

PA Vaccine Conversations on Twitter

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Vaccine Hesitancy Project Update based on April 29, 2022 – May 5, 2022

The CMU centers for:

Informed DEMocracy And Social cyber-security

Computational Analysis of Social and Organizational Systems



Carnegie Mellon University



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PA Vaccine Conversations Project

- ❑ This report is an effort to summarize social media conversations around COVID-19 issues in Pennsylvania, with a focus on vaccination. It contains an analysis of the general topics related to COVID-19 vaccination. This includes discussions related to COVID-19 regulations, mandates, masks, pro-and anti-vaccination campaigns, science messages, misinformation, disinformation, conspiracy theories, and vaccine hesitancy messages.
- ❑ Anti-Vax messaging includes vaccine hesitancy messages, opinions, questions, policy health and science related information, misinformation, disinformation, and conspiracy theories.

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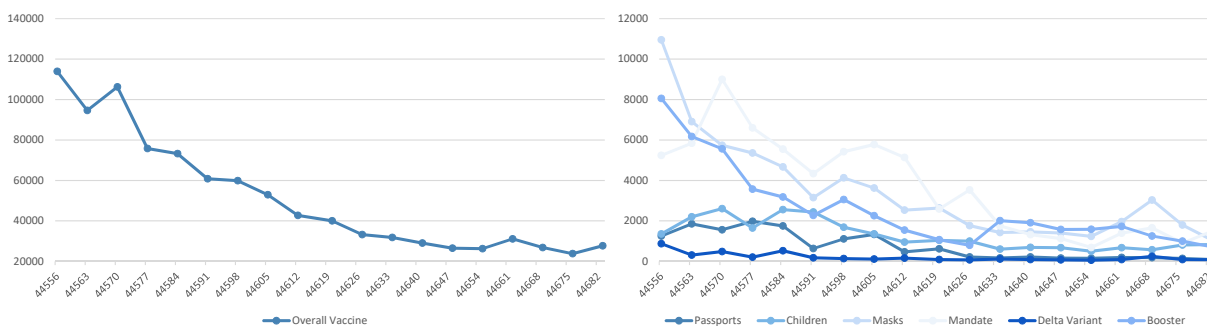
Report Overview April 29 – May 5

- ❑ Mandates, Masks, and Boosters are trending this week;
- ❑ Trending stories: político.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill?; wisconsinexaminer.com/brief/in-interview-sen-johnson-says-it-may-be-true-that-covid-vaccines-cause-aids In an interview on the right-wing social media site Rumble, Sen. Johnson said it "may be true" that COVID-19 vaccines cause AIDS;
- ❑ Anti-vax, disinformation, and vaccine hesitancy stories: youtu.be/U3bXXqU06eQ Pfizer can't hide this ANYMORE | Redacted with Natali and Clayton Morris; icandecide.org/pfizer Pfizer Documents Produced by the FDA in FOIA Litigation; dailycaller.com/2022/05/03/fda-covid-19-coronavirus-influenza-flu-vaccine-annual The FDA Finally Admits We Should Treat COVID-19 Like The Flu; bitchute.com/video/byKMd5CMgkDY AS COVID DISAPPEARS FROM THE NEWS CYCLