

Toxicity and Networks of COVID-19 Misinformation Discourse: A Tale of Two Social Media Platforms

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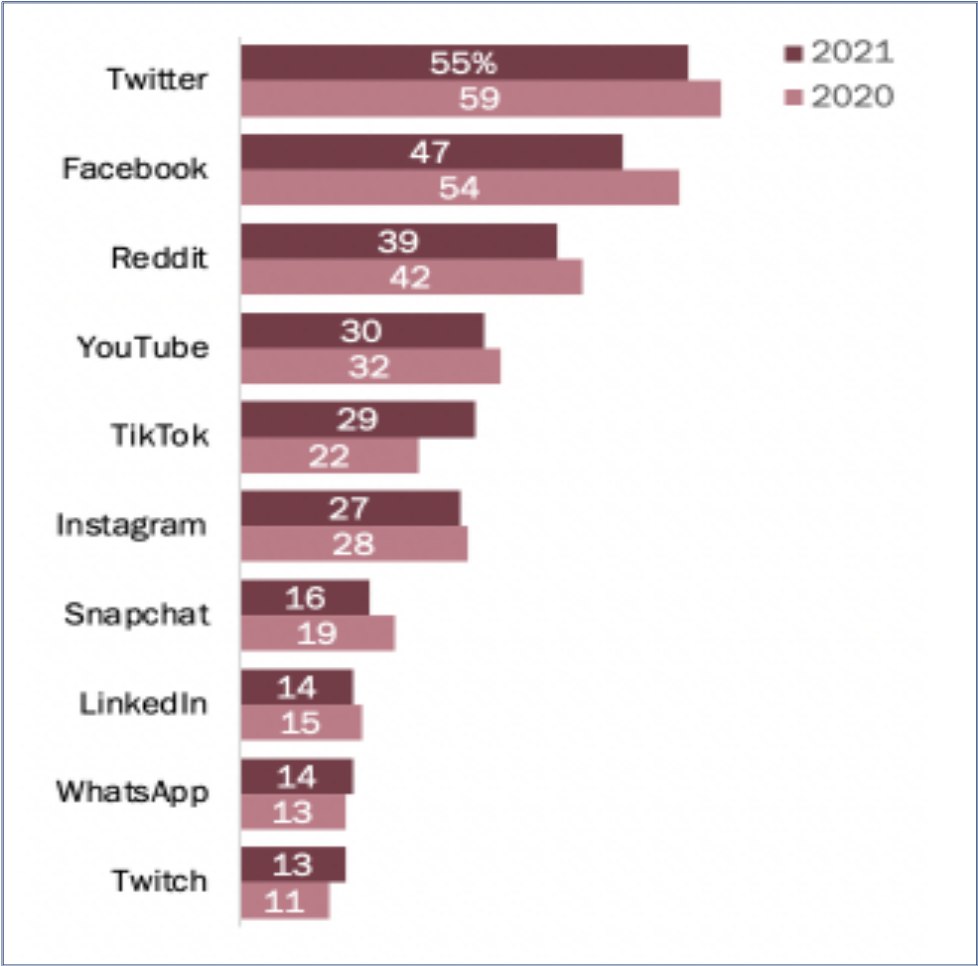
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72% of US adults say that they use at least one social media site.

A little under 48% of US adults say that they get news from social media “often” or “sometimes”.

Toxic information on social media like Twitter, and Parler has become a growing concern.

Even though these social media have policy and regulation to make toxicity free social media, toxicity still present there.



Data collection

Methodology

Results

Conclusion

Future directions

4 Covid related keywords/Hashtags. (f*ckcovid, f*cklockdown, f*ckmask, f*ckvaccine)

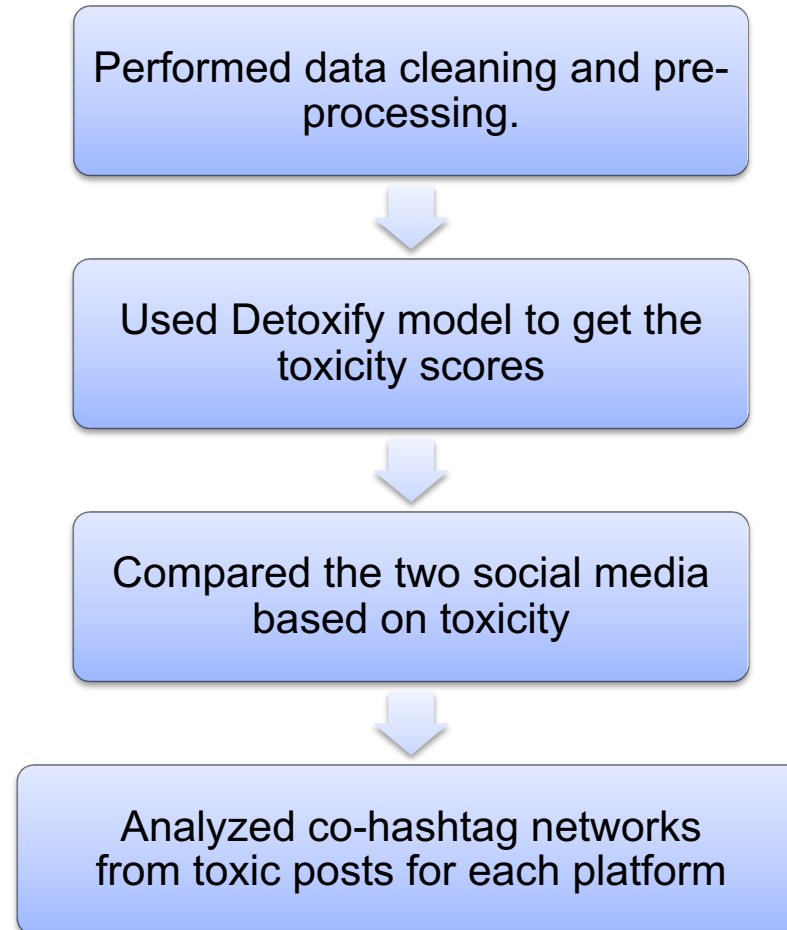
Time Period: January 1, 2020, through December 31, 2020.

