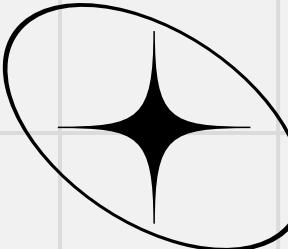
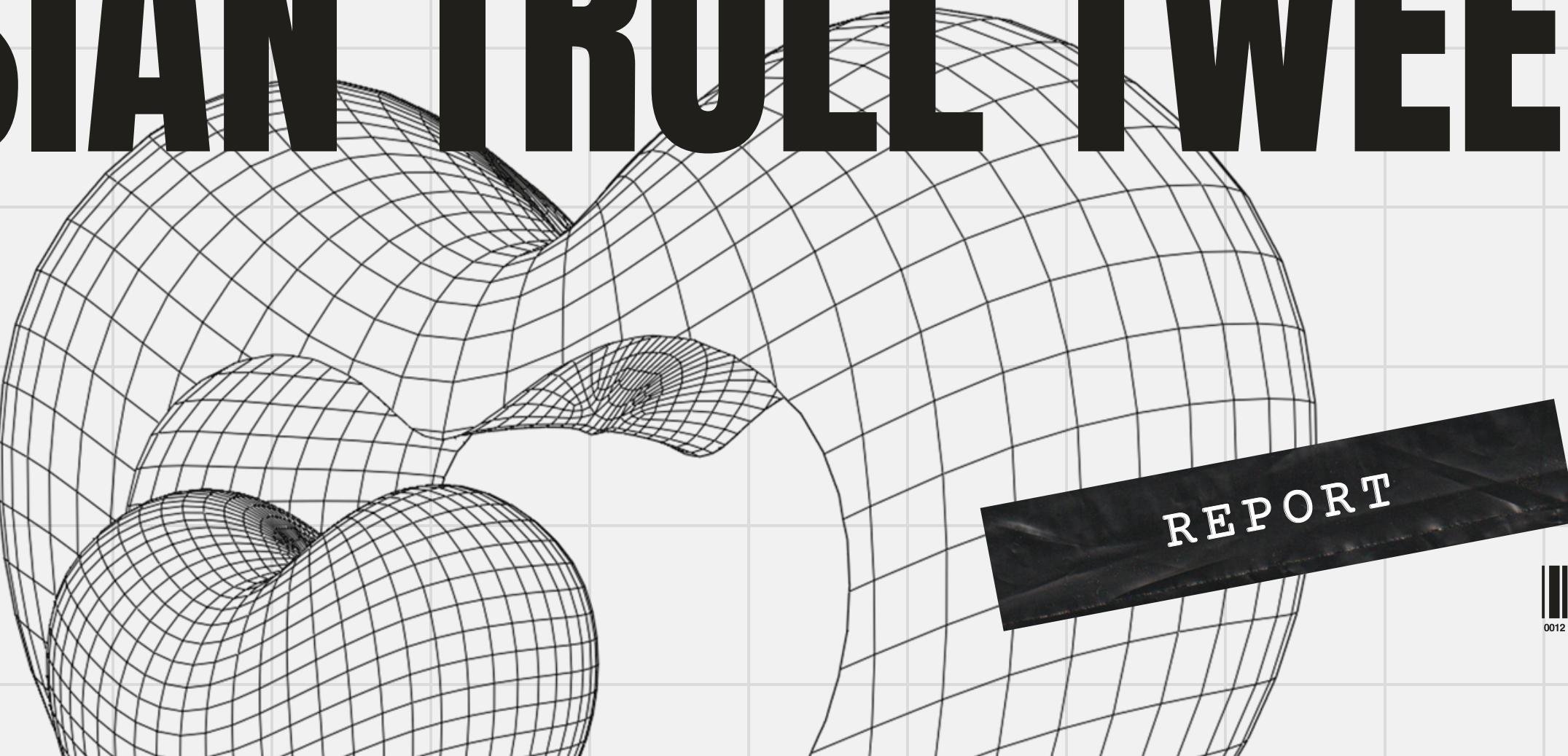


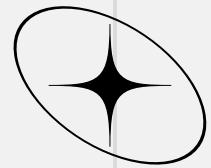
GROUP 3



# 2016 US ELECTION VS RUSSIAN TROLL TWEETS

PRESENTED BY:  
BOLUN ZHANG  
CHANG LI  
YOLANDA CHEUNG  
CHIH-EN KO  
CHENG-YA LIOU  
JUI-JIA LIN





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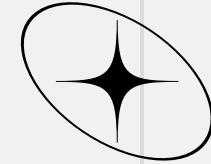
3

