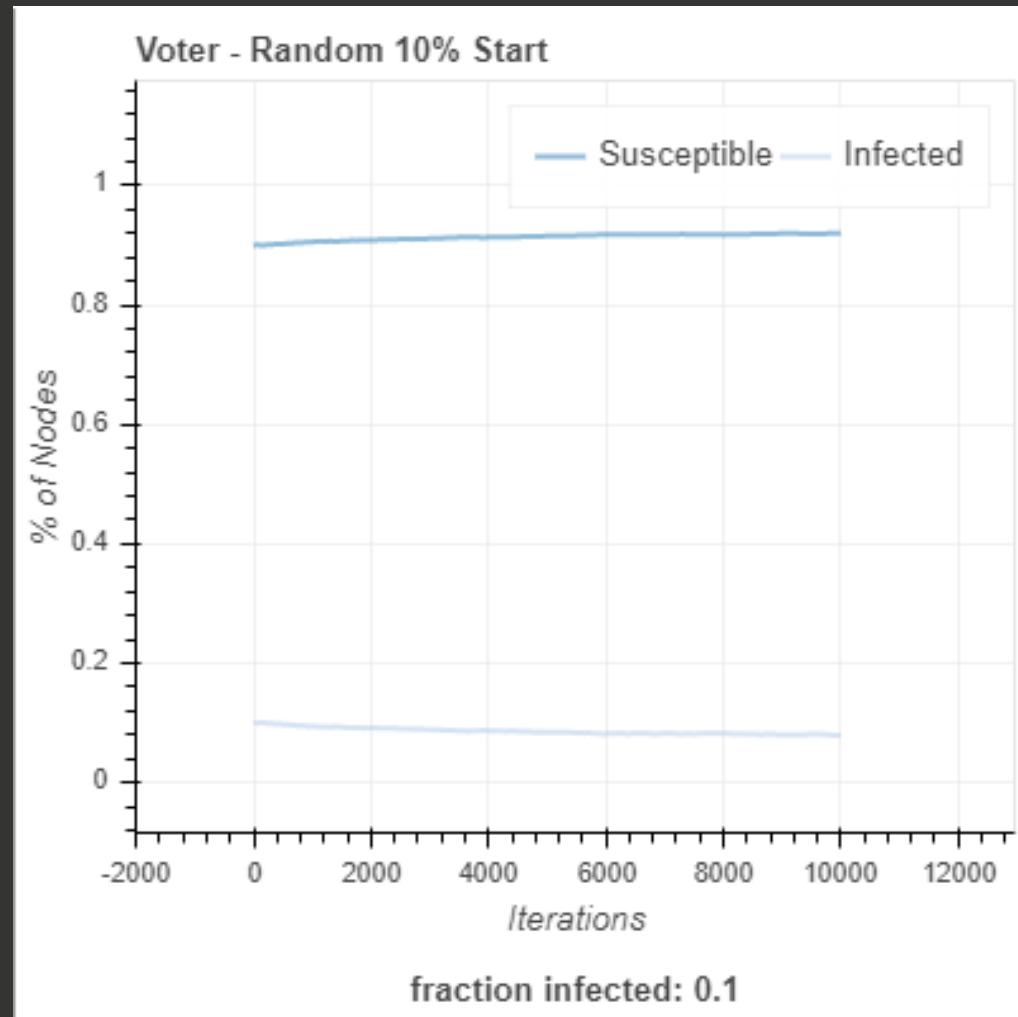
User Engagement

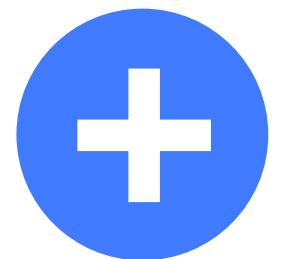
Tweets: 8,946
Nodes: 6,684
Edges: 6,834
Louvain Communities: 500+
Reciprocity: 0.074
Node size: Betweenness Centrality
Edge size: Weighted
Features:
- Directed
- Weighted
- Self-Loops
Largest Connected Component:
Diameter: 24 (if undirected)
Avg. Shortest Path Length: 6.856
(if undirected)



DIFFUSION MODEL

Voters Opinion





EVALUATE CENTRALITY METRICS

Know your metrics!