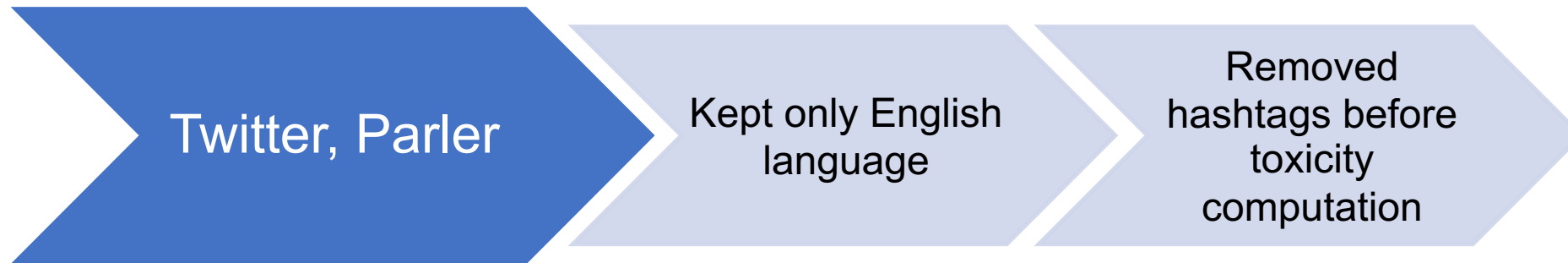
Posts from Twitter: 32,636

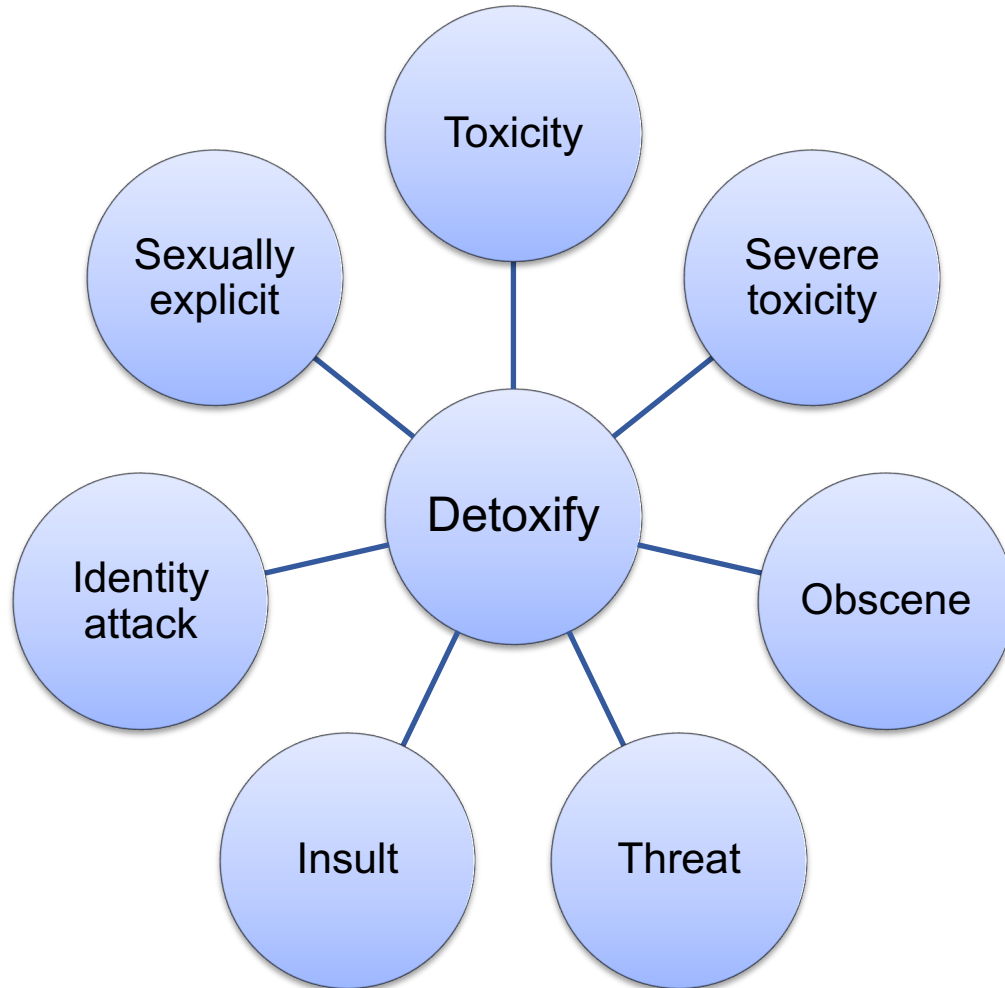
From Parler: 54,419

2 Social Media Platforms (Twitter, Parler)

Categories	Social Media	Records
Covid	Twitter	28,131
	Parler	16,361
Lockdown	Twitter	1,472
	Parler	5,965
Mask	Twitter	2,423
	Parler	26,165
Vaccine	Twitter	610
	Parler	5,928







