

Characterizing Spread of Misinformation

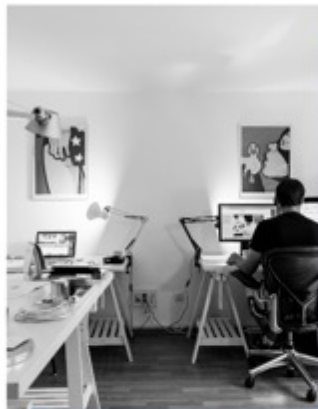
Anika Halappanavar
Grade 10, Richland High School
Activity Journal

Become a Fake News Expert

What is Fake News?

Fake News is news or information spread by the media that is factually incorrect. It can be used as satire or to overdramatize a certain point. Various media outlets use it to promote thier story and to try to convince thier audience to believe it.





Source: How to Spot 11 Types of Media Bias by AllSides.

<https://www.allsides.com/media-bias/how-to-spot-types-of-media-bias>

01

Media Biases

There are 11 main types of media biases to be aware of.

Starting with **Spin**, which uses vague, dramatic or sensational language, such as "critical" or "offensive".

Another is **Unsubstantial claims**, which are used to report information without any real evidence to back them up.

Up next is **Opinion Statements Presented as Fact**, which are based on personal opinions, assumptions, beliefs, tastes, preferences, or interpretations, some examples are "seemingly" or "dangerous".

Following is **Sensationalism/Emotionalism**, in which information is presented in a way that gives a shock or makes a deep impression.

Some words/phrases to look out for are "Chaotic" or "Embroided in..."

Another popular one is called **Mudslinging/Ad Hominem**, which is when unfair or insulting things are said about someone in order to damage their reputation.

Next up is called **Mind Reading** which occurs when a writer assumes they know what another person is thinking, or believes that the way they see the world reflects the way the world really is.

Following we have **Slant** which describes when journalists only tell part of a story. It can include only sharing information or data to support one side, or ignoring another perspective. describes when journalists tell only part of a story. It prevents readers from knowing the whole story, and narrows the scope of understanding.

Moving on we have **Flawed Logic** which is used to misrepresent people's opinions or to arrive at conclusions that are not justified by the given evidence.

Next is **Bias by Omission** in which media outlets choose not to cover certain stories or omit information that would support an alternative viewpoint.

Another media bias is called **Omission of Source Attribution**, where journalists do not identify their sources and choose to keep them secret. This doesn't necessarily make the statements incorrect, but it does make them less reliable.

Lastly, we have **Bias by Placement**, in which there are two biases, bias by story placement and bias by viewpoint placement.

Bias by story placement is when a media outlets features certain stories noticeably on their homepage. This shows which stories they really want you to read.

Then there is story by viewpoint, which is when a story only features viewpoints from one type of sources and commentators, or includes them near the top of the story in the first few paragraphs, and does not include any opposing viewpoints, or buries them at the end of a story.

02

R-A-V-E-N

R= Reputation

A= Ability to see

V= Vested Interest

E= Expertise

N= Nuetrality/ Bias

1. Reputation is used to determine whether the source's history or status suggests reliability or unreliability.
2. Ability to see is whether the source is in a state to know what they are speaking about. If a source doesn't have access to the evidence the value of their statement is going to be limited.
3. Vested Interest refers to whether the source of information has anything personally at stake or to gain.
4. Expertise is determining whether the source has a background in a certain field or has aquired specialized knowledge to accurately interpret information.
5. Nuetrality/ Bias is whether someone is predisposed to support a singular point of view.



Source: **Criteria of Credibility Slides**

https://docs.google.com/presentation/d/1BLZ82_Ydo-vbADh0jOt15YsqIAHnAxNJ2ezjYxgObVE/edit#slide=id.p19



03

A-P-C-D

A= Authority and Accuracy

P= Purpose and Content

C= Currency

D= Design, Organization, and Ease of Use

When using this tool, you are required to find out more information on the particular website you are using in order to figure out if it is reliable.

Source: Criteria of Credibility Slides

https://docs.google.com/presentation/d/1BLZ82_Ydo-Dh0jOt15YsqIAHnAxNJ2ezjYxg0bVE/edit#slide=id.p19

Infographic created by Anika Halappanavar

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Misinformation versus disinformation

Figure 2: Reconfigured vs fabricated misinformation

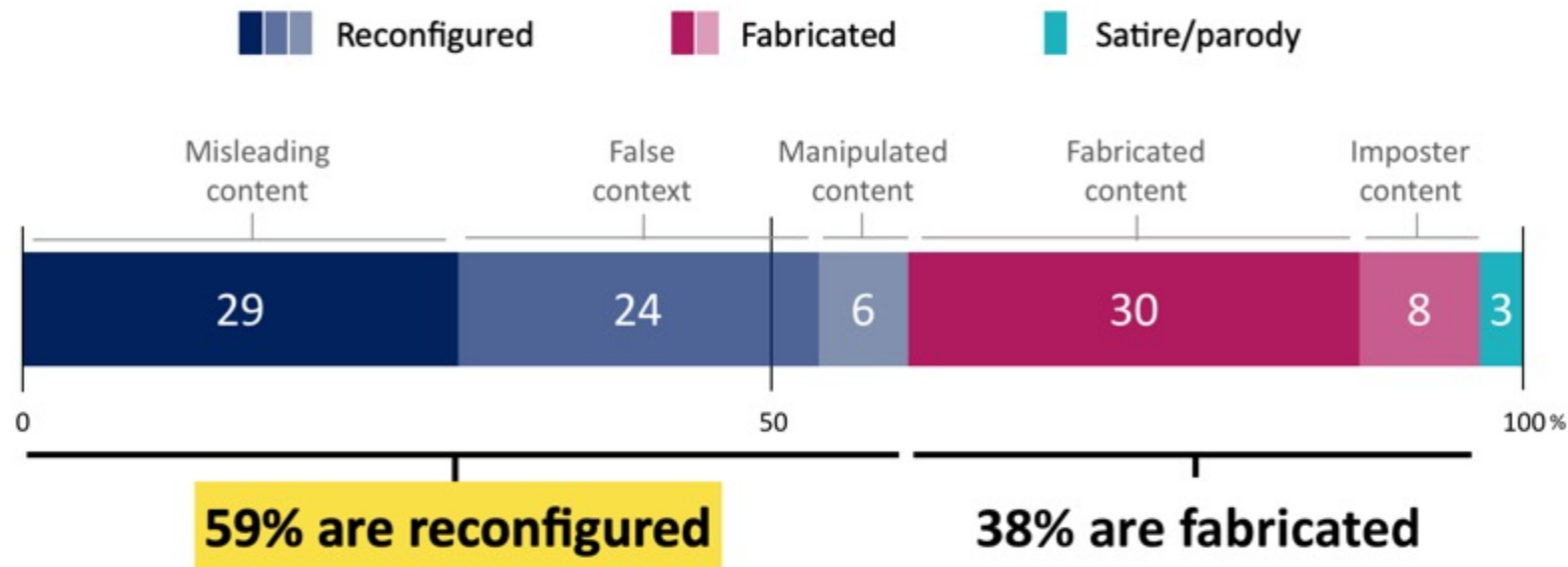


Figure 2 shows the proportion of reconfigured (N=133) and fabricated (N=86) misinformation in the sample (N=225) and the types of misinformation that constitute both reconfigured and fabricated misinformation.

Dataset

- Source: Reddit (Feb 2020 to Feb 2021)
 - Two sets of narratives --- origin and fake cures
 - For each narrative, data consists of posts and comments downloaded in JSON format using **PushshiftAPI**.
- Example:

```
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  "link_flair_text_color": "dark",
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  "num_crossposts": 0,
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  "parent_whitelist_status": "all_ads",
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  "pinned": false,
  "pwls": 6,
  "retrieved_on": 1604092624,
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  "selftext": "Context: 20M. As a response to pandemic, government in Slovakia put together a nation-wide testing, which happens this weekend. Everyone should come (who doesn't, has to spent 10 days in quarantine). 90 % will voluntarily attend (polls) and this step is mostly supported.\n\nObviously, \"mandatory\" testing is something that conspiracists jump on as a coup to manipulate people with 5G chips, you know this bs, it's probably all over the world.\n\nMy mom has been in conspiracy theories for many years now and she will believe that there are lizard people inside the core of the world if you tell her. Russia is the savior, USA is trying to enslave everyone and the only people we should believe are some made up doctors by conspiracy new source. Again, you know this bs. Make up any conspiracy theory \u2013 2013 and she will believe it.\n\nnlt's gotten really bad, we can't have any conversation at all, because even a conversation on random topics like bananas, she will find a way to turn into the eternal argument between us \u2013 2013 what I call Reason vs. Delusion. E.g. that bananas used to be better, since US government is injecting with herbicides that turn people gay so the entire population can't reproduce and dies out.\n\nI've spent countless hours arguing, calmly explaining, trying every possible technique, but it just doesn't work, she is so stubborn. I feel like I completely lost her, she has this sick view on everything. No talking is possible.\n\n30m ago, she randomly started hysterically crying, shouting and slamming doors. Refused to talk but I am 100 % sure it has to do with the testing this weekend (which she will obviously not attend).\n\nI understand her side (I hope). She is frightened that she will lose his son to 5G chips and I will be controlled by the government. Right now, she is in an amok, talking to her side of the family and my sister, which are similarly deep in the conspiracies, but are much calmer personalities.\n\nMy father is still pretty reasonable, but they don't speak for 10 years, even though they live in this very house (different rooms).\n\nShe called me a \"her personal terrorist\", blamed me for all of her depression and such things. I don't really care about that, I just want her to get better.\n\nPlease what to do, please? I don't think there is any way to bring her to reason, she is just so deep and I failed to protect her from internet crap. But I don't want her to feel that she lost me and for her to cry all the time, I can't watch that \u2013 2013 but even if I interfere, it ends in an even bigger argument. Did that many times.\n\nI could move out but I can't leave her in this state of delusion and desperation.\n\nI want to get tested. What to do, so she doesn't break and even maybe do something terrible?\n\nRight now I am so fckin crying and abandoned. I have BPD so I feel emotions much stronger \u2013 2013 but I currently don't any emergency help, I just need to talk.\n\nnlt's a sick circle of depression, created by the most most evil people on the earth \u2013 2013 spreading misinformations purposely for profit. I work in an influential media and I will work tirelessly to put these people into jail for ruining my family. I feel so much hate for them, for ruining countless lives and relationships all over the world.\n\nTLDR: 20M Slovakia, my mother is very deep in conspiracy theories. You make one up, she will believe it. This weekend, there is a required Covid testing in our country for everyone, I will go, She won't. She believes that I will be injected with 5G Chips, start being controlled by government and she will lose her son. She is in a hysterical amok right now, I don't see any solution. What to do?\",
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  \"stickied\": false,
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  \"title\": \"[20M]: My conspirating mom thinks I will get 5G chipped in Covid testing tomorrow and had lost all reason. I feel like I've completely lost her as a person. What to do?\",
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  \"url\": \"https://www.reddit.com/r/relationships/comments/jl5g1j/20m_my_conspirating_mom_thinks_i_will_get_5g/\",
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```

```
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416B Feb 17 18:53 ..
6.0K Feb 9 18:38 .DS_Store
2.6M Feb 1 11:27 5g_comments.json
2.7M Feb 9 17:55 5g_comments_backup.json
2.7M Feb 18 15:46 5g_comments_processed.json
1.7M Feb 18 16:04 5g_extract_data.json
23M Jan 31 23:37 5g_posts.json
17M Feb 18 18:20 AllCures_extract_data.json
15M Feb 18 16:07 AllOrigin_extract_data.json
4.0M Feb 17 14:06 Bioweapon_comments.json
4.0M Feb 18 15:46 Bioweapon_comments_processed.json
245K Feb 18 16:02 Bioweapon_extract_data.json
2.3M Feb 17 13:47 Bioweapon_posts.json
13M Feb 9 17:57 Combined_data.json
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9.1M Feb 18 16:03 Fauci_extract_data.json
18M Feb 17 08:14 Fauci_posts.json
12M Feb 2 12:05 Gates_comments.json
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4.4M Feb 18 16:02 Sputnik_extract_data.json
24M Feb 16 22:17 Sputnik_posts.json
216K Feb 25 16:43 newGraph-Hydroxy.txt
0B Feb 9 18:20 testGraph-5g.txt
24K Feb 9 18:16 testGraph-Gates.txt
197K Feb 9 18:20 testGraph-Hydroxy.txt
347K Feb 9 18:12 testGraph.txt
```

Python Script for data download:

```
import pandas as pd
import json
import os
import time
from psaw import PushshiftAPI
from datetime import timedelta
import numpy as np

def collectPosts(query, firstDay, lastDay, save_to_filename, queryLabel):
    beforeVal = str(pd.to_datetime(lastDay)+timedelta(days=1))
    api = PushshiftAPI()
    results = api.search_submissions(q=query, after=firstDay,
    before=beforeVal)
    linkIDs = []
    ctr = 0
    with open(save_to_filename+'_posts.json','a') as f:
        for res_obj in results:
            postData = res_obj.d_
            postData['queryLabel'] = queryLabel
            f.write(json.dumps(res_obj.d_)+'\n')
            linkIDs.append(postData['id'])
            ctr +=1
            if (ctr % 100) == 0:
                print(f'{ctr} posts collected -- {time.ctime()}')
                time.sleep(np.random.uniform(30, 180))
    return linkIDs

def collectCommentsForPost(post_id, save_to_filename):
    api = PushshiftAPI()
    results = api.search_comments(link_id=post_id)
    ctr = 0
    with open(save_to_filename+'_comments.json','a') as f:
        for res_obj in results:
            f.write(json.dumps(res_obj.d_)+'\n')
            ctr +=1

if (ctr % 100) == 0:
    print(f'{ctr} comments collected for {post_id} -- {time.ctime()}')
    time.sleep(np.random.uniform(30, 180))

def load(filename):
    """
    Load saved comments/post data into a pandas dataframe
    """
    return pd.read_json(filename,lines=True)

def buildGraph(comments, directparent=True):
    comments['x'] =comments['id'].apply(lambda x:'t1_'+str(x))
    if directparent:
        edges =
        comments[['x','parent_id']].copy().rename(columns={'parent_id':'y'})
    else:
        edges = pd.merge(comments[['x','link_id']],
            comments[['x','link_id']].rename(columns={'x':'y'}),
            on='link_id')
        edges = edges[[sorted([x,y]) == [x,y] for x,y in
            zip(edges['x'],edges['y'])]].copy()
        return edges[['x','y']].copy()

if __name__ == "__main__":
    covidReferenceQ = '(coronavirus|covid|covid19|covid-
    19|covid%2019|corona%20virus|corona)'

    # Gates Narrative
    q1 =
    '(Gates|Bill+Melinda)+(create|created|engineered|made|developed|c
    aused)'+'+'+covidReferenceQ
    # 5g Narrative
    q2 =
    '(5g|5G|5%20g|5%20G|five%20g)+(cause|causes|from|created|creat
    es)+'+covidReferenceQ
    q3 =
    '(Hydroxychloroquine|Hydroxy|chloroquine|chloro|quine|bleach|chlo
    rine)+(cures|cured|curing)+'+covidReferenceQ

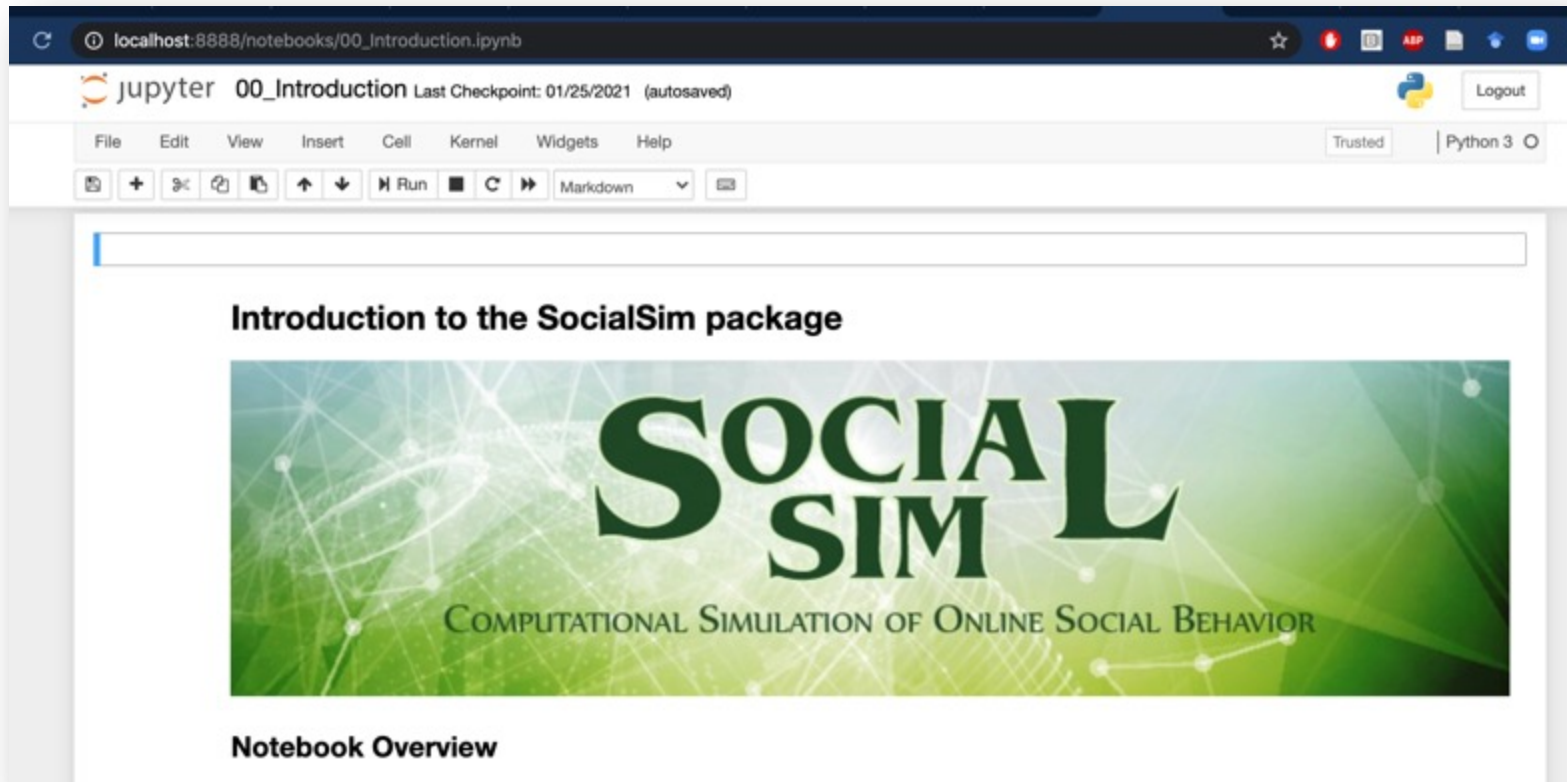
    # collect for two days, Jan 1 and 2, 2020
    firstDay = '2020-01-01'
    lastDay = '2020-10-30'
    # queryMap = {'Gates':q1, '5g':q2}
    queryMap = {'Hydroxy':q3}
    linkIDs = []
    for queryLabel in queryMap.keys():
        query = queryMap[queryLabel]
        linkIDs.extend(collectPosts(query, firstDay, lastDay, queryLabel,
        queryLabel))
        time.sleep(np.random.uniform(15, 45))

    for i, linkID in enumerate(linkIDs):
        collectCommentsForPost(linkID, queryLabel)
        if (i%50) == 0:
            time.sleep(np.random.uniform(30, 90))
```

SocialSim: A comprehensive tool for analysis

Mentors: Dr. Svitlana Volkova and Dr. Maria Glenski

- Provides a set of Jupyter notebook interfaces



☐	00_Introduction.ipynb
☐	01_Data_Extraction.ipynb
☐	02_multi_platform.ipynb
☐	03_Social_Structure.ipynb
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☐	05_recurrence.ipynb
☐	06_persistent_groups.ipynb
☐	07_Cross_Platform.ipynb
☐	08_Scaling_Up.ipynb

PART 1

Dynamics Over Time



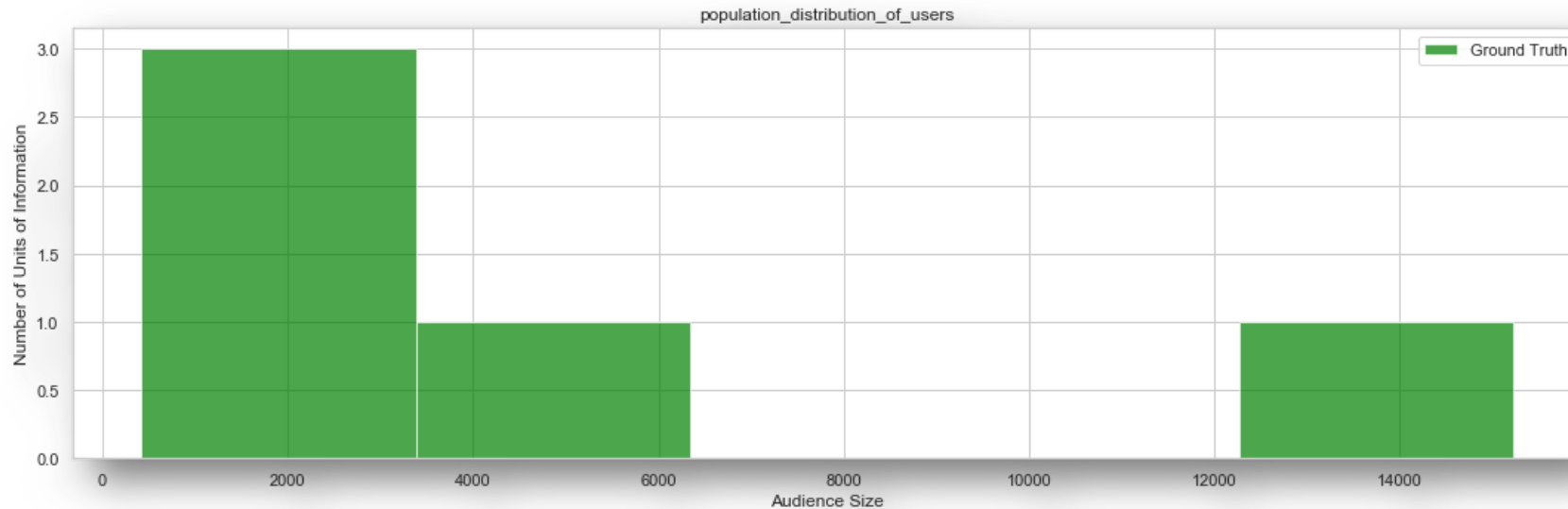
Unique Users Over Time

Origin Narratives

Cure Narratives

Origin Narratives: Gates/Soros/Fauci/5G/Bioweapon

- Audience size for each unit of information:



Fauci	15231
Soros	5768
5g	2952
Gates	2055
Bioweapon	422

For the "reddit" platform:
55,675 rows of data
55,675 nodes
25,105 users

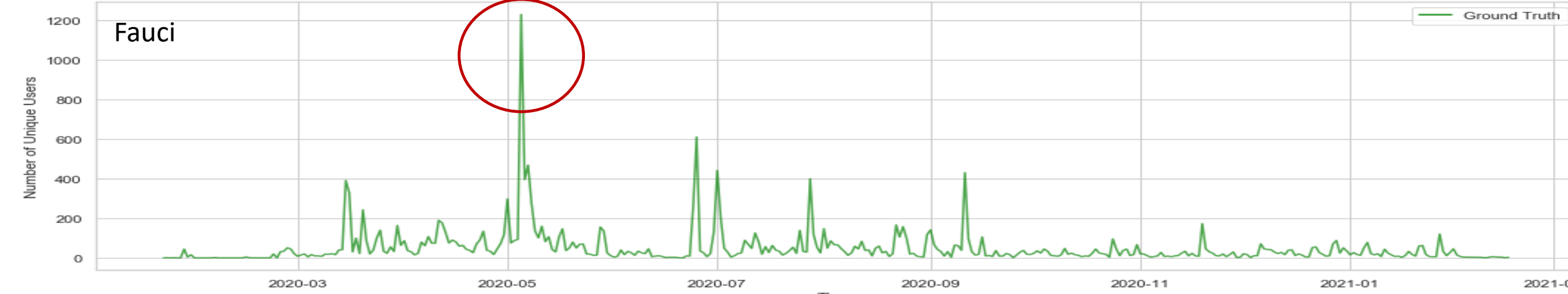
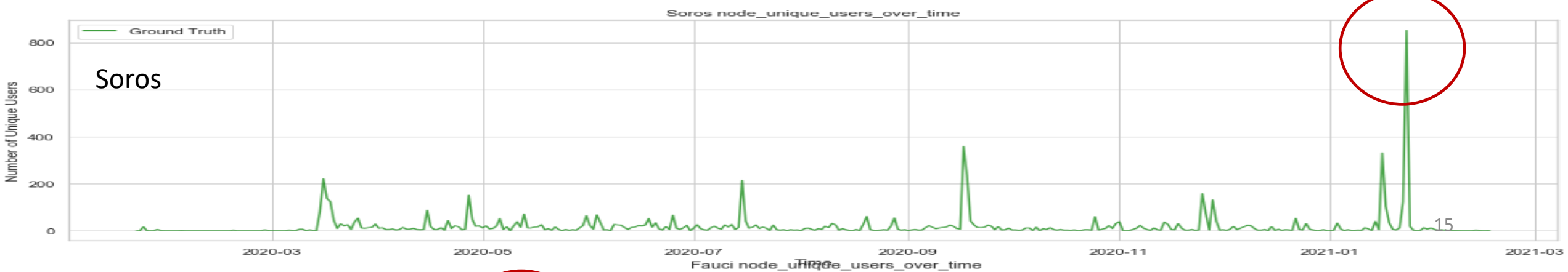
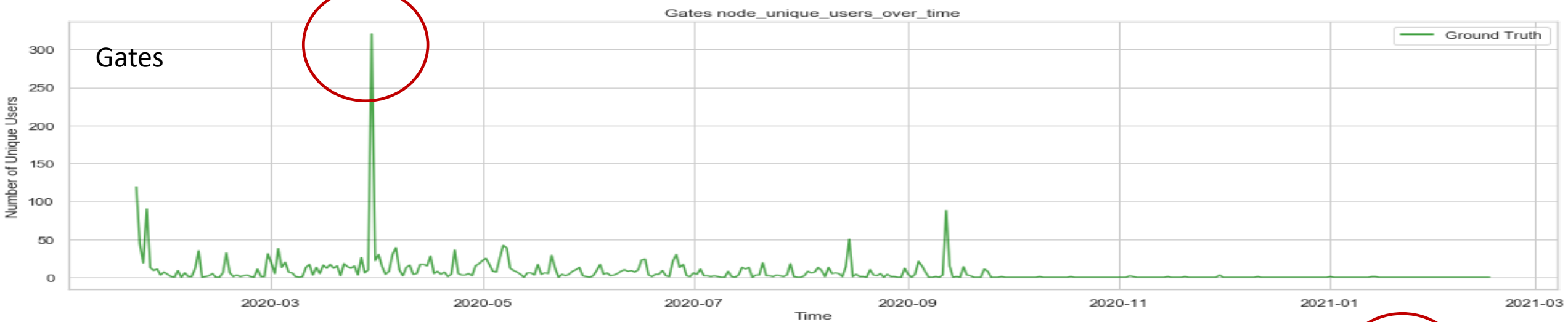
`measurements.top_audience_reach(k=5)`

Key Metrics

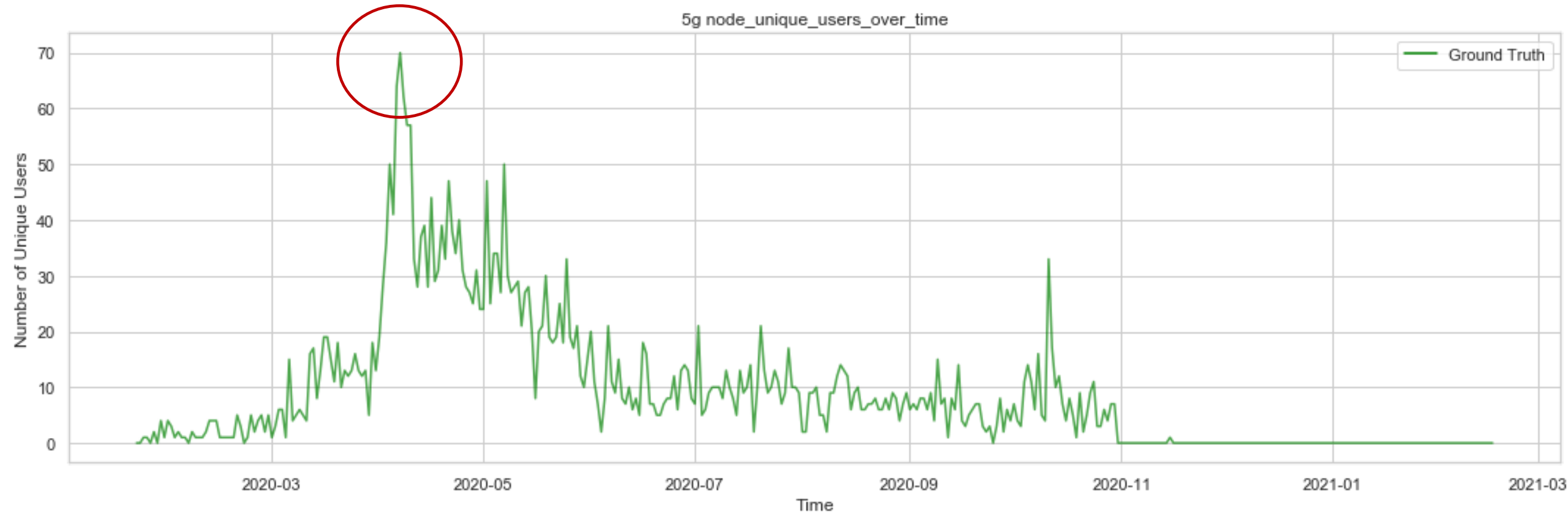
informationID	lifetime	#shares	#users	speed
Fauci	389.261157	33876	15231	87.026407
Soros	388.997141	12326	5768	31.686608
Bioweapon	365.75228	819	422	2.23922
Gates	357.860023	4338	2055	12.122058
5g	296.315359	4316	2952	14.565563

Community: Information Units with Largest Audience

informationID	value
Fauci	15231
Soros	5768
5g	2952
Gates	2055
Bioweapon	422



Temporal Measurements: 5G