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INSIGHT & CONCLUSION





# DATASET INTRODUCTION

200,000 malicious-account tweets  
captured by NBC



Datasets retrieved from Kaggle



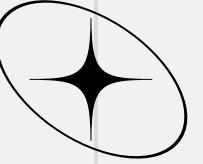
## TWEETS.CSV

- OVER 200K TWEETS
- INCLUDING RETWEET POST
- INCLUDING NON-ENGLISH POSTS



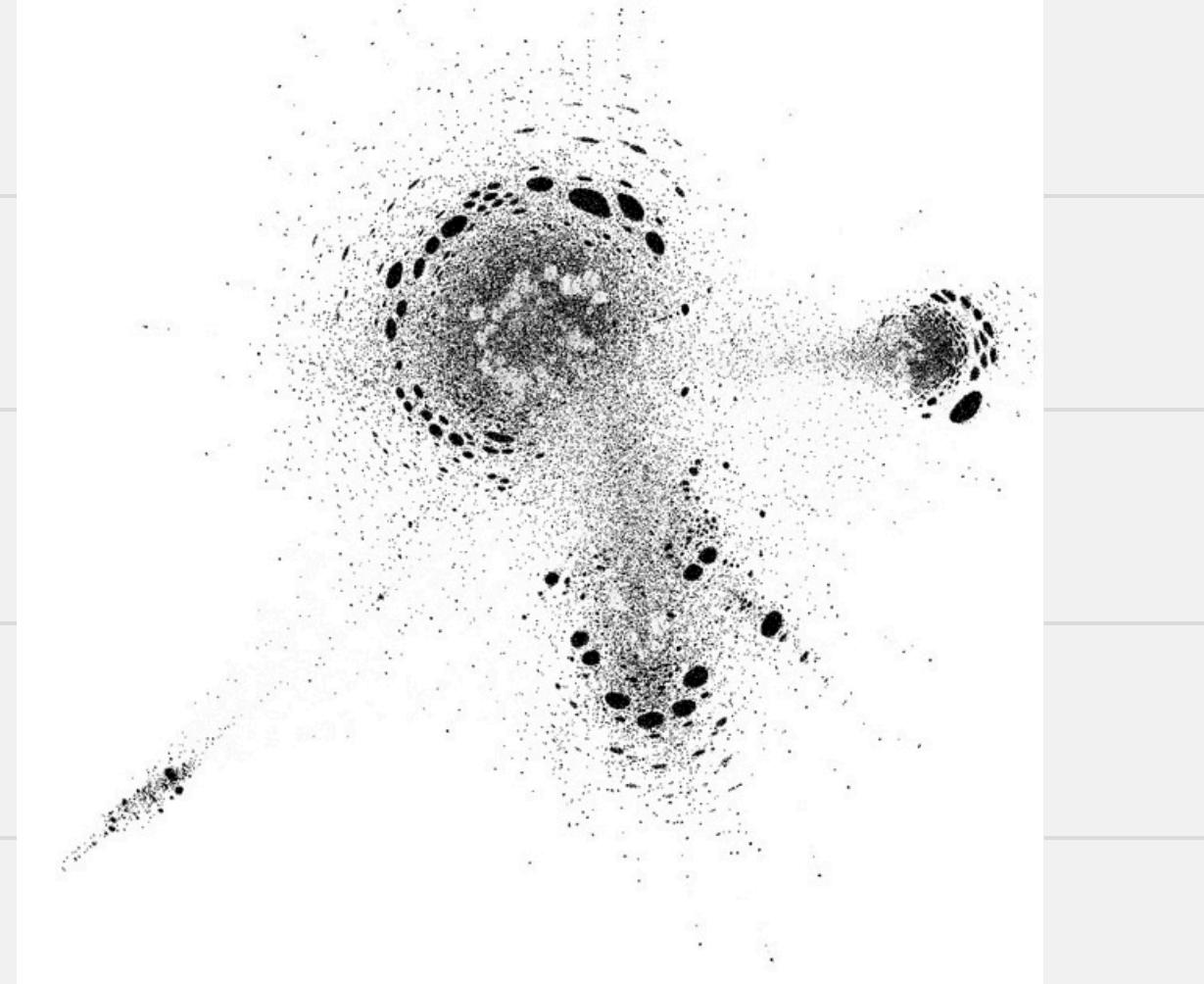
## USERS.CSV

- OVER 400 RECOGNIZED USERS
- MOSTLY CREATED FROM 2013 TO 2016