Closeness Centrality

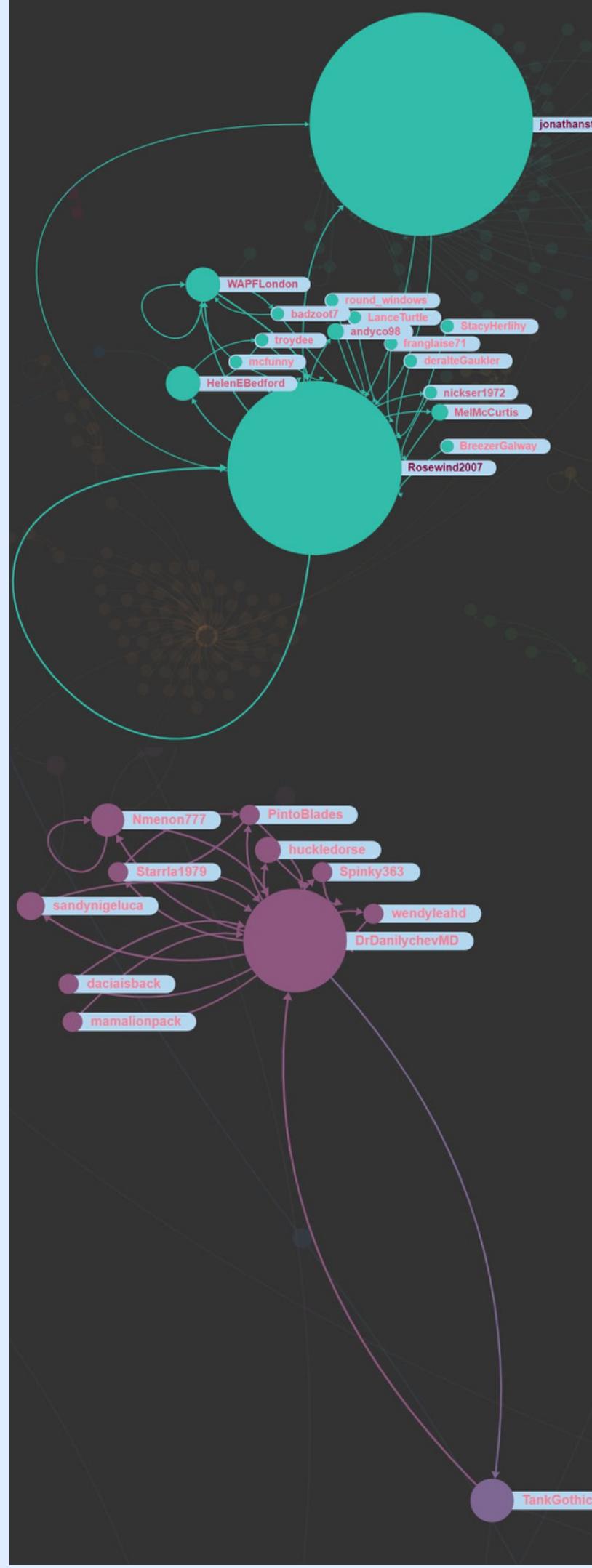
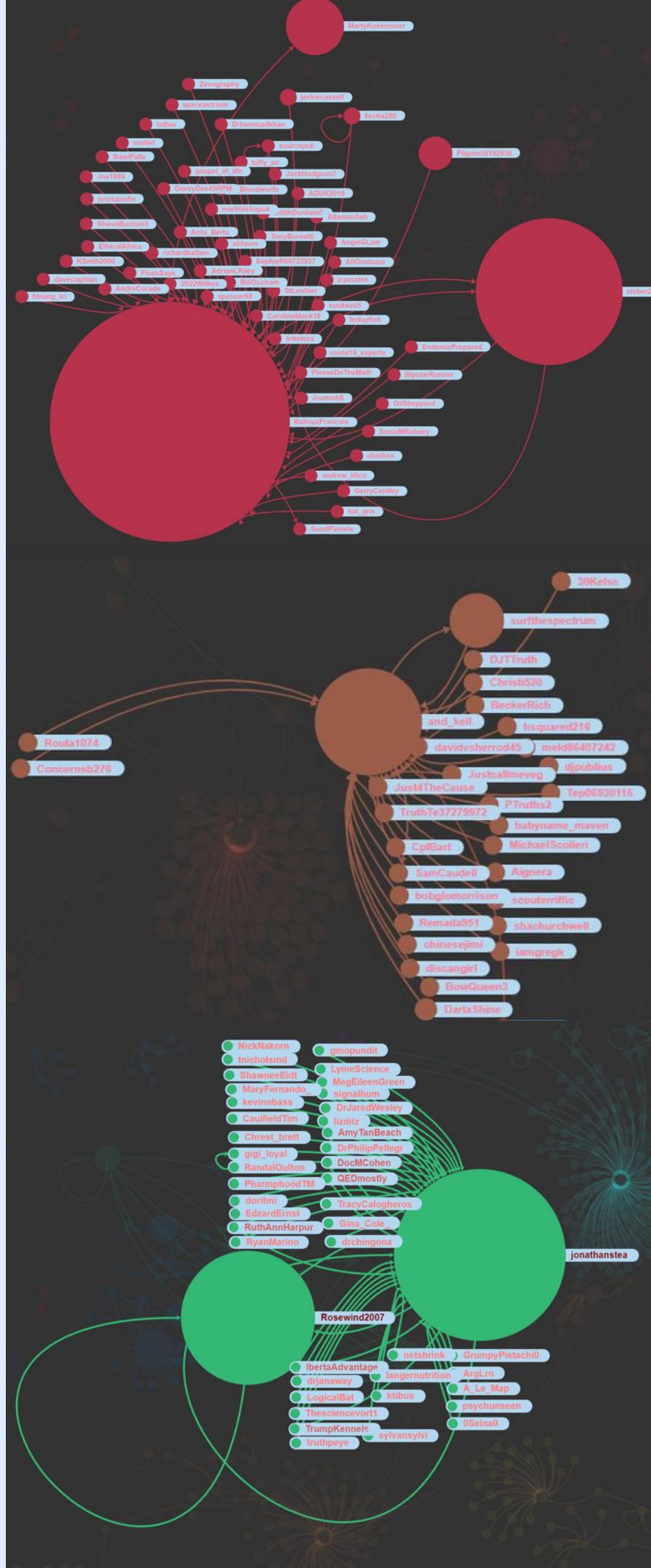
An actor can easily interact with all other actors.