```
measurements.unique_users_over_time(delta_t=False,node_level=True)
```



5G Spike-- April

← → × cnet.com/health/5g-coronavirus-conspiracy-theory-sees-77-mobile-towers-burned-report-says/

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c|net Health and Wellness

FEATURED FITNESS SLEEP HEALTHY EATING CAREGIVING PERSONAL CARE

5G coronavirus conspiracy theory leads to 77 mobile towers burned in UK, report says

Attacks on cell towers continue.

Corinne Reichert · May 7, 2020 9:34 a.m. PT

LISTEN · 01:09

→ ↻ apnews.com/article/4ac36796f39e8bd2561c1cbeafdb55

AP

Conspiracy theorists burn 5G towers claiming link to virus

By KELVIN CHAN, BEATRICE DUPUY and ARIJETA LAJKA April 21, 2020 GMT

LONDON (AP) — The CCTV footage from a Dutch business park shows a man in a black cap pouring the contents of a white container at the base of a cellular radio tower. Flames burst out as the man jogs back to his Toyota to flee into the evening.

It's a scene that's been repeated dozens of times in recent weeks in Europe, where conspiracy theories linking new 5G mobile networks and the coronavirus pandemic are fueling arson attacks on cell towers.

Popular beliefs and conspiracy theories that wireless communications pose a threat have long been around, but the global spread of the virus at the same time that countries were rolling out fifth generation wireless technology has seen some of those false narratives amplified.

Officials in Europe and the U.S. are watching the situation closely and pushing back, concerned that attacks will undermine vital telecommunications links at a time they're most needed to deal with the pandemic.

"I'm absolutely outraged, absolutely disgusted, that people would be taking action against the very infrastructure that we need to respond to this health emergency," Stephen Powis, medical

RELATED TOPICS

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npr.org/2020/04/19/838195056/5g-conspiracy-theories-trigger-attacks-on-cellphone-towers

npr NWPB

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TECHNOLOGY

5G Conspiracy Theories Trigger Attacks On Cellphone Towers

April 19, 2020 · 5:06 PM ET
Heard on All Things Considered

FRANK LANGFITT

3-Minute Listen

Dozens of cellphone towers and equipment boxes have been set aflame in Britain, apparently by people who believe 5G technology is helping to spread the coronavirus.

Transcript

MICHEL MARTIN, HOST:



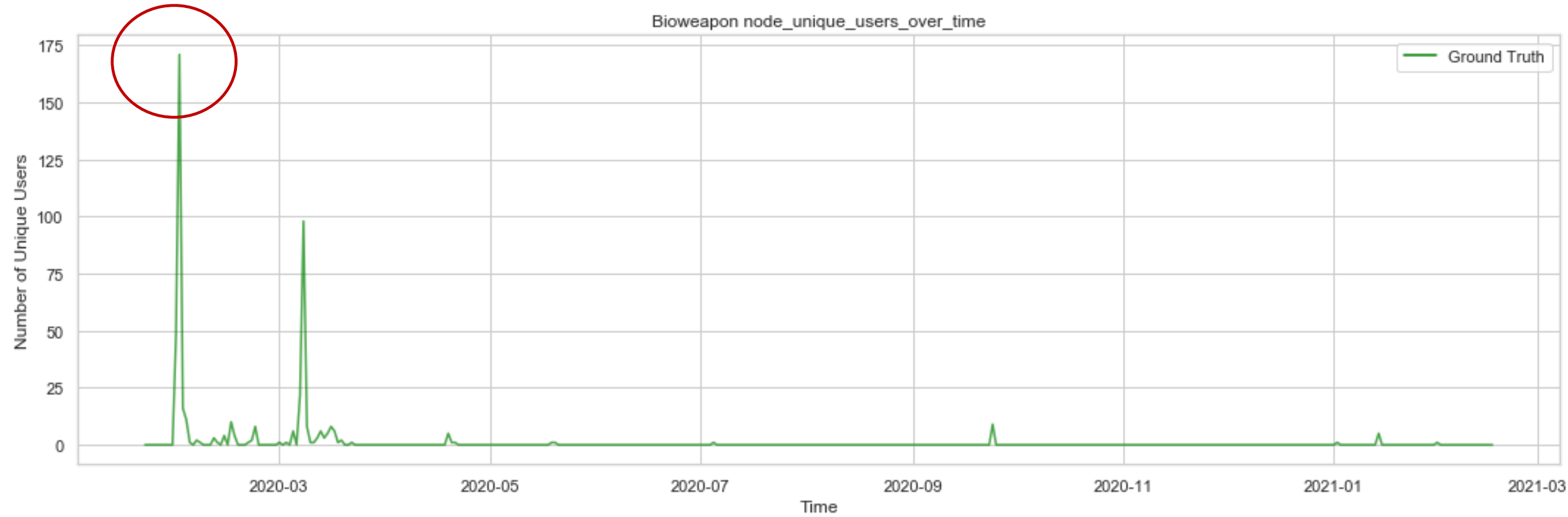
The New York Times

Burning Cell Towers, Out of Baseless Fear They Spread the Virus

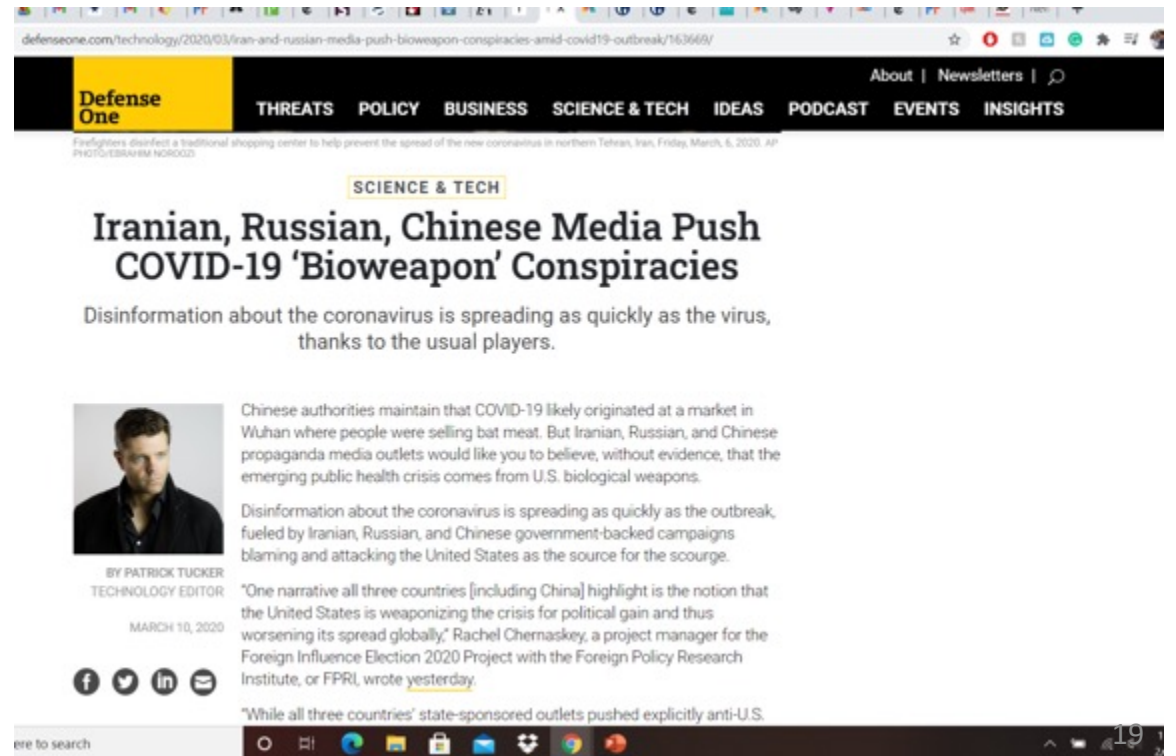
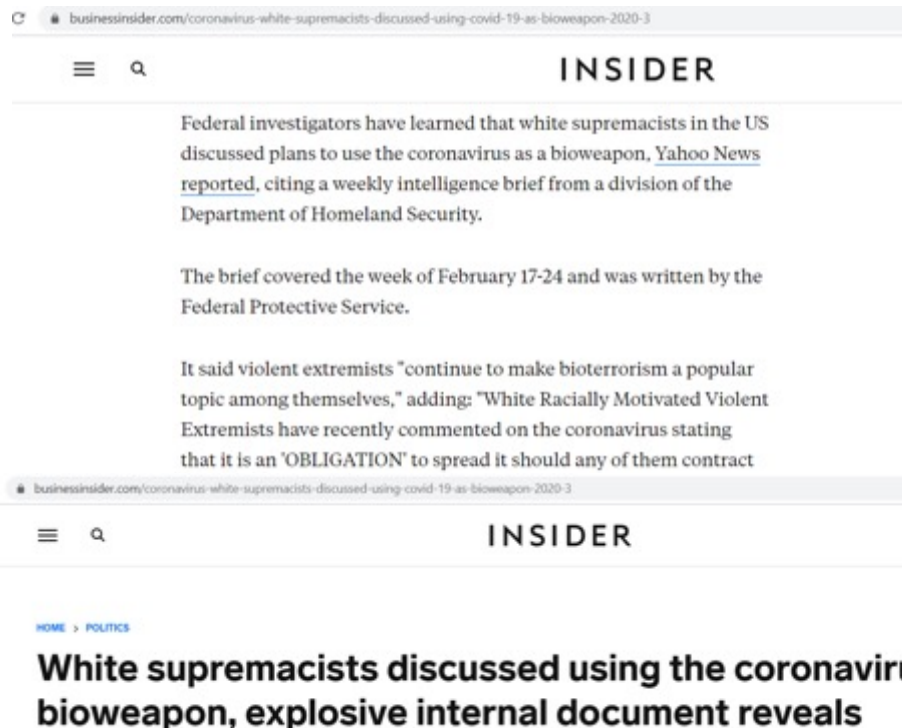
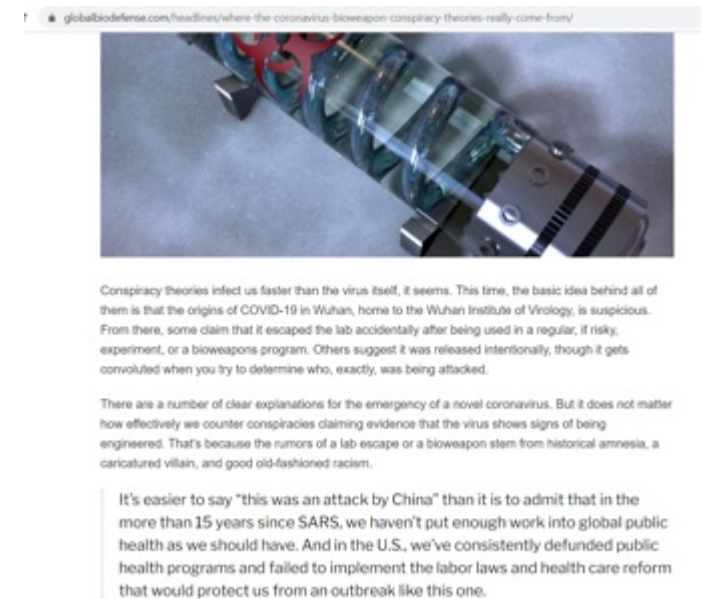
A conspiracy theory linking the spread of the coronavirus to 5G wireless technology has spurred more than 100 incidents this month, British officials said.

17

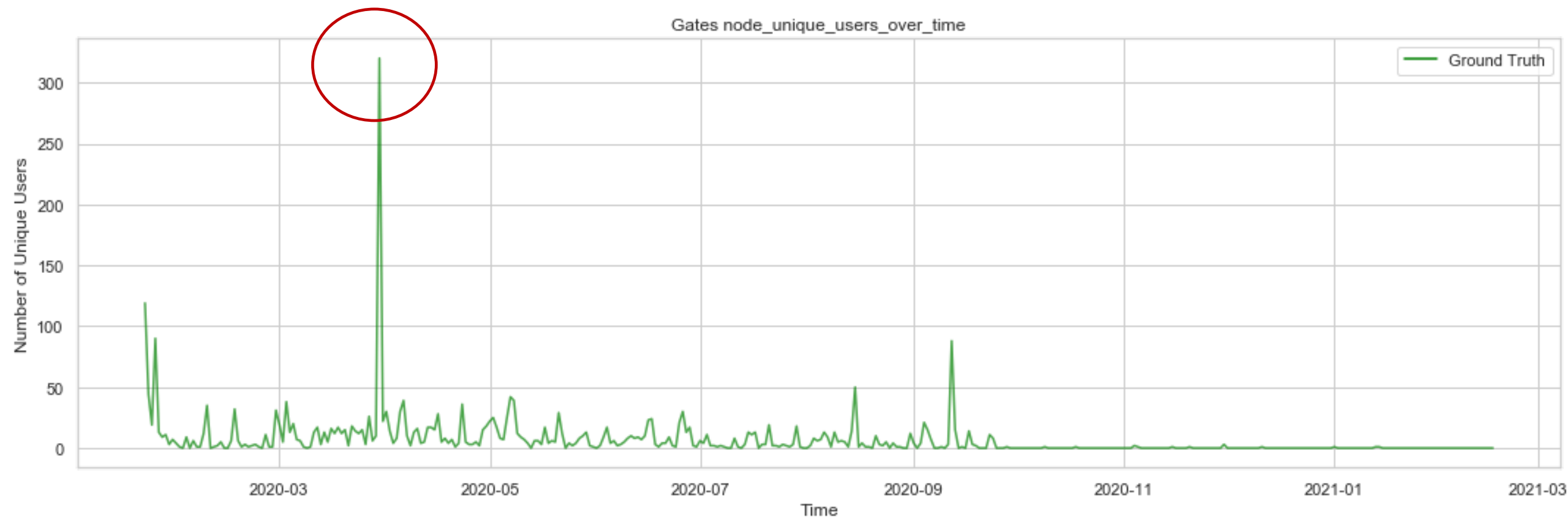
Temporal: Bioweapon



- February spike



Temporal: Gates



Gates- April

statnews.com/2020/04/23/in-long-essay-bill-gates-says-time-and-innovation-needed-before-coronavirus-lockdowns-end/

HEALTH

In long essay, Bill Gates says time and innovation needed before coronavirus lockdowns end

By Helen Branswell April 23, 2020



POLICY TECH CORONAVIRUS

Bill Gates is now the leading target for coronavirus falsehoods, says report

Lies about Gates outpace 5G conspiracies

By Thomas Ricker | @Trixy | Apr 17, 2020, 5:28am EDT

theverge.com/2020/04/17/21224728/bill-gates-coronavirus-lies-5g-covid-19

THE CORONAVIRUS CRISIS

Bill Gates, Who Has Warned About Pandemics For Years, On The U.S. Response So Far

April 9, 2020 · 4:04 PM ET
Heard on All Things Considered

HEIDI GLENN

technology/bill-gates-virus-conspiracy-theories.html

The New York Times

Bill Gates, at Odds With Trump on Virus, Becomes a Right-Wing Target

The Microsoft co-founder turned philanthropist has been attacked with falsehoods that he created the coronavirus and wants to profit from it.

1524



21

washingtonpost.com/education/2020/04/21/no-bill-gates-did-not-engineer-covid-19-pandemic-other-lessons-fake-news/

Sections

The Washington Post
Democracy Dies in Darkness

Answer Sheet · Analysis

No, Bill Gates did not engineer the covid-19 pandemic — and other lessons on fake news

statnews.com/2020/04/23/in-long-essay-bill-gates-says-time-and-innovation-needed-before-coronavirus-lockdowns-end/

KAYANA SZYMOSZAK FOR STAT

Billions of people will be slow to return to normal life from coronavirus lockdowns, and cautioned that it will take time before people feel safe enough to attend large public events or flock to restaurants.