# NETWORK OVERVIEW

Using Gephi to get a common understanding of the networks



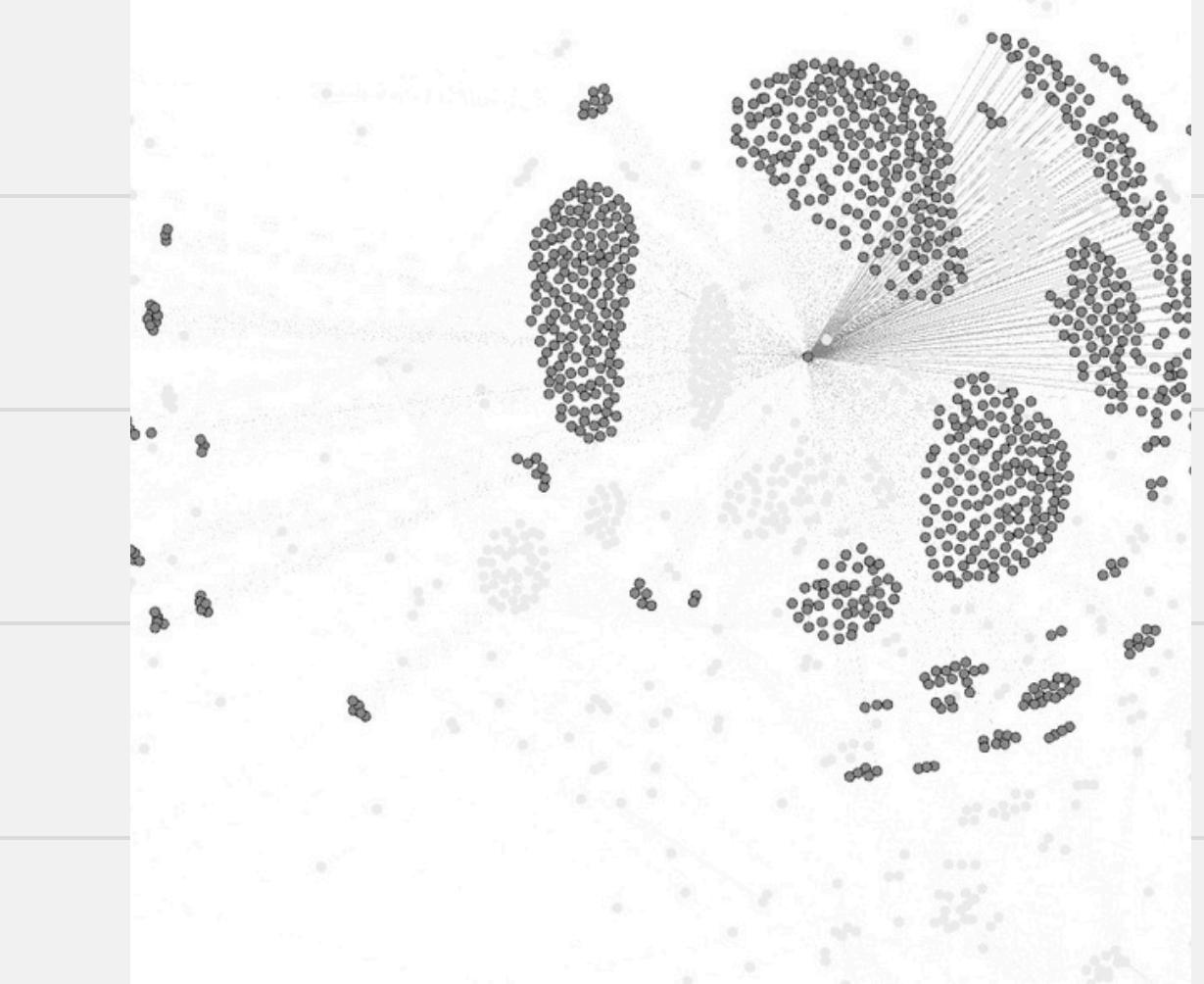
## USERS AND TWEETS

All the users are the nodes and the tweets are edges, we got 3 major communities and some minor groups



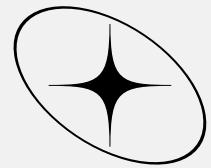
## RUSSIAN INTERACTION

There are a few centroids where people who receive attention are the target with sources around them.



## CENTROIDS

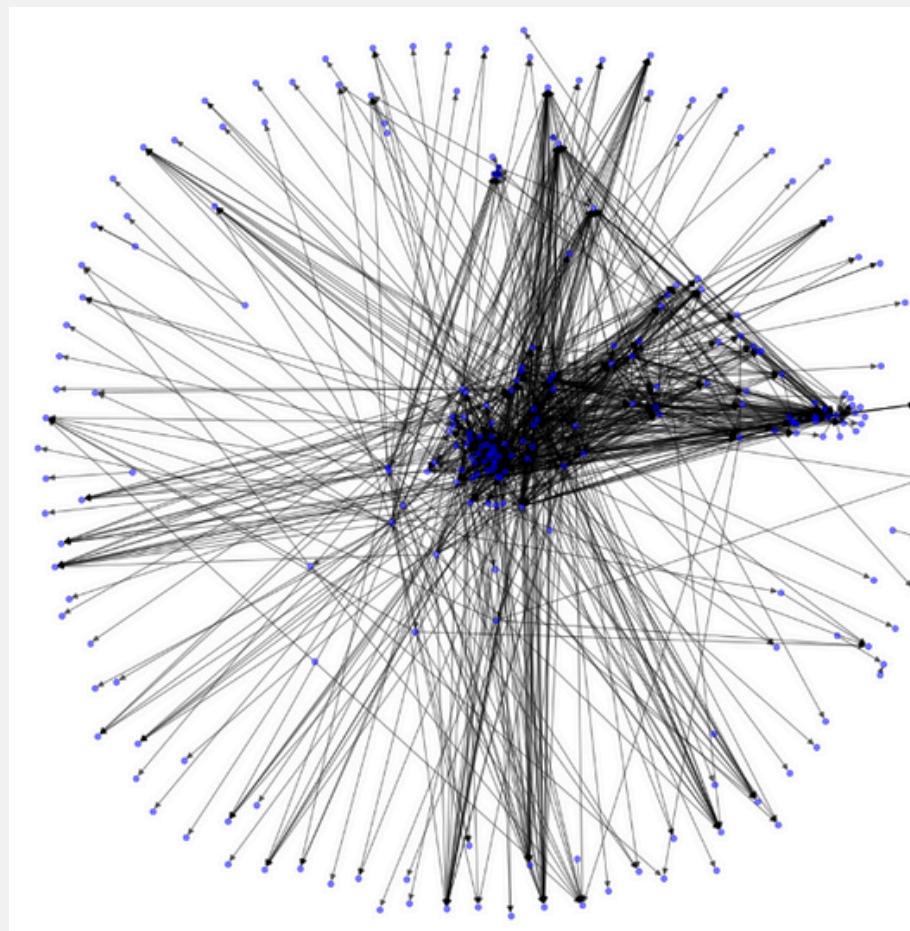
Are they bots or real though?