Degree Centrality

Central nodes are those that have most links with other nodes.

Users with Top Degree Centrality

	Name	betweenness_centrality	degree_centrality	eigenvector_centrality	closeness_centrality
1700	realDonaldTrump	0.000000	0.067784	0.000000	0.067804
4533	GeoRebekah	0.000000	0.044740	0.000000	0.044647
4535	ChrisWickNews	0.000000	0.037558	0.000000	0.035222
3035	DrMadej	0.000000	0.036062	0.001748	0.034795
5504	gtconway3d	0.000000	0.026485	0.000000	0.026187
4534	JosephJFlynn1	0.000000	0.024989	0.000000	0.023034
1579	TeamTrump	0.000000	0.024540	0.000000	0.024412
4450	marklevinshow	0.000000	0.024540	0.000000	0.024543
3012	simondolan	0.000000	0.024241	0.000000	0.024226
6557	AndrewYang	0.000000	0.023492	0.000000	0.023515



Betweenness Centrality

Central actors are those that have "Control" of other pairs of actors.

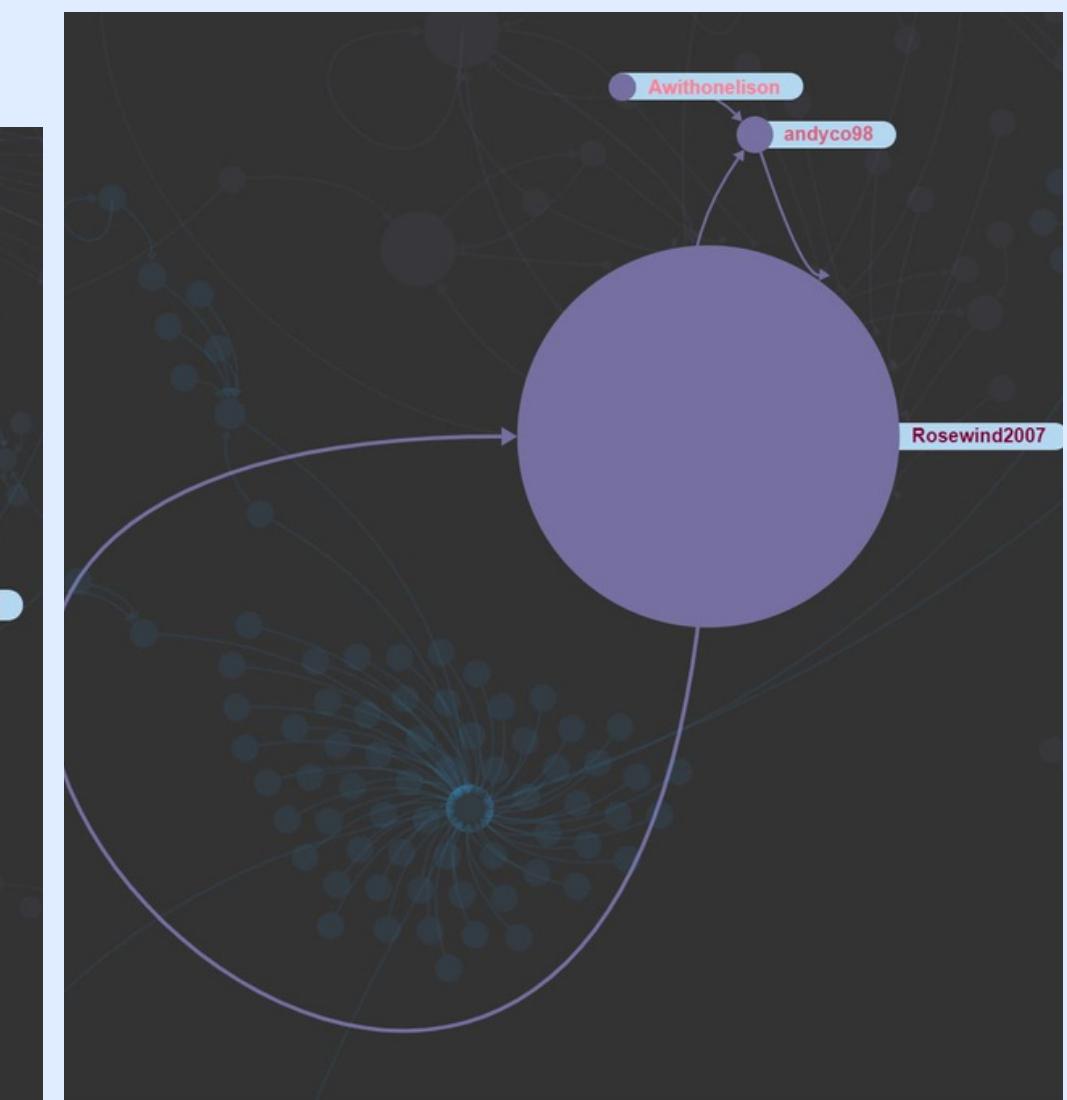
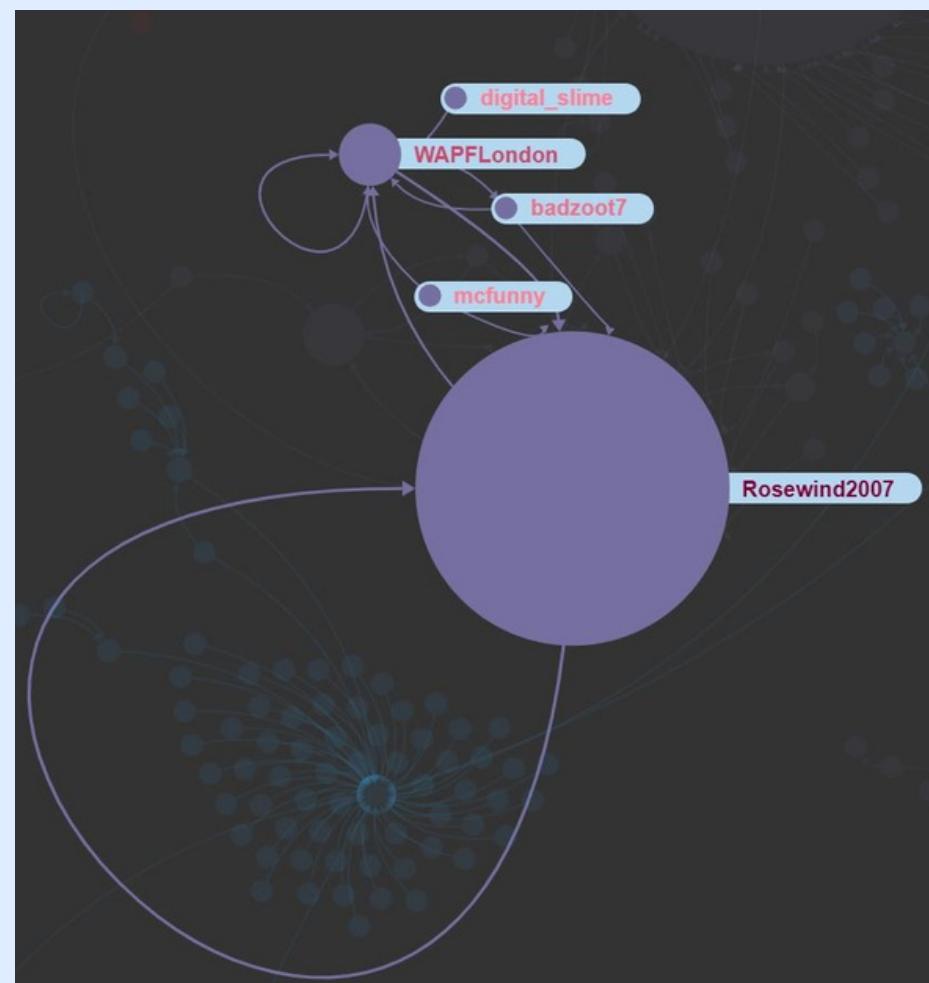
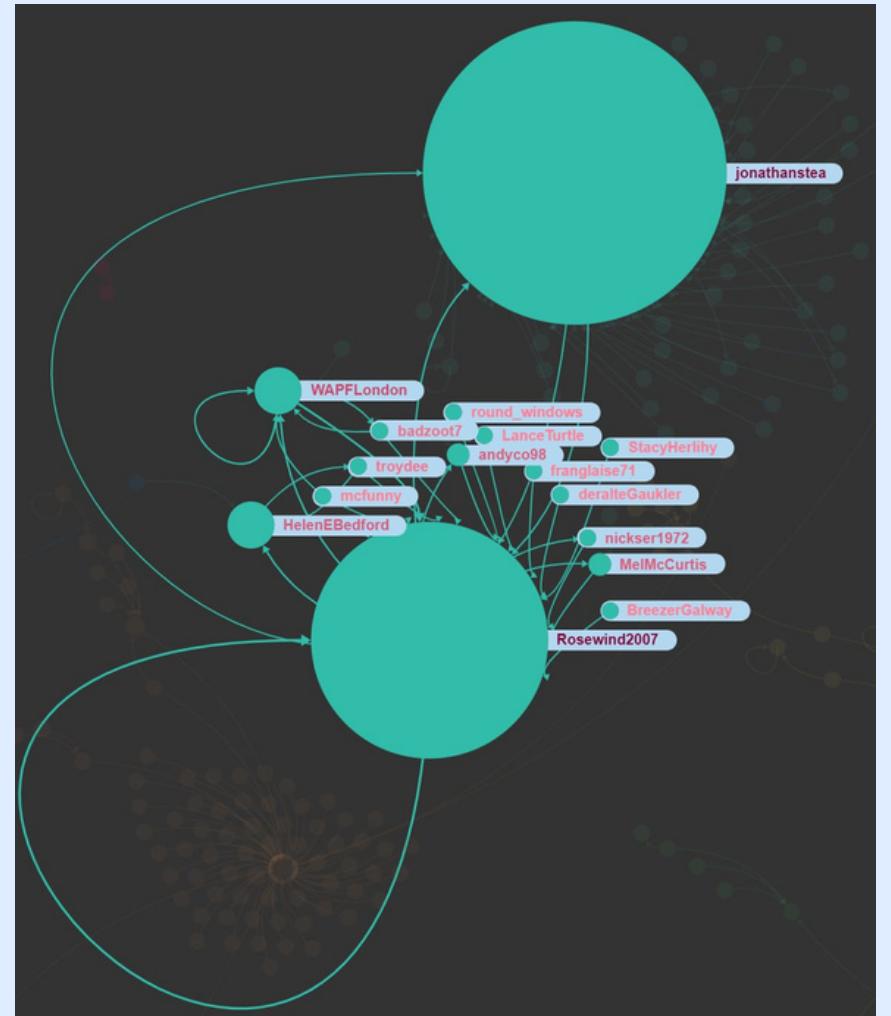
Users with high betweenness are important as information often passes through one community or cluster of the user to another.

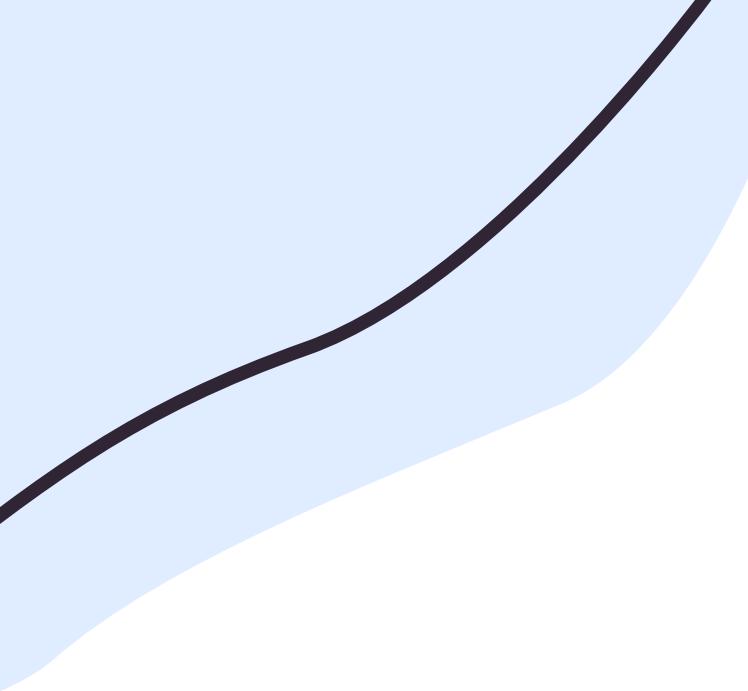
More accurate and informational tweets should be directed to credible users with high betweenness centrality as it will reach different clusters of users on Twitter.

Eigenvector Centrality

Eigenvector centrality generalizes degree centrality by incorporating the importance of the neighbors.

Rosewind2007, jonathanstea, and DrDanilychevMD, have a high eigenvector centrality, meaning they have a connection with users who are considered more important in the topic.