"Even as a government relaxes restrictions on behavior, not everyone will immediately resume the activities that are allowed," Gates, the co-founder of Microsoft and co-chair of the Bill and Melinda Gates Foundation, wrote in a long essay posted Thursday to his blog. "It will take a lot of good communication so that people understand what the risks are and what is comfortable going back to work or school."

Gates said that the dramatic shutdowns of cities and countries worldwide have been necessary to slow spread of the SARS-CoV-2 virus, which causes Covid-19, despite enormous societal costs.

nbc.com/2020/04/24/bill-gates-were-not-even-halfway-through-coronavirus-pandemic.html

make it

SUCCESS MONEY WORK LIFE VIDEO

HEALTH AND WELLNESS

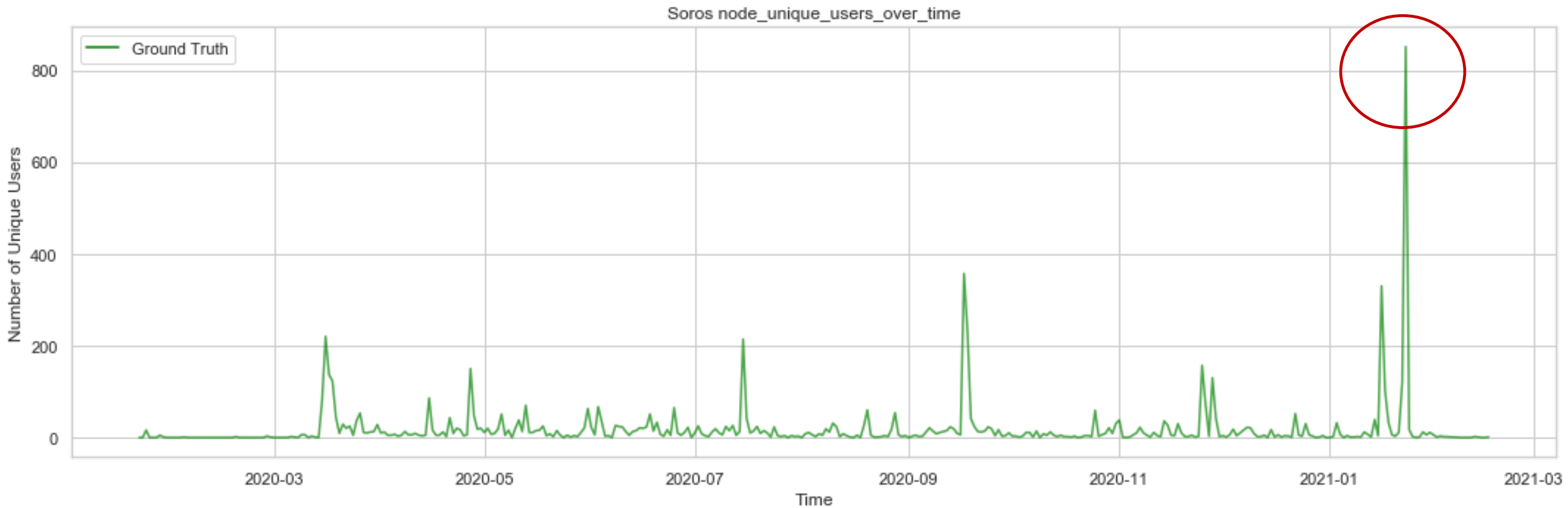
Bill Gates: 'I wish I could say that we're halfway through' coronavirus pandemic

Published Fri, Apr 24 2020 · 2:23 PM EDT

Tom Huddleston Jr.

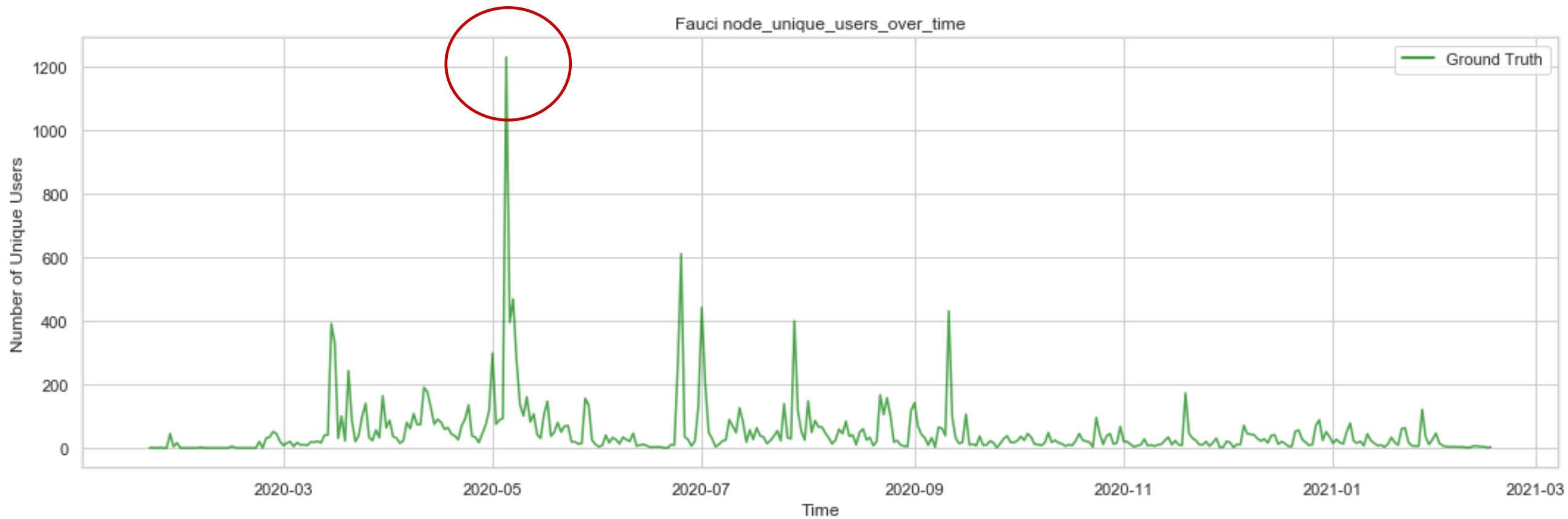
SHARE

Temporal: Soros



No relevant news sources were found from a limited search

Temporal: Fauci



Fauci- May

cnbc.com/2020/05/06/white-house-advisor-anthony-fauci-on-keeping-up-with-covid-19-news.html

make it SUCCESS MONEY WORK LIFE VIDEO

POWER PLAYERS

White House advisor Anthony Fauci on keeping up with Covid-19 like drinking from a fire hydrant

Published Wed, May 6 2020 12:17 PM EDT

Jade Scipioni @JADESCIPIONI



Coronavirus US live: Fauci testifies pandemic is not 'under control' in America - as it happened

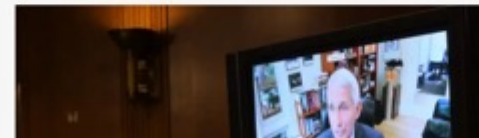
The Guardian US edition

Sport Culture Lifestyle More

ics Business Tech Science Newsletters

Coronavirus US live: Fauci testifies pandemic is not 'under control' in America - as it happened

- Fauci says opening too soon may cause says 'spikes' leading to larger outbreaks
- Analysis shows thousands in US getting Covid-19 at work
- Pence will avoid close contact with Trump
- The race for a vaccine: how Trump's 'America First' approach slows the global search
- Coronavirus - latest global updates
- Get a fresh perspective on America - sign up to our First Thing newsletter



The New York Times

Fauci to Warn Senate of 'Needless Suffering and Death'

The risks of reopening the country too soon will be a focus of government hearings on Tuesday. The White House's new mask requirement won't apply to President Trump.

Published May 11, 2020 Updated May 13, 2020

This briefing has ended. Follow our latest coverage of the coronavirus pandemic.

Here's what you need to know:

- Fauci will issue a stark warning on the risks of reopening too soon.
- The White House plans to ask officials — but not Trump — to wear face masks.

12 May 2020 19:58

Summary

- California is loosening its stay-at-home order for counties that meet certain criteria in containing the virus, allowing them to reopen some offices. But it seems Los Angeles is likely to extend its stay-at-home order through July, and California State University has announced it will cancel most in-person classes this fall.
- Aimee Stephens, the plaintiff in a landmark case about LGBTQ rights that was in the process of being heard by the US Supreme Court has died. She was awaiting the court's decision on whether federal civil rights law protects transgender people, which is expected in late June.
- The White House coronavirus task force is to be expanded soon,

may/12/fauci-testimony-coronavirus-reopening-deaths-hearing

Fauci says US reopening could trigger outbreak 'you might not be able to control'

- 'The consequences could be really serious' if safeguards relaxed
- Infectious disease expert testifies remotely before Senate panel
- Coronavirus - latest US updates
- Coronavirus - latest global updates



▲ Anthony Fauci: 'serious consequences' if US exits lockdown too early - video

Dr Anthony Fauci, the government's top public health expert, warned in Senate testimony on Tuesday that the official coronavirus death toll in the US is an undercount, and that "the consequences could be really serious" if America relaxes safeguards against Covid-19 too abruptly.

while, public
Robert Redfield
despite being
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\$3 trillion
Republicans
Mitt Romney
us testing. The
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nsequences" if
he US death



Cures

`measurements.top_audience_reach(k=3)`

Hydroxy

22324

Sputnik

7880

Silver

1573

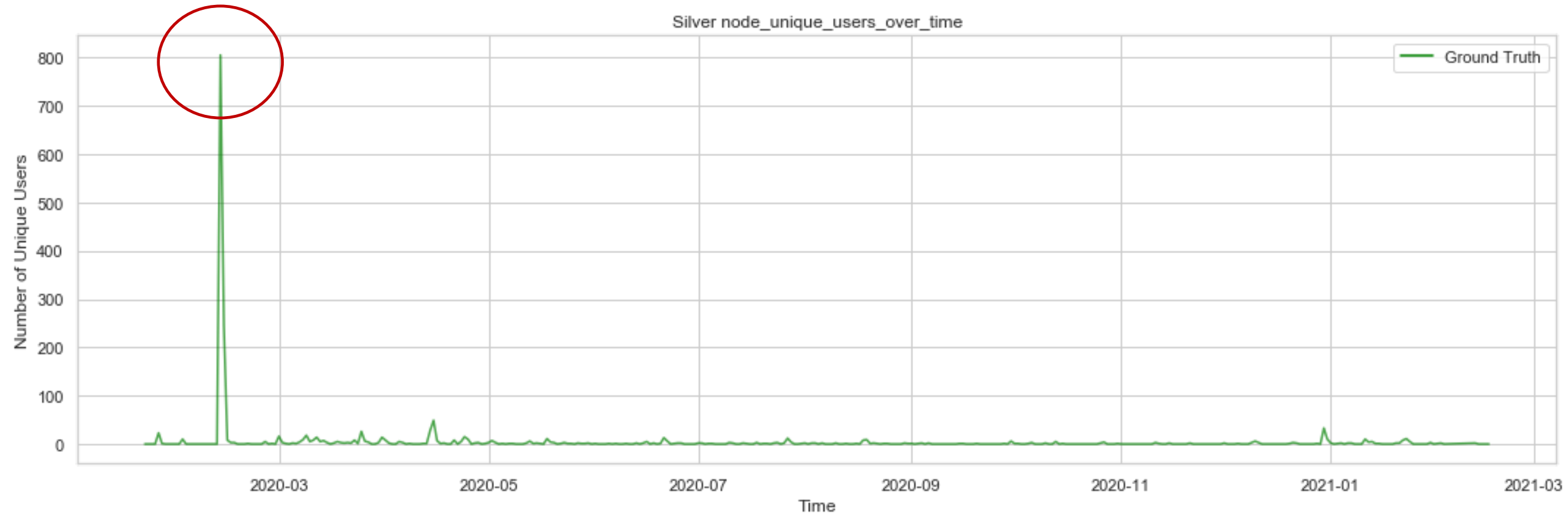
For the "reddit" platform:
62,546 rows of data
62,546 nodes
30,819 users



Cures: Details

	lifetime	#shares	#users	speed
Sputnik	390.770914	15463	7880	39.570499
Silver	382.365081	2415	1573	6.315953
Hydroxy	373.048623	44668	22324	119.737743

Cure: Silver



Silver - February



Sherill Sellman

stated on February 12, 2020 in remarks on the Jim Bakker show:

Silver Solution used on strains of coronavirus "totally eliminate it. Kills it. Deactivates it."



PUBLIC HEALTH MISSOURI PUNDITFACT CORONAVIRUS

SHERILL SELLMAN