# CENTRALITY MEASURES

**RUSSIAN\_INTERACTION**

## NETWORK VISUALIZATION



Top five nodes by degree centrality

```
[('giselleevns', 0.3012552301255229),  
 ('ten_gop', 0.2426778242677824),  
 ('lazkykstafford', 0.2301255230125523),  
 ('_nickluna_', 0.22175732217573219),  
 ('michellearry', 0.22175732217573219)]
```

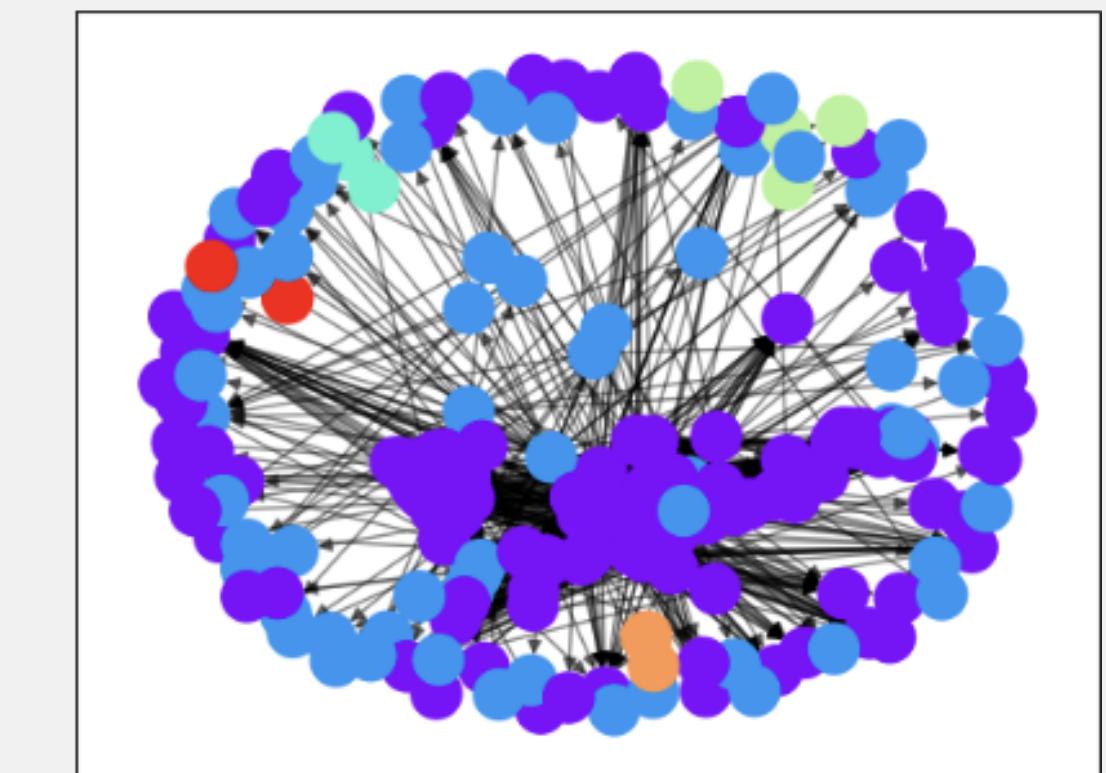
Top five nodes by closeness centrality

```
[('pamela_moore13', 0.23018638265500188),  
 ('thefoundingson', 0.2183918501000546),  
 ('jenn_abrams', 0.21261428792809545),  
 ('ten_gop', 0.20960680539776663),  
 ('danagerezus', 0.20006073694155757)]
```

Top five nodes by betweenness centrality

```
[('giselleevns', 0.048423029054527285),  
 ('michellearry', 0.012433919443857189),  
 ('pamela_moore13', 0.009776485963579381),  
 ('thefoundingson', 0.00961840308175279),  
 ('danagerezus', 0.008691703920733264)]
```