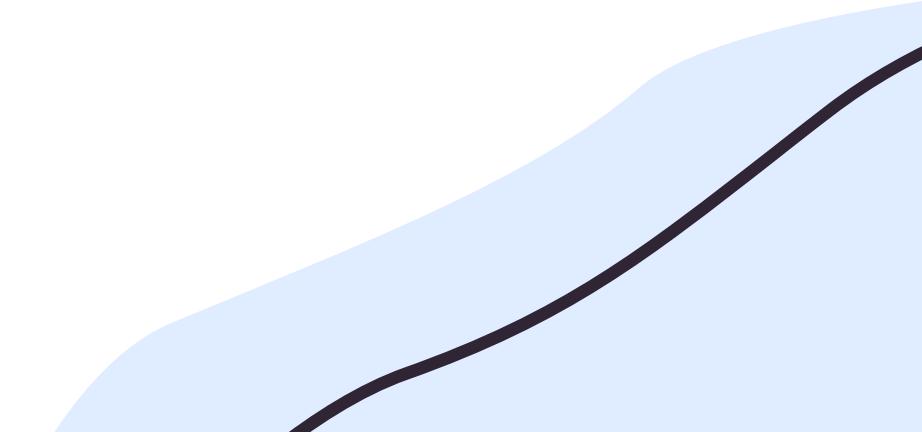




Keep In Mind:

We are not taking any particular sides, but
we want to limit the spread of
misinformation and effectively push more
accurate information.