No, a silver solution won't cure the coronavirus

2/2/20



SPECIAL SERIES
The Coronavirus Crisis

Missouri Sues Televangelist Jim Bakker For Selling Fake Coronavirus Cure

March 11, 2020 - 4:35 PM ET



MATTHEW S. SCHWARTZ

Televangelist Jim Bakker held up a blue and silver bottle, gazing intently at the label, as he questioned the woman sitting next to him.

"This influenza that is now circling the globe," Bakker said on the Feb. 12 broadcast of *The Jim Bakker Show*, "you're saying that Silver Solution would be effective."

His guest, the so-called "natural health expert" Sherrill Sellman, falsely implied that the liquid would likely be effective. The coronavirus impacting more than 120,000 people worldwide does not yet have a known treatment or cure.



Televangelist Jim Bakker, shown here in 2018, faces a legal challenge from the state of Missouri for selling a false remedy against the coronavirus. The COVID-19 disease currently has no cure.
Chuck Burton/AP



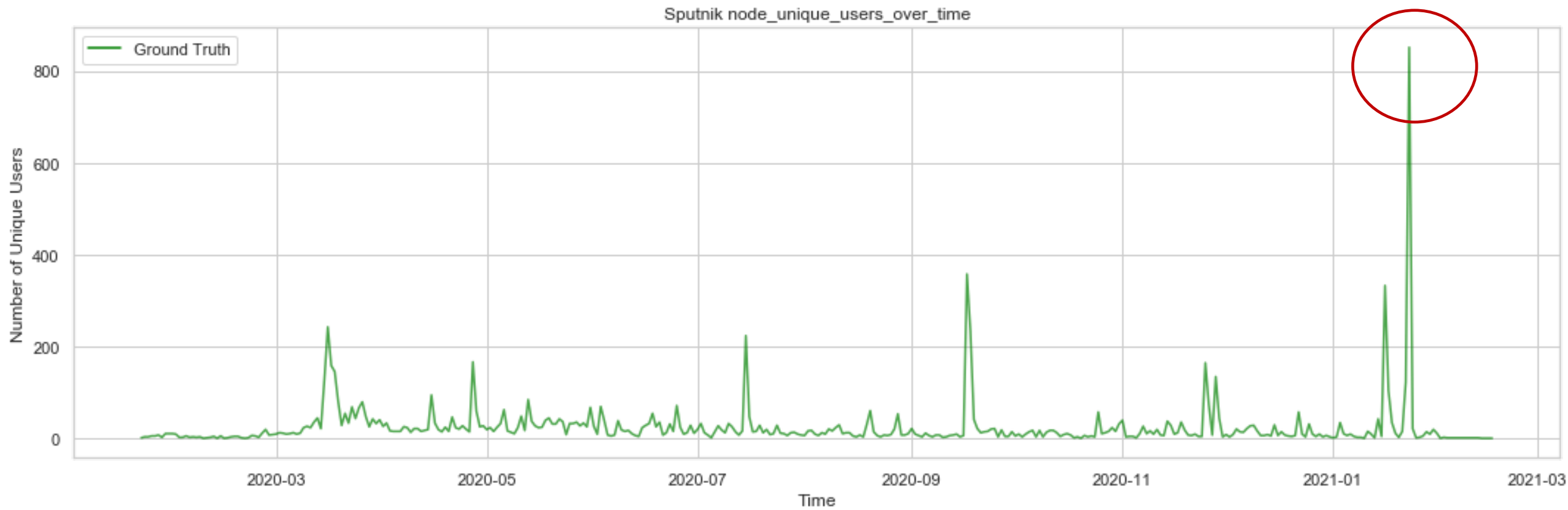
Televangelist Jim Bakker in a February 2020 episode of his show "The Jim Bakker Show"

NEWSFEED

TV Preacher Jim Bakker Suggests His \$125 Product Kills Coronavirus (COVID-19) and HIV

Update: N.Y. attorney general tells the televangelist to stop making misleading claims about Silver Solution.

Cure: Sputnik/Russia



Sputnik: Dec20/Jan21

from **Africa in Transition** and **Africa Program**

Russian Disinformation Popularizes Sputnik V Vaccine in Africa

Blog Post by Guest Blogger for John Campbell

December 10, 2020

7:00 am (EST)

World

Russian vaccine Sputnik V is using Twitter to needle and undermine its rivals

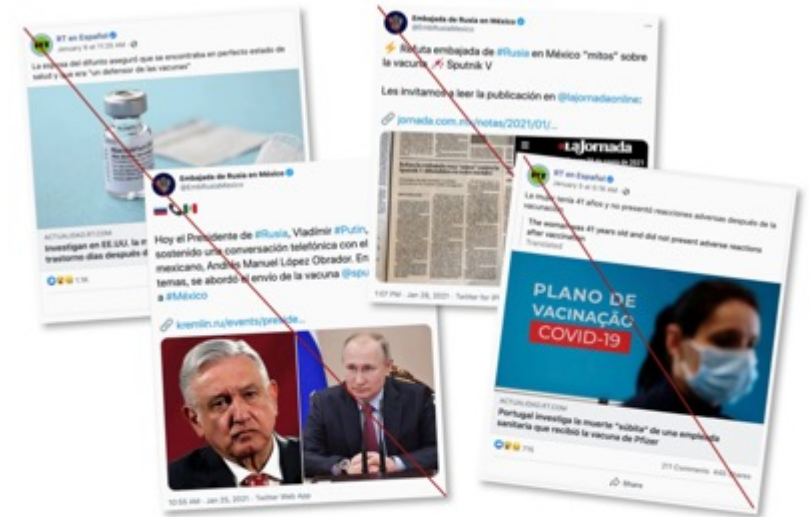
By **Adam Taylor**

Dec. 18, 2020 at 9:25 a.m. PST

The Washington Post
Democracy Dies in Darkness

Russian Campaign Promotes Homegrown Vaccine and Undercuts Rivals

Russian news outlets with connections to the Kremlin ran disingenuous Spanish-language stories targeting vaccines made in the United States and Europe, researchers said.



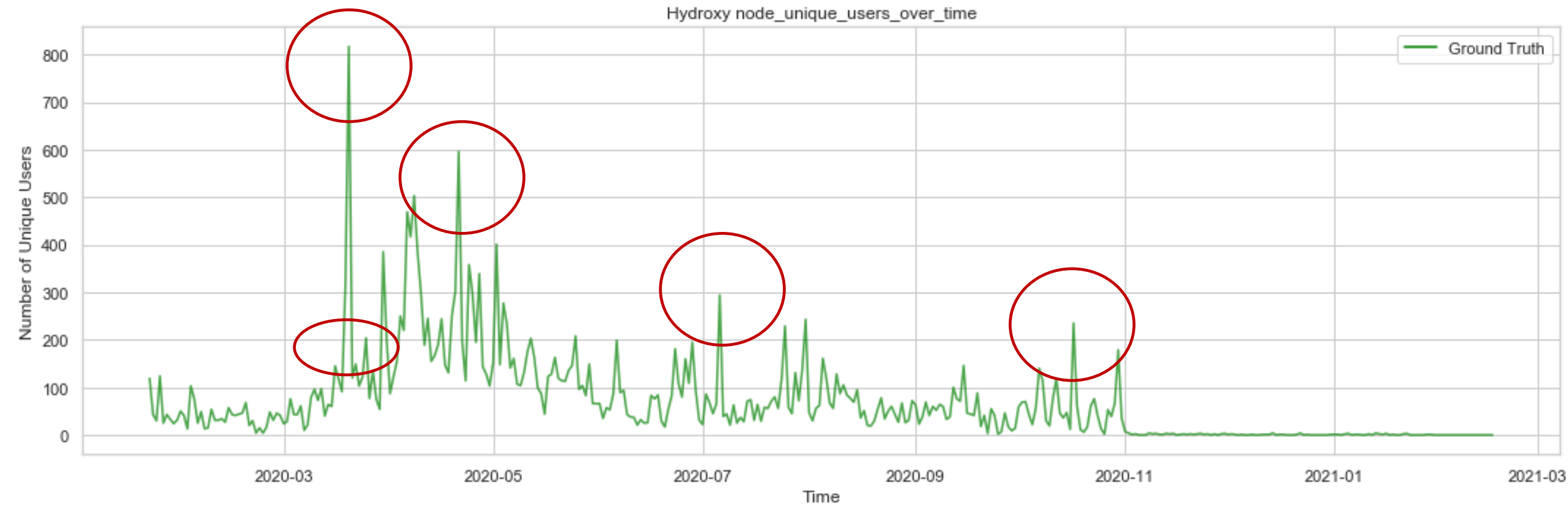
Screenshots from Russia Today's Spanish language Facebook account and the official Twitter account of the Russian Embassy in Mexico City.



By Sheera Frenkel, Maria Abi-Habib and Julian E. Barnes

Published Feb. 5, 2021 Updated Feb. 6, 2021

Cure: Hydroxychloroquine/bleach/chlorine



Hydroxychloroquine - March

chloroquine prescriptions surged 2,000% in March when Trump touted malaria drug

U.S. prescriptions for malaria drug hydroxychloroquine surged nearly 2,000% in March when President [Donald Trump](#) first promoted the drug as a potential treatment for the coronavirus, according to a [new study published in JAMA](#).

During the week of March 15 to March 21, there were 45,858 short-term prescription fills for hydroxychloroquine and chloroquine, compared to 2,208 in 2019, according to researchers at Brigham and Women's Hospital and Harvard Medical School whose findings were published Thursday.

The researchers said 28-to-60 day and 61-plus day prescriptions generally used by people with chronic conditions like Lupus jumped 179% and 182%, respectively, during that week. They said overall there were 483,425 excess prescriptions fills of hydroxychloroquine and chloroquine in the 10 weeks from Feb. 16 to April 25 examined by the study.

The findings come a week after a [study published](#) in medical journal The Lancet found that hospitalized Covid-19 patients treated with hydroxychloroquine had a higher risk of death than those who didn't take it.

Patients who took the drug or chloroquine, which hydroxychloroquine is derived from, were also more likely to develop irregular heart rhythms, according to the study, which looked at more than 96,000 patients from 671 hospitals across six continents.

For Immediate Release: March 30, 2020

The U.S. Food and Drug Administration today announced the following actions taken in its ongoing response effort to the COVID-19 pandemic:

- On March 28, 2020, the FDA [issued an Emergency Use Authorization](#) (EUA) to allow hydroxychloroquine sulfate and chloroquine phosphate products donated to the [Strategic National Stockpile](#)(SNS) to be distributed and used for certain hospitalized patients with COVID-19. These drugs will be distributed from the SNS to states for doctors to prescribe to adolescent and adult patients hospitalized with COVID-19, as appropriate, when a clinical trial is not available or feasible. The EUA requires that fact sheets that provide important information about using chloroquine phosphate and hydroxychloroquine sulfate in treating COVID-19 be made available to health care providers and patients, including the known risks and drug interactions. The SNS, managed by ASPR, will work with the Federal Emergency Management Agency (FEMA) to ship donated doses to states.