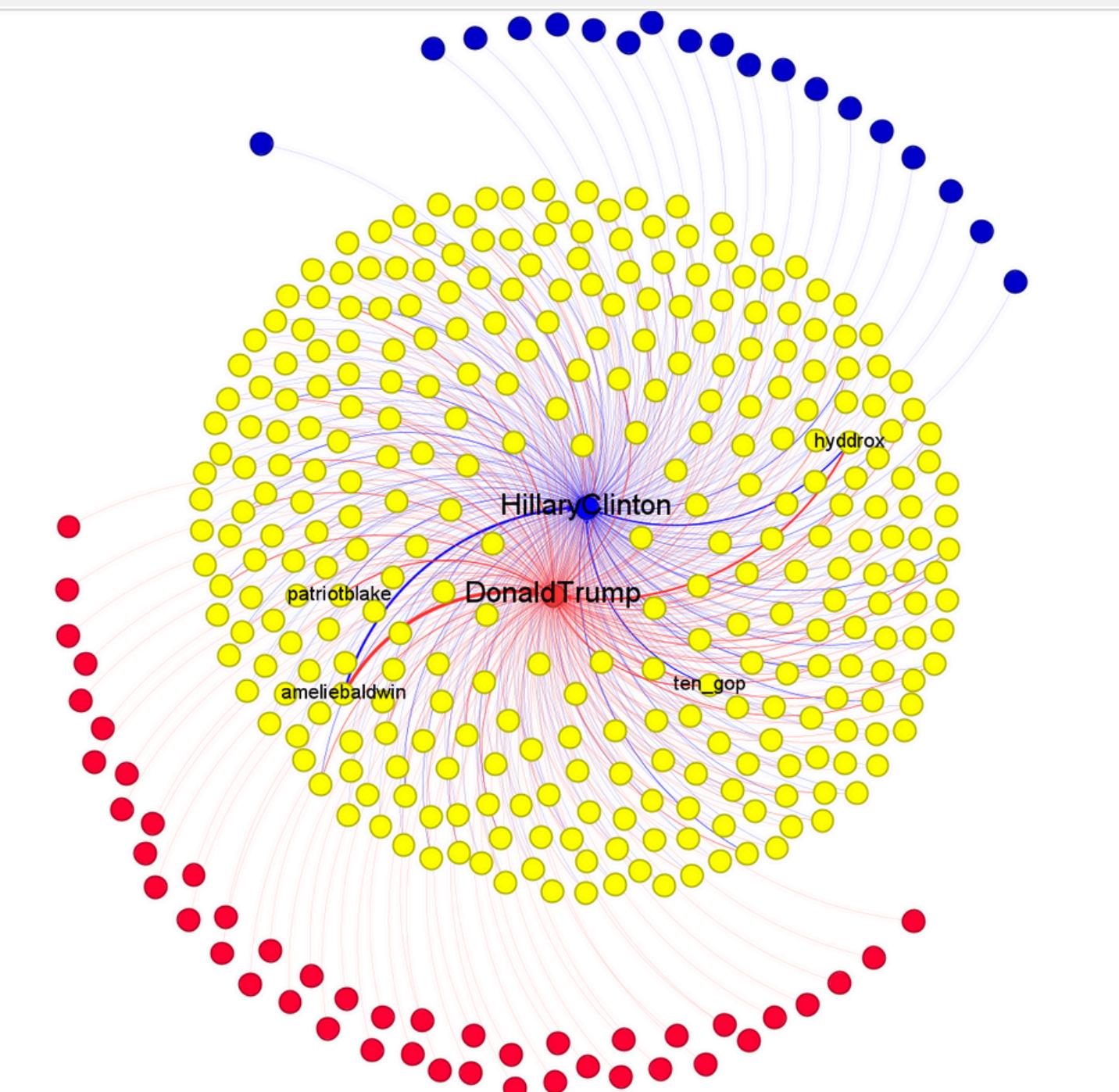
## COMMUNITY VISUALIZATION



- six community groups
- three main categories: Trump, Hillary, Others

# NETWORK VISUALIZATION

Trump and Hillary  
--  
Combined Dataset



The users with more significant edges are those who pay attention to both Trump and Hillary.

# CENTRALITY MEASURES

Top five nodes by degree centrality

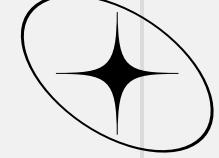
```
[('trump', 0.9468085106382979),  
 ('hillary', 0.875),  
 ('ameliebaldwin', 0.005319148936170213),  
 ('patriotblake', 0.005319148936170213),  
 ('pamela_moore13', 0.005319148936170213),  
 ('kansasdailynews', 0.005319148936170213),  
 ('hyddrox', 0.005319148936170213)]
```

Top five nodes by closeness centrality

```
[('trump', 0.9468085106382979),  
 ('hillary', 0.875),  
 ('ameliebaldwin', 0.0),  
 ('patriotblake', 0.0),  
 ('pamela_moore13', 0.0),  
 ('kansasdailynews', 0.0),  
 ('hyddrox', 0.0)]
```

Top five nodes by betweenness centrality

```
[('ameliebaldwin', 0.0),  
 ('trump', 0.0),  
 ('hillary', 0.0),  
 ('patriotblake', 0.0),  
 ('pamela_moore13', 0.0)]
```