<https://github.com/unitaryai>

NetworkX

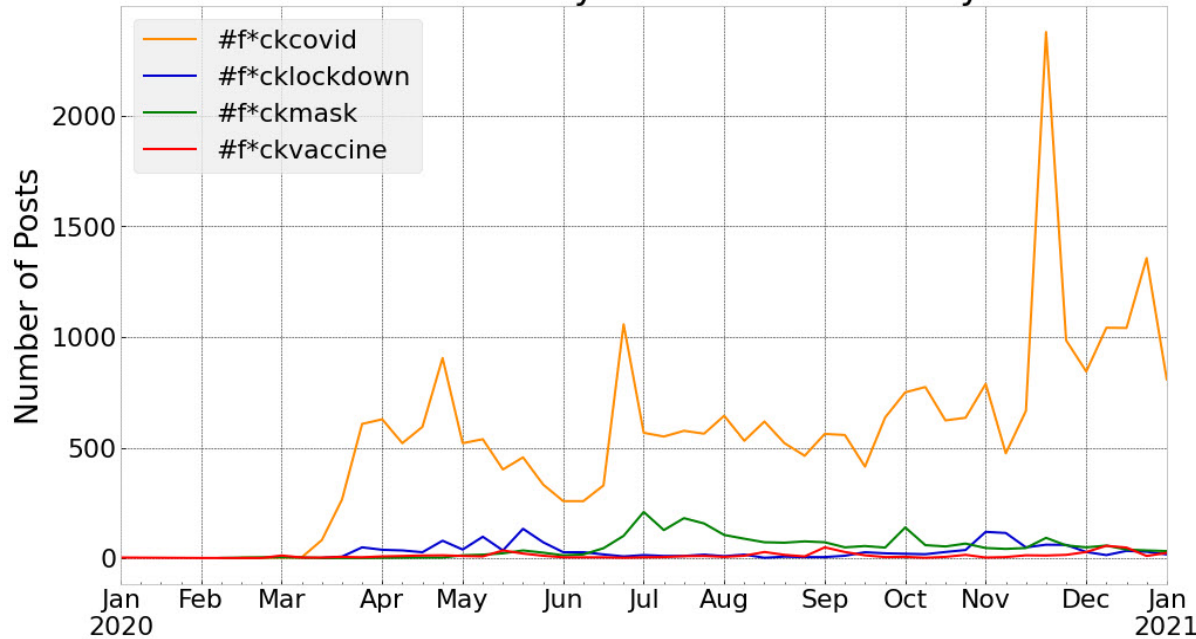
Python library for creating and analyzing networks

Generate co-hashtag networks for Twitter and Parler toxic posts.