statnews.com/2020/03/20/trump-coronavirus-drug-just-a-feeling/

President Trump speaks at a March 20 press briefing.
EVAN VUCOLIAN

WASHINGTON — President Trump on Friday admitted that his enthusiasm for an antimalarial drug unproven as a coronavirus treatment was based largely on gut instinct, after an open disagreement with the nation's top infectious disease expert at a White House press briefing.

When reporters asked Tony Fauci, the director of the National Institute of Allergy and Infectious Diseases, whether the drug hydroxychloroquine was effective at preventing coronavirus, he said simply: "The answer is no."

But when Trump came back to the microphone, he told reporters that "we ought to give it a try."

"I think we disagree a little bit," Trump added. "I feel good about it. That's all it is, just a feeling, you know, smart guy. I feel good about it."

The drug, long used to treat malaria and diseases including rheumatoid arthritis and lupus, has shown limited efficacy at treating coronavirus, and has not yet been fully tested either as a treatment or preventive medicine in a formal trial. Trump, nonetheless, said the White House had ordered millions of doses — perhaps a reference to Bayer's recent announcement that it would donate three million tablets of the drug to the American government.

Hydroxychloroquine - July



Dr Stella Immanuel tell tori pipo say she don treat ova 350 patients with hydroxychloroquine

DEBUNKING FALSE STORIES › FEATURED POSTS

In Viral Video, Doctor Falsely Touts Hydroxychloroquine as COVID-19 ‘Cure’

By *Saranac Hale Spencer and Angelo Fichera*

Posted on July 28, 2020

BBC NEWS | PIDGIN

Home Nigeria Africa World Video Sport Entertainment Most popular

Dr Stella Immanuel Covid hydroxychloroquine video: Facebook remove viral post of doctor wey say she use di drug to treat over 300 coronavirus patients for US

Stella Immanuel - the doctor behind unproven coronavirus cure claim

By Dickens Olewe
BBC News

Hydroxychloroquine – April/October

abc NEWS CORONAVIRUS HEALTH & SCIENCE

Tracking hydroxychloroquine misinformation: How an unproven COVID-19 treatment ended up being endorsed by Trump

Donald Trump has touted the anti-malarial drug as a COVID-19 "game changer."

By **Fergal Gallagher**

April 22, 2020, 9:10 AM • 10 min read



POLICY CORONAVIRUS

Trump's chloroquine hype is a misinformation problem bigger than social media

Social media sites are policing powerful voices

By **Adi Robertson** | @thedextrarchy | Apr 9, 2020, 2:22pm EDT

The New York Times

Coronavirus Outbreak >

LIVE

Latest Updates

Maps and Cases

Risk in Benton County

Vaccine Rollout

New

< Tracking Viral Misinformation

Hydroxychloroquine Is Part of the Online Conversation, Again



Oct. 5, 2020

By Katherine J. Wu

President Trump's announcement on Friday that [he tested positive for the coronavirus](#) has reignited an online fervor over hydroxychloroquine, a drug [repeatedly promoted](#) and taken by Mr. Trump despite a lack of evidence that it effectively treats or prevents Covid-19.

Cascade Analysis

Default Community: Information Units with Largest Audience

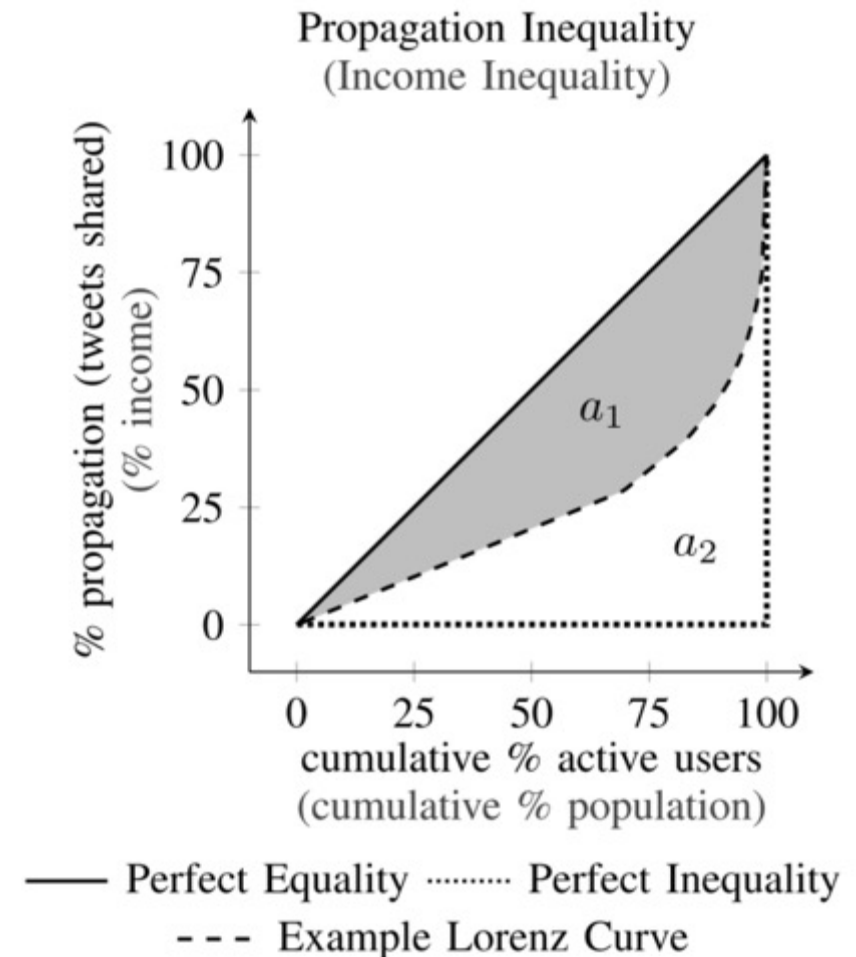
informationID	value
Hydroxy	22324
Sputnik	7880
Silver	1573

Background

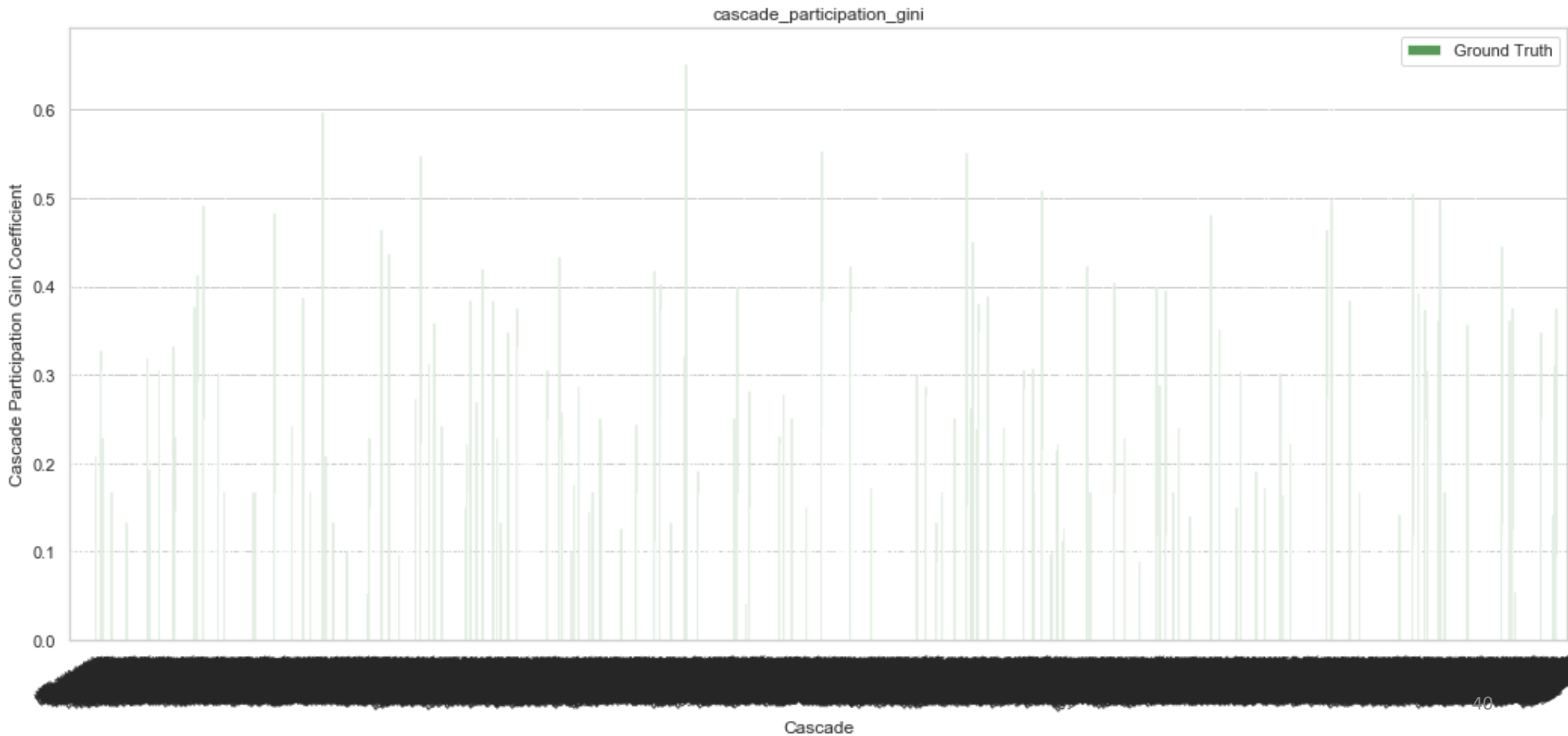
- **Cascade Participation Inequality Measurements**
- cascade_participation_gini
- cascade_participation_palma
- cascade_collection_initialization_gini
- cascade_collection_initialization_palma
- cascade_collection_participation_gini
- cascade_collection_participation_palma

Gini & Palma

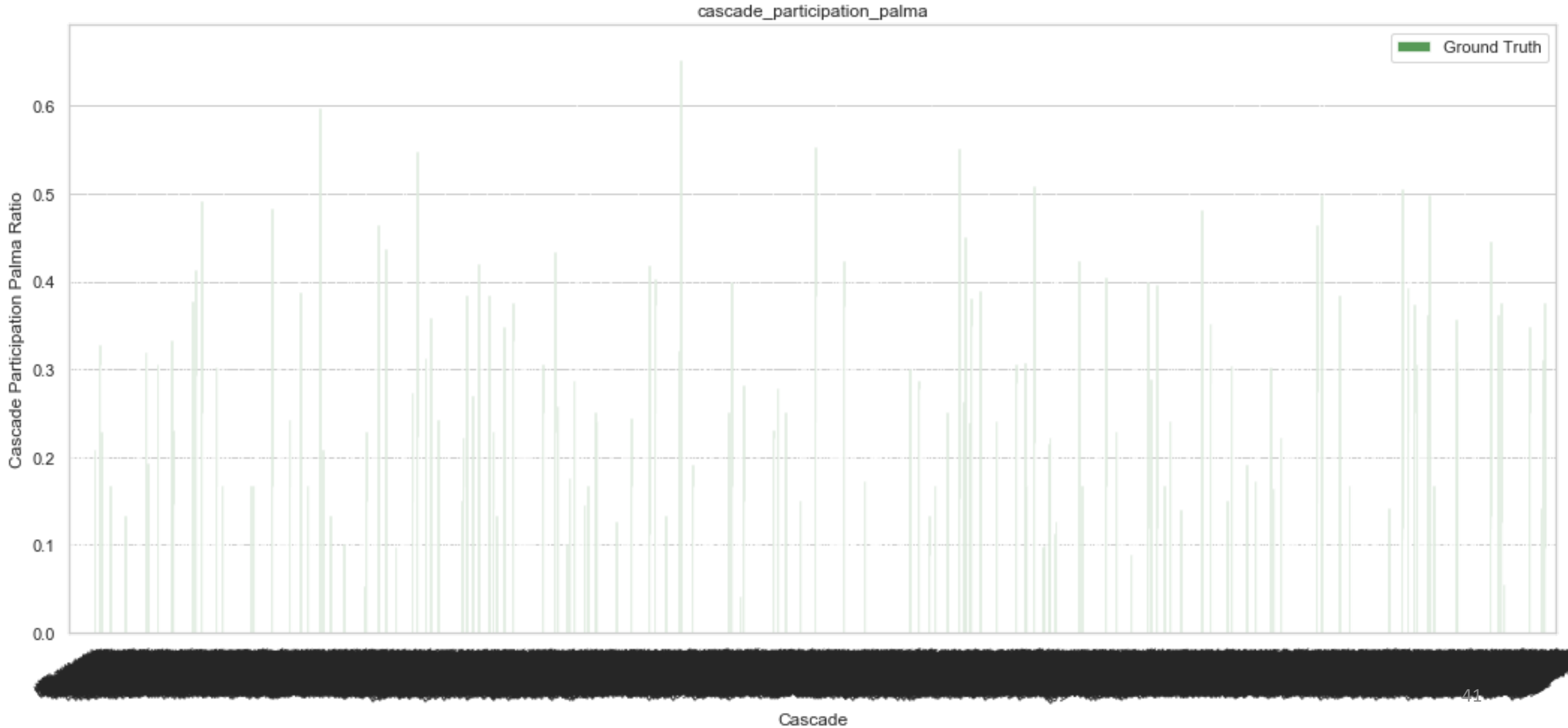
- As a graphical representation of income inequality within a population, Lorenz curves plot the share of income by the cumulative share of the population. Lorenz curves that measure the inequality in propagation plot the share of total propagation, i.e., the $y\%$ of tweets posted, by the share of the population who authored tweets, i.e., the cumulative $x\%$ of active users.
- The Gini coefficient is the proportion of the area under the line of perfect equality ($a_1 + a_2$) that is captured between the line of perfect equality and the Lorenz curve (a_1).
- The Palma ratio is defined as the ratio of the share of the top 10% to the bottom 40% of users in the population. Again, using income as an example, in perfect equality each individual in the population is responsible for an equal amount, e.g. an equal share of income, resulting in a Palma ratio of 1/41/4. The Palma ratio was formulated as another measure of inequality because the Gini coefficient is most sensitive to changes in the middle, which is relatively stable — the Palma ratio, on the other hand, is sensitive to changes at the extremes.