# SENTIMENT ANALYSIS

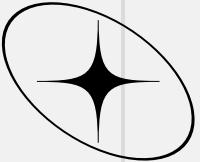
The Dataset is separated into two parts: the Trump tweet and the Hillary tweet. Then the sentiment analysis is done accordingly

trump\_sentiment

1	user_key	text	sentiment_score
2	ameliebaldwin	RT @AriaWilsonGOP: 3 Women Face Charges After Being Caught Stealing Dozens Of Trump Signs <a href="https://t.co/JjiZxaW3JN">https://t.co/JjiZxaW3JN</a> <a href="https://t.co/qW2Ok9ROxH">https://t.co/qW2Ok9ROxH</a>	1.9607920218259100
3	patriotblake	RT @America_1st_: CW: "The thing that impressed me was that Trump is always comfortable in own skin, but now he was comfortable being the P...	3.910651460289960
4	pamela_moore13	Dave Chappelle: "Black Lives Matter" is the worst slogan I've ever heard! How about "enough is enough"? VotingTrump! <a href="https://t.co/5okvmoQhcj">https://t.co/5okvmoQhcj</a>	1.126123639754950
5	kansasdailynews	Obama on Trump winning: 'Anything's possible' <a href="https://t.co/MjVMZ5TR8Y">https://t.co/MjVMZ5TR8Y</a> #politics	3.86319837346673
6	hyddrox	RT @TrumpSuperPAC: Obama's a Muslim & this video from @FoxNews proves it! Even @CNN admits Obama's training protesters/jihadists! #MAGA ht...	1.9497699216008200
7	pamela_moore13	Deceitful Media caught on act when trying to drive the "Donald Trump is racist" rhetoric.  #BlacksForTrump <a href="https://t.co/czKOvbfkVQ">https://t.co/czKOvbfkVQ</a>	1.2211730466224300
8	patriotblake	RT @Veteran4Trump: A picture you will never see on @CNN or @MSNBC #BlacksForTrump Thumbs up for Trump 🤘 #MakeAmericaGreatAgain #Blacks4Trump...	3.9132189378142400
9	bigboysneed	RT @funkflex: (Video) Jeezy On Donald Trump: "If He Was A Rapper Right Now, He'd Be Tupac" 😲 <a href="https://t.co/ApqAVshya9">https://t.co/ApqAVshya9</a>	2.7715542912483200
10	giselleevns	RT @DanaGeezus: Those #ChildrenThinkThat they don't actually have to think before they say anything become Donald Trump when they grow up	1.581276312470440
11	march_for_trump	Join the flashmob across the state of Florida to support Mr. Trump on August, 20. Check the details on our page.	4.176615008618680