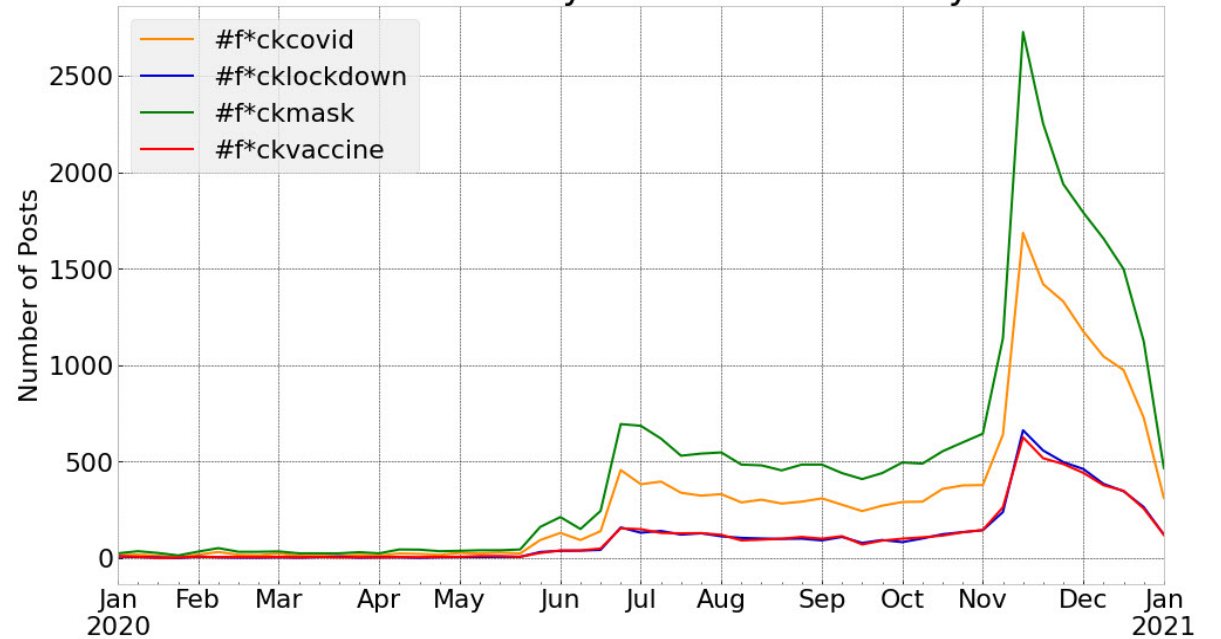


<https://networkx.org/>

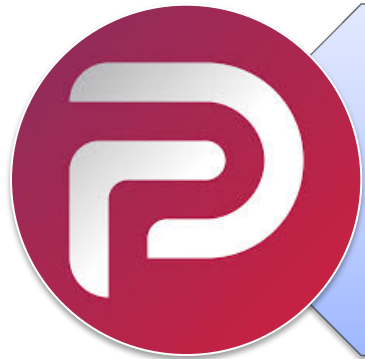
Twitter Posts by Publication - Weekly



Parler Posts by Publication - Weekly



Twitter (left) and Parler (right) posts by weekly publication showing posting frequency



For Anti-Covid, Parler is more toxic.

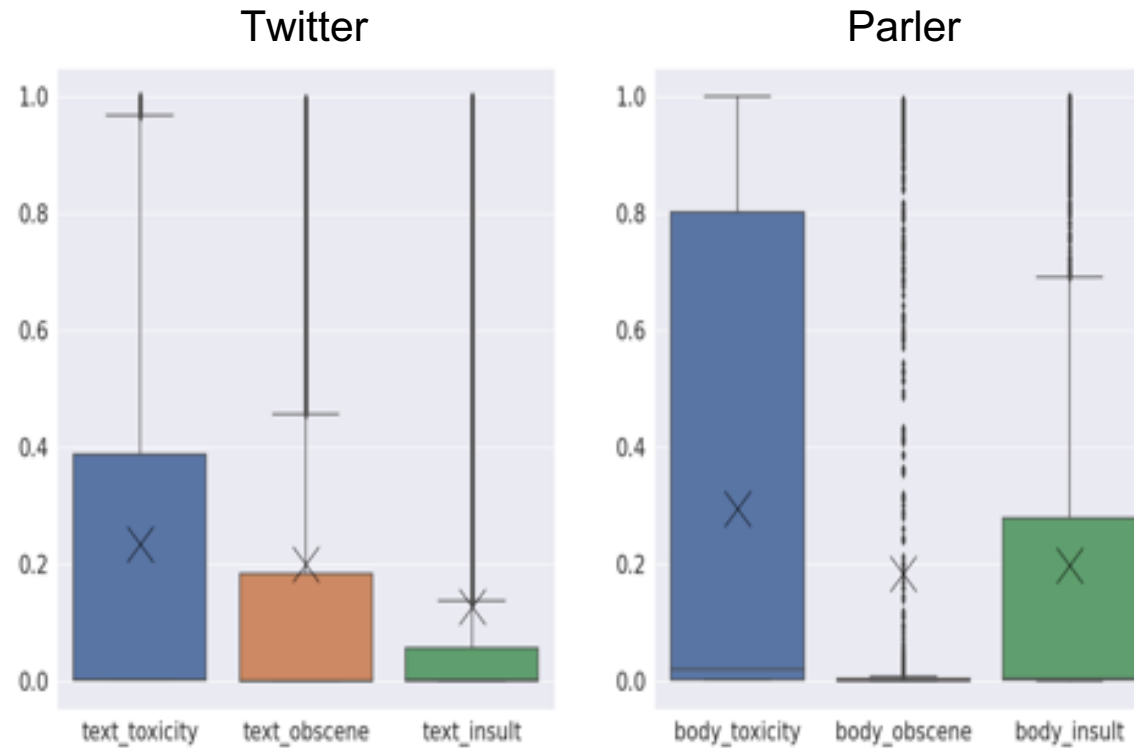


For Anti-Lockdown, Anti-mask and Anti-vaccine, Twitter is more toxic.