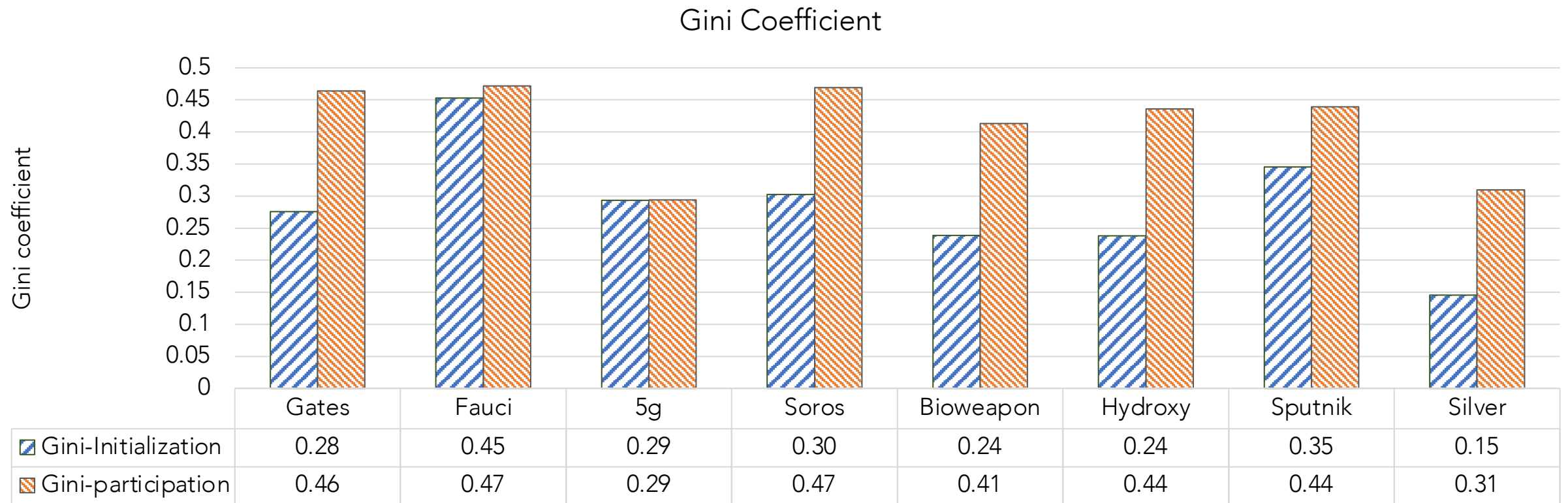
Cascade Participation Gini: Origin Narratives



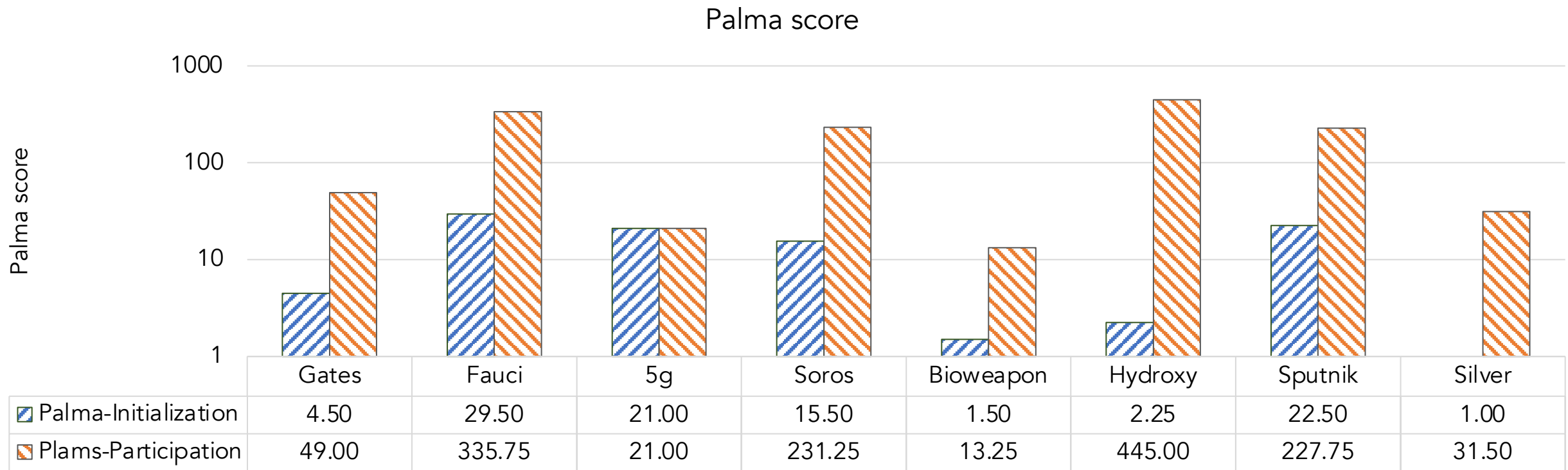
Cascade Participation Palma: Origin



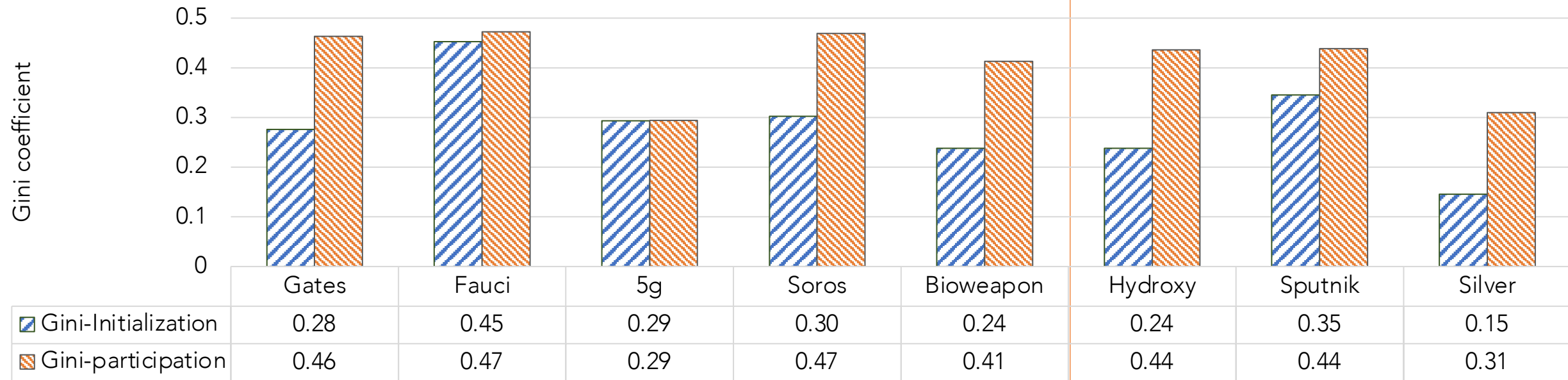
Gini Coefficient: Origin & Cure



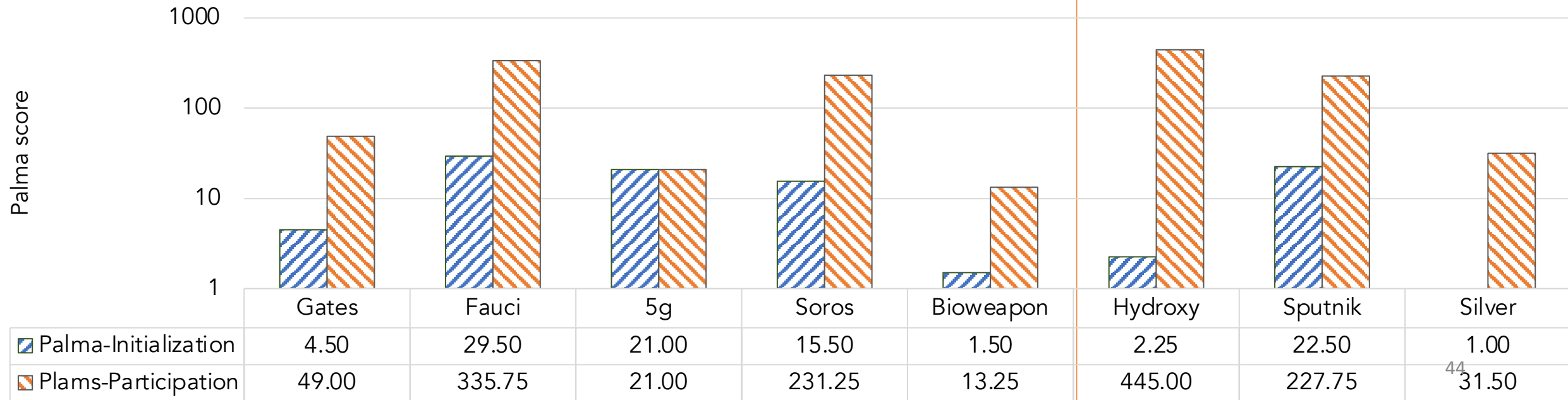
Palma: Origin and Cure



Gini Coefficient



Palma score



cascades.list_measurements()

- 1) `cascade_breadth_by_depth`: the number of nodes created at a given depth
- 2) `cascade_breadth_by_time`: the number of nodes created at a given time/within a given time bin
- 3) `cascade_collection_initialization_gini`: gini coefficient summarizing to what extent are posts that trigger information cascades disproportionately authored by a subset of the users?
- 4) `cascade_collection_initialization_palma`: palma ratio summarizing to what extent are posts that trigger information cascades disproportionately authored by a subset of the users who participate in the cascade?
- 5) `cascade_collection_participation_gini`: gini coefficient summarizing to what extent are posts sets of cascades disproportionately authored by a subset of the users who participate in the cascade?
- 6) `cascade_collection_participation_palma`: palma ratio summarizing to what extent are posts within a collection of information cascades disproportionately authored by a subset of the users who participate in the cascade?
- 7) `cascade_max_depth_over_time`: time series of Max-Depth of cascade, i.e., the longest path from the root to a leaf node in the cascade over time
- 8) `cascade_new_user_ratio_by_depth`: the diversity of users who participate at different depths of the cascade - here, "new users" are users who did not previously participate in the given cascade at an earlier depth.
- 9) `cascade_new_user_ratio_by_time`: the diversity of users who participate over the lifetime of the cascade
- 10) `cascade_participation_gini`: gini coefficient summarizing to what extent are the posts within an information cascade disproportionately authored by a subset of the users who participate in the cascade?
- 11) `cascade_participation_palma`: palma ratio summarizing to what extent are posts within information cascades disproportionately authored by a subset of the users who participate in the cascade?
- 12) `cascade_size_over_time`: size of the cascade over time (delay from timestamp of root node)
- 13) `cascade_structural_virality_over_time`: how "viral" the cascade is (average path lengths between nodes in the cascade)
- 14) `cascade_uniq_users_by_depth`: the number of unique participants at given depths within a cascade
- 15) `cascade_uniq_users_by_time`: the number of unique participants at a given time, i.e., the size of the audience at a given time/within a given time bin

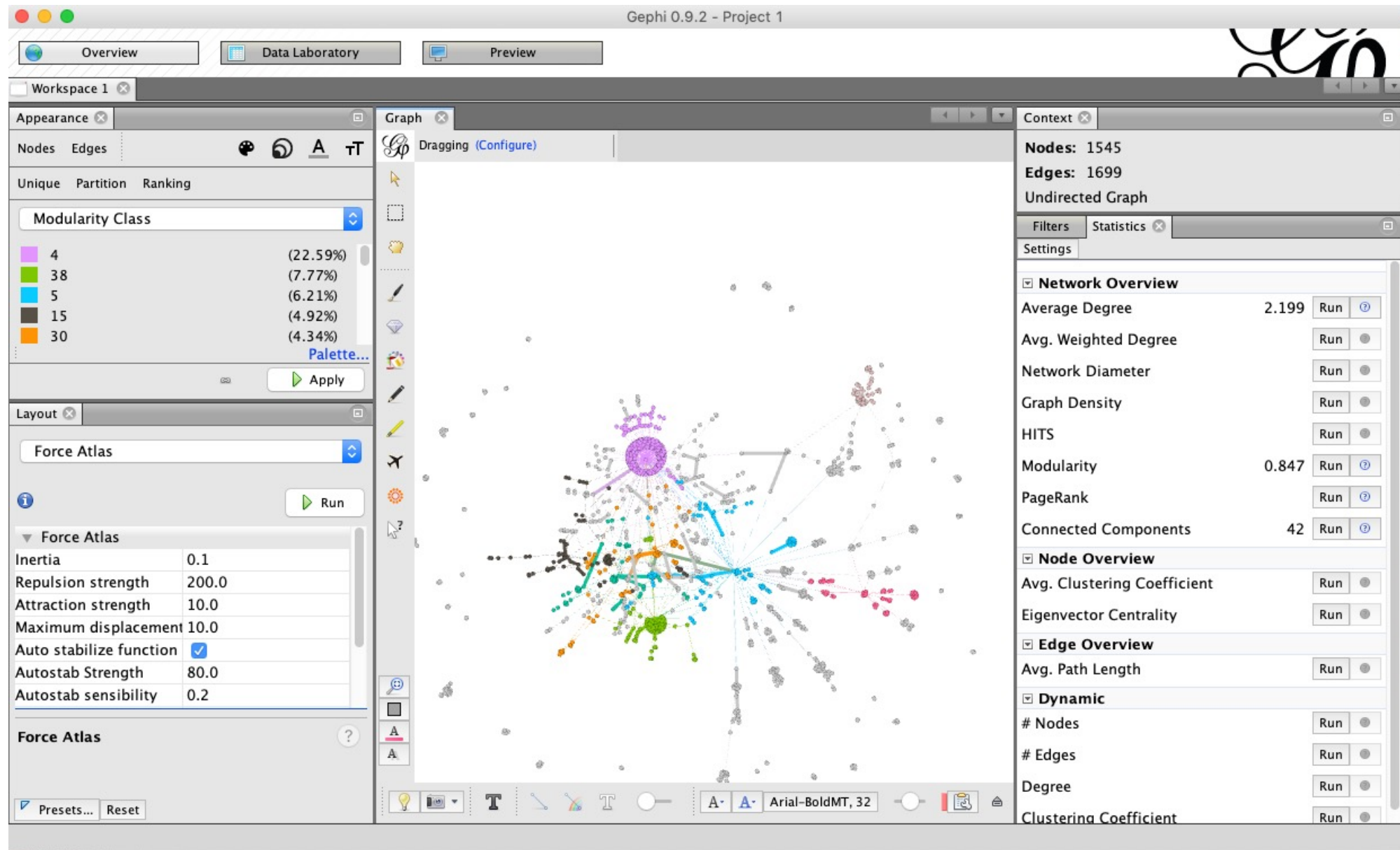
PART 2

Social Network Analysis

Social Structure: Graph Analytics

- Origin
- Cures

Tool: Gephi



Key Graph Measures

Origin Narratives										
Topic	IVI	IEI	Avg degree	#components	Modularity	#Communities	Diameter	AvgPath	AvgCC	#Triangles
5g	35	34	1.943	4	0.648	8	6	2.94	0.293	3
Bioweapon	403	440	2.18	15	0.842	31	11	4.677	0.181	29
Gates	2023	2443	2.415	32	0.877	63	16	4.73	0.199	212
Soros	5544	7114	2.566	76	0.879	118	22	4.788	0.226	888
Fauci	14925	19649	2.633	192	0.911	271	18	5.1	0.186	2354
Fake Cure Narratives										
Topic	IVI	IEI	Avg degree	#components	Modularity	#Communities	Diameter	AvgPath	AvgCC	#Triangles
Silver	1545	1699	2.199	42	0.849	72	13	4.446	0.143	80
Sputnik	3506	3933	2.244	280	0.91	317	23	6.22	0.123	304
Hydroxy	16143	17350	2.15	1401	0.936	1508	25	6.43	0.132	1185

Origin

- Number of nodes:
 - {'Gates': 2023, 'Fauci': 14925, '5g': 35, 'Soros': 5544, 'Bioweapon': 403}
- Number of edges:
 - {'Gates': 37086, 'Fauci': 37086, '5g': 37086, 'Soros': 37086, 'Bioweapon': 37086}
- social_structure_reddit.mean_node_degree:
 - {'Gates': 3.0578348986653485, 'Fauci': 3.268609715242881, '5g': 2.2285714285714286, 'Soros': 3.0797258297258296, 'Bioweapon': 2.7493796526054592}
- Average Clustering Coefficient:
 - Reddit: {'Gates': -0.07085505997211623, 'Fauci': -0.07085505997211623, '5g': -0.07085505997211623, 'Soros': -0.07085505997211623, 'Bioweapon': -0.07085505997211623}

Note: These numbers change when loaded into Gephi for graph analytics (parallel edges are removed)

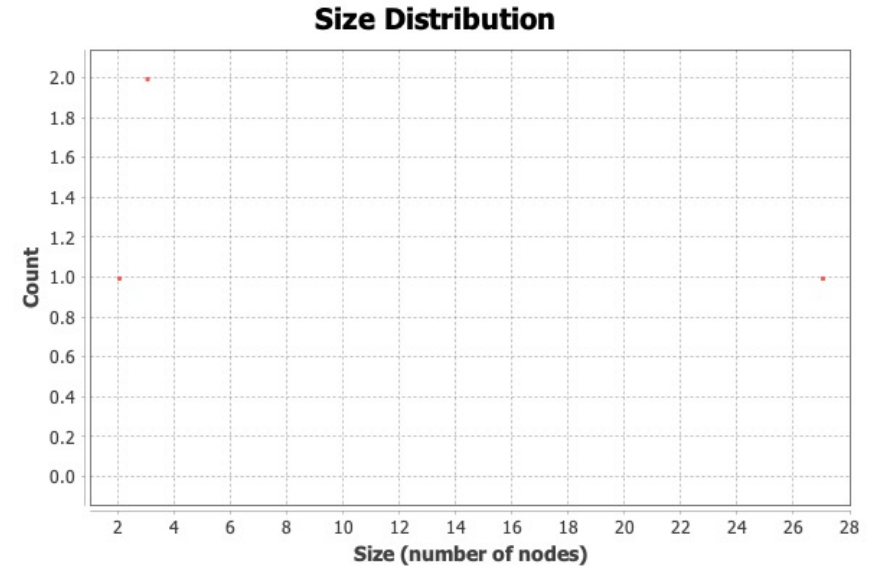
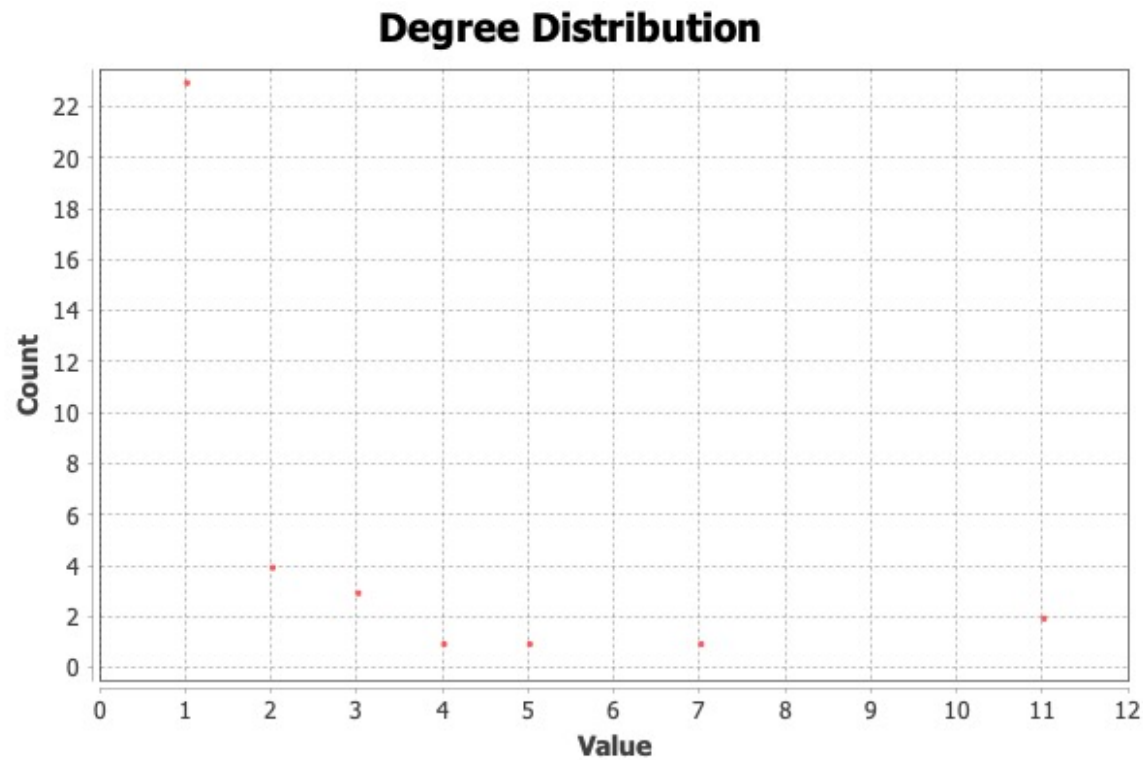
5G: Analysis

#Nodes: 35

#Nodes: 34

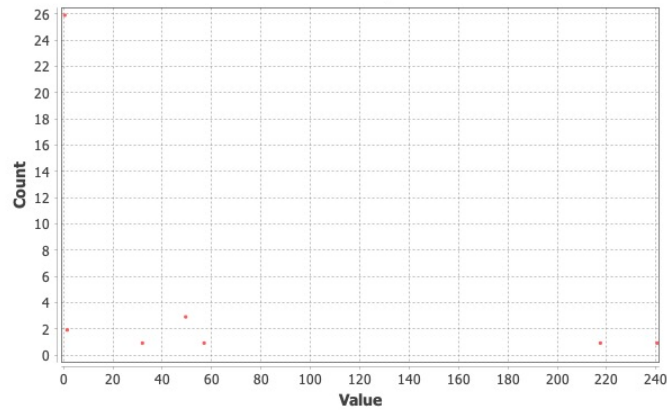
Degree Analysis

- Average Weighted Degree: 2.229
- Number of Weakly Connected Components: 4

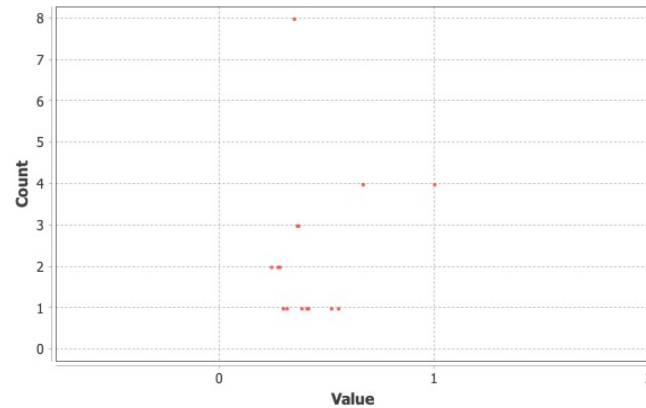


Centralities

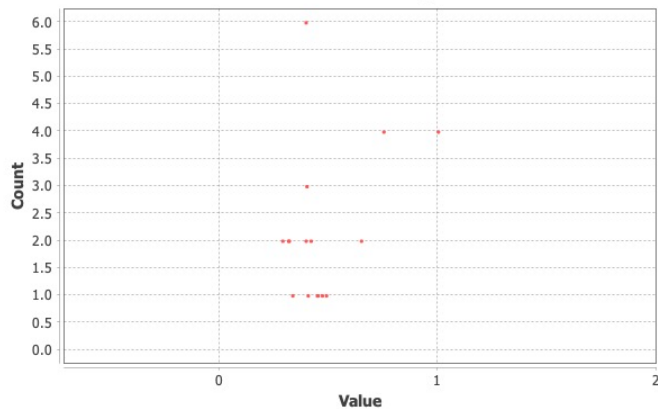
Betweenness Centrality Distribution



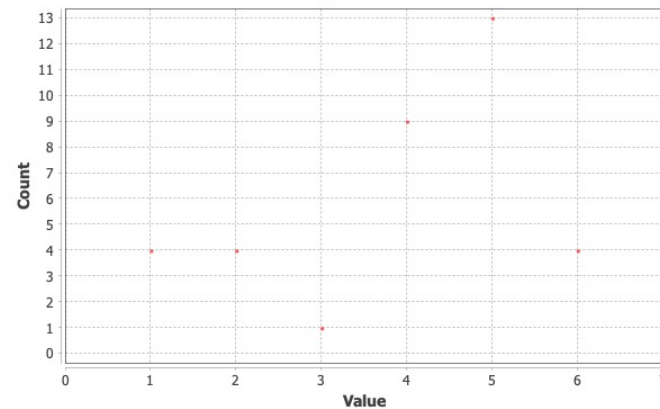
Closeness Centrality Distribution



Harmonic Closeness Centrality Distribution

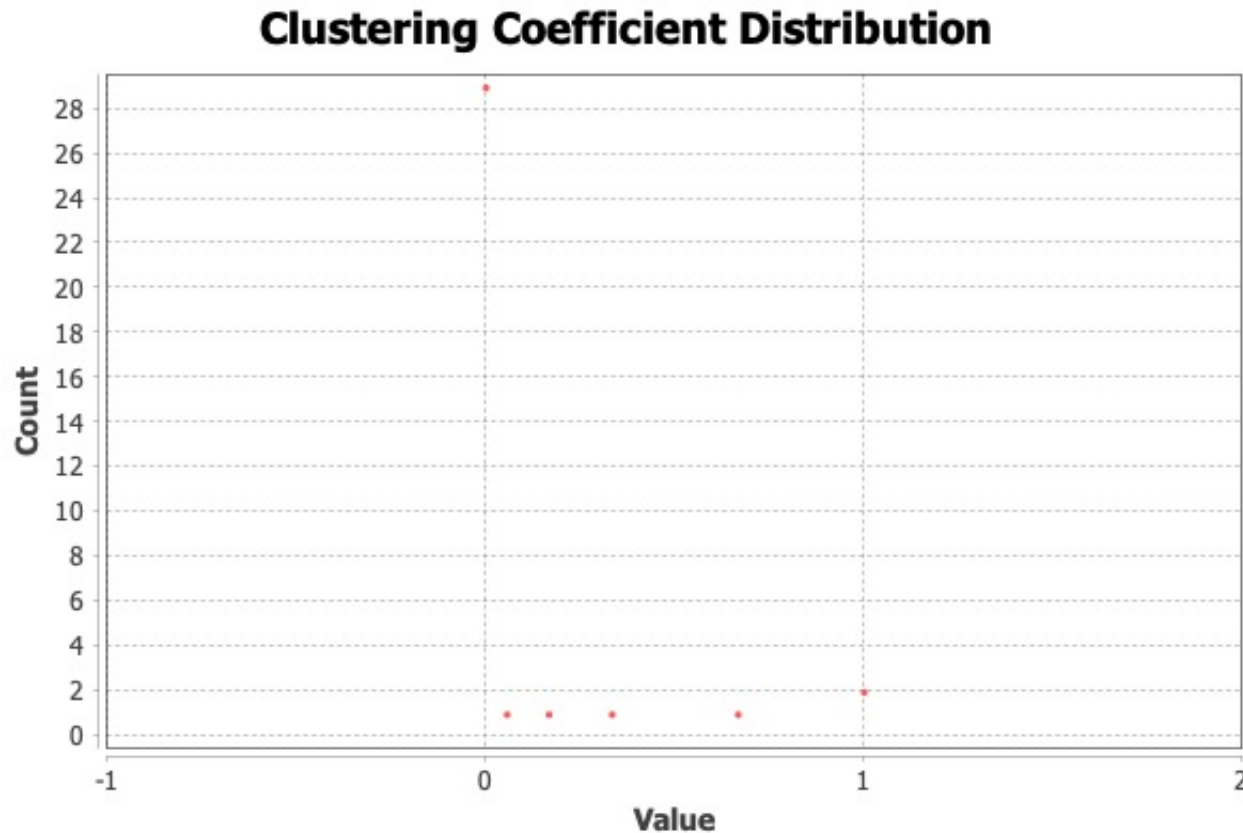


Eccentricity Distribution



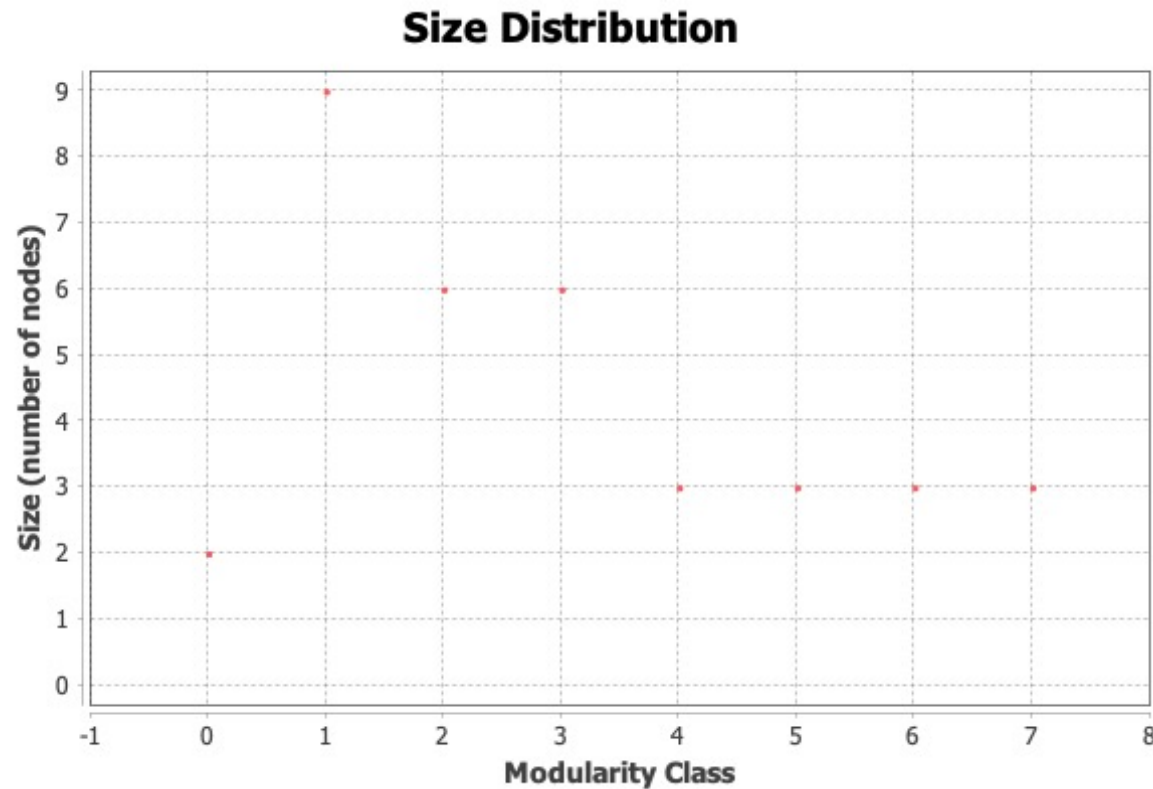
- Diameter: 6
- Radius: 1
- Average Path length:
2.9385474860335
195

Clustering Coefficient

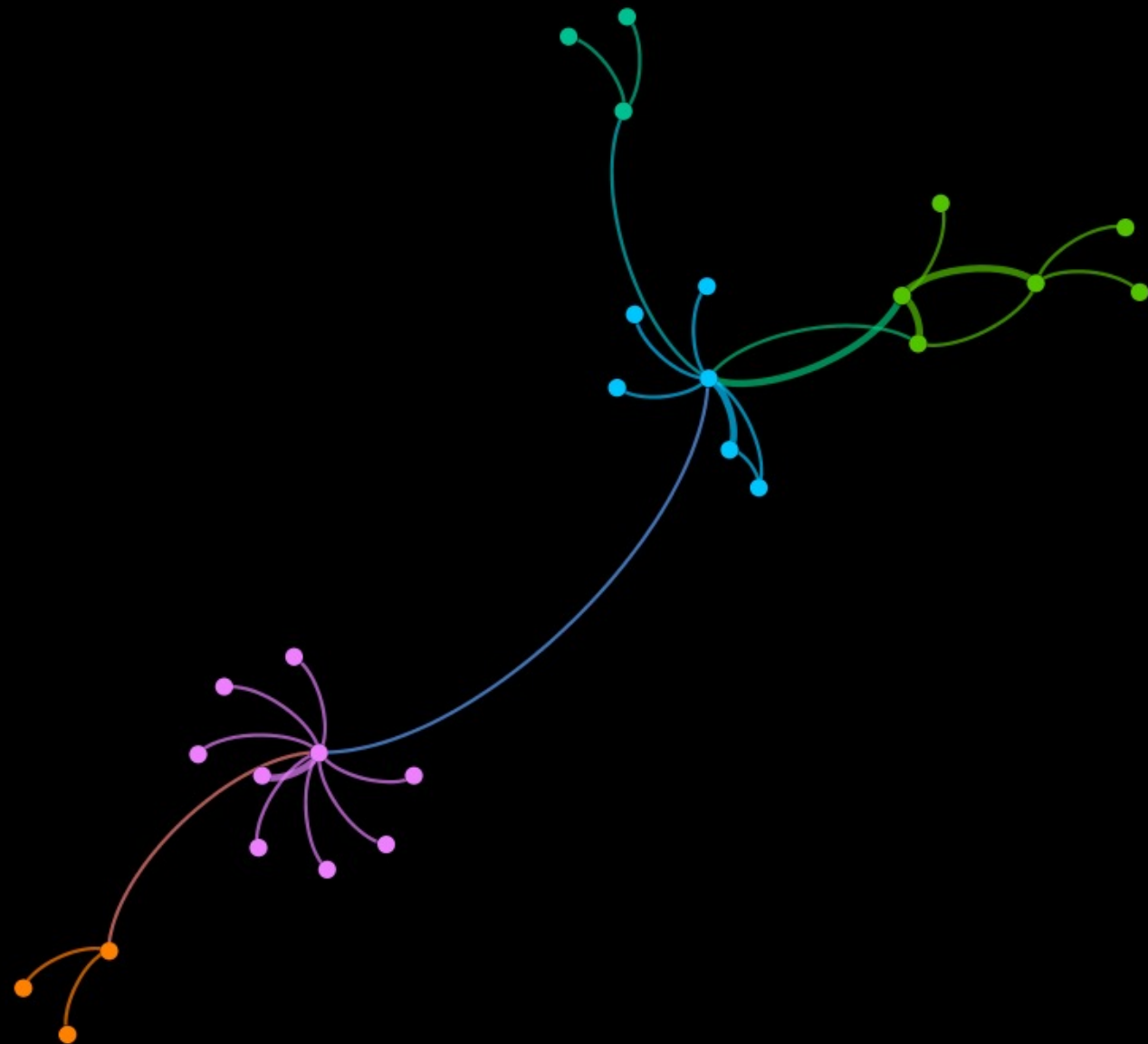


- Average Clustering Coefficient: 0.293
- Total triangles: 3
- The Average Clustering Coefficient is the mean value of individual coefficients.

Community structure



- Modularity: 0.648
- Modularity with resolution: 0.648
- Number of Communities: 8

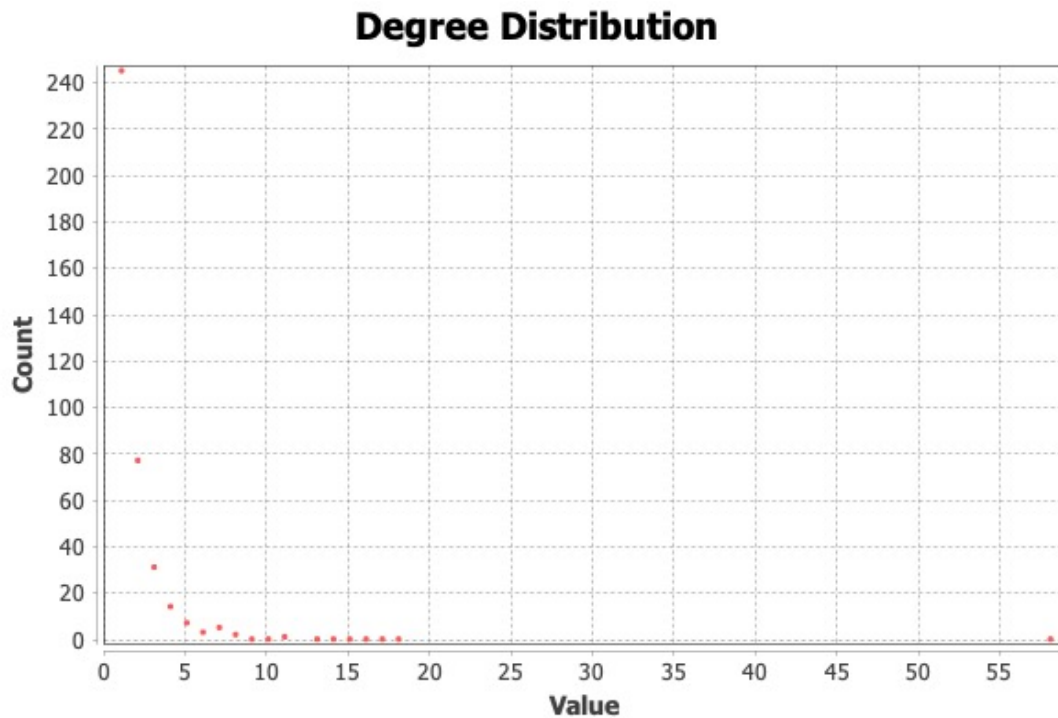


Bioweapon

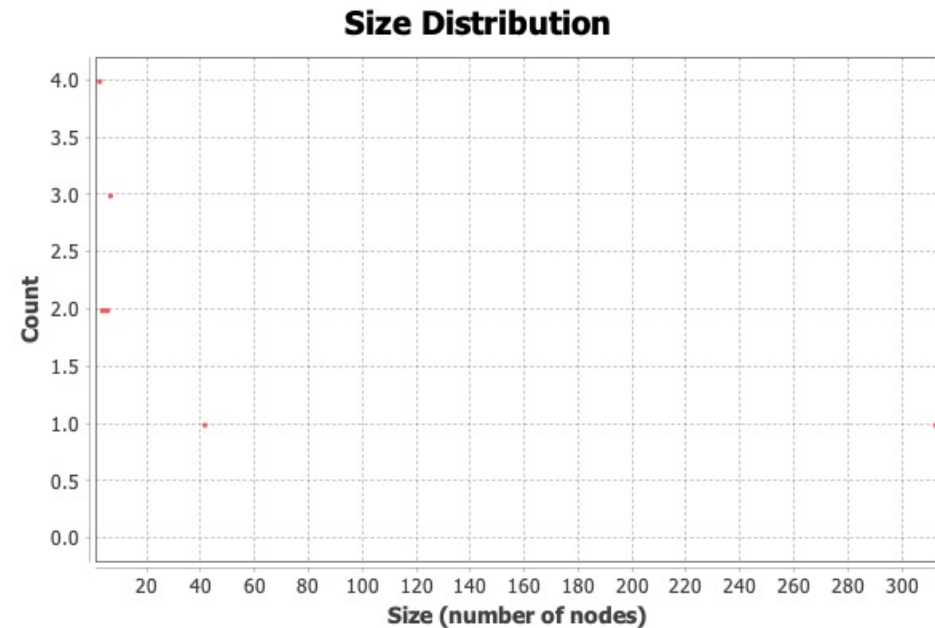
$|V|: 403$

$|E|: 440$

Degree Distribution

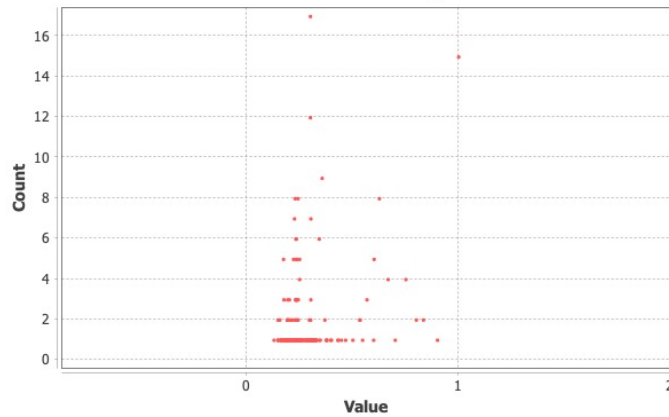


- Average Degree: 2.184
- Number of Weakly Connected Components: 15

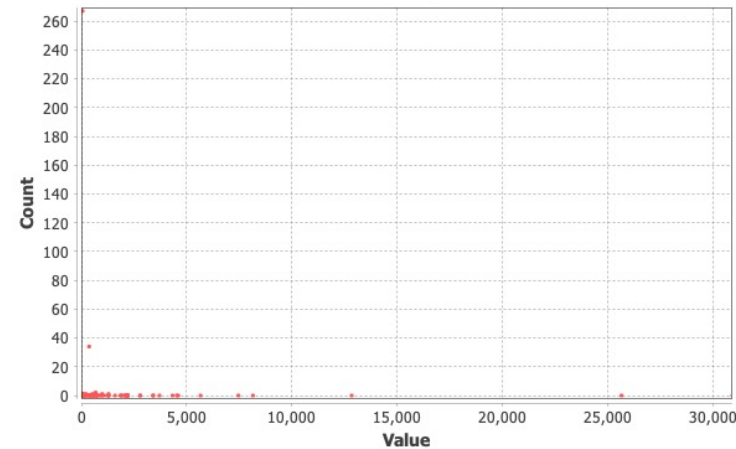


Centrality

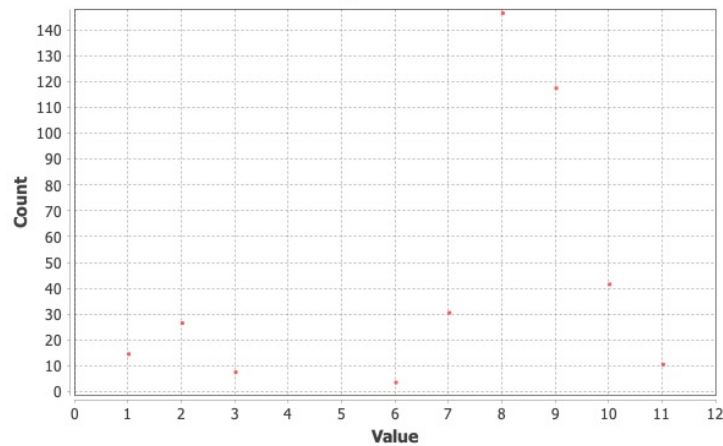
Harmonic Closeness Centrality Distribution



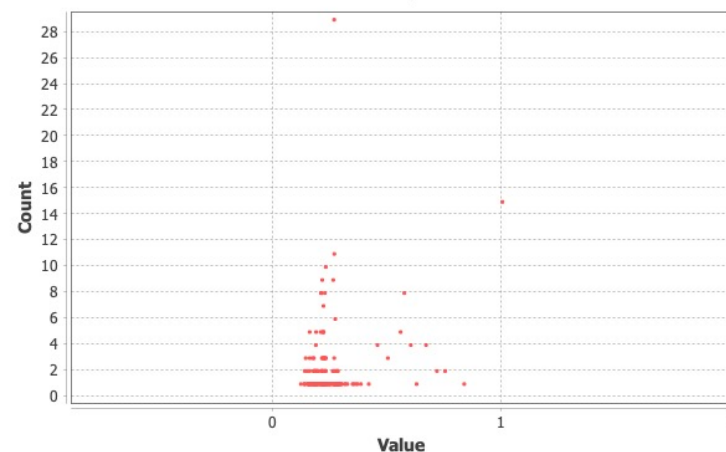
Betweenness Centrality Distribution



Eccentricity Distribution

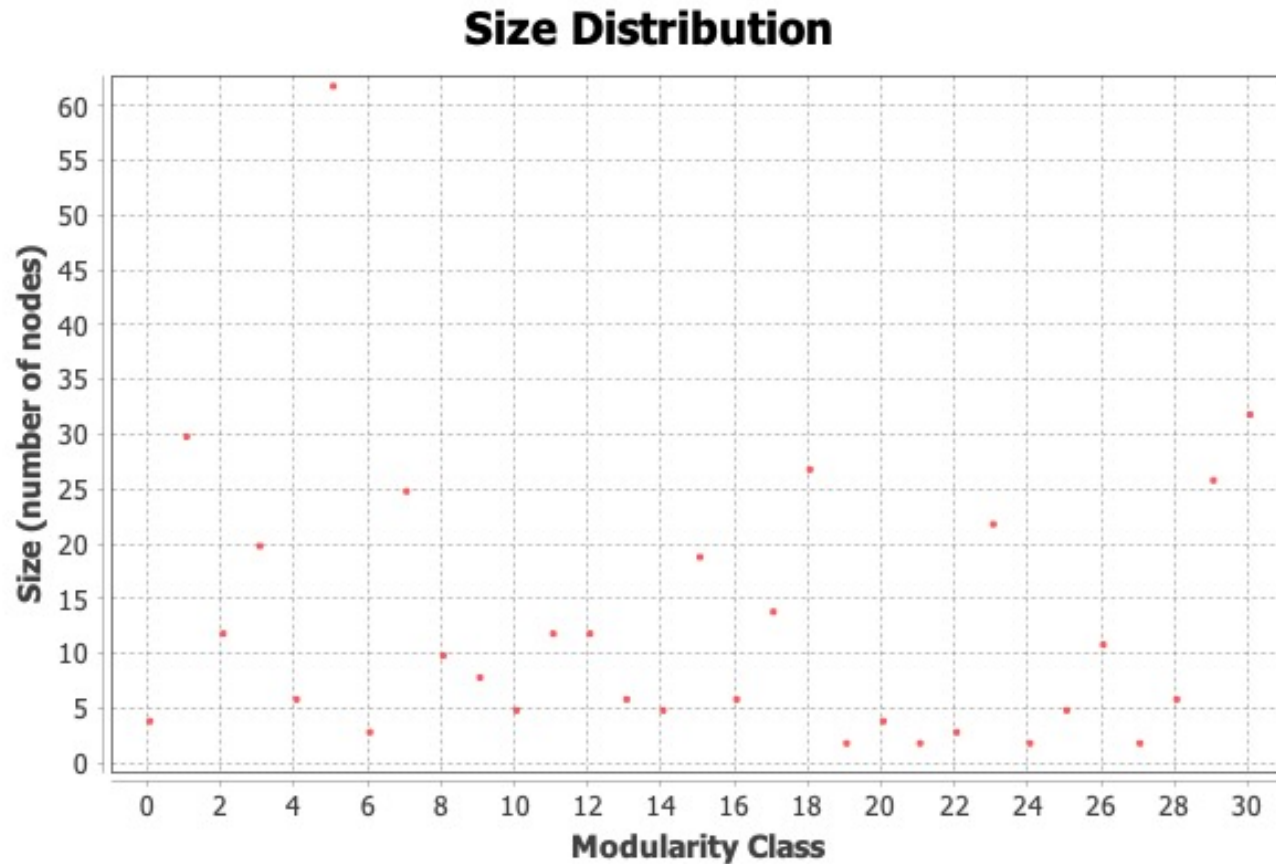


Closeness Centrality Distribution



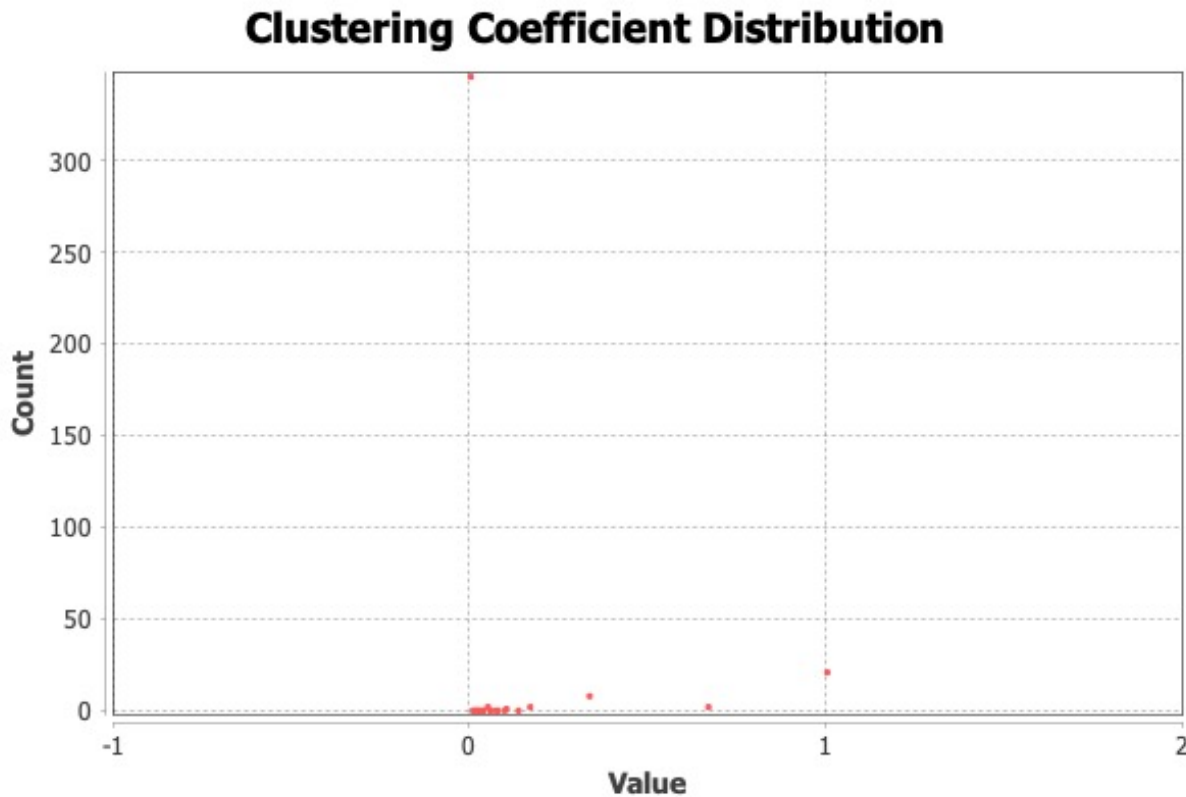
- Diameter: 11
- Radius: 1
- Average Path length:
4.6774173967
58594

Modularity

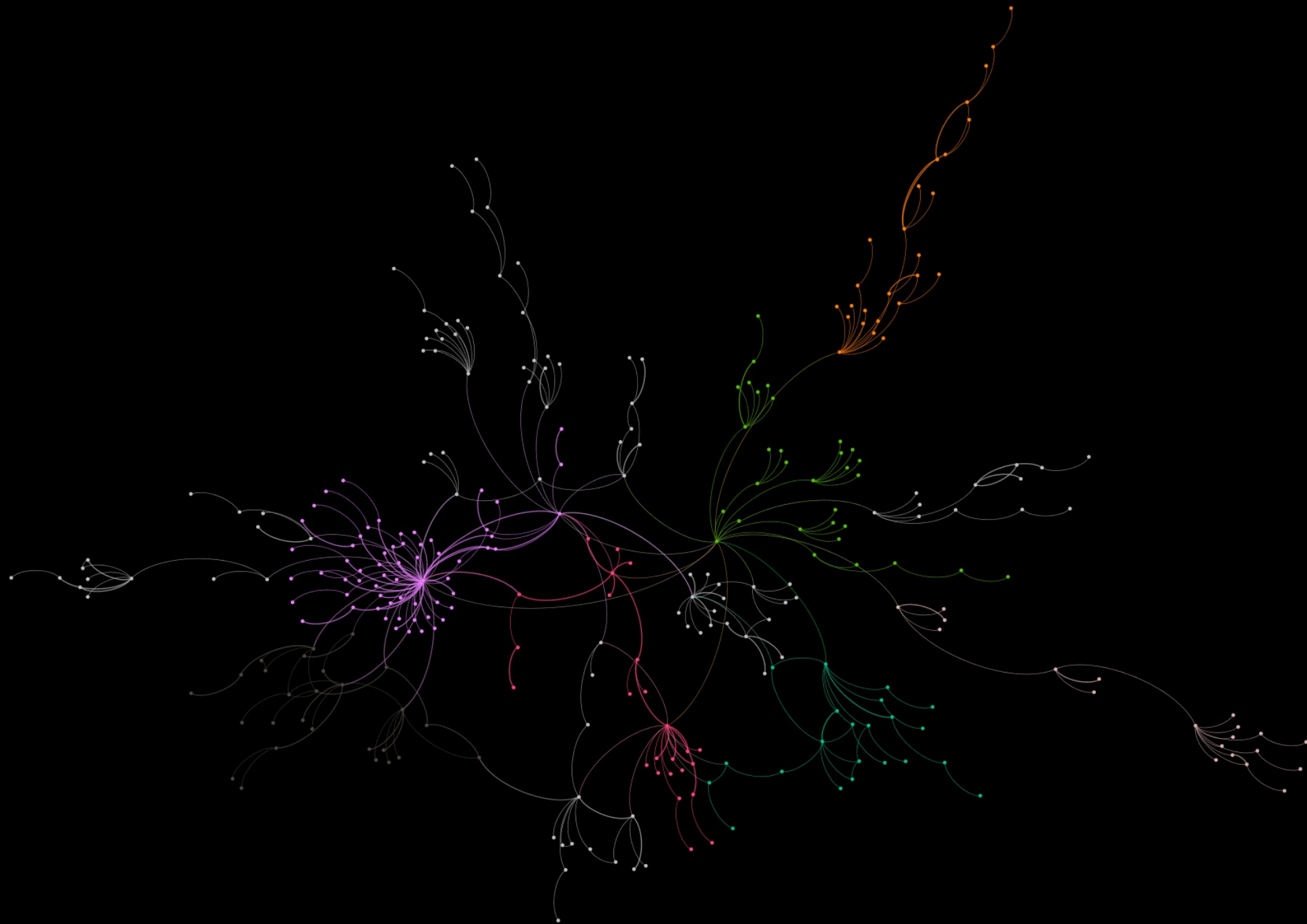


- Modularity: 0.842
- Modularity with resolution: 0.842
- Number of Communities: 31

Clustering Coefficient



- Average Clustering Coefficient: 0.181
- Total triangles: 29
- The Average Clustering Coefficient is the mean value of individual coefficients.

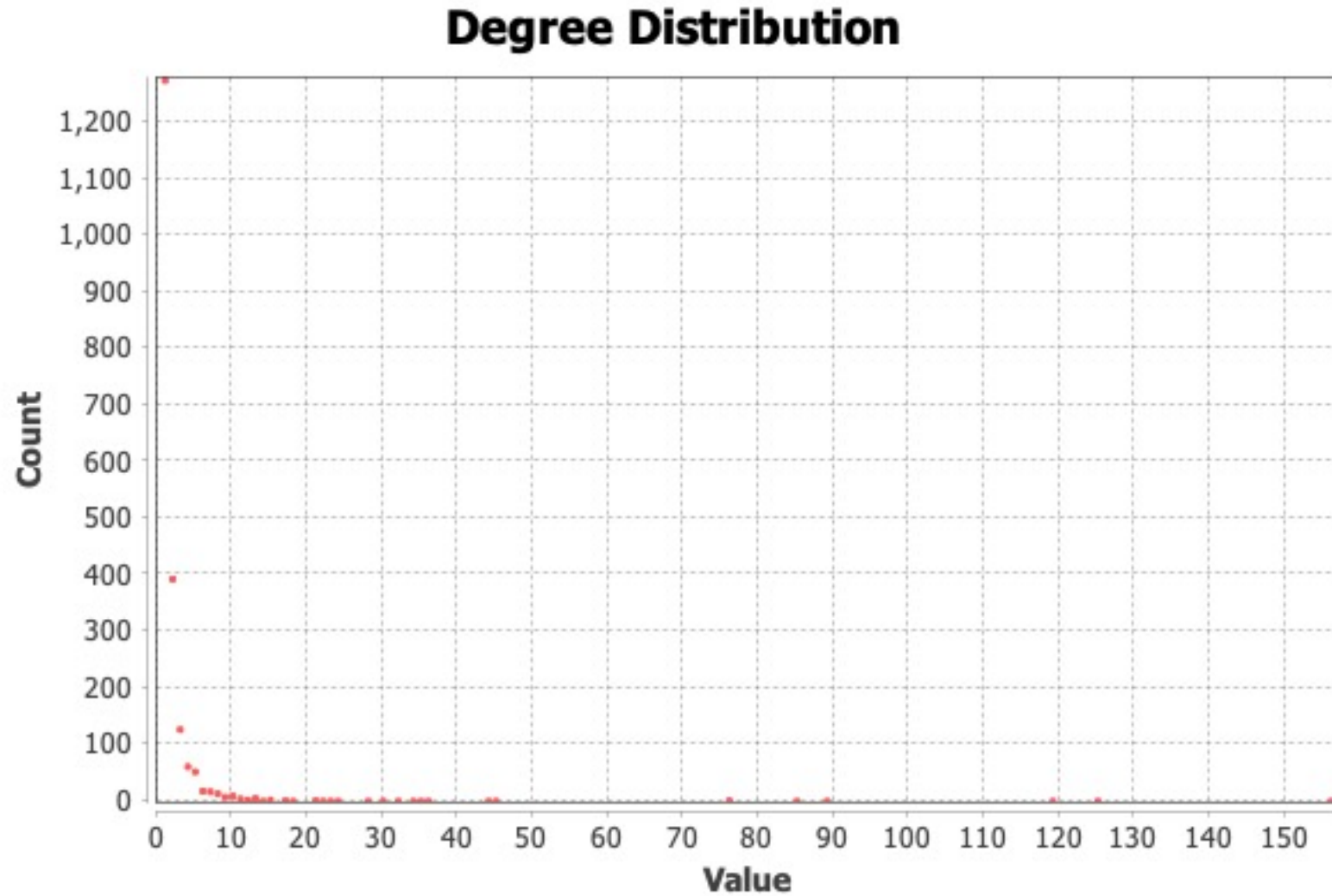


Origin: Gates

Nodes: 2,023

Edges: 2,443

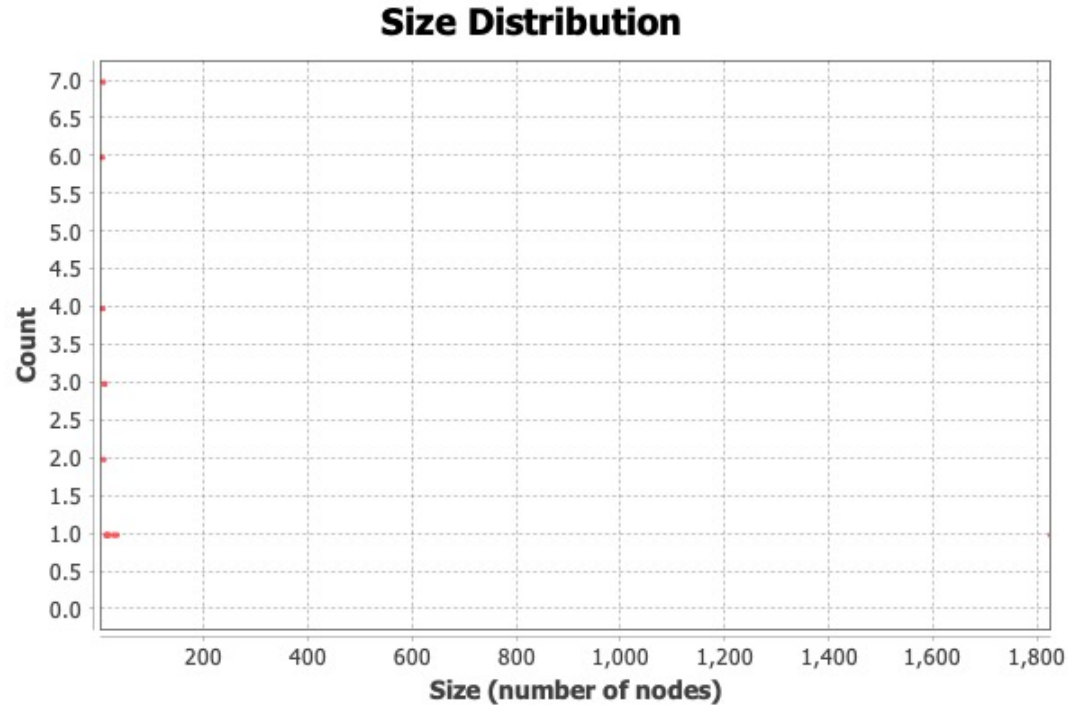
Gates:



Average Degree:
2.415

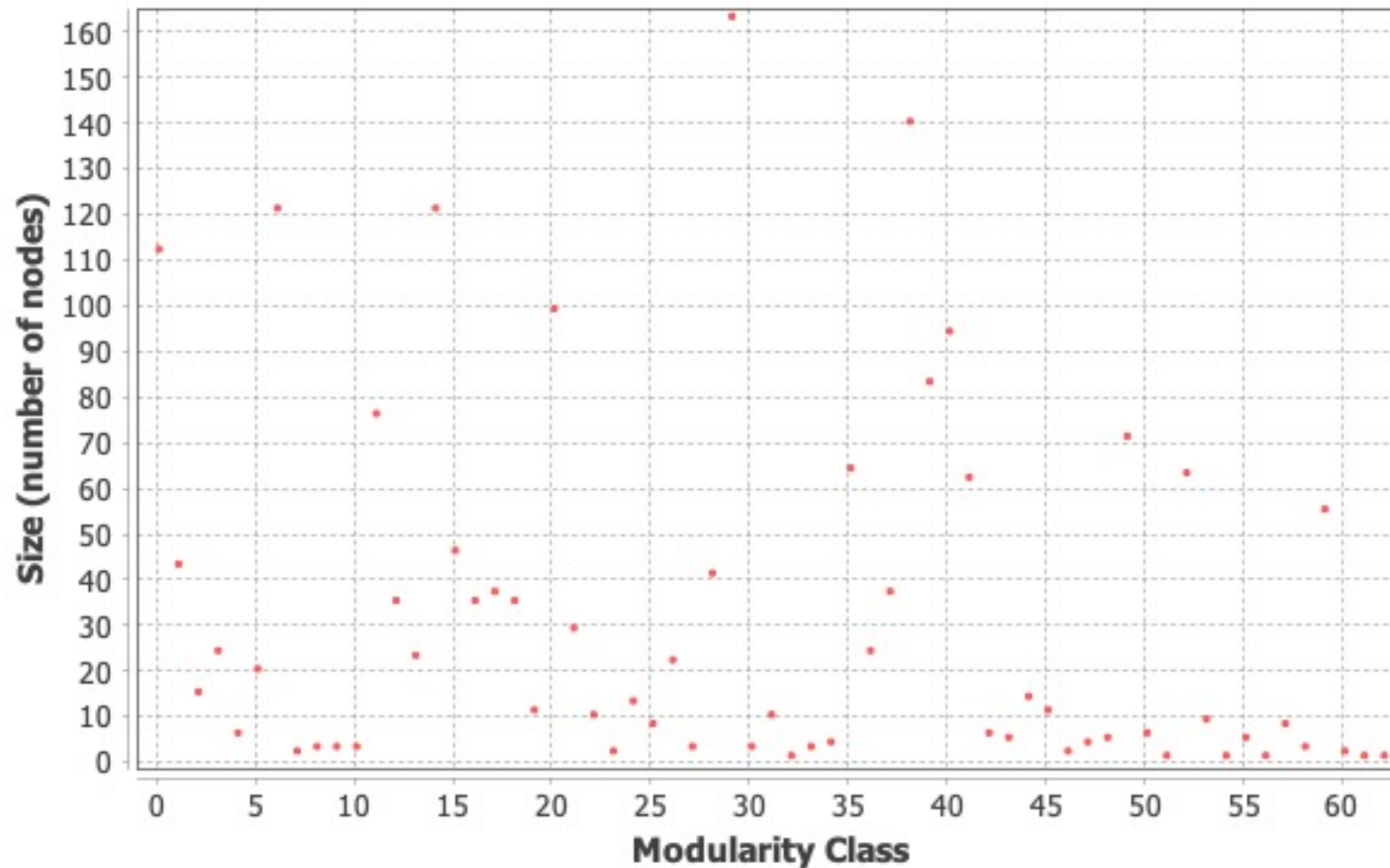
Components

- Number of Weakly Connected Components: 32



Gates: Community structure

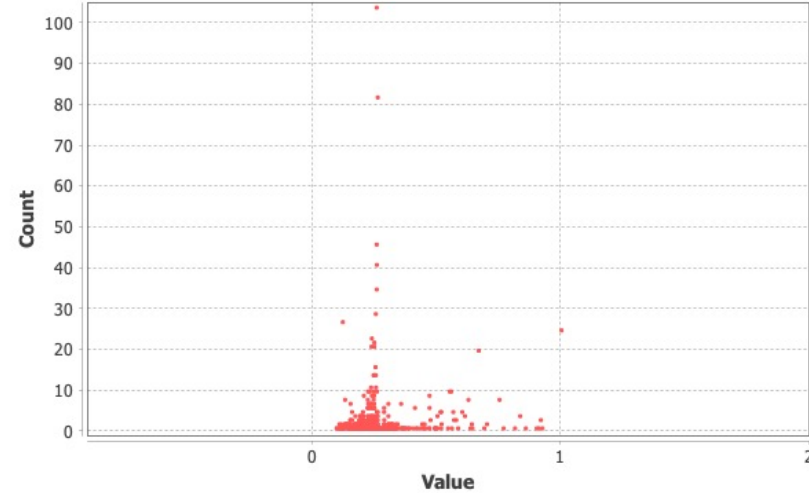
Size Distribution



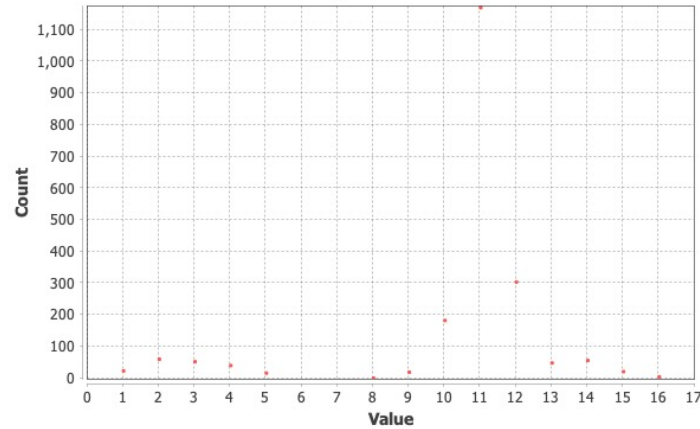
- Modularity: 0.877
- Modularity with resolution: 0.877
- Number of Communities: 63

Gates: Different centralities

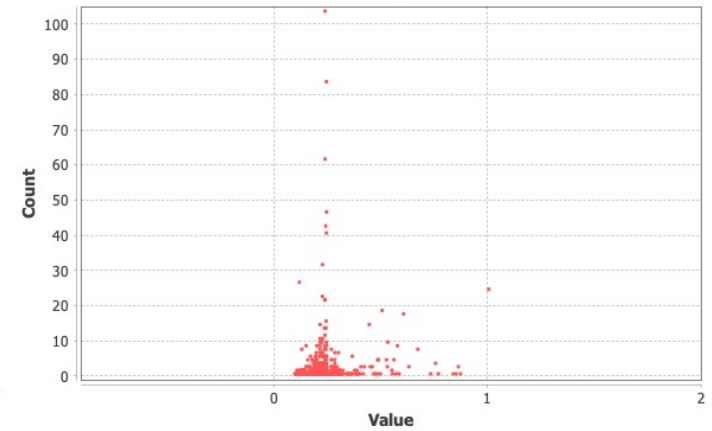
Harmonic Closeness Centrality Distribution



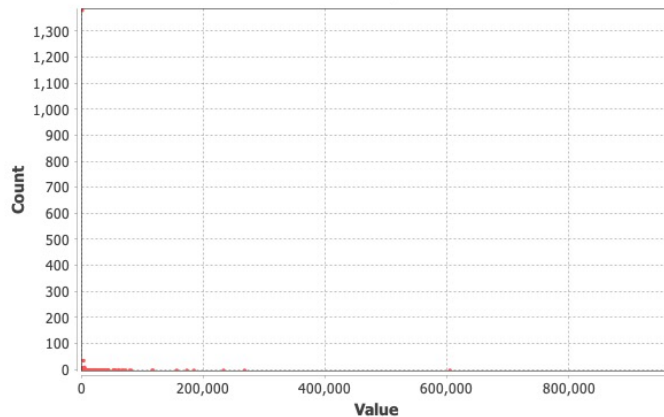
Eccentricity Distribution



Closeness Centrality Distribution

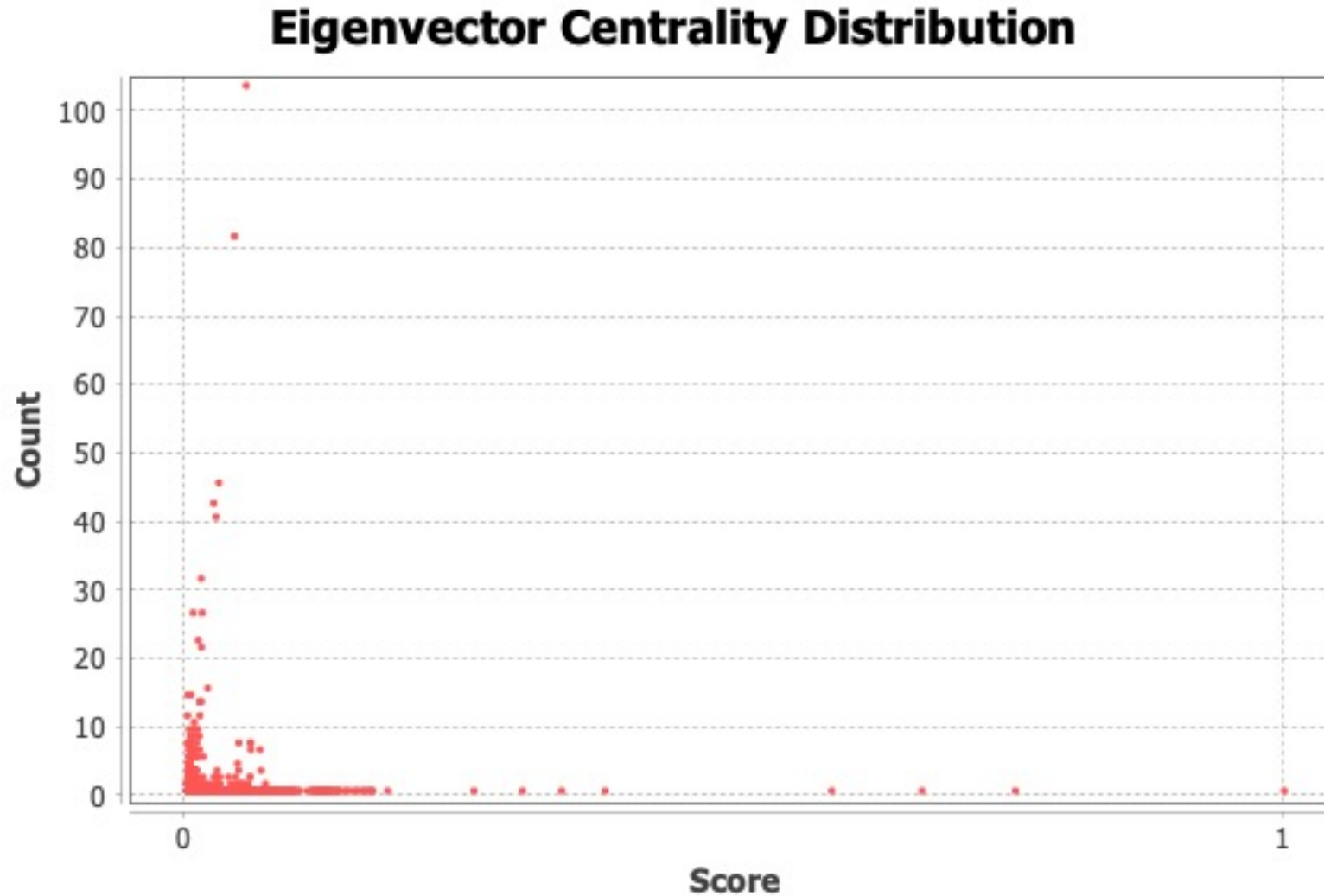


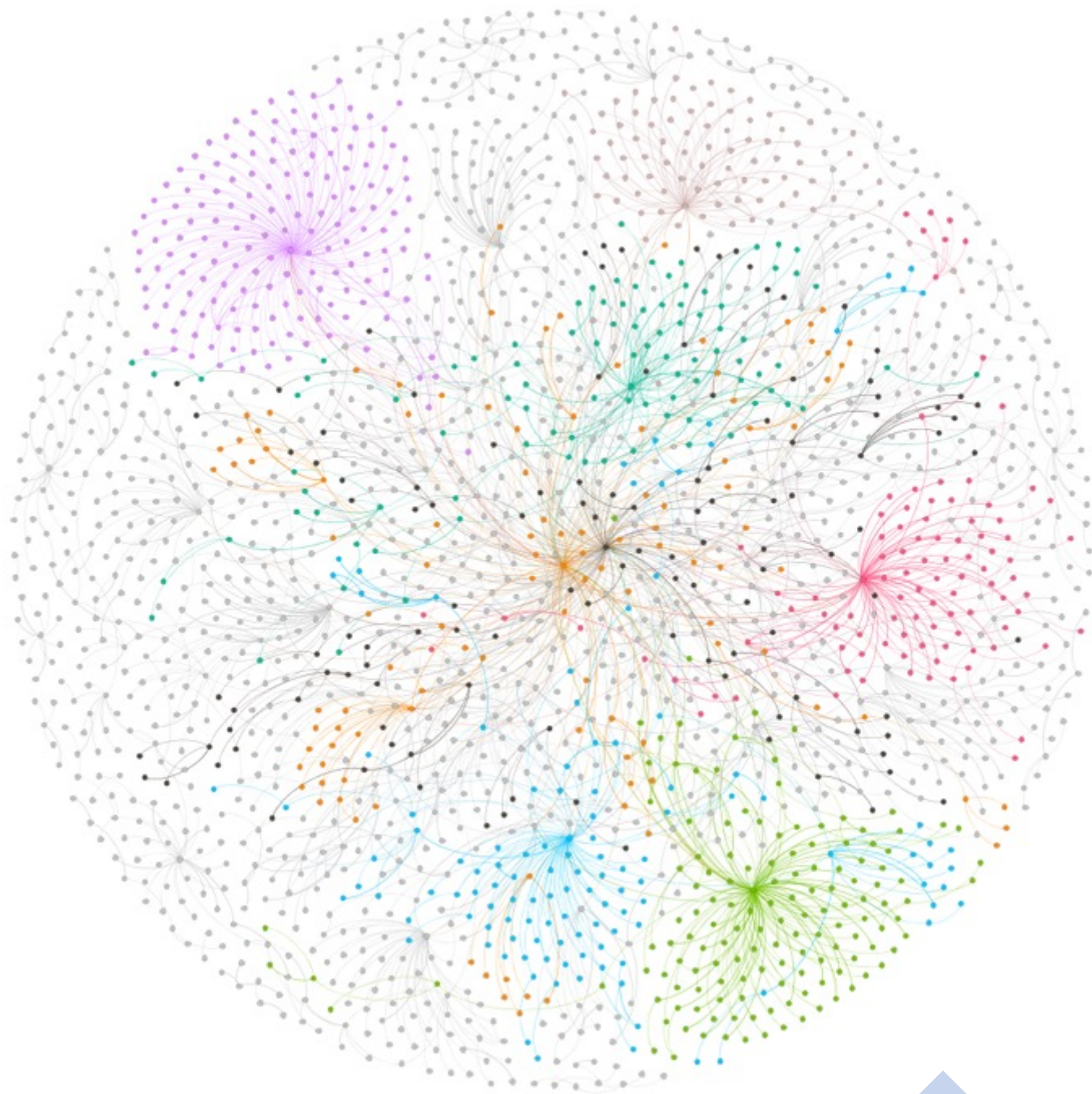
Betweenness Centrality Distribution



- Diameter: 16 --- Radius: 1
- Average Path length: 4.726700793577169
- Average Clustering Coefficient: 0.199
- Total triangles: 212
- The Average Clustering Coefficient is the mean value of individual coefficients.

Gates: Eigenvector centrality





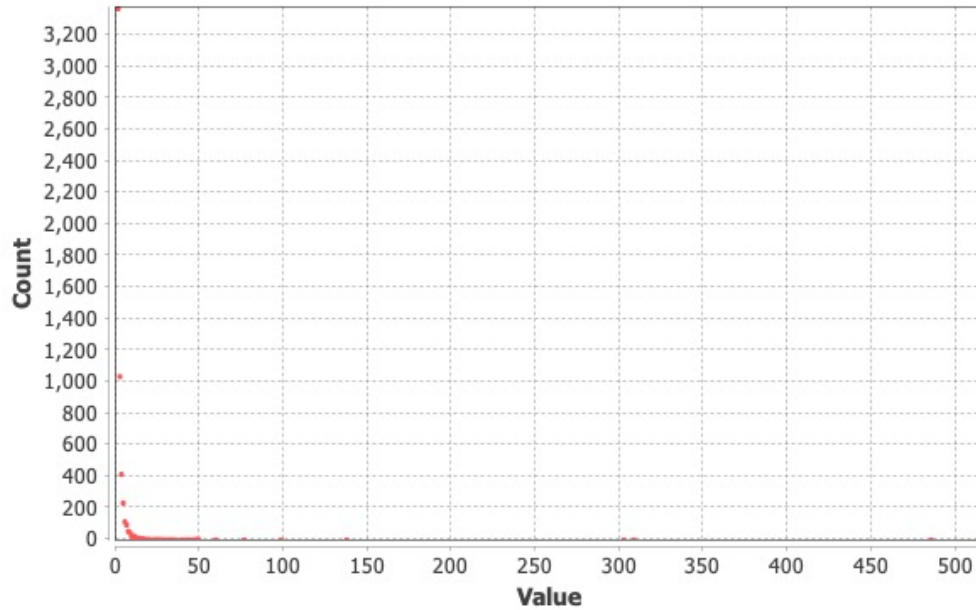
Soros: Analysis

#Nodes: 5544

#Edges: 7114

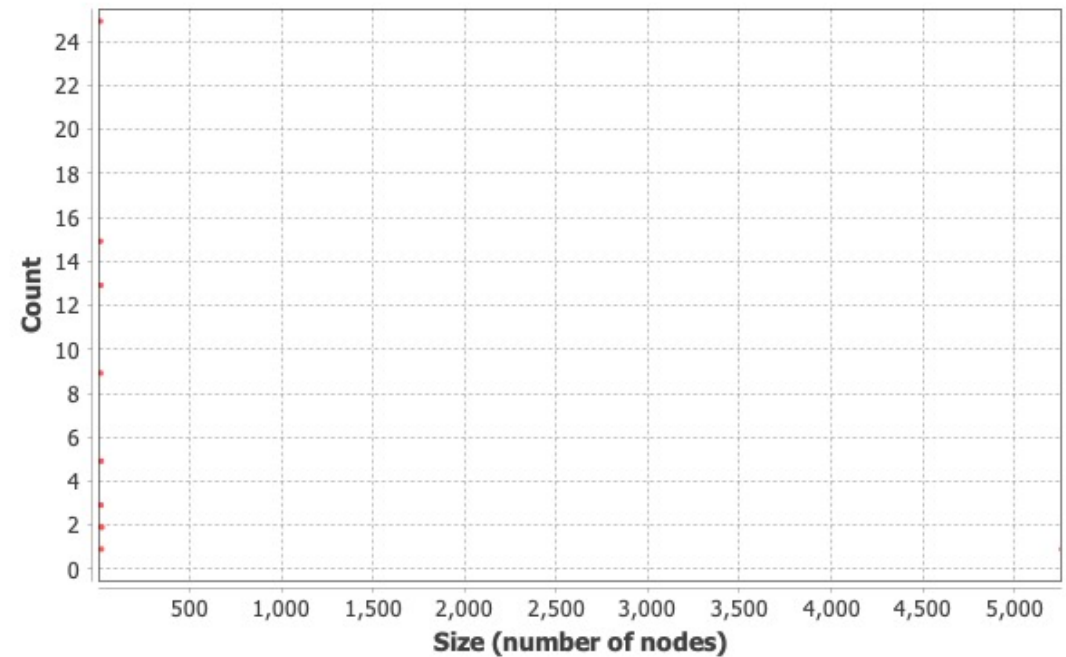
Degree

Degree Distribution



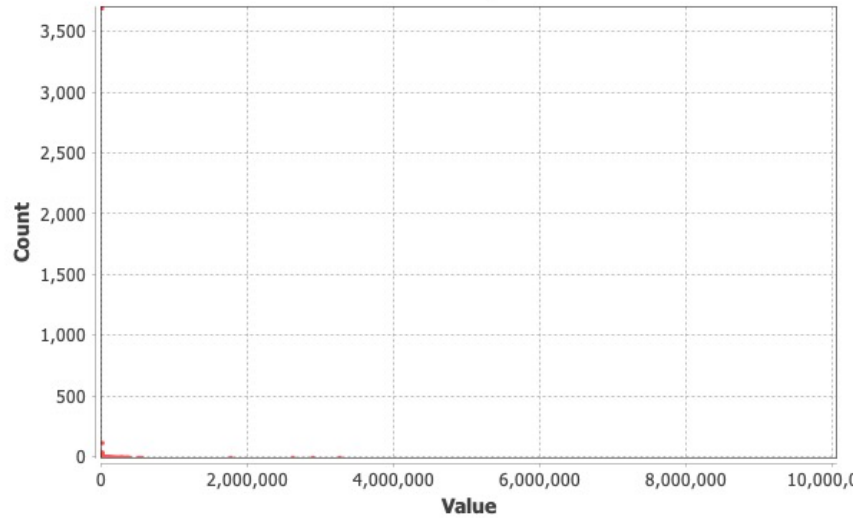
- Average Degree: 2.566
- Number of Weakly Connected Components: 76

Size Distribution

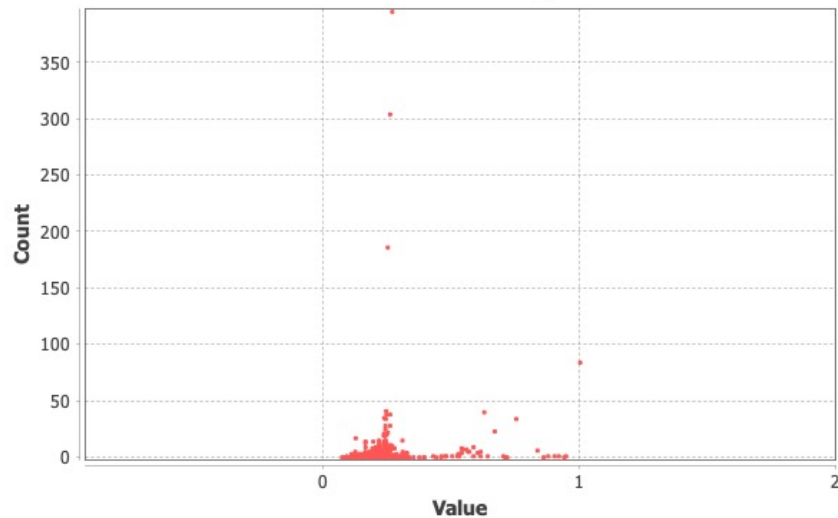


Centralities

Betweenness Centrality Distribution

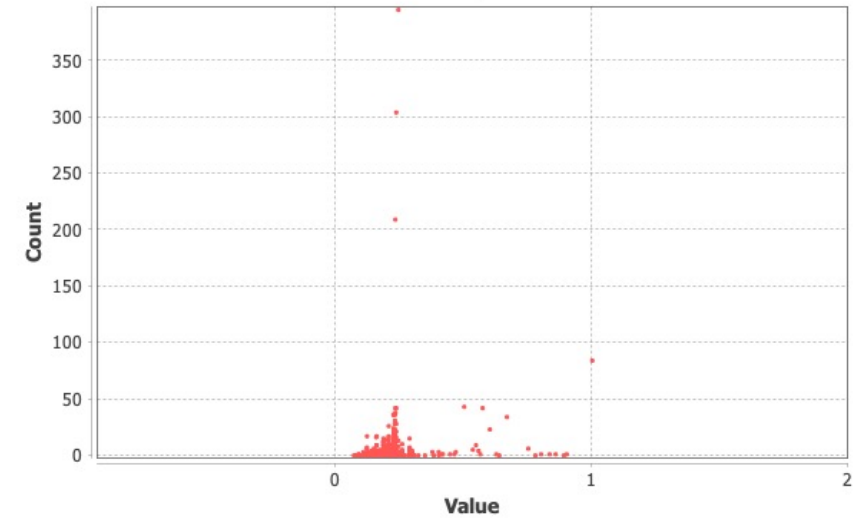


Harmonic Closeness Centrality Distribution

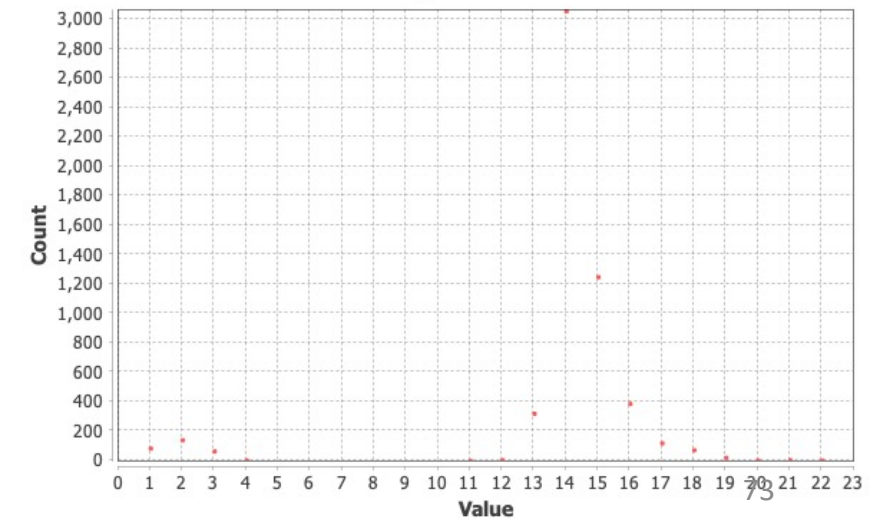


- Diameter: 22
- Radius: 1
- Average Path length: 4.788253
- 13253913

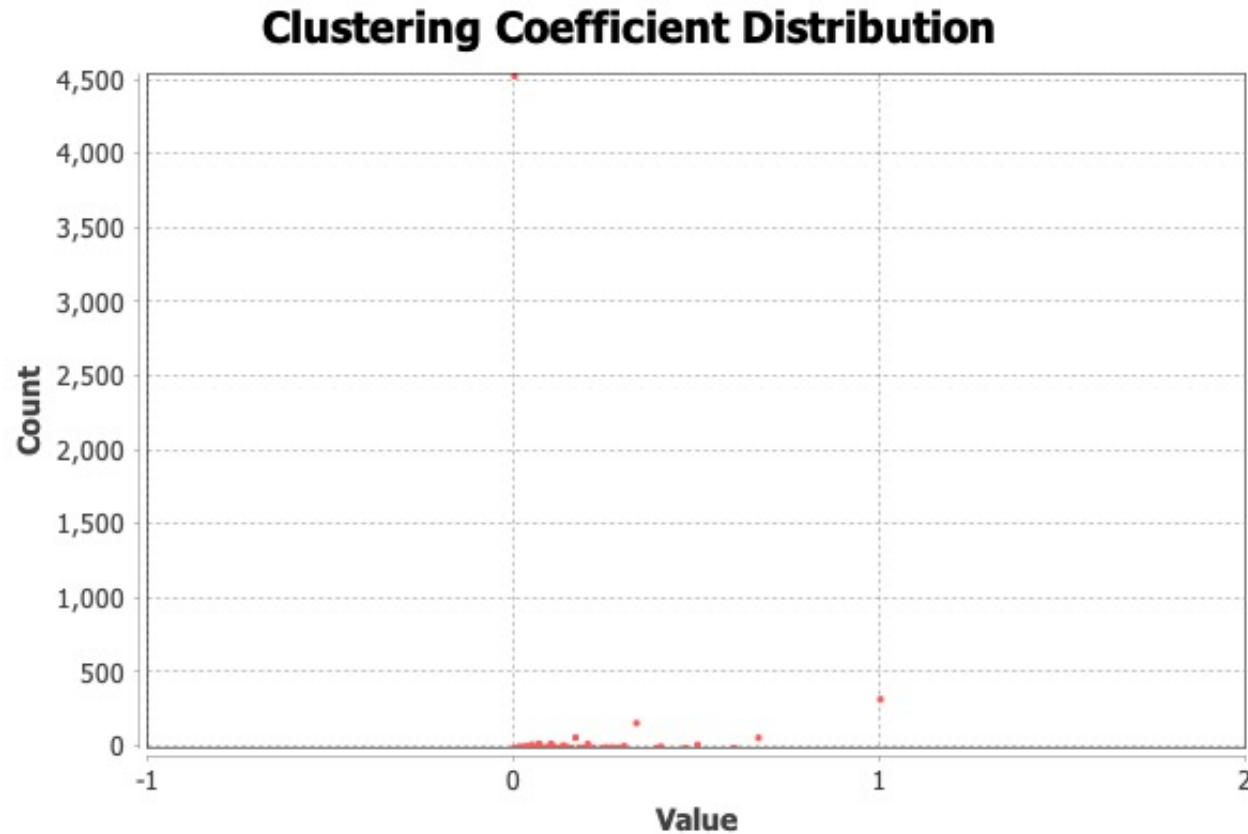
Closeness Centrality Distribution



Eccentricity Distribution

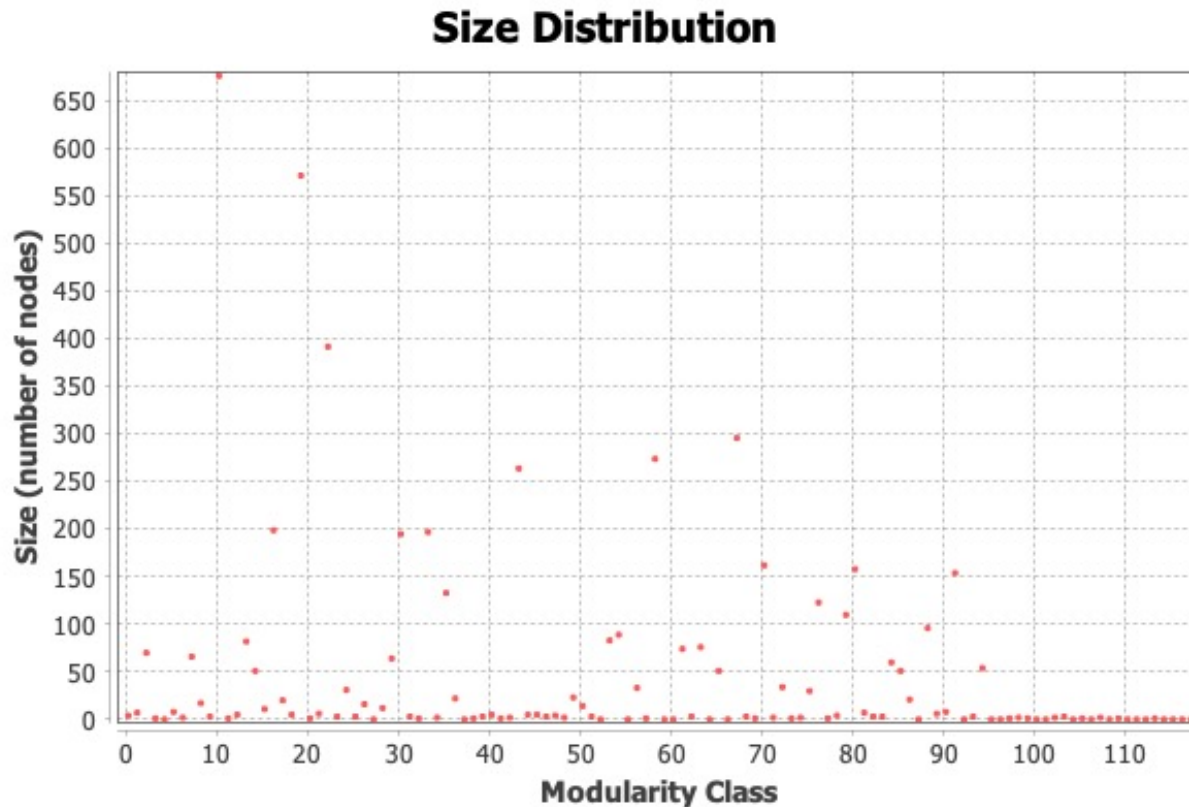


Clustering Coefficient

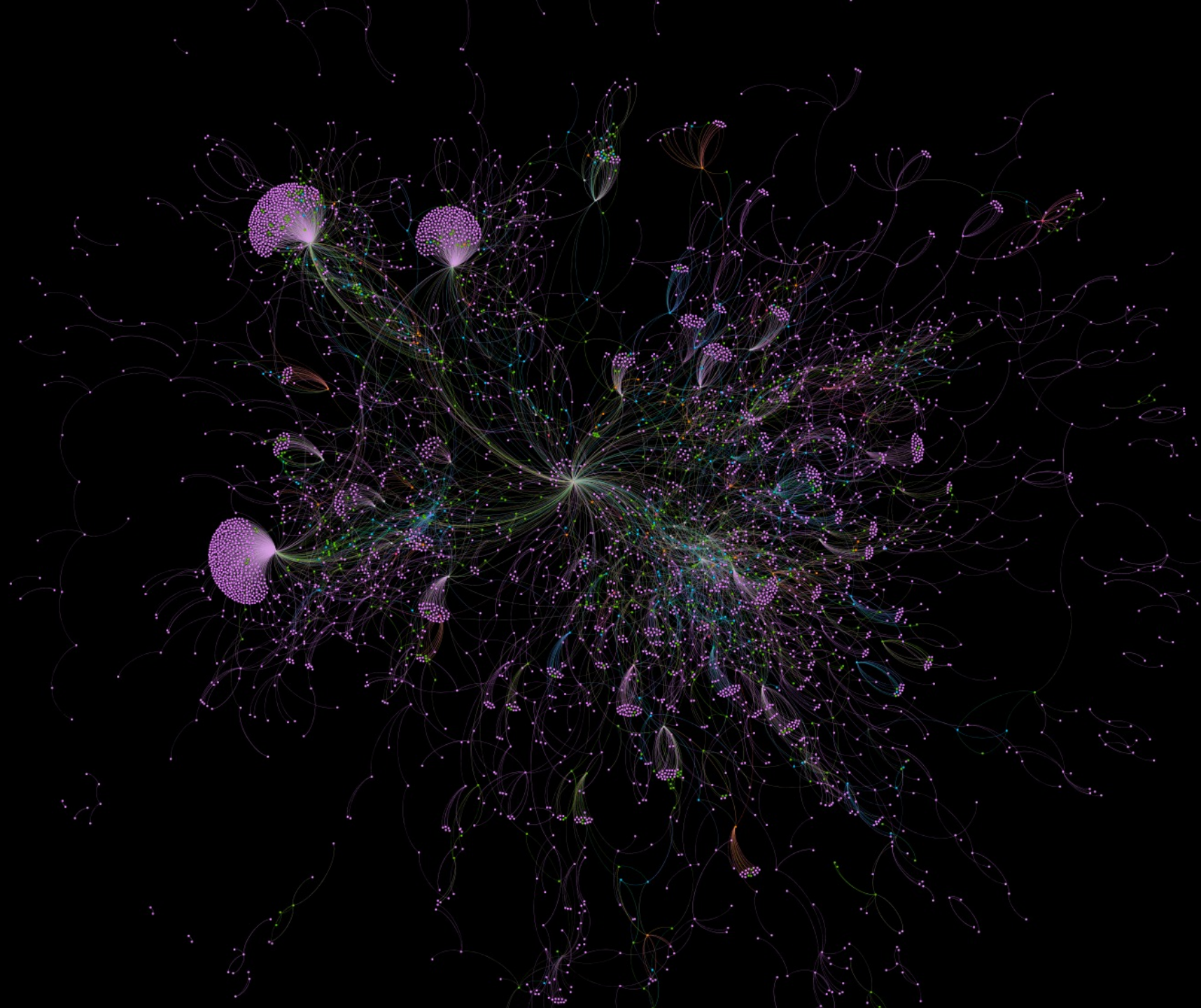


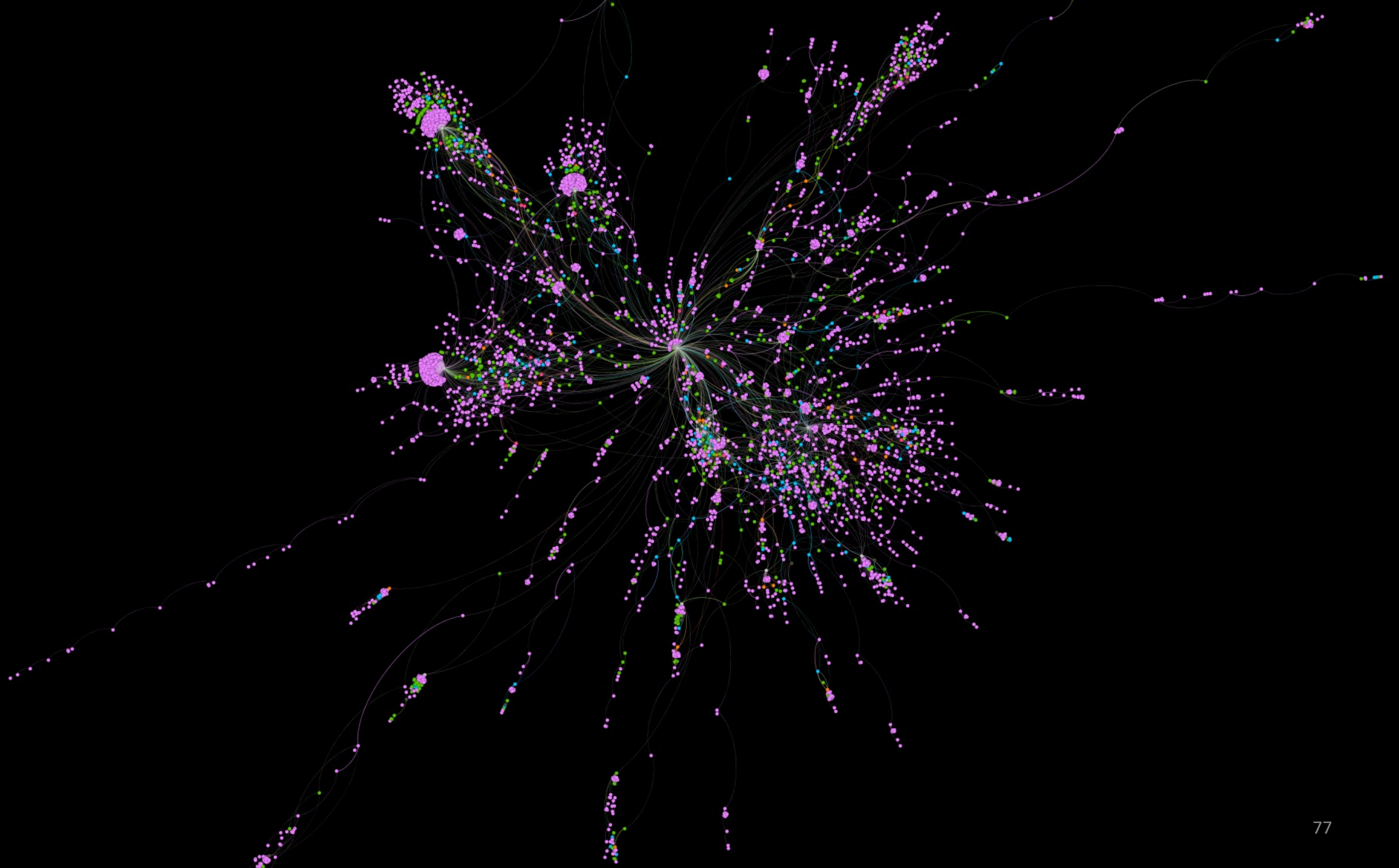
- Average Clustering Coefficient: 0.226
- Total triangles: 888
- The Average Clustering Coefficient is the mean value of individual coefficients.

Modularity



- Modularity: 0.879
- Modularity with resolution: 0.879
- Number of Communities: 118



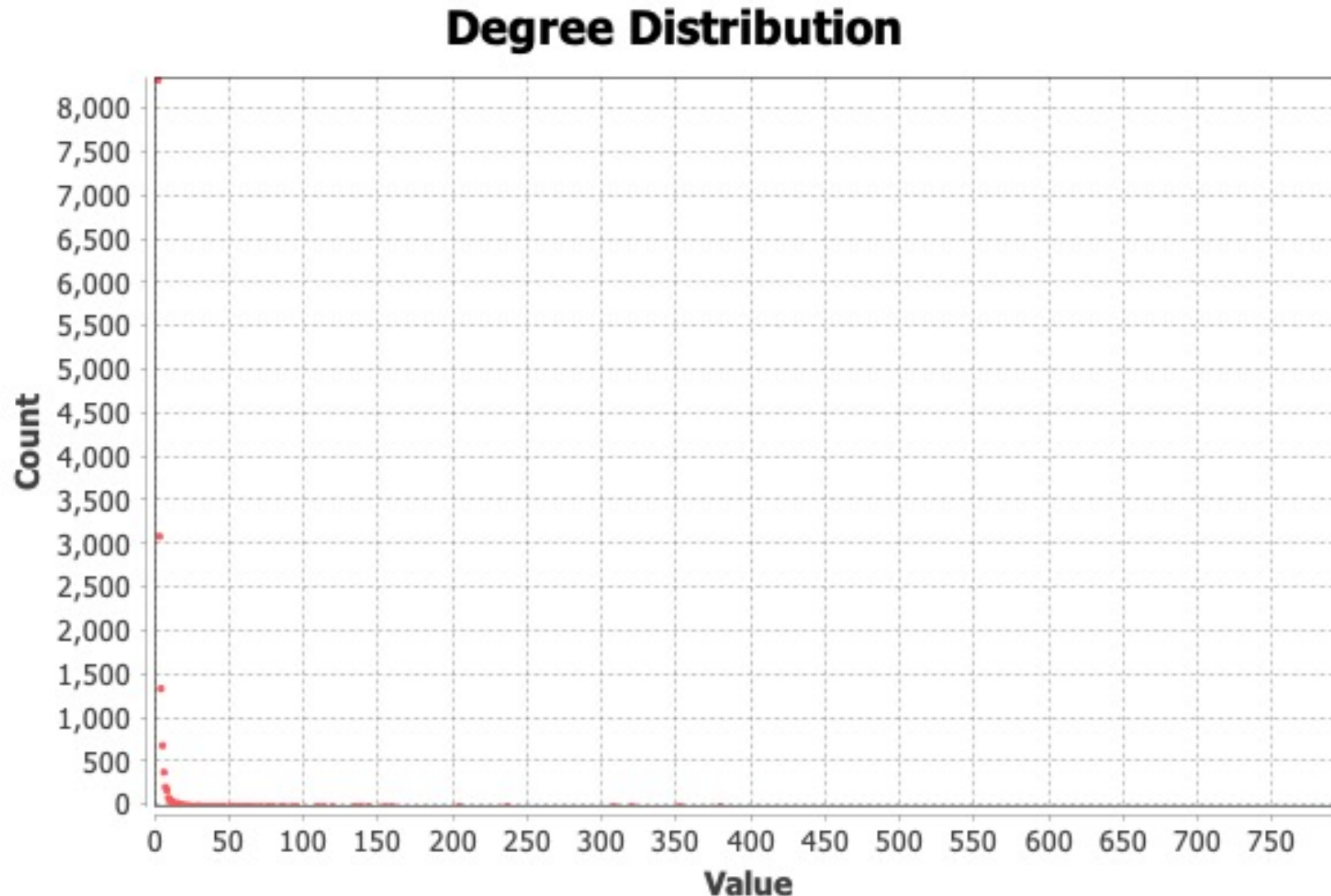


Nodes: 14,925
Edges: 19,649

Fauci: Graph Analytics

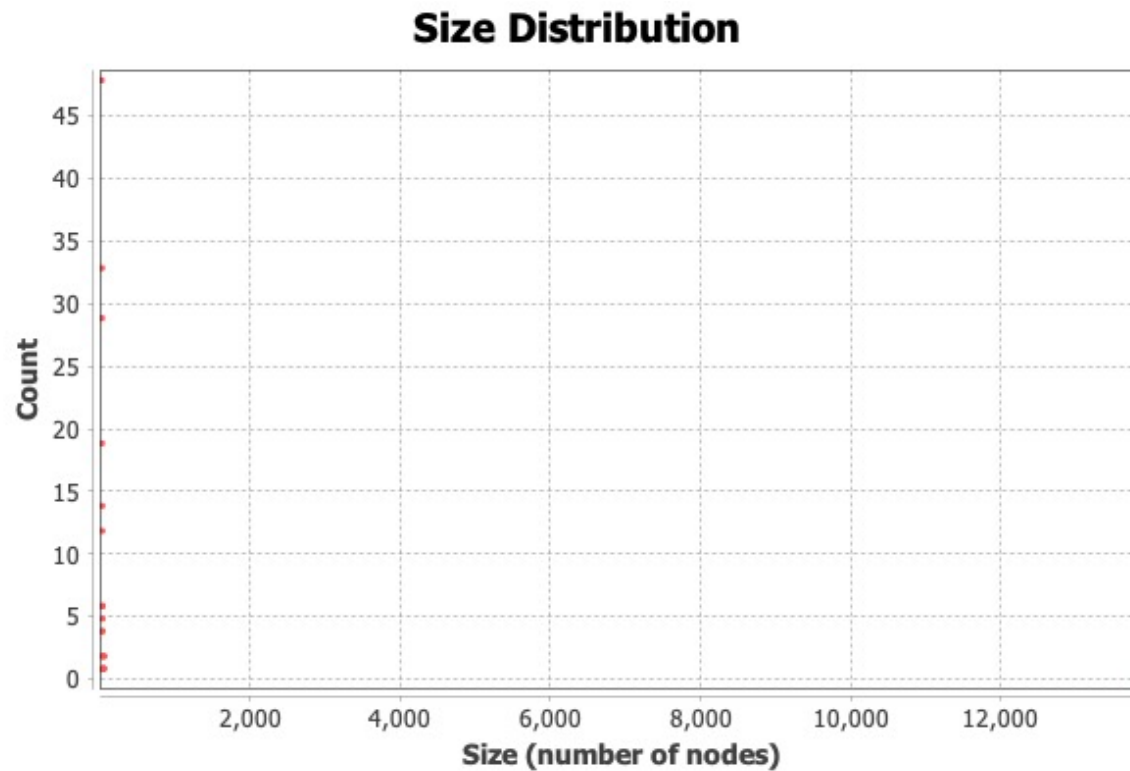
Fauci: Degree Distribution

- Average Degree: 2.633
- #Connected components: 192

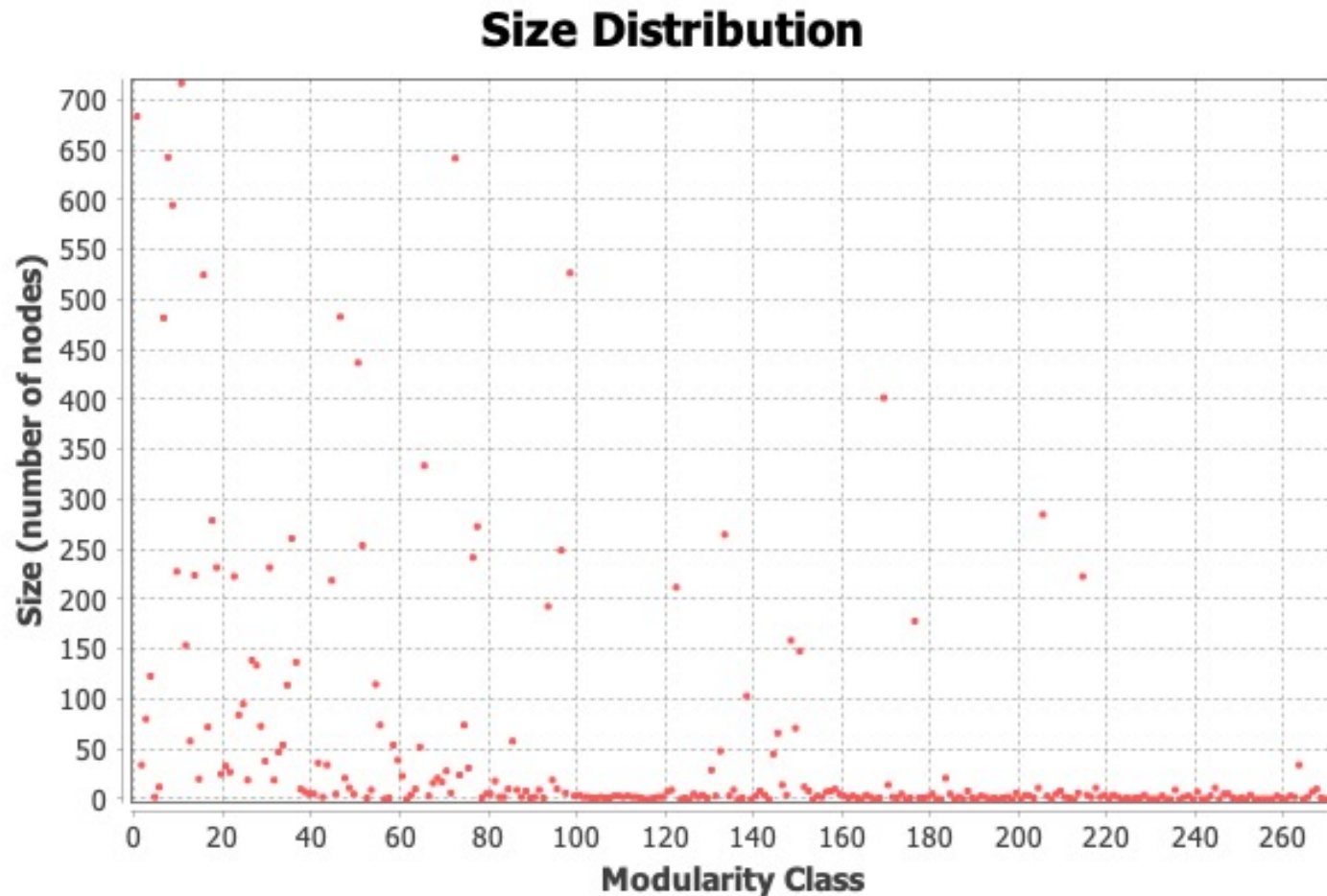


Components

- Number of Weakly Connected Components: 192

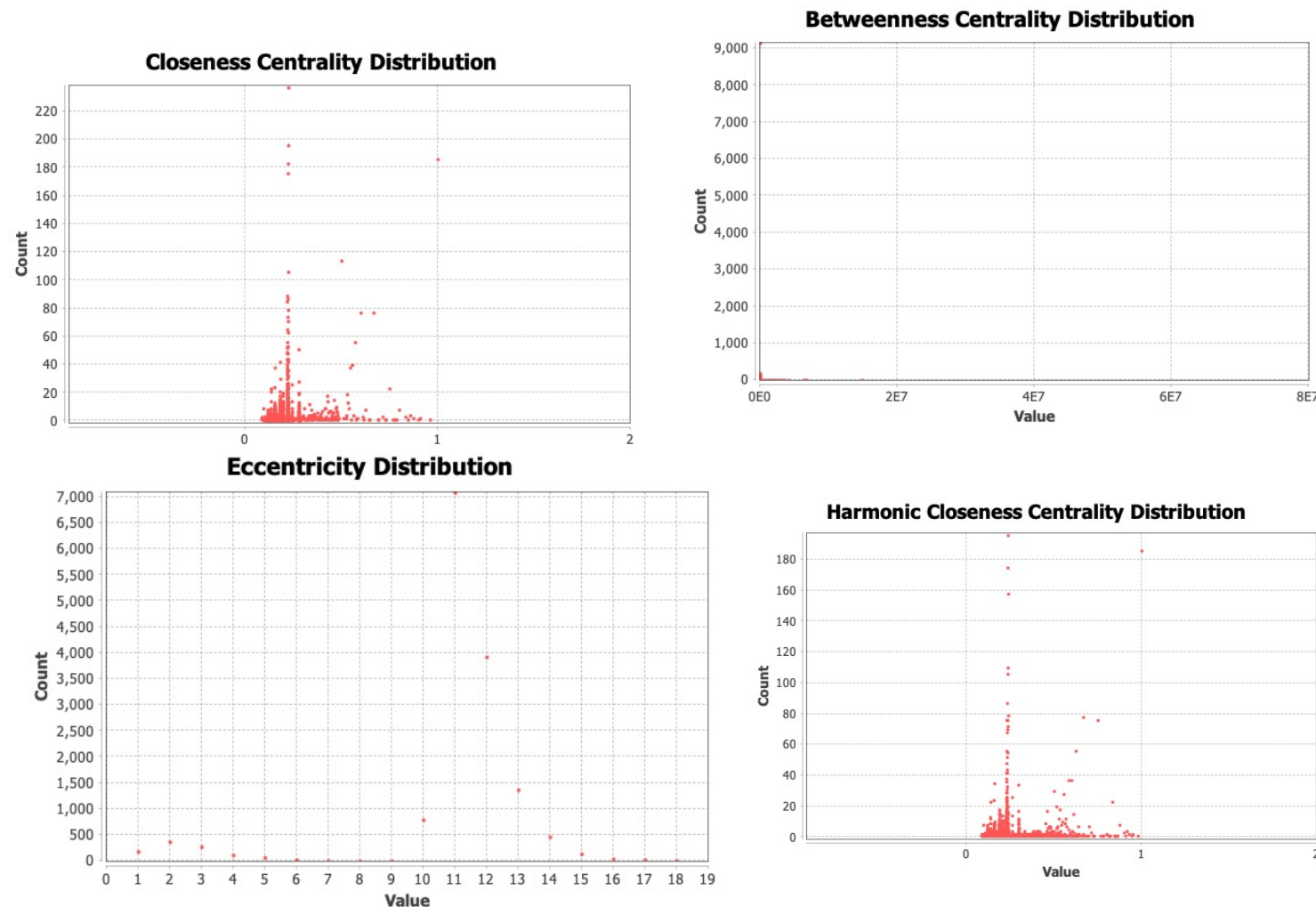


Fauci: Community Structure



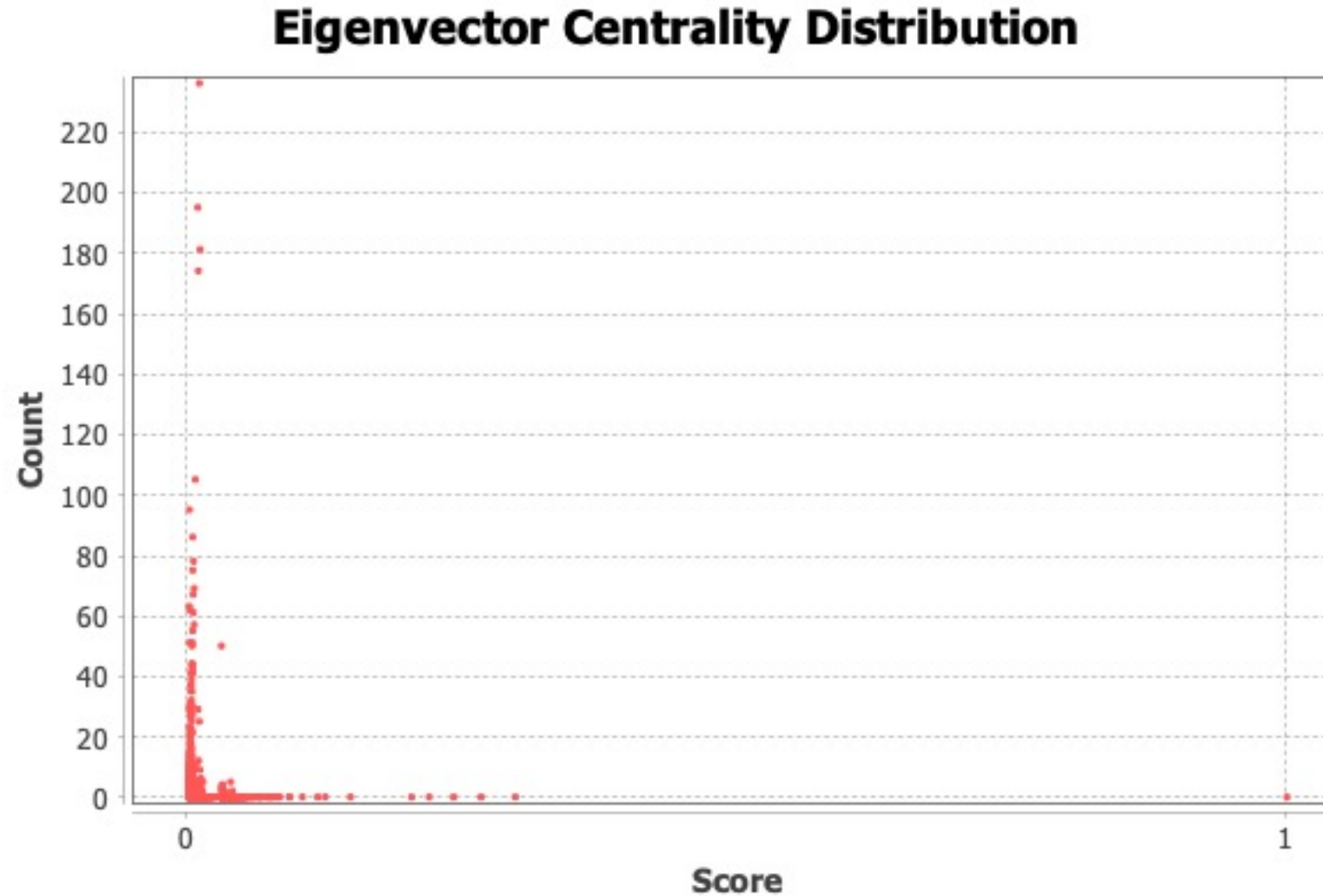
- Modularity: 0.911
- Modularity with resolution: 0.911
- Number of Communities: 271

Fauci: Centralities

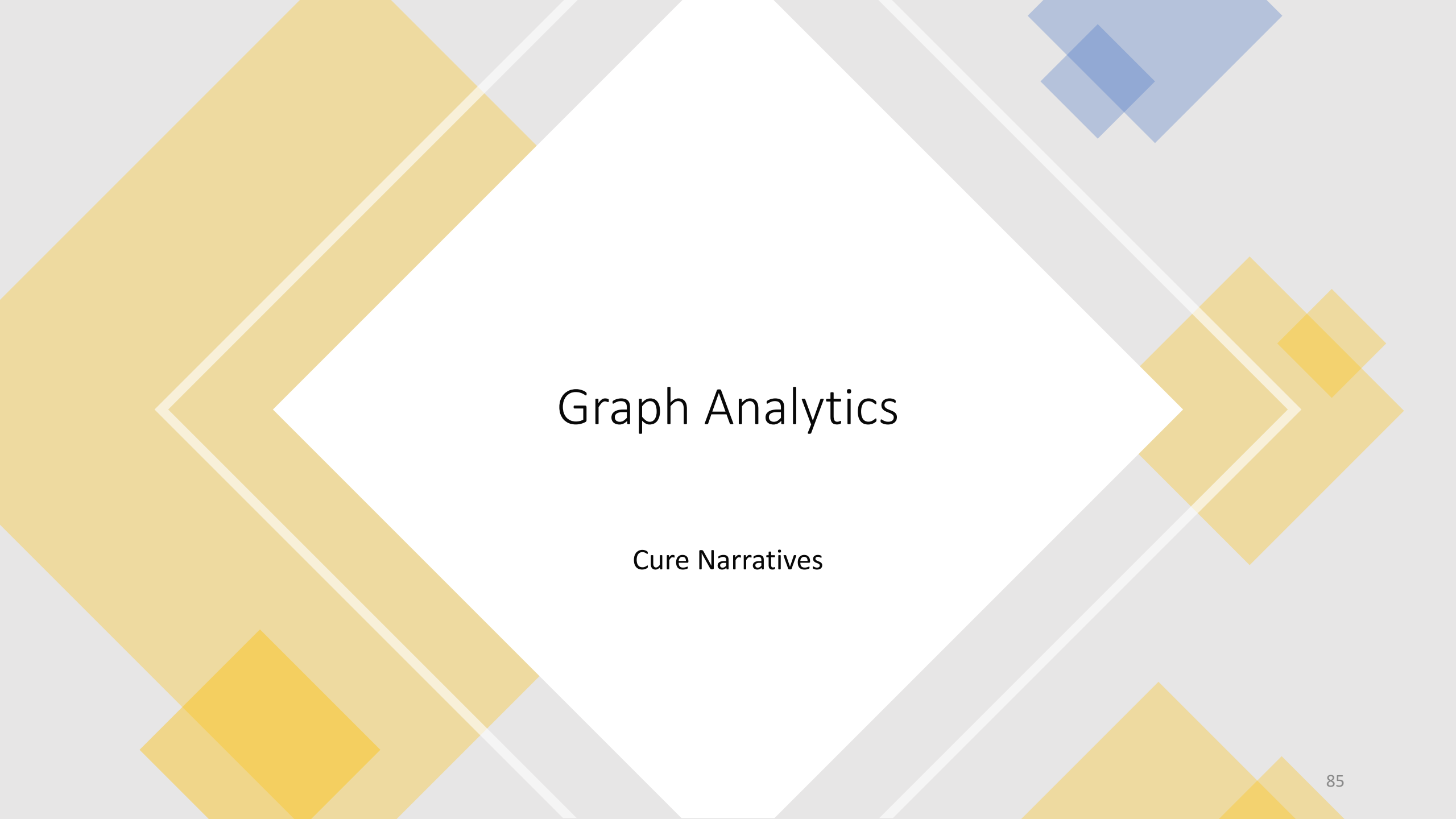


- Diameter: 18 -- Radius: 1
- Average Path length: 5.094
- Average Clustering Coefficient: 0.186
- Total triangles: 2354
- The Average Clustering Coefficient is the mean value of individual coefficients
- Number of Weakly Connected Components: 192

Fauci: Eigenvector Centrality







Graph Analytics

Cure Narratives

Key Graph Measures

Origin Narratives										
Topic	IVI	IEI	Avg degree	#components	Modularity	#Communities	Diameter	AvgPath	AvgCC	#Triangles
5g	35	34	1.943	4	0.648	8	6	2.94	0.293	3