hillary\_sentiment

1	user_key	text	sentiment_score
2	ameliebaldwin	RT @Gumball55668882: DEMOCRATS,,WOMEN ,,BILL CLINTON HAS ABUSED MANY WOMEN ,, ONLY TO BE PROTECTED BY HILLARY ,ATTACKING THOSE VICTIMS ht...	1.705962184816600
3	patriotblake	RT @thomassfl: Wikileaks E-Mails: Hillary Clinton Blackmailed Bernie Sanders <a href="https://t.co/l9X32FegV6">https://t.co/l9X32FegV6</a> .	2.2557715512812100
4	blackmattersus	Clinton's VP Choice: More Harm Than Good <a href="https://t.co/iGnLChFHeP">https://t.co/iGnLChFHeP</a>	1.697706624865530
5	atlanta_online	Hillary Clinton vows to fight, lead for all as she accepts ... <a href="https://t.co/R6VEQUisA4">https://t.co/R6VEQUisA4</a>   <a href="https://t.co/1KPXto2HfW">https://t.co/1KPXto2HfW</a> <a href="https://t.co/nB3hB1kBds">https://t.co/nB3hB1kBds</a>	3.203195460140710
6	ameliebaldwin	RT @Rammer_Jammer84: I don't know about Hilary Clinton having a body double but it's super weird that she came out by herself considering s...	1.7501298282295500
7	hyddrox	RT @Darren32895836: After Hillary Clinton Caught 4attempting 2take advantage of Americans hardships & tears changes Strat #PrayForFlorida ht...	2.0926238987594800
8	jenn_abrams	The most honest Hillary's poster I've seen 😂 Good morning, guys <a href="https://t.co/rLQDW2ZOb3">https://t.co/rLQDW2ZOb3</a>	4.818367328727620
9	ten_gop	Reminder: Hillary caught using a child actor !! at her townhall in Haverford, PA  #Debate	1.9419855680316700
10	patriotblake	RT @kolin_benson: Go back to HELL, Hillary!!!  Hillary Clinton Resurfaces - Encourages More Protests AKA Violence <a href="https://t.co/mHEj9QN8Rw">https://t.co/mHEj9QN8Rw</a> vi...	1.5113666001707300
11	amandavgreen	RT @Latent_Fury: #TeamCap or #TeamIronMan  #RejectedDebateTopics  &lt;As @HillaryClinton whispers&gt; "Hail Hydra..." <a href="https://t.co/N6WwHB4dK">https://t.co/N6WwHB4dK</a>	2.503504268825050
12	jacquelinisbest	RT @BobMacAZ: Benghazi Marine: Clinton Put Her Political Career Ahead Of Doing What&#8217;s Right <a href="https://t.co/RYnF29NdMu">https://t.co/RYnF29NdMu</a>	2.518199849873780
13	hyddrox	RT @SkuzzNews: It kinda makes me happy Clinton hates me. #ClintonHate #deplorablelivesmatter #BillRapesEverydayAmericans <a href="https://t.co/ARjWx...">https://t.co/ARjWx...</a>	1.72901751101017
14	rh0lbr00k	RT @NRSC: Hillary Clinton isn't the only Dem with an email problem: <a href="https://t.co/oKgIPKqUKE">https://t.co/oKgIPKqUKE</a> #PASen <a href="https://t.co/5qzZbn2PGe">https://t.co/5qzZbn2PGe</a>	2.1087058037519500
15	queenofthewo	Elevator ride with Ray Rice #ThingsMoreTrustedThanHillary	3.4851026721298700
16	hyddrox	RT @luvGodncountry: There goes the YouTube story: <a href="https://t.co/GRzkk3uMf8">https://t.co/GRzkk3uMf8</a> #ChelseaClintonEmails1 <a href="https://t.co/yhkJPLAjw">https://t.co/yhkJPLAjw</a>	2.5492370761930900
17	paolakinck	RT @MichelleKOrts10: .@1Viperbabe @JillSizzle Neither is this Hillary's voice in this interview. OTHERS are tweeting her -H signature ht...	2.3521382585167900
18	finley1589	RT @TuesdayTells: .@MikePenceVP ~ #HillaryClinton's repulsive LIES are in check with the number of #emails she deleted...33,000 and countin...	1.5161441322416100
19	paolakinck	RT @markflesberg: OBAMA IS A TERRORIST !!! SECRETLY GAVE \$100 MILLION TO IRAN. CREATED ISIS. @HillaryClinton BELONGS IN PRISON. <a href="https://t....">https://t....</a>	1.286386818625030
20	hyddrox	RT @AmericanVoterUS: Hillary's EVIL ways may have helped her strategically but they bring no loyalty, she will lose on November 8th...	1.573892280459400
21	ryanmaxwell_1	The Nation doesn't deserve another spectacle of a Clinton in the WH #HillaryNoThnx	1.153122019022700
22	southlonestar	No more corrupt politicians. Clintons must be the first to jail next to Obama #RiggedSystem <a href="https://t.co/DcvdqMklBe">https://t.co/DcvdqMklBe</a>	1.2815158497542100
23	ameliebaldwin	RT @LesgartCPA: Exaggeratng idiot doesn't know both Obama & Clinton had similar temp. bans from Muslim countries.	1.5810049828141900

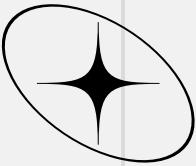


# TOP TARGET

Based on the Network, the common mentions are:

- 'giselleevns', 'ten\_gop',
- 'lazykstafford', 'nickluna',
- 'michellearry', 'pamela\_moore13',
- 'thefoundingson', 'jenn\_abrams',
- 'danageezus'

		trump	hillary
	<b>giselleevns</b>	2.759247	2.308603
	<b>ten_gop</b>	2.898439	2.040322
	<b>lazykstafford</b>	2.702302	2.505106
	<b>_nickluna_</b>	2.616964	2.217201
	<b>michellearry</b>	2.801713	2.462007
	<b>pamela_moore13</b>	2.807792	1.960067
	<b>thefoundingson</b>	2.447351	2.183184
	<b>jenn_abrams</b>	2.272758	2.317085
	<b>danageezus</b>	2.643396	2.614727



# COMMUNITY OPNIONS

To better understand the group behavior, we also want to look at the sentiment scores community wise

	TAG	Trump	Hillary
0	IMPORTANT	2.561152	2.336911
1	MARGINAL	2.288399	2.595514
2	MARGINAL	3.163414	2.468858
3	MARGINAL	2.575910	2.881813
4	MARGINAL	2.660708	2.847366
5	MARGINAL	2.753431	2.652234