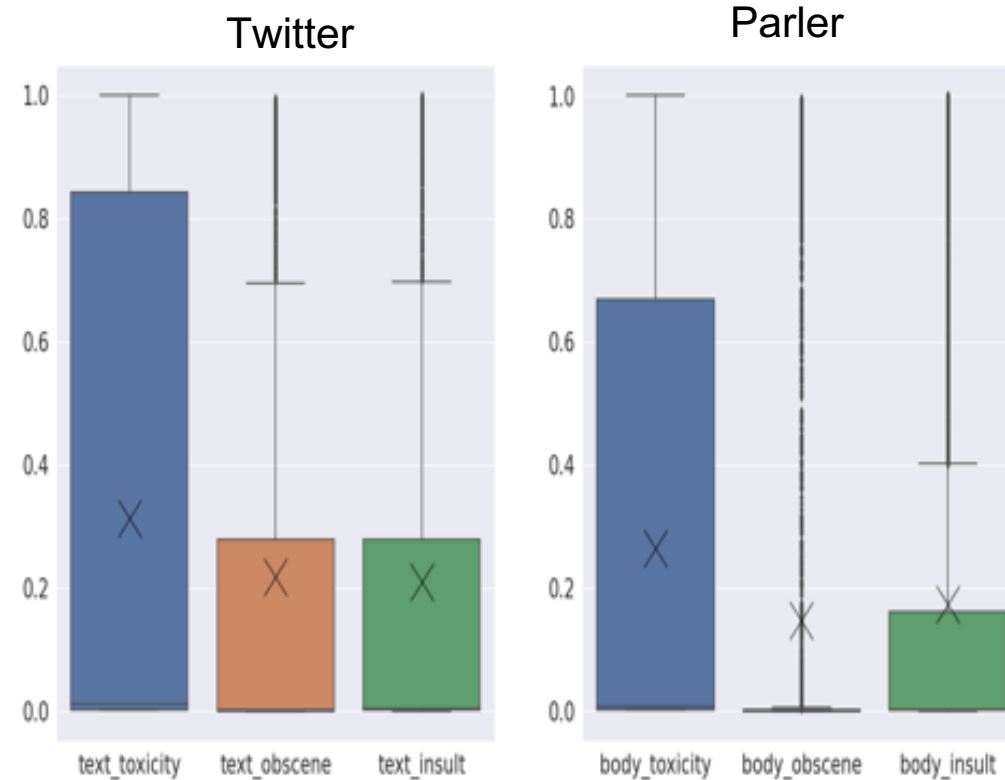
Categories	Social Media	Mean Toxicity	SD
Covid	<i>Twitter</i>	0.234	0.388
	<i>Parler</i>	0.294	0.402
Lockdown	<i>Twitter</i>	0.326	0.406
	<i>Parler</i>	0.176	0.361
Mask	<i>Twitter</i>	0.313	0.416
	<i>Parler</i>	0.264	0.388
Vaccine	<i>Twitter</i>	0.302	0.411
	<i>Parler</i>	0.119	0.304

Results – Comparison

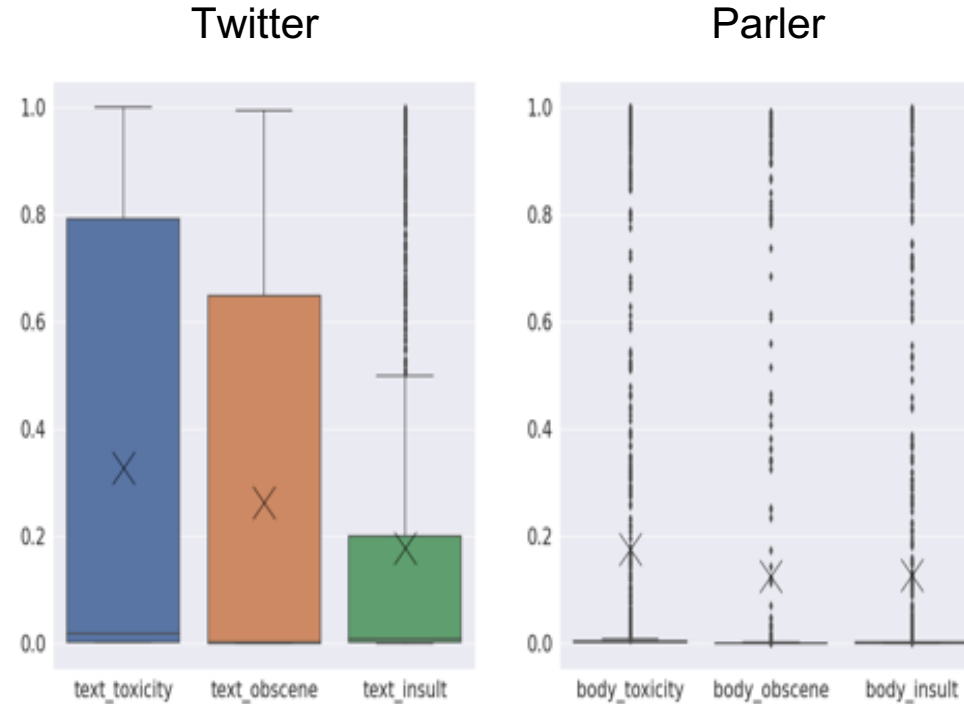
		Total	Percentage of Post with Toxicity Score > 0.5			Percentage of Posts with Toxicity score > 0.7			Percentage of Posts with Toxicity Score > 0.9		
Dataset	Platform	Tweets/ Posts	Toxicity	Obscene	Insult	Toxicity	Obscene	Insult	Toxicity	Obscene	Insult
#f*ckcovid	Twitter	28131	24.08%	22.05%	10.93%	21.65%	19.89%	8.60%	17.00%	10.06%	6.93%
#f*cklockdown		1472	34.31%	28.60%	16.37%	27.45%	22.96%	11.35%	20.11%	14.54%	6.05%
#f*ckmask		2423	31.24%	23.15%	19.81%	27.90%	20.59%	16.05%	22.86%	15.44%	5.94%
#f*ckvaccine		610	30.98%	23.28%	19.51%	27.21%	19.84%	14.75%	20.98%	14.26%	7.21%
#f*ckcovid	Parler	16361	30.51%	20.61%	18.01%	29.08%	19.16%	15.82%	15.48%	10.43%	7.03%
#f*cklockdown		5956	18.11%	13.06%	12.14%	17.45%	12.98%	11.90%	13.73%	8.14%	8.04%
#f*ckmask		26165	26.80%	15.71%	17.12%	23.38%	13.28%	13.48%	14.64%	9.96%	7.18%
#f*ckvaccine		5928	11.93%	9.06%	5.36%	10.90%	8.92%	4.82%	10.37%	8.52%	4.28%