TEAM E, Advocate for Accurate Information





TEAM E

the best team



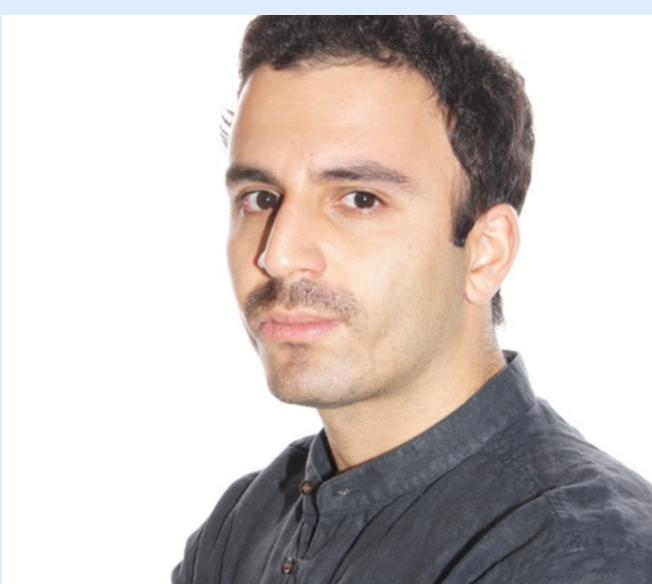
Eun Suk Hong
Deborah Cheng



Laura Frazer
Albert Sehnaoui



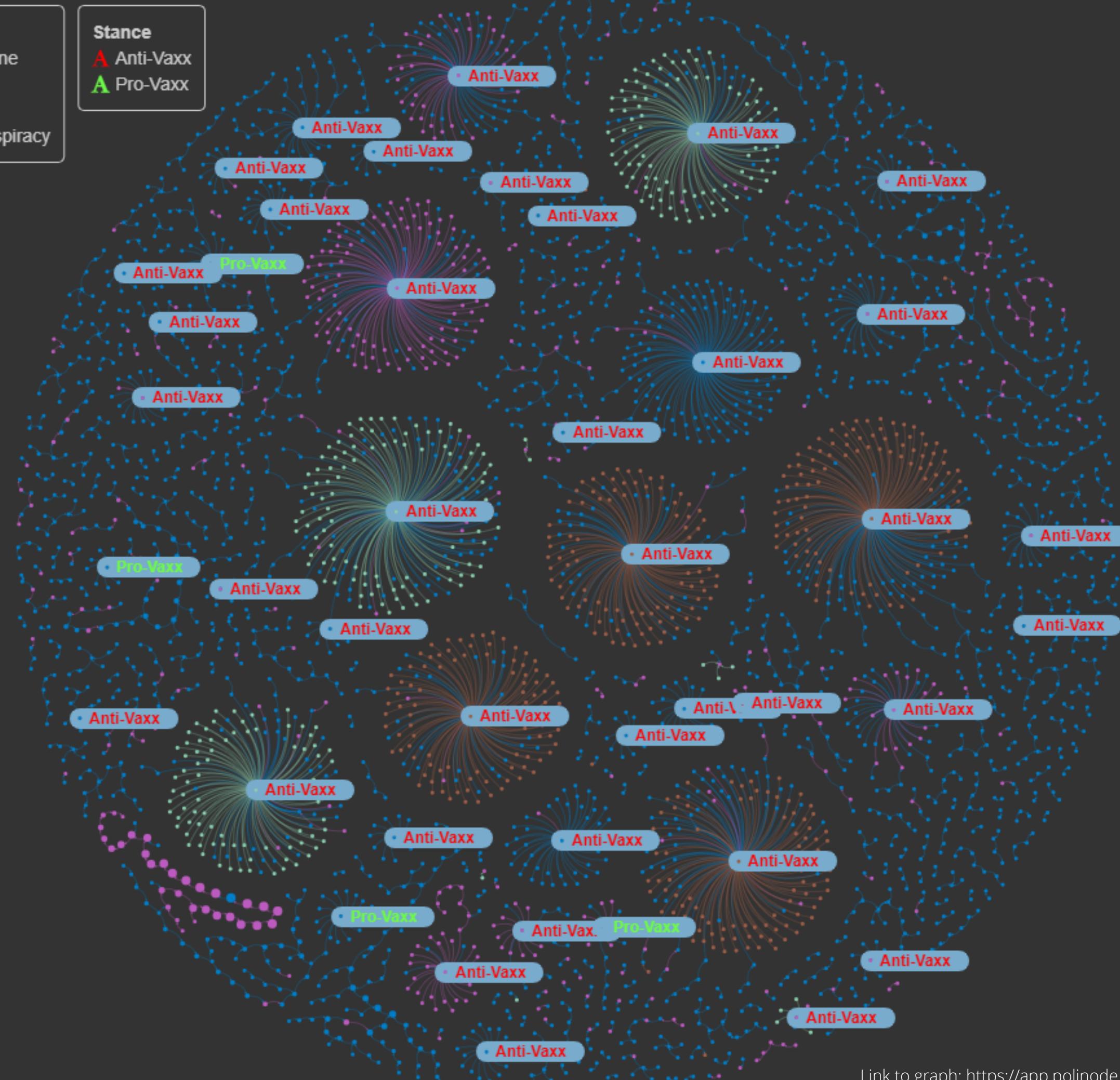
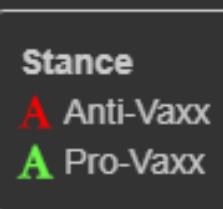
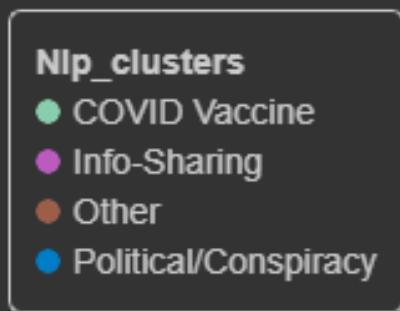
Vasilis Sagiannos
Emily Yorke