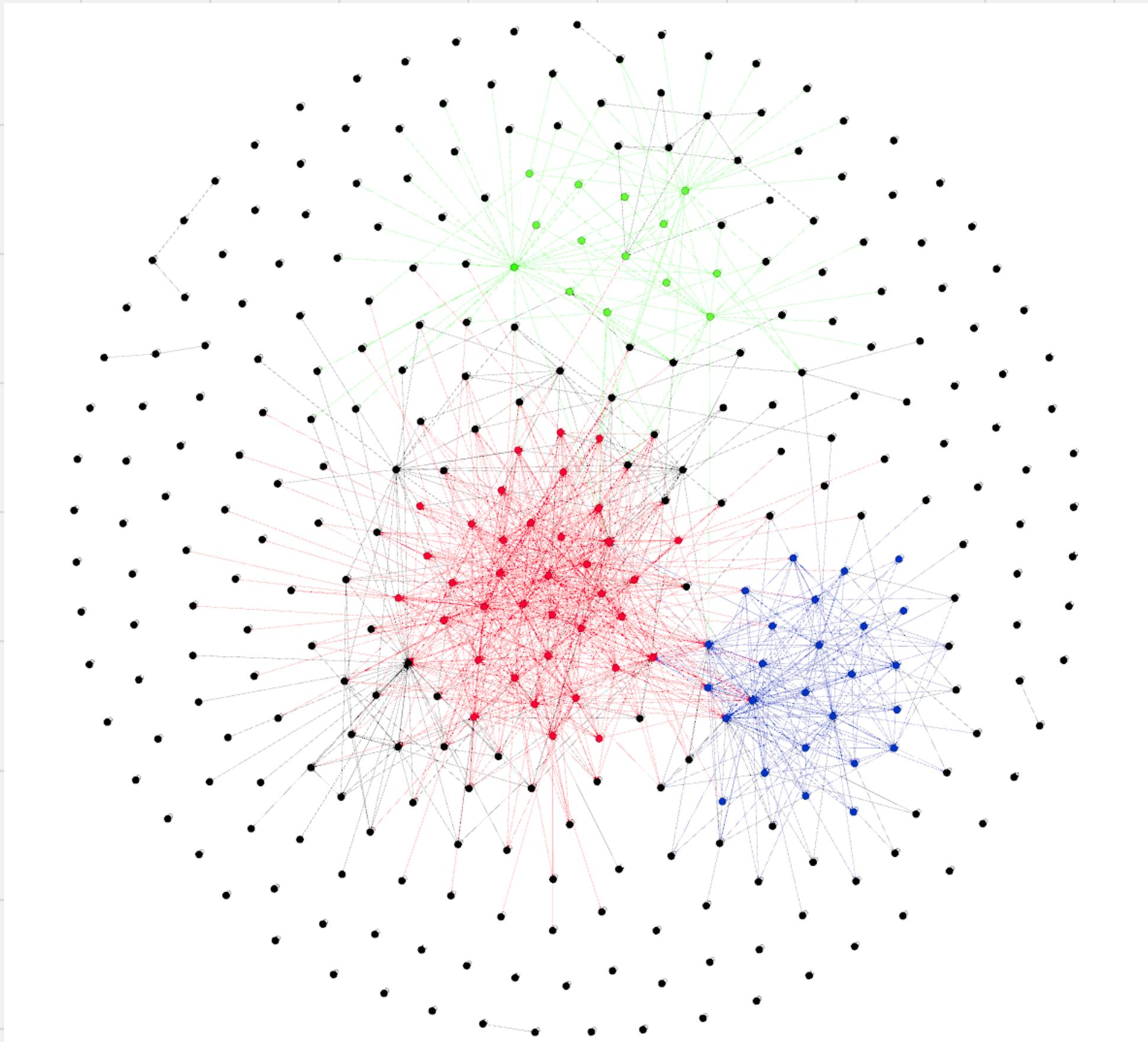
# GROUP OPINION

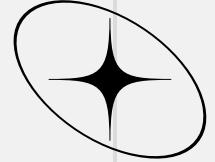
BLUE: TRUMP:2.50 HILLARY:2.49

GREEN: TRUMP:2.26 HILLARY:2.64

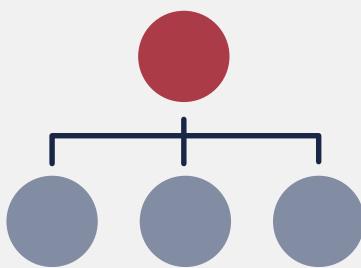
RED: TRUMP:2.68 HILLARY:2.20

RED AND BLUE HAVE MORE  
CONNECTION -- TRUMP IS MORE  
POPULAR!



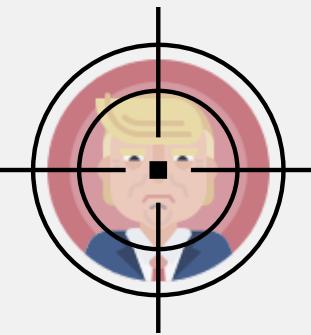


# INSIGHTS & CONCLUSION



## CENTRAL ACCOUNTS

Some accounts have high degree/closeness/betweenness centrality at the same time



## CENTER OF CONVERSATION

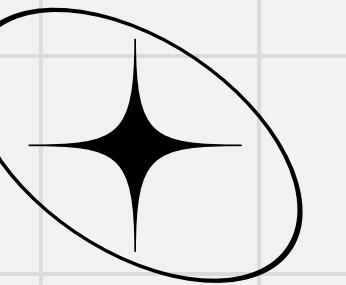
With the main community largely supporting Trump and smaller communities divided, the conversation focuses on Trump



## IDENTIFYING TROLLS AND BOTS

Could evaluate more specific details on retweets/replies/mentions where retweeters might be trolls/bots





# THANK YOU

Any Questions?