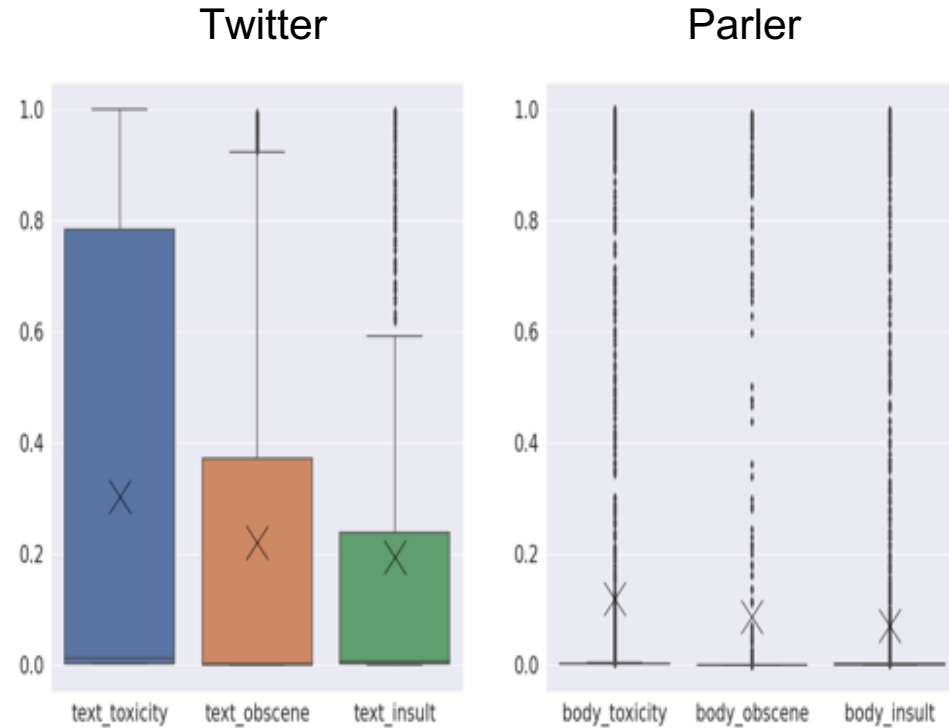
F*Covid Hashtag for three classes (Toxicity, Obscene, Insult) for Twitter vs Parler



F*lockdown Hashtag for three classes (Toxicity, Obscene, Insult) for Twitter vs Parler

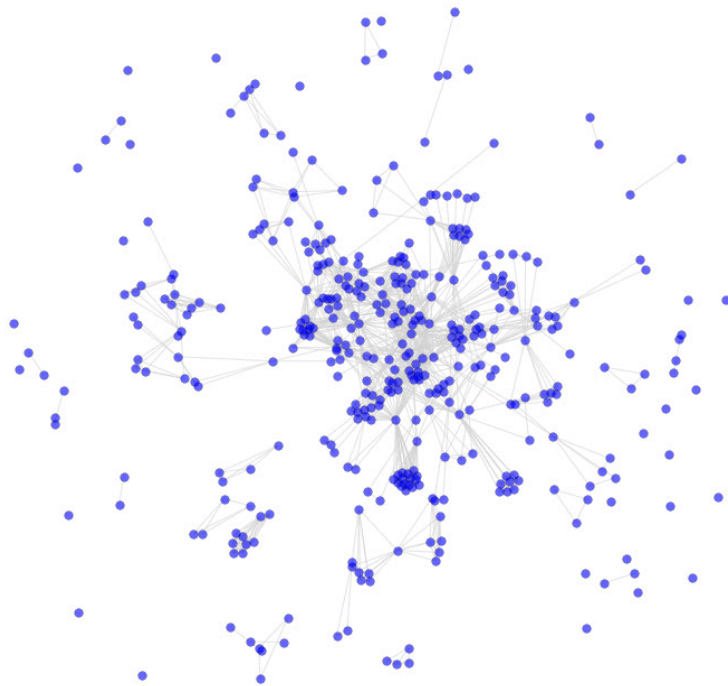


F*mask Hashtag for three types of classes (Toxicity, Obscene, Insult) for Twitter vs Parler



F*vaccine Hashtag for three types of toxicity (Toxicity, Obscene, Insult) for Twitter vs Parler