Bioweapon	403	440	2.18	15	0.842	31	11	4.677	0.181	29
Gates	2023	2443	2.415	32	0.877	63	16	4.73	0.199	212
Soros	5544	7114	2.566	76	0.879	118	22	4.788	0.226	888
Fauci	14925	19649	2.633	192	0.911	271	18	5.1	0.186	2354
Fake Cure Narratives										
Topic	IVI	IEI	Avg degree	#components	Modularity	#Communities	Diameter	AvgPath	AvgCC	#Triangles
Silver	1545	1699	2.199	42	0.849	72	13	4.446	0.143	80
Sputnik	3506	3933	2.244	280	0.91	317	23	6.22	0.123	304
Hydroxy	16143	17350	2.15	1401	0.936	1508	25	6.43	0.132	1185

Network Details:

- Number of Nodes:
 - {'Hydroxy': 16143, 'Sputnik': 3506, 'Silver': 1545}
- Number of Edges:
 - {'Hydroxy': 29244, 'Sputnik': 29244, 'Silver': 29244}
- Average clustering coefficient of the network:
 - {'Hydroxy': -0.038466482683549255, 'Sputnik': -0.038466482683549255, 'Silver': -0.038466482683549255}
- Average node degree within the network:
 - {'Hydroxy': 2.73022362633959, 'Sputnik': 2.8368511123787794, 'Silver': 2.5359223300970872}

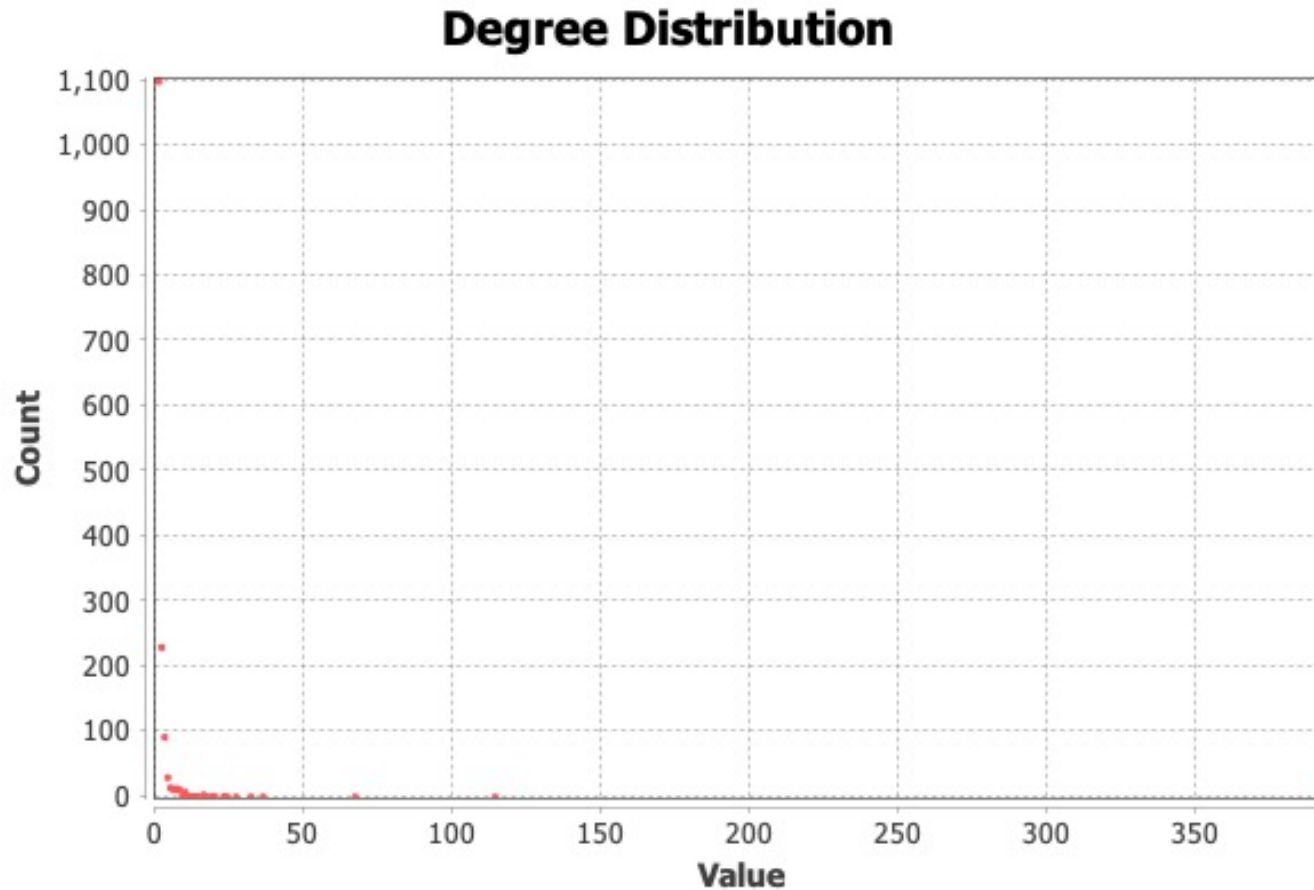
Note: These numbers change when loaded into Gephi for graph analytics (parallel edges are removed)

#Nodes: 1545

#Edges: 1699

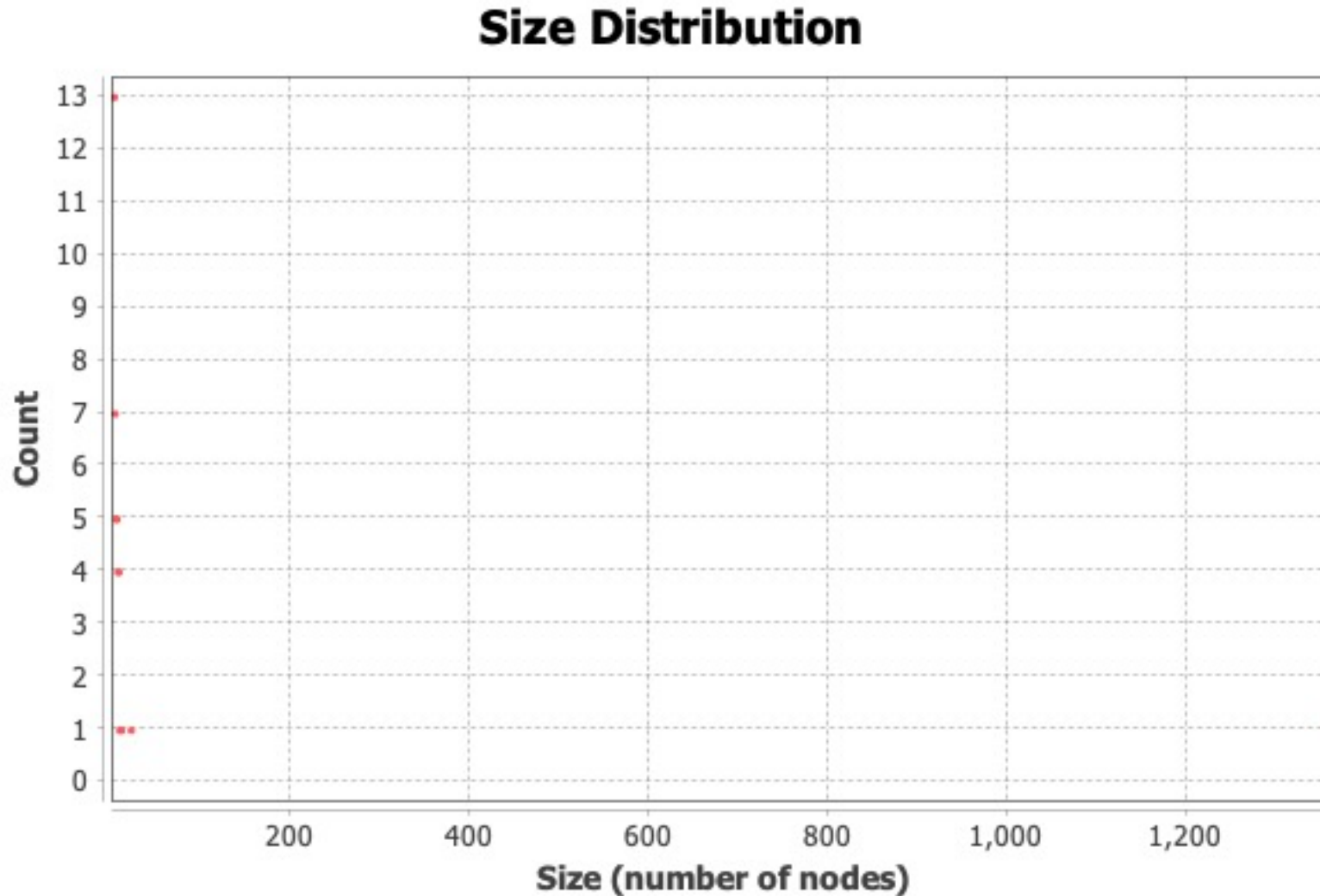
Silver Narrative

Silver: Degree distribution



- Average Degree: 2.199
- Number of Weakly Connected Components: 42

Silver: Number of components



- Number of Weakly Connected Components: 42

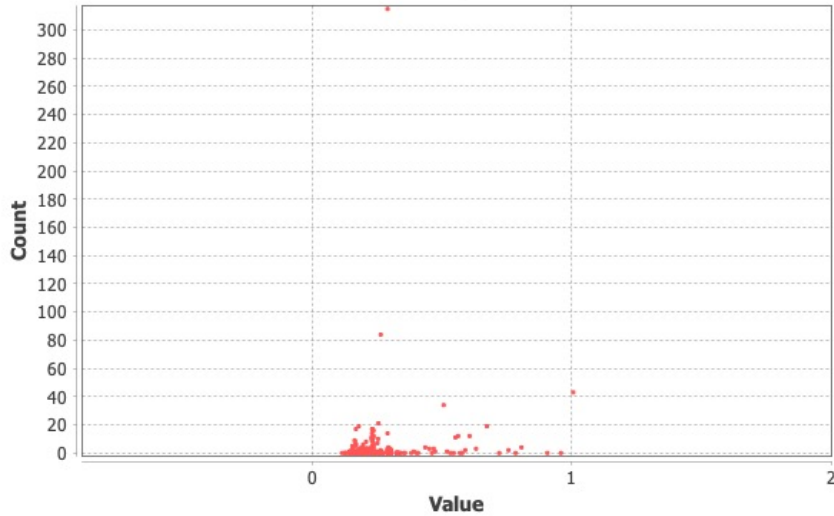
Silver: Community structure



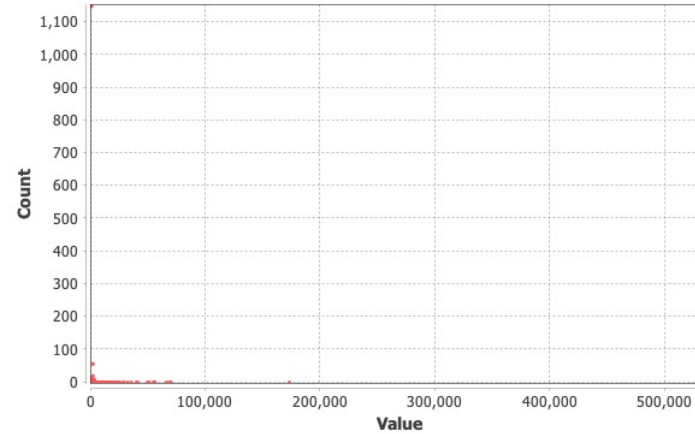
- Modularity: 0.849
- Modularity with resolution: 0.849
- Number of Communities: 72

Centralities:

Closeness Centrality Distribution

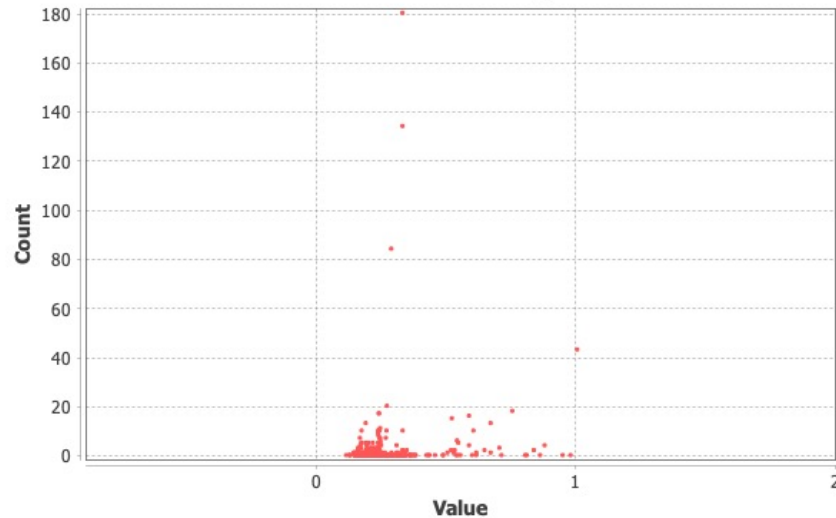


Betweenness Centrality Distribution

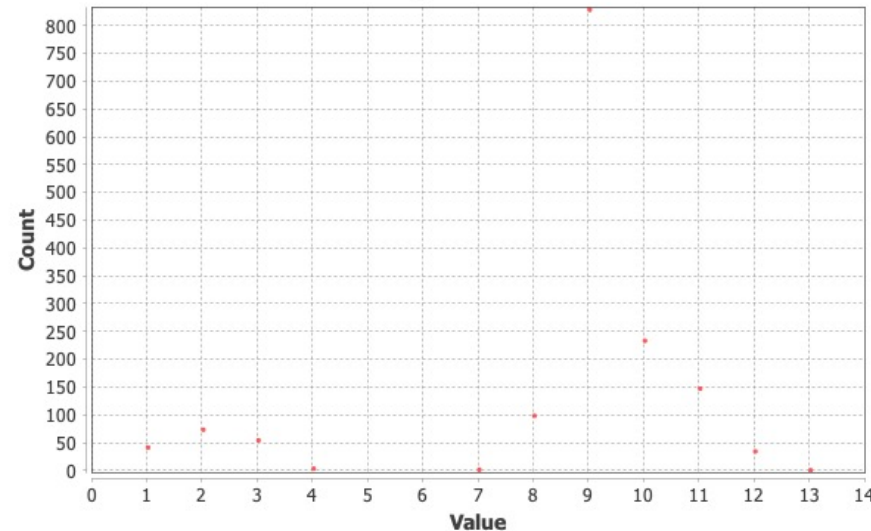


- Diameter: 13
- Radius: 1
- Average Path length: 4.4461440916472394

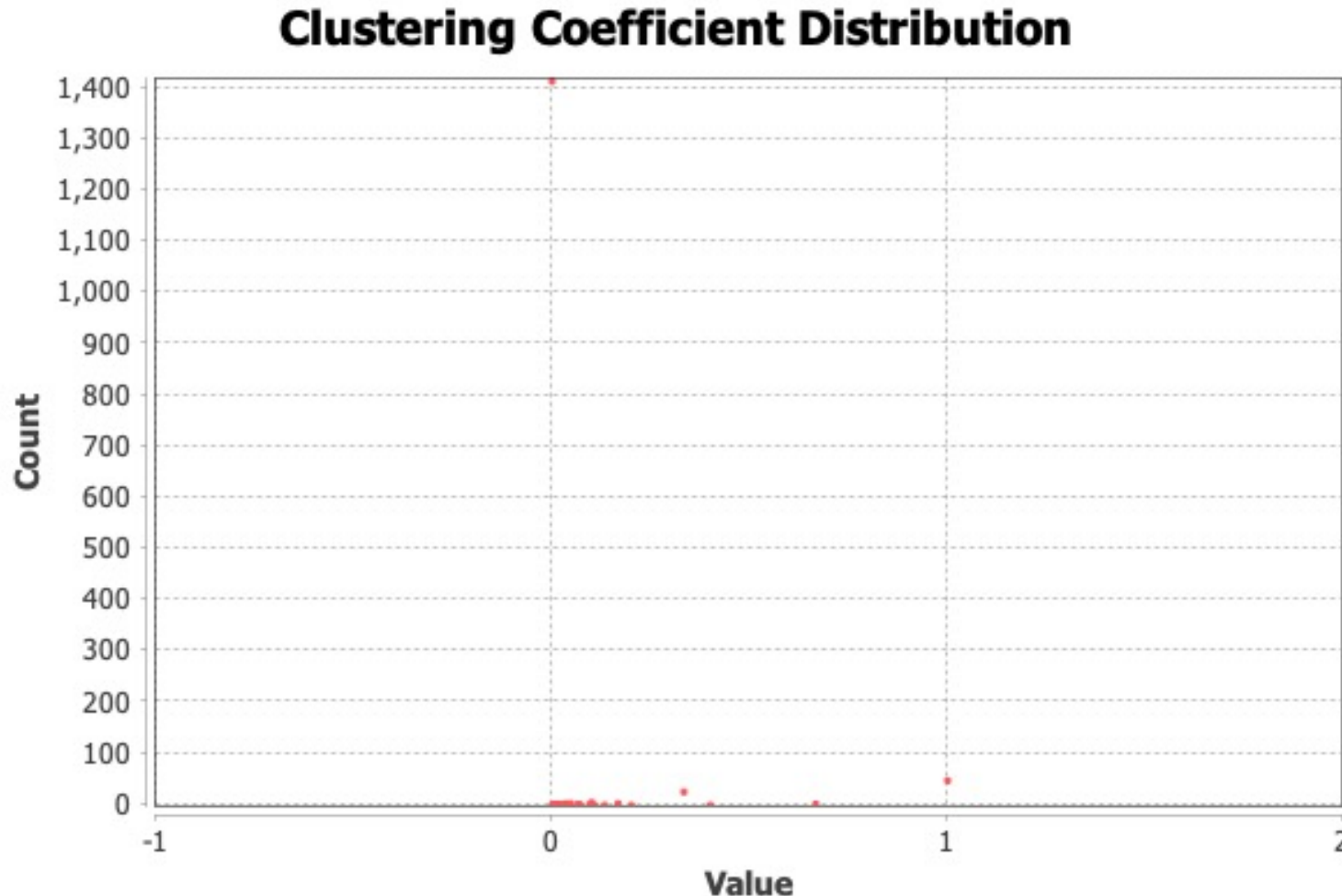
Harmonic Closeness Centrality Distribution



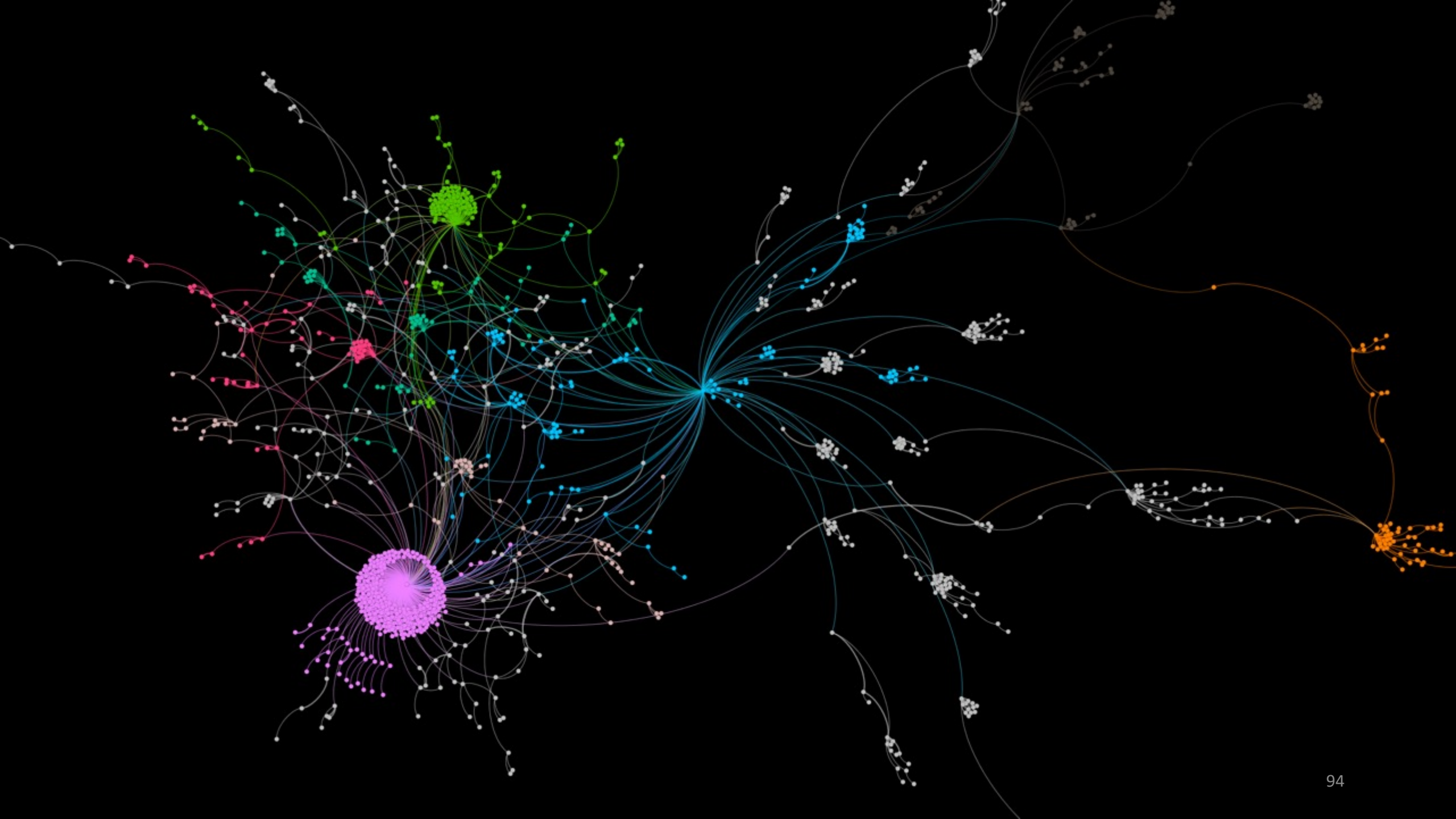
Eccentricity Distribution

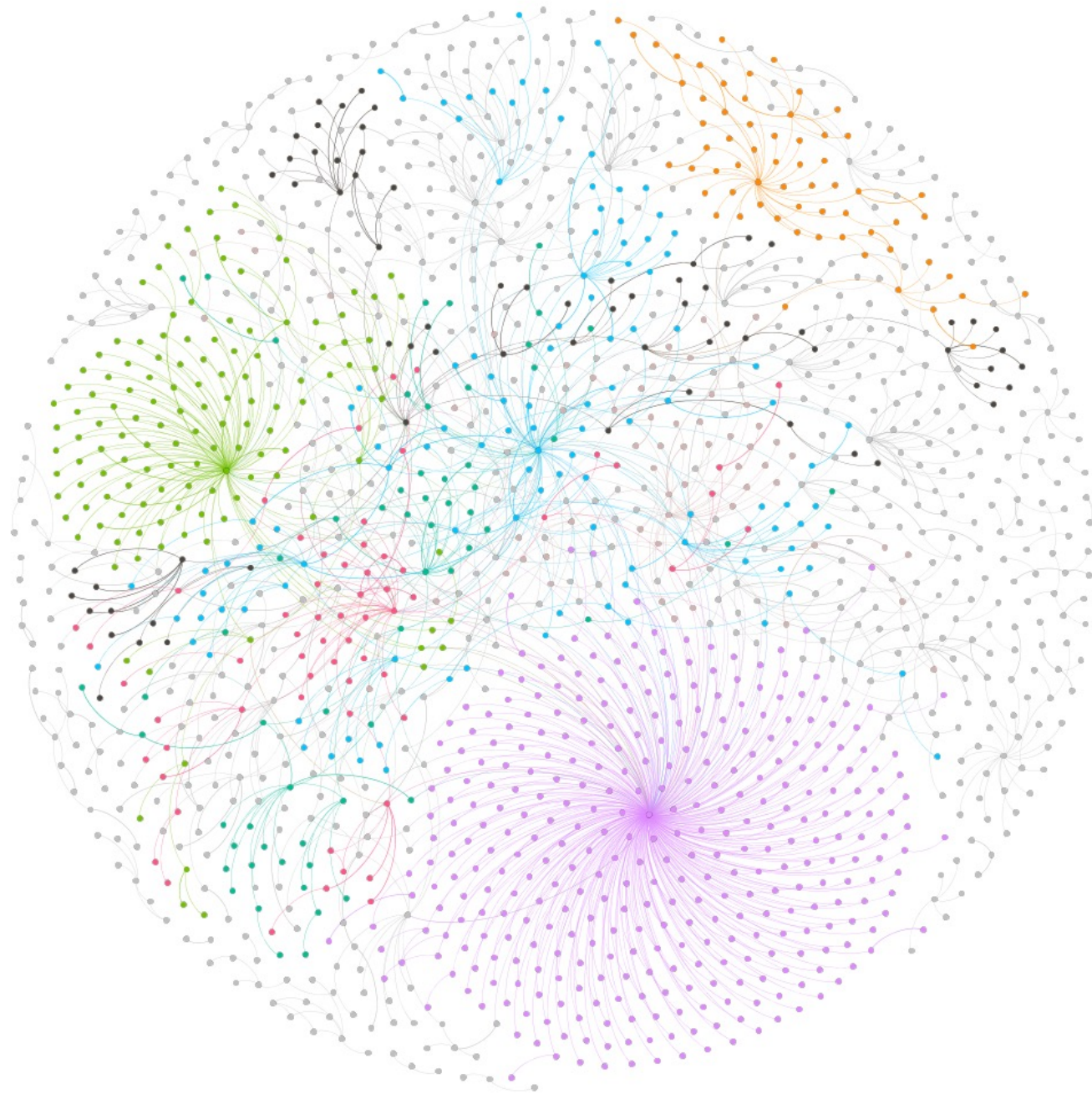


Silver: Clustering Coefficient



- Average Clustering Coefficient: 0.143
- Total triangles: 80
- The Average Clustering Coefficient is the mean value of individual coefficients.





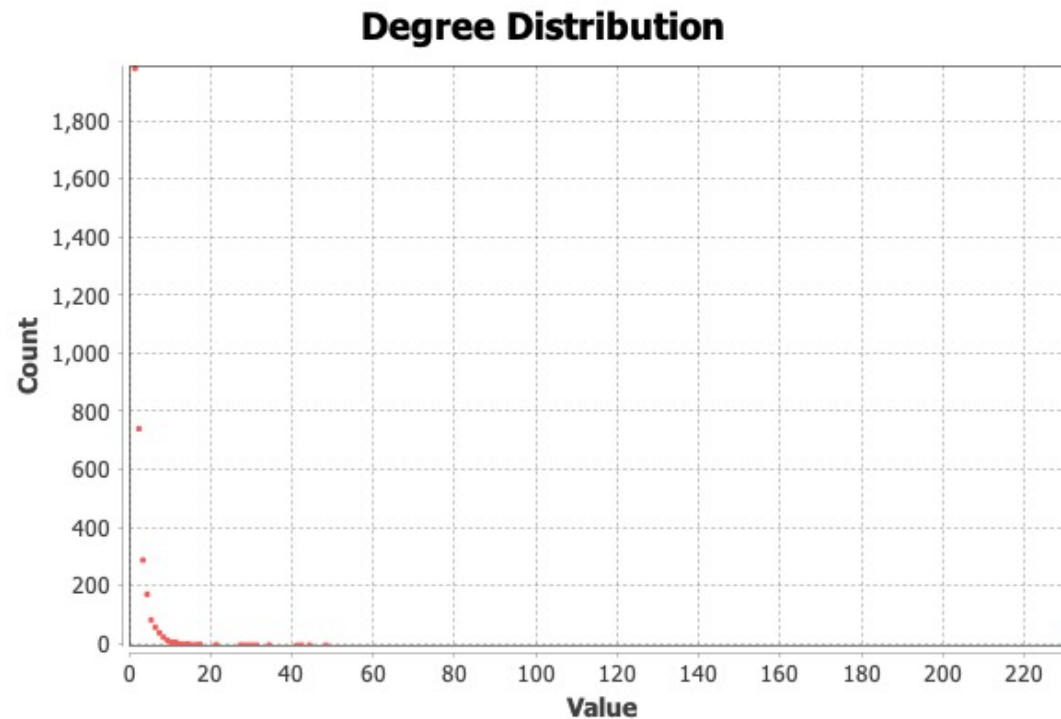
#Nodes: 3,506

#Edges: 3,933

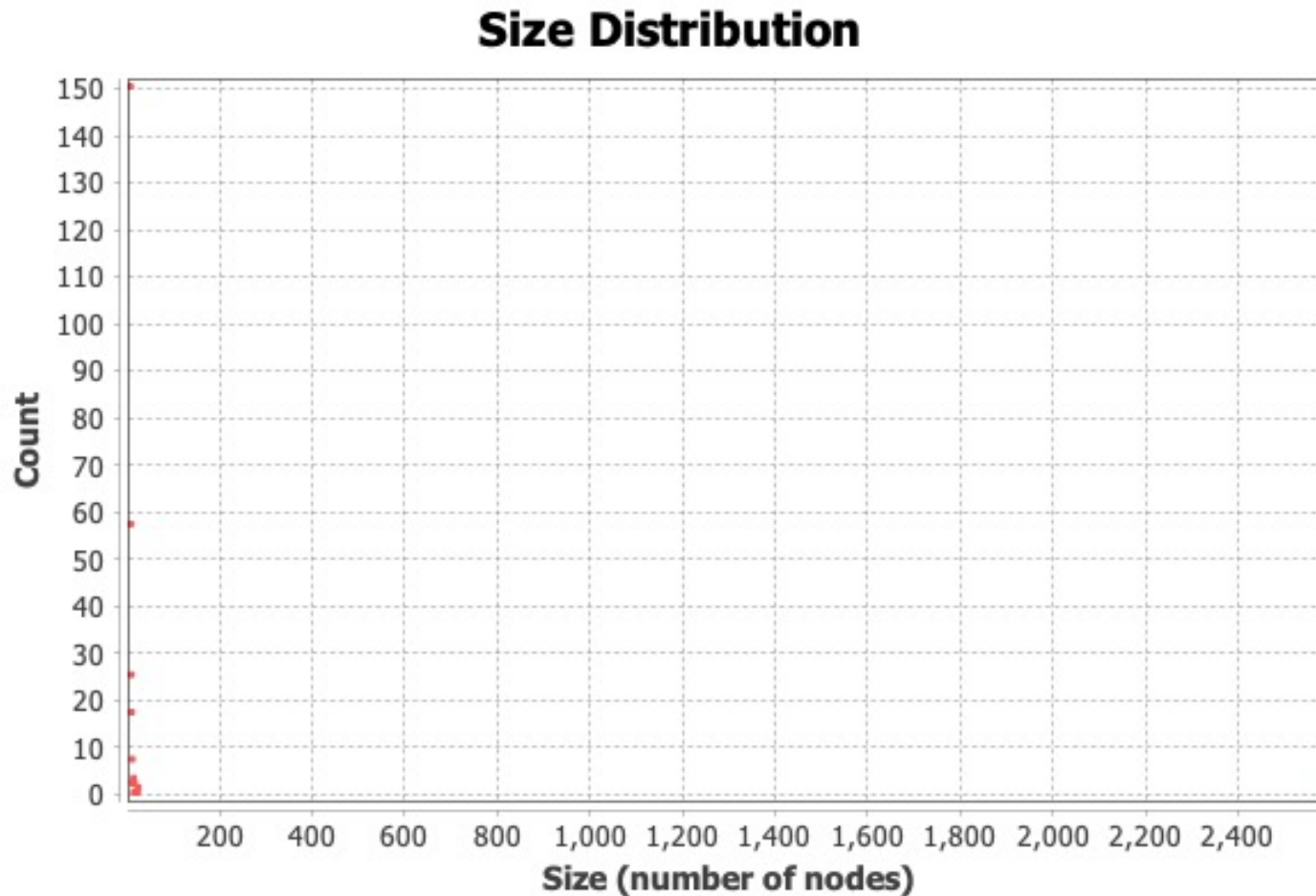
Sputnik: Analytics

Bioweapon: Degree distribution

- Average Degree: 2.244



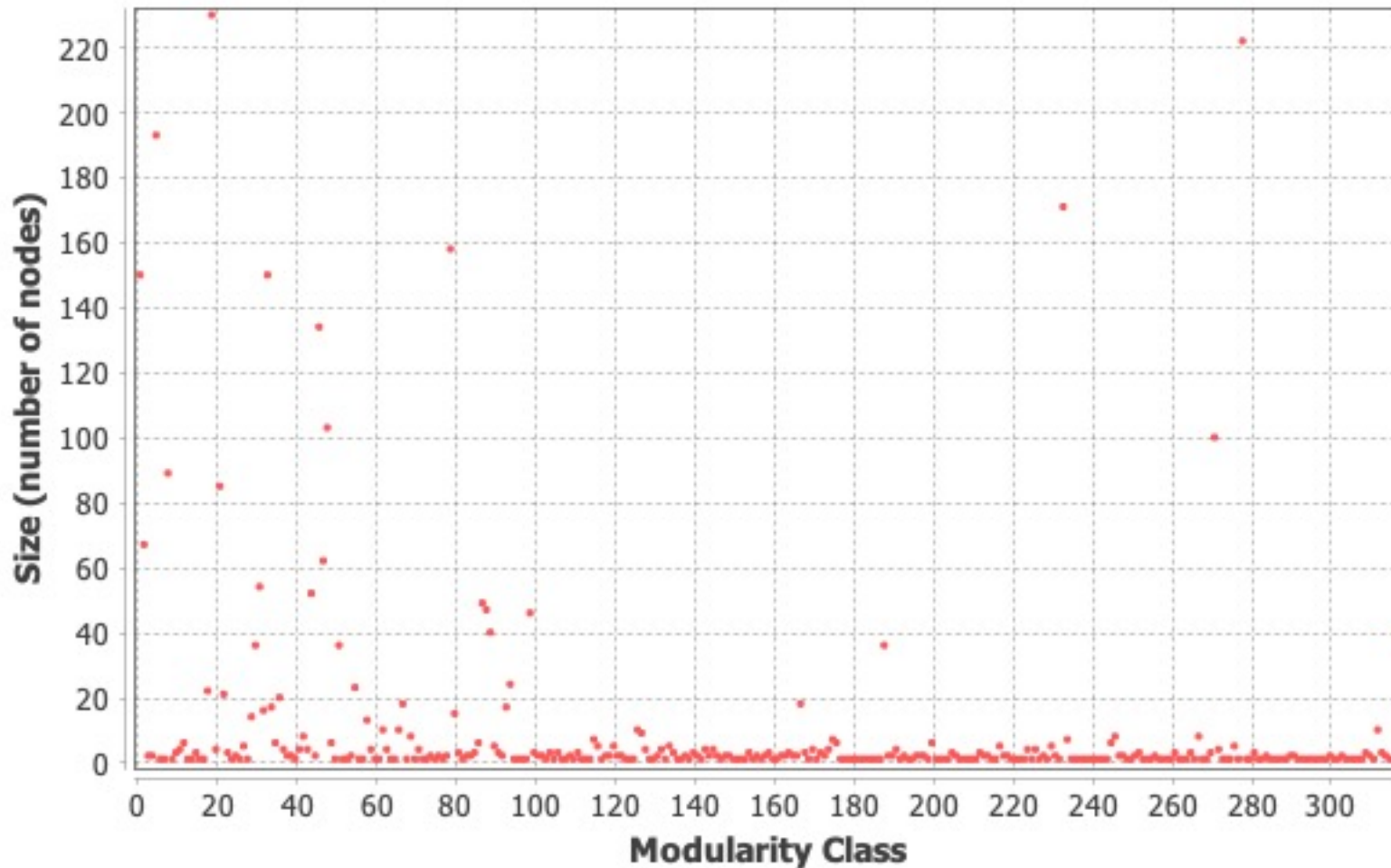
Bioweapon: #Components



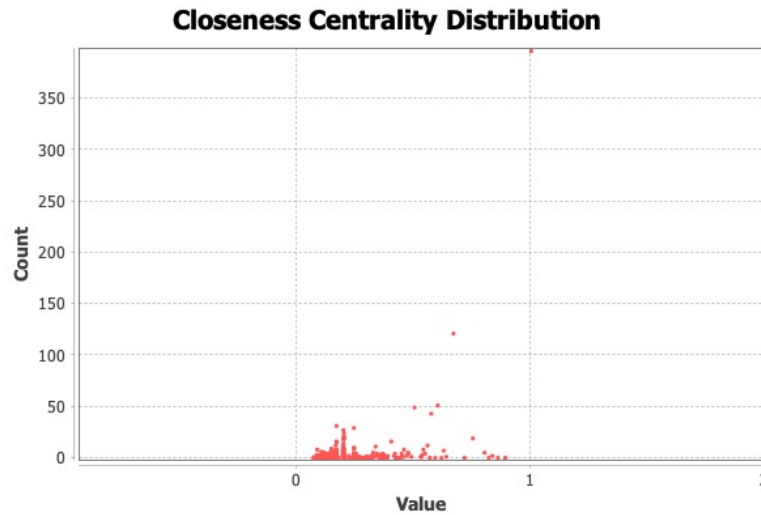
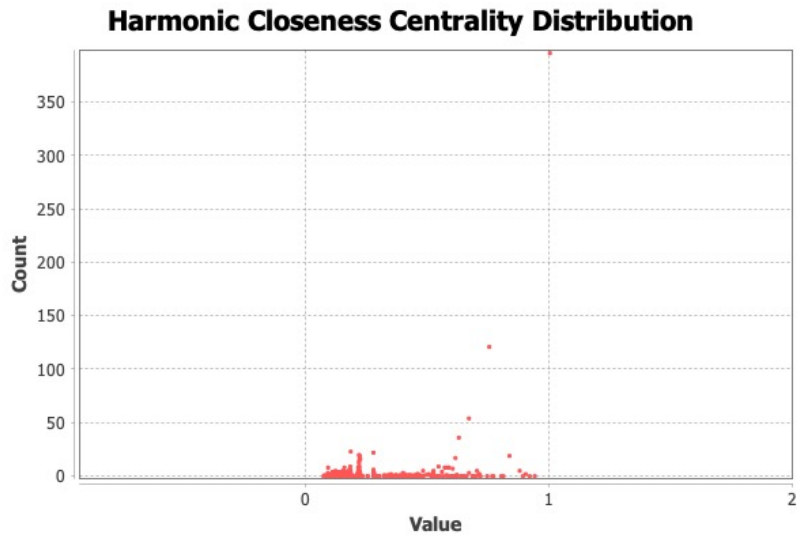
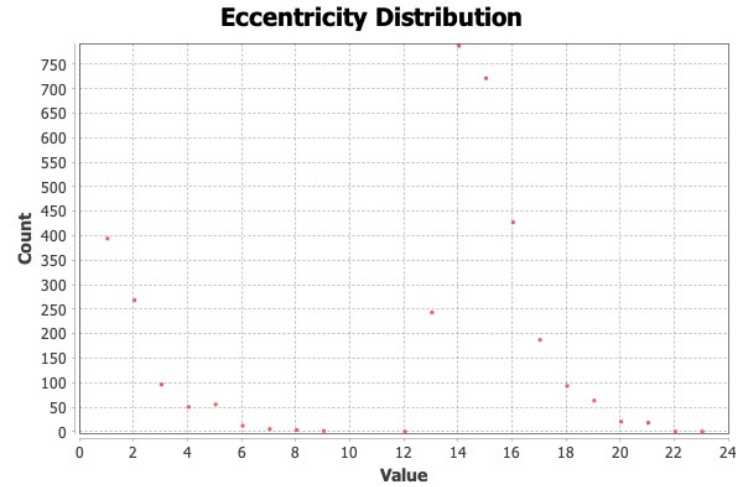
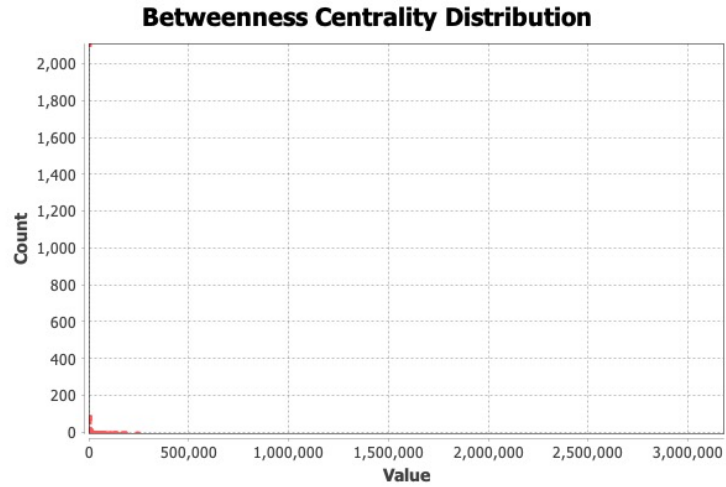
- Number of Weakly Connected Components: 280

Modularity

Size Distribution

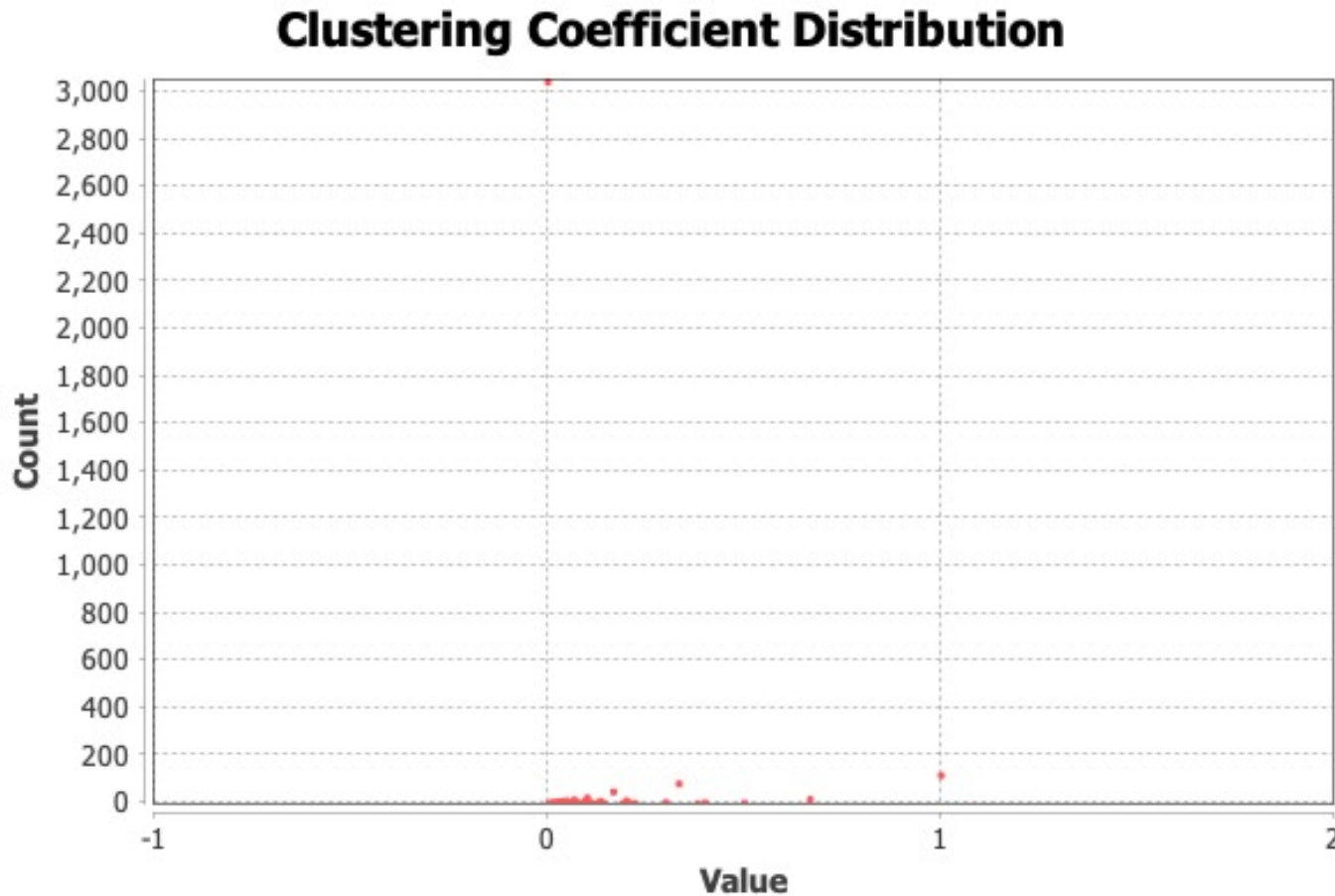


- Modularity: 0.910
- Modularity with resolution: 0.910
- Number of Communities: 317



- Diameter: 23
- Radius: 1
- Average Path length: 6.22139640321823

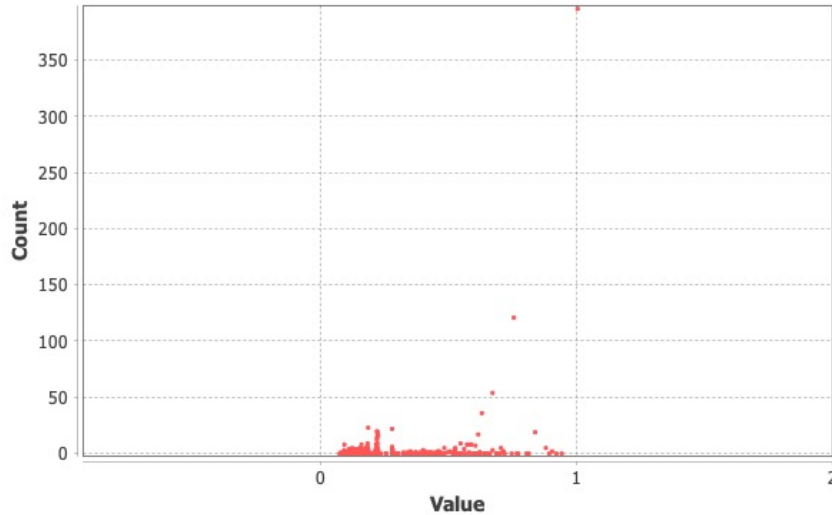
Bioweapon: Clustering Coefficient



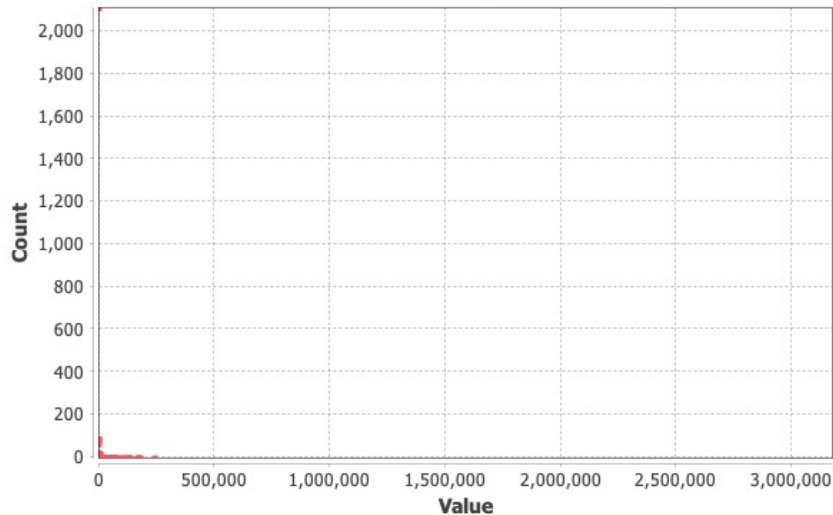
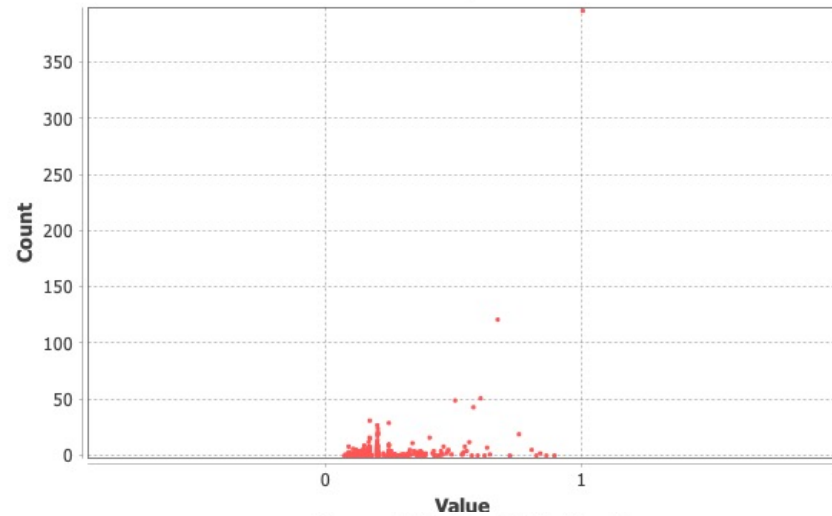
- Average Clustering Coefficient: 0.123
- Total triangles: 304
- The Average Clustering Coefficient is the mean value of individual coefficients.

Bioweapons: Centralities

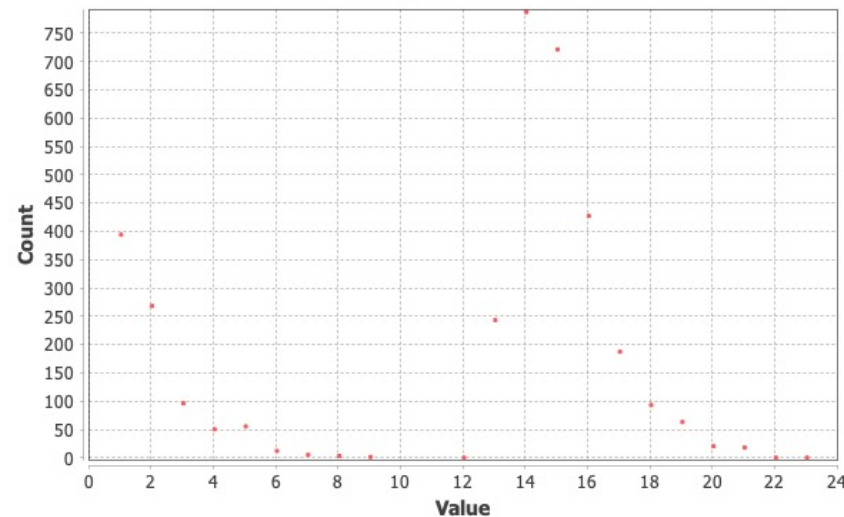
Harmonic Closeness Centrality Distribution



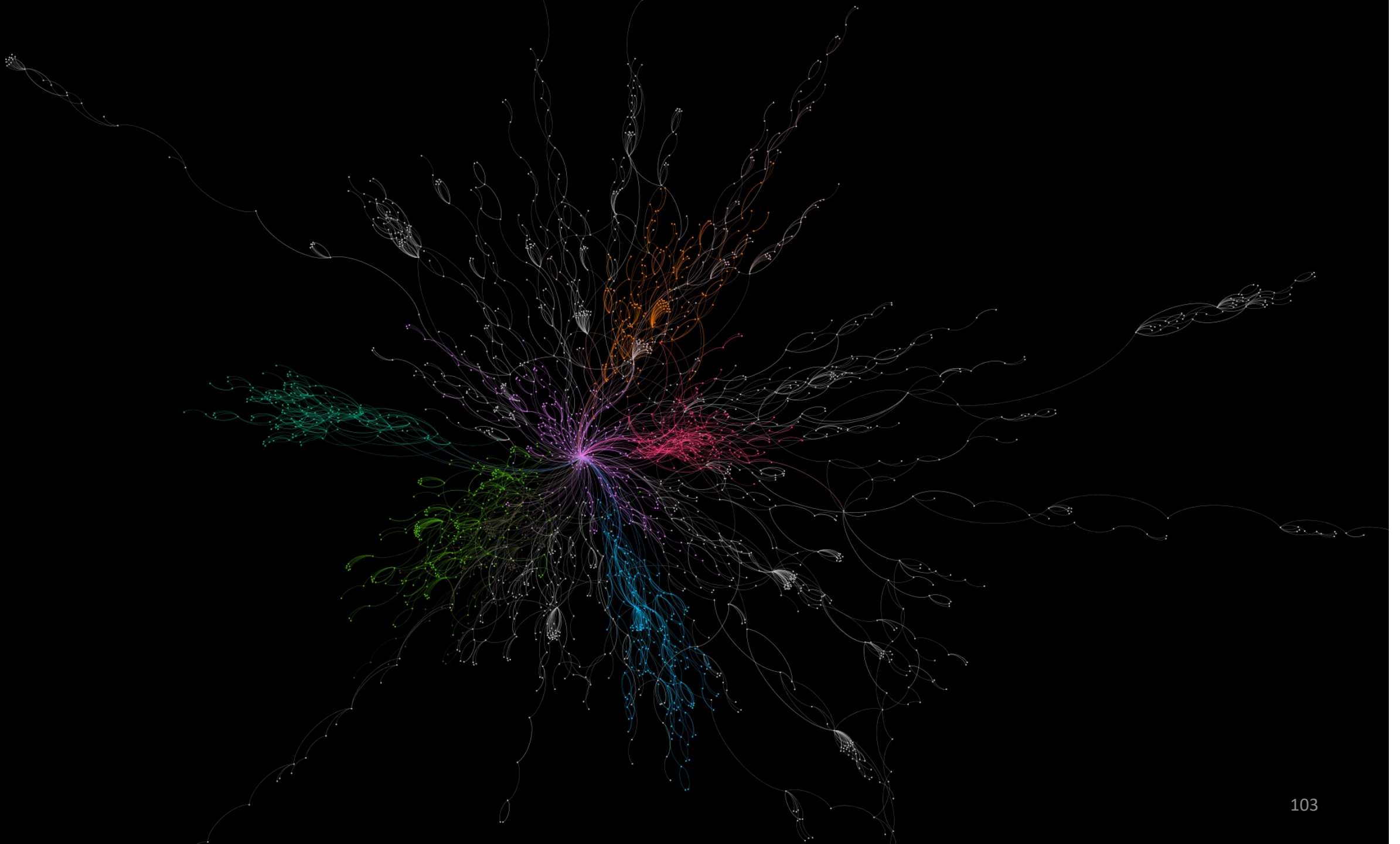
Closeness Centrality Distribution

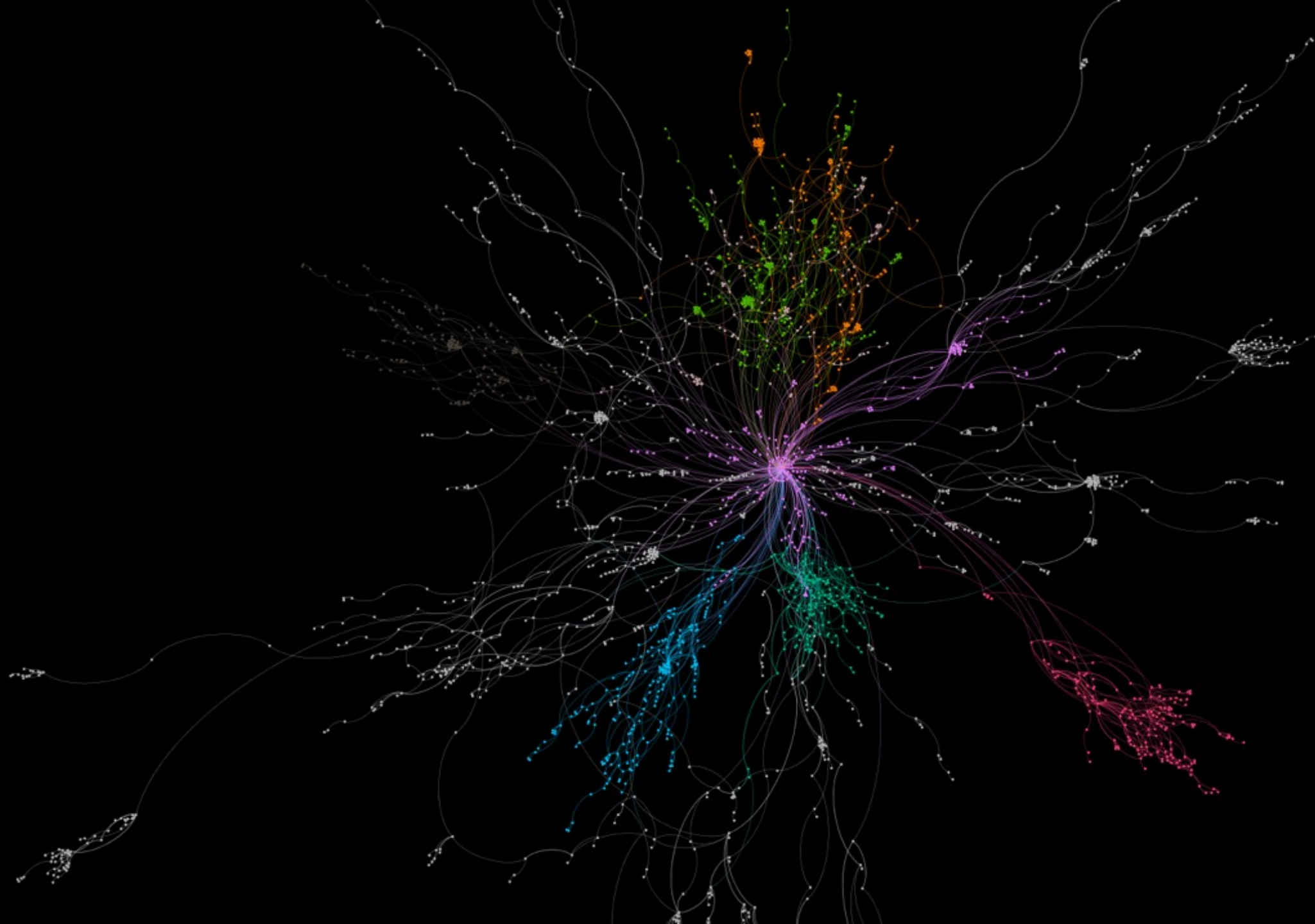


Eccentricity Distribution



- Diameter: 23
- Radius: 1
- Average Path length:
6.22139640321823





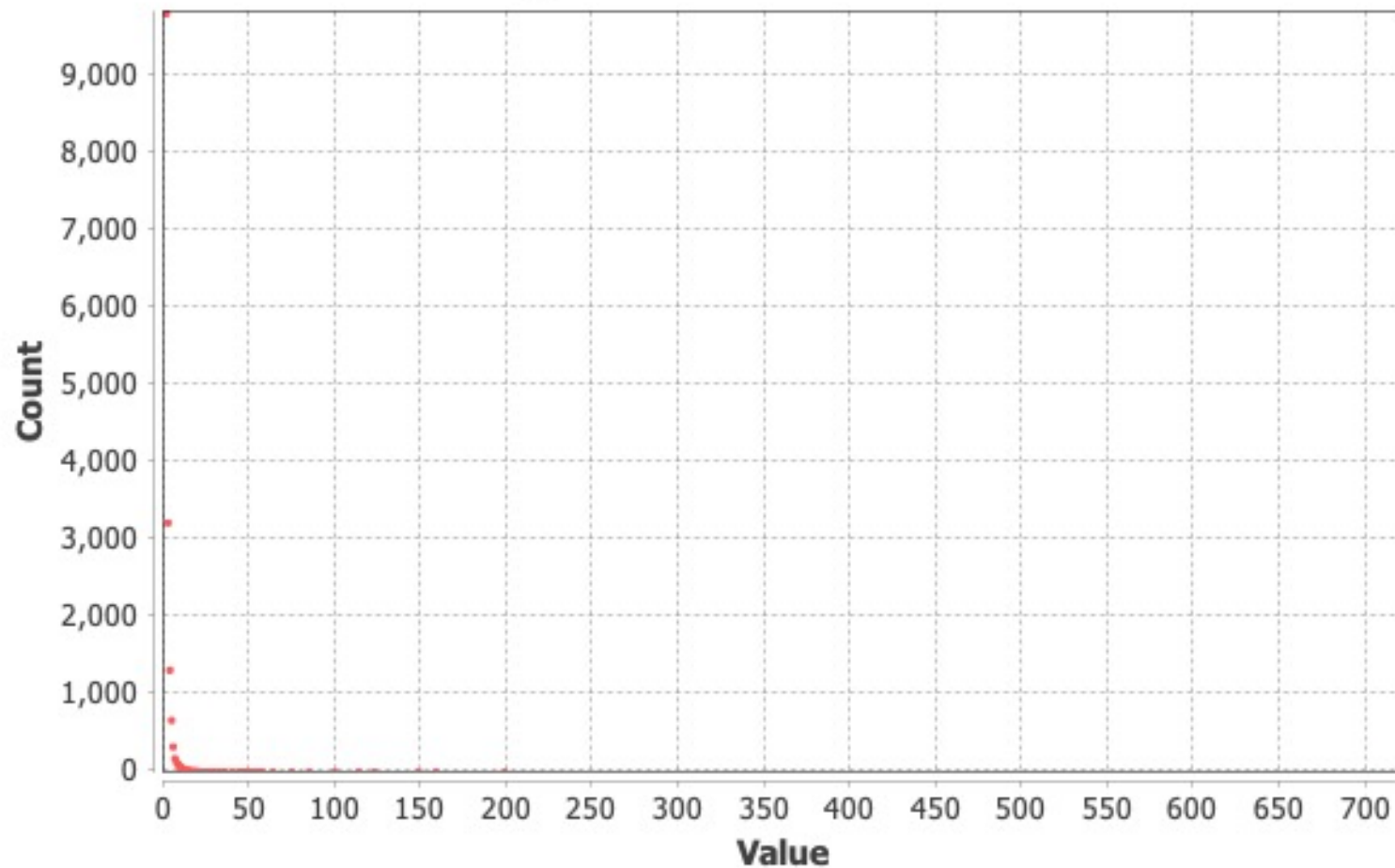
#Nodes: 16,143

#Edges: 17,350

Hydroxy Narrative

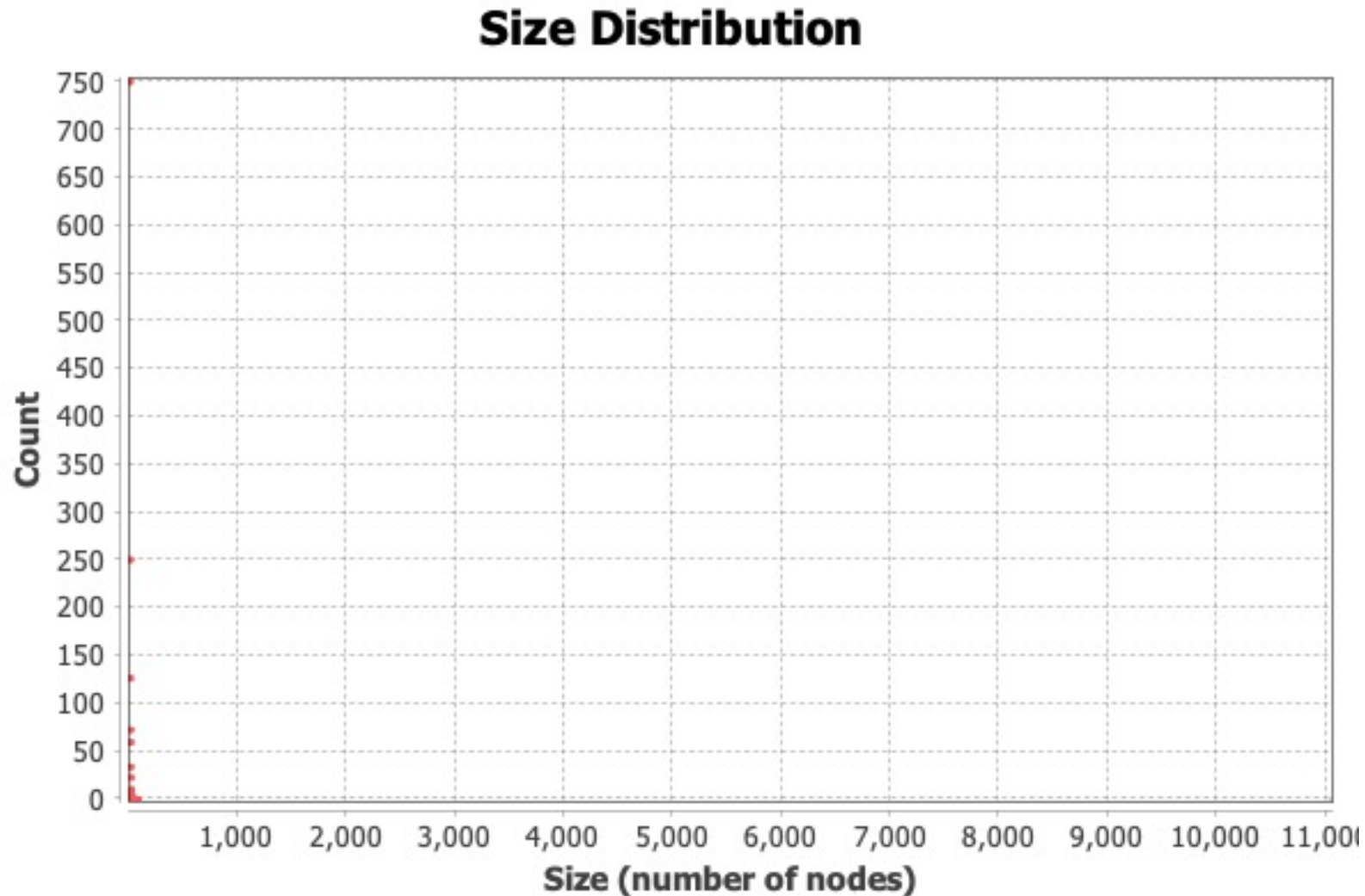
Hydroxy: Degree distribution

Degree Distribution



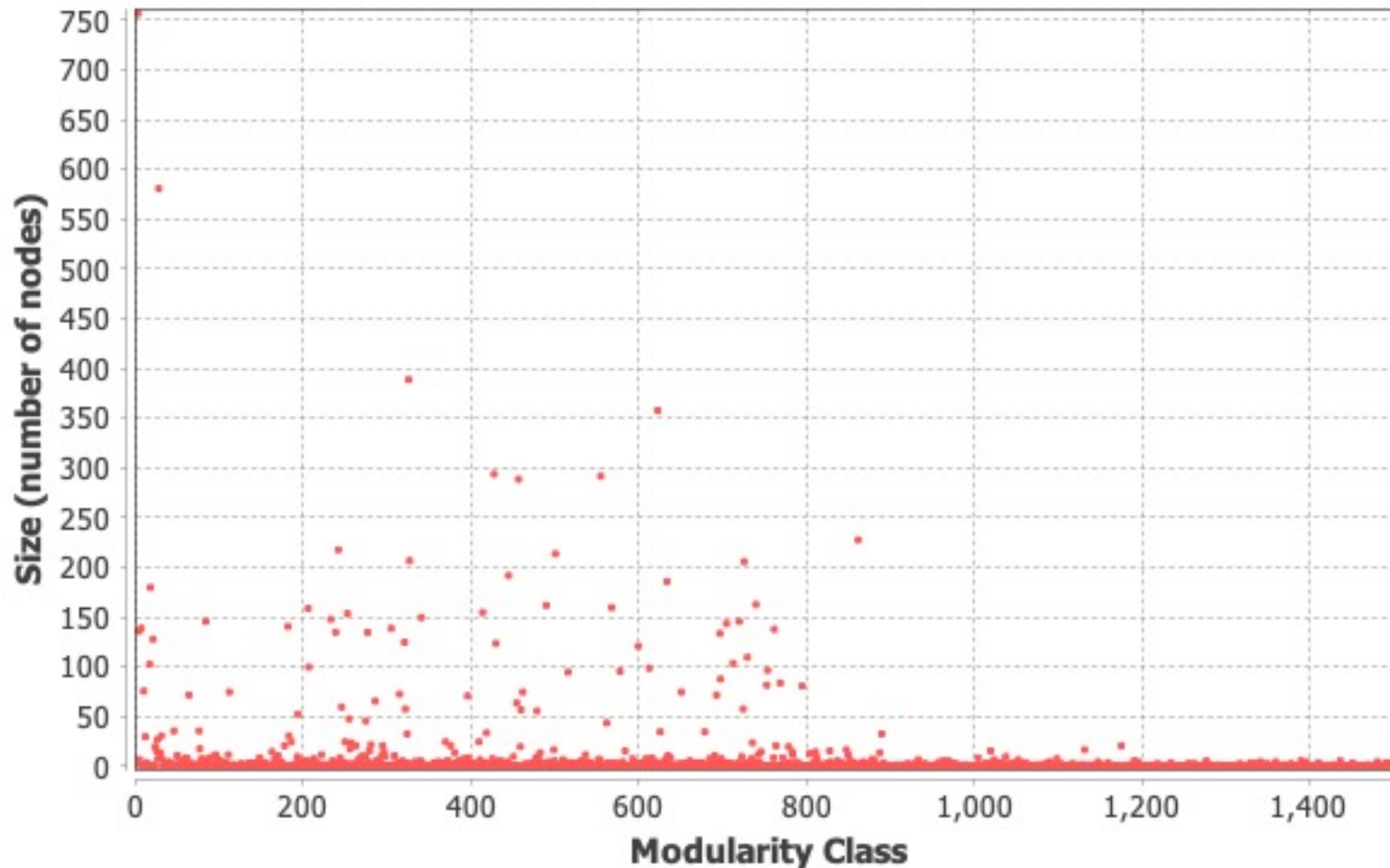
- Average Degree: 2.150

Hydroxy: Components



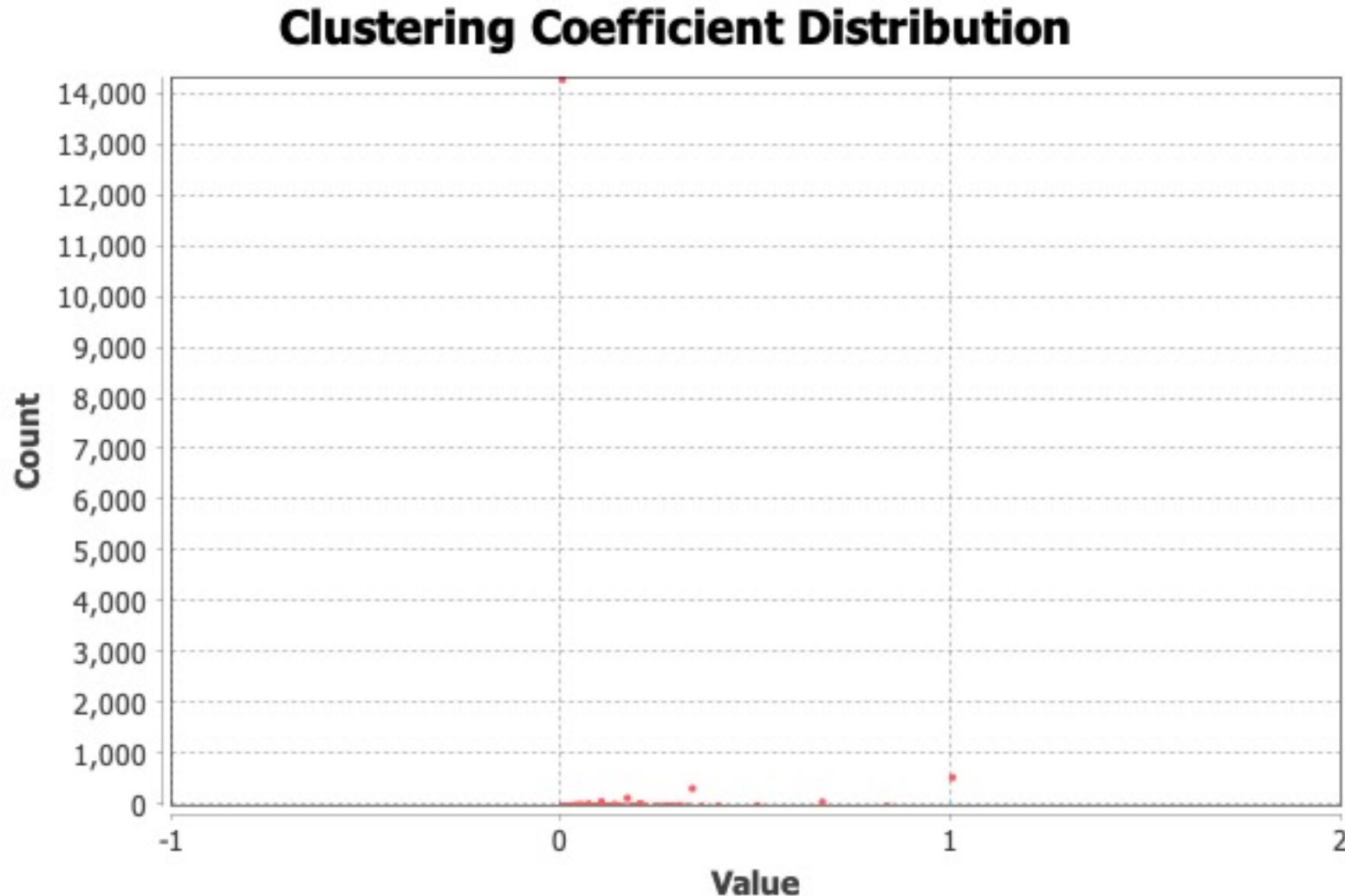
Community Structure

Size Distribution



- Modularity: 0.936
- Modularity with resolution: 0.936
- Number of Communities: 1508
- Number of Weakly Connected Components: 1401

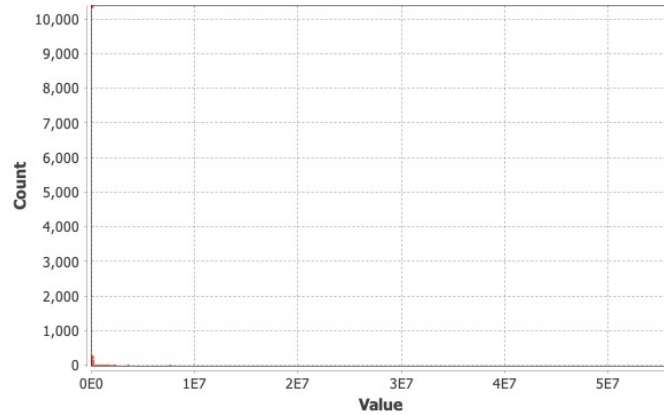
Hydroxy: Clustering coefficient



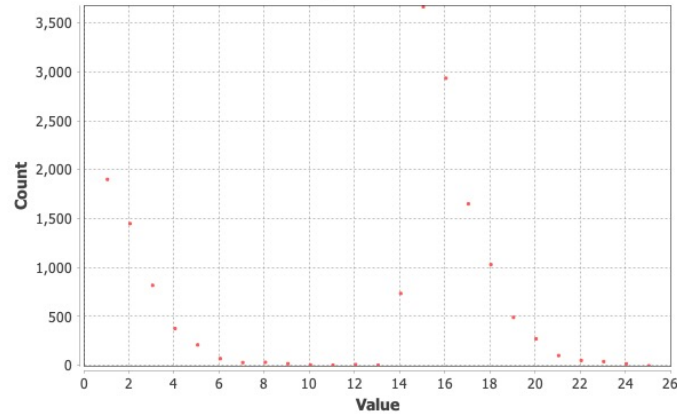
- Average Clustering Coefficient: 0.132
- Total triangles: 1185
- The Average Clustering Coefficient is the mean value of individual coefficients.

Centralities

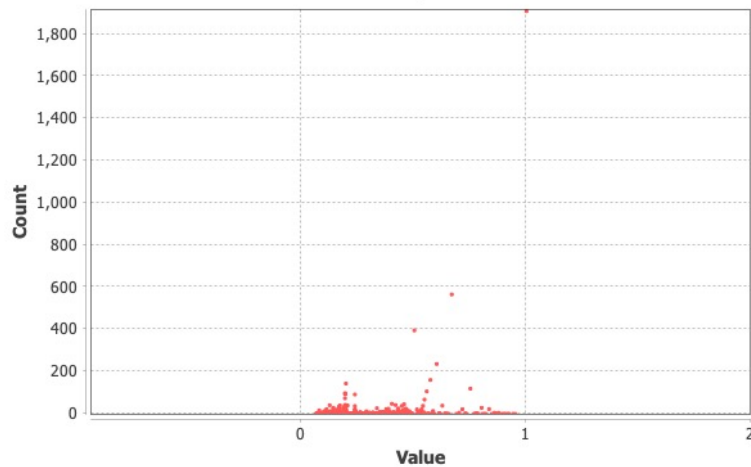
Betweenness Centrality Distribution



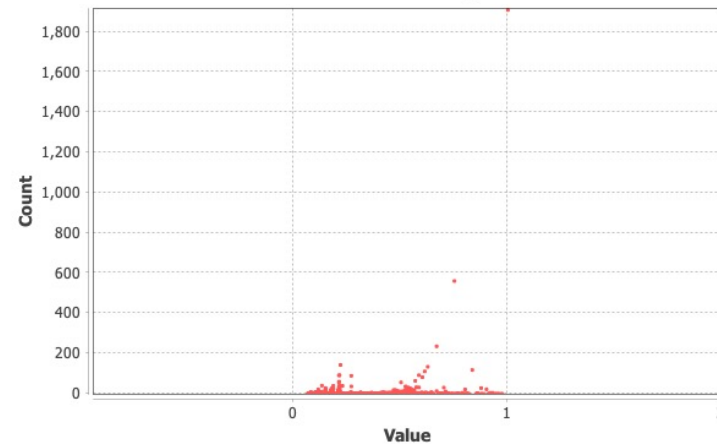
Eccentricity Distribution



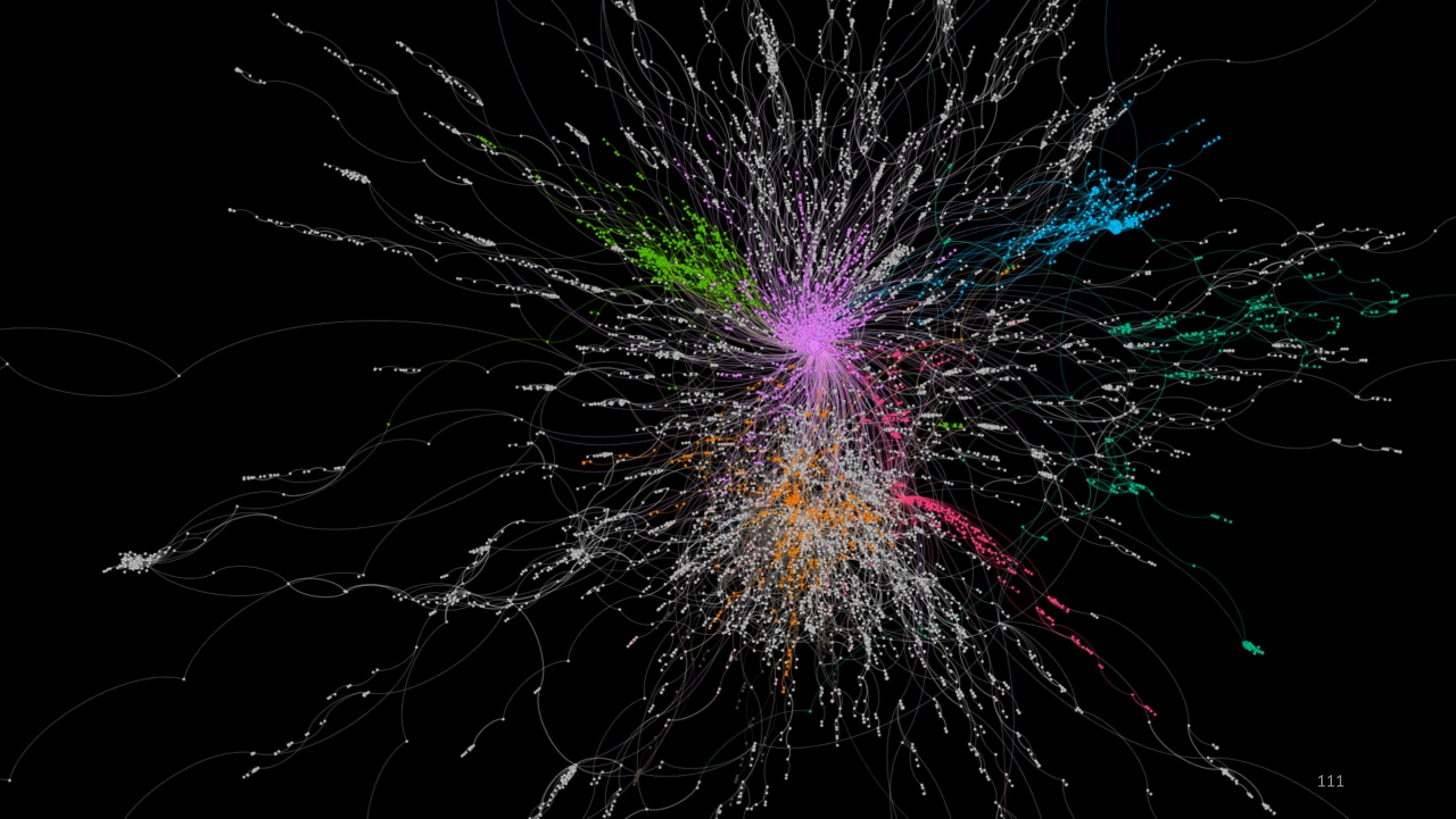
Closeness Centrality Distribution



Harmonic Closeness Centrality Distribution



- Diameter: 25
- Radius: 1
- Average Path length:
6.430795419900
987



Summary



Characterization
of spread helps
understand the
mechanics better

Assist in designing
effective control
mechanisms