FOR MORE INFORMATION

Please don't hesitate to ASK questions

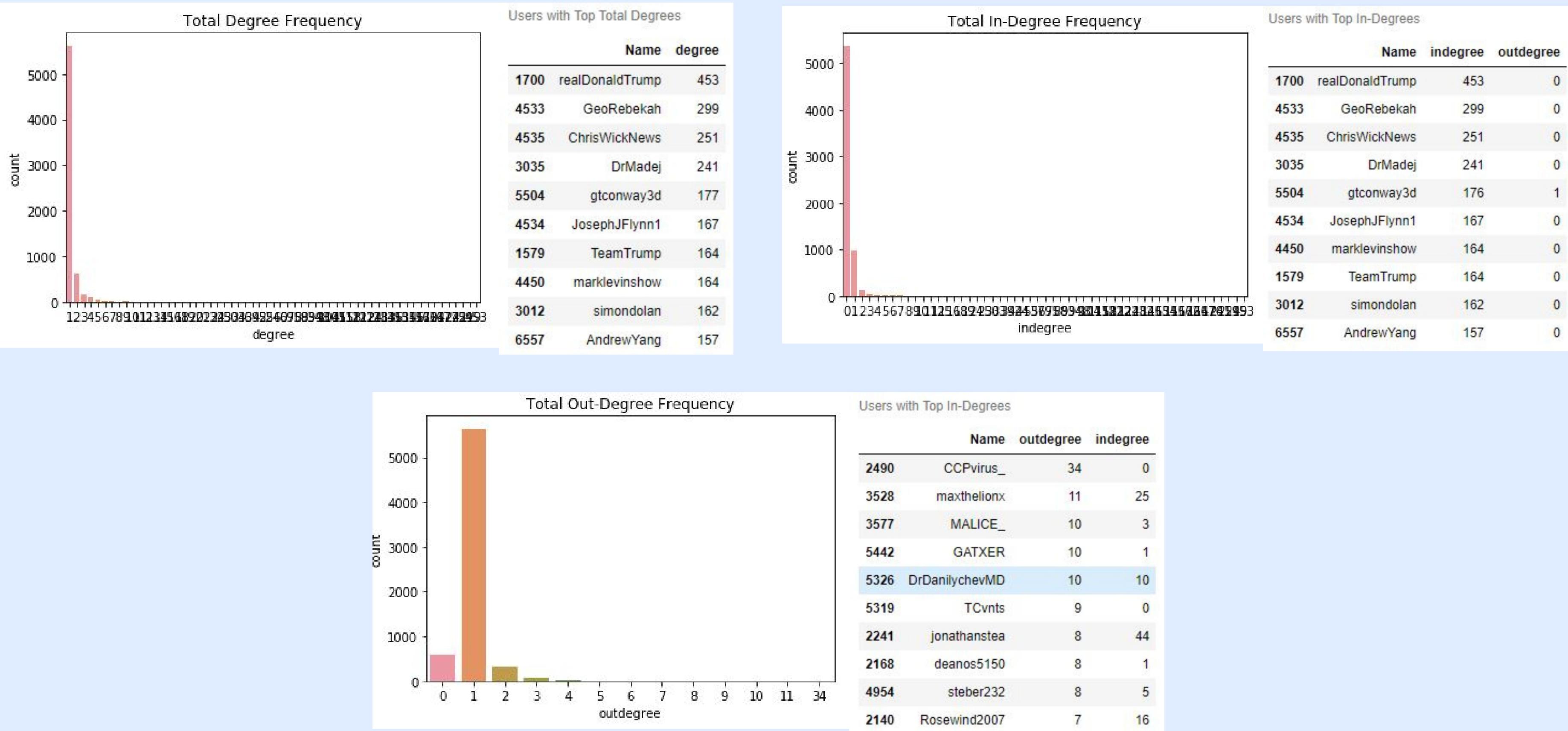


Tweets

Topics:

- Anti-Vaxx: 90%+
- Pro-Vaxx: 5-8%
- Others: 1 - 2%

Degrees



Top Centralities

Users with Top Closeness Centrality

	Name	betweenness_centrality	degree_centrality	eigenvector_centrality	closeness_centrality
1700	realDonaldTrump	0.000000	0.067784	0.000000	0.067804
4533	GeoRebekah	0.000000	0.044740	0.000000	0.044647
4535	ChrisWickNews	0.000000	0.037558	0.000000	0.035222
3035	DrMadej	0.000000	0.036062	0.001748	0.034795
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1579	TeamTrump	0.000000	0.024540	0.000000	0.024412
3012	simondolan	0.000000	0.024241	0.000000	0.024226
6557	AndrewYang	0.000000	0.023492	0.000000	0.023515
4534	JosephJFlynn1	0.000000	0.024989	0.000000	0.023034

Users with Top Degree Centrality

	Name	betweenness_centrality	degree_centrality	eigenvector_centrality	closeness_centrality
1700	realDonaldTrump	0.000000	0.067784	0.000000	0.067804
4533	GeoRebekah	0.000000	0.044740	0.000000	0.044647
4535	ChrisWickNews	0.000000	0.037558	0.000000	0.035222
3035	DrMadej	0.000000	0.036062	0.001748	0.034795
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3012	simondolan	0.000000	0.024241	0.000000	0.024226
6557	AndrewYang	0.000000	0.023492	0.000000	0.023515

Users with Top Betweenness Centrality

	Name	betweenness_centrality	degree_centrality	eigenvector_centrality	closeness_centrality
4957	BallouxFrancois	0.000016	0.008978	0.000045	0.008189
2241	jonathanstea	0.000016	0.007781	0.569658	0.006708
2140	Rosewind2007	0.000012	0.003442	0.594850	0.005204
4954	steber232	0.000009	0.001945	0.000119	0.004846
3528	maxthelionx	0.000007	0.005387	0.000294	0.003741
589	k_klo224743370	0.000006	0.008080	0.000000	0.007841
587	JSDH_S	0.000005	0.001347	0.000000	0.004460
2	and_kell	0.000004	0.005088	0.000000	0.004324
5326	DrDanilychevMD	0.000004	0.002993	0.015184	0.001539
4955	MartyKoekemoer	0.000003	0.000599	0.000019	0.005027

Users with Top EigenVector Centrality

	Name	eigenvector_centrality	degree_centrality	betweenness_centrality	closeness_centrality
2140	Rosewind2007	0.594850	0.003442	0.000012	0.005204
2241	jonathanstea	0.569658	0.007781	0.000016	0.006708
4563	WAPFLondon	0.247404	0.001197	0.000002	0.003416
4568	HelenEBedford	0.174732	0.000748	0.000002	0.003395
4570	MelMcCurtis	0.161804	0.000449	0.000000	0.003374
4569	andyco98	0.161804	0.000449	0.000000	0.003374
4560	nickser1972	0.161804	0.000299	0.000000	0.003334
2245	IberiaAdvantage	0.154955	0.000299	0.000000	0.003894
2240	TrumpKennels	0.154955	0.000299	0.000000	0.003894
2242	AmyTanBeach	0.154955	0.000299	0.000000	0.003894