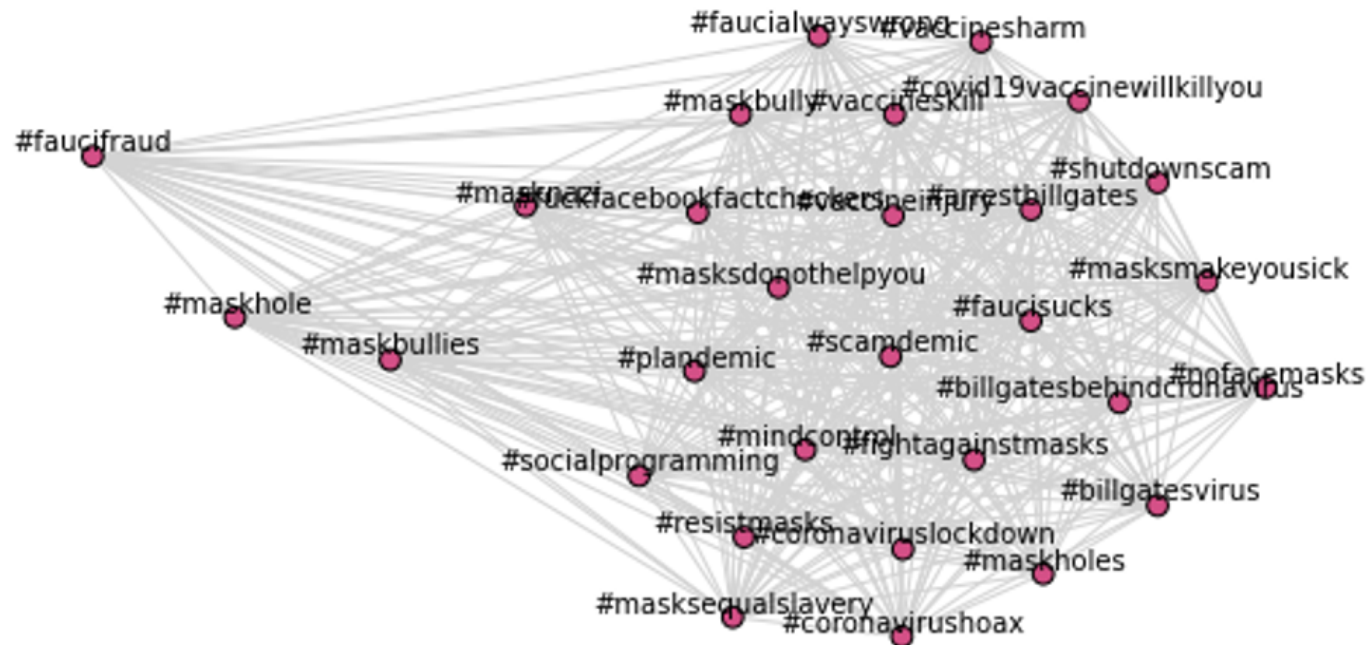
Twitter Co-Hashtag Network



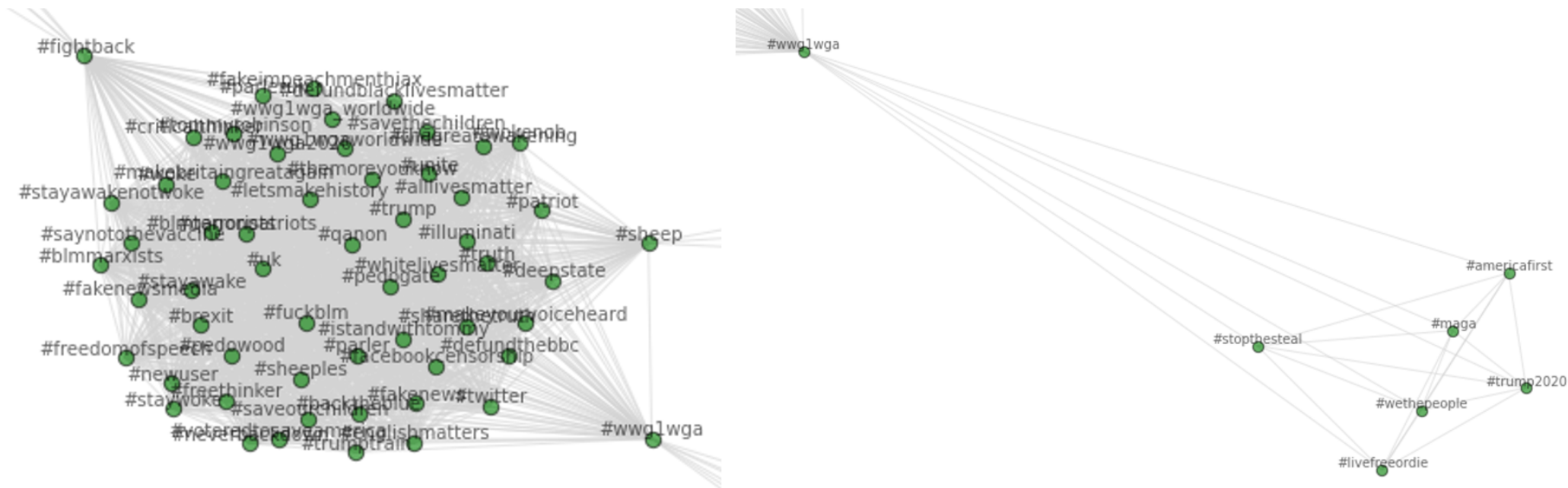
Parler Co-Hashtag Network



Toxic Twitter Co-Hashtag Network Graph (left) and Parler Co-Hashtag Network Graph (right)



Parler co-hashtag network graph component identifying a misinformation **echo chamber**.



Parler co-hashtag network graph component identifying **important bridge nodes** connecting COVID-19 misinformation to fringe narratives.

Twitter contained a higher level of toxicity for COVID-19 misinformation discourse than Parler

Parler has higher level of toxicity for anti-COVID-19 category

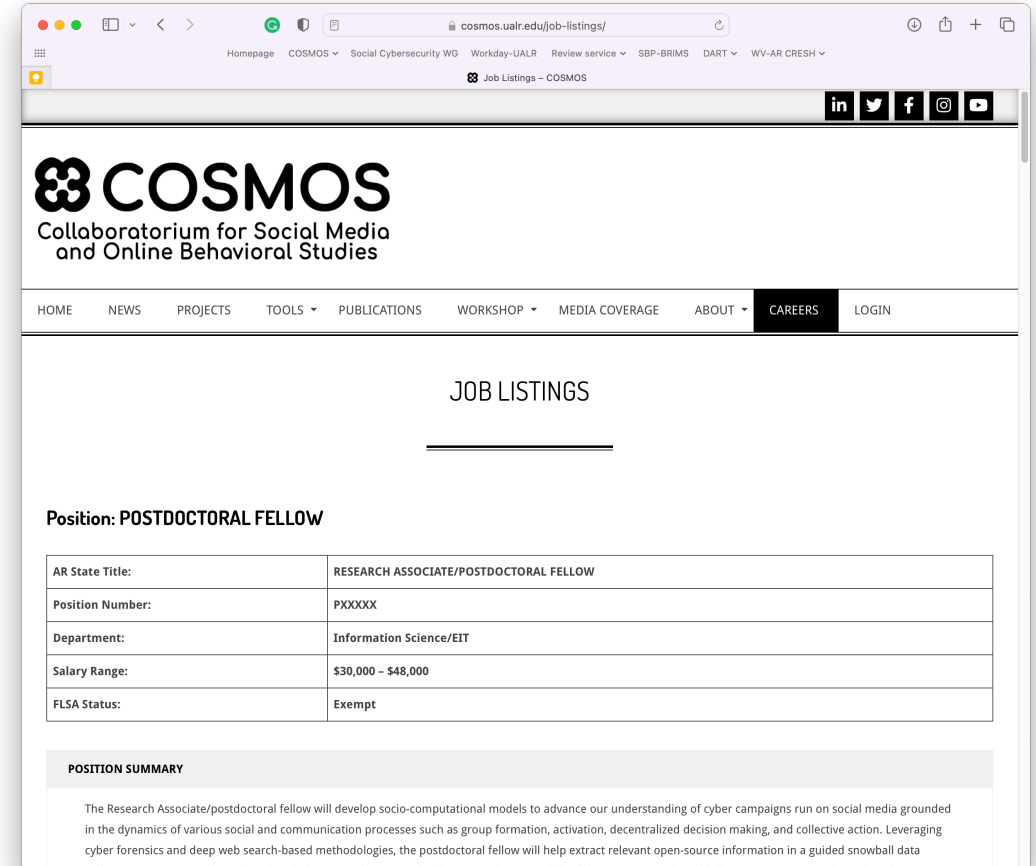
Twitter network showed prominent conspiracy themes such as those regarding Bill Gates and QAnon

Parler network showed well-defined clusters, the most concerning consisting of a misinformation echo chamber

In Parler, important bridge nodes were identified that connected COVID-19 misinformation with other fringe narratives

- Extending platform comparison to misinformation narratives other than COVID-19
- Include more platforms such as Reddit, Instagram, and TikTok
- Compare Twitter and Parler mentions, shared URL, and retweet/echo networks
- Detect users suspicious of being a bot and analyze toxicity

- Graduate research assistants (Masters, PhD program)
- Postdoctoral fellows
- Data engineer
- Dev ops
- Contact nxagarwal@ualr.edu
- <https://cosmos.ualr.edu>



The screenshot shows the COSMOS website's job listings page. The header includes the COSMOS logo and the text "Collaboratorium for Social Media and Online Behavioral Studies". A navigation menu contains links for HOME, NEWS, PROJECTS, TOOLS, PUBLICATIONS, WORKSHOP, MEDIA COVERAGE, ABOUT, CAREERS (which is highlighted), and LOGIN. The main content area is titled "JOB LISTINGS" and features a table for a "Position: POSTDOCTORAL FELLOW".

AR State Title:	RESEARCH ASSOCIATE/POSTDOCTORAL FELLOW
Position Number:	PXXXXX
Department:	Information Science/EIT
Salary Range:	\$30,000 - \$48,000
FLSA Status:	Exempt

Below the table is a "POSITION SUMMARY" section with the following text: "The Research Associate/postdoctoral fellow will develop socio-computational models to advance our understanding of cyber campaigns run on social media grounded in the dynamics of various social and communication processes such as group formation, activation, decentralized decision making, and collective action. Leveraging cyber forensics and deep web search-based methodologies, the postdoctoral fellow will help extract relevant open-source information in a guided snowball data collection manner. He/she will work with the research team in developing predictive models of deviant socio-technical behaviors on a variety of social media."

COSMOS Tools Developed:

- **COVID-19** - <https://cosmos.ualr.edu/covid-19>
- **Blogtrackers** - <https://btracker.host.ualr.edu>
- **YouTubeTracker** - <https://vtracker.host.ualr.edu>
- **Focal Structure Analysis** - <http://fsa.host.ualr.edu>

Blogtrackers YouTubeTracker



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Nitin Agarwal – nxagarwal@ualr.edu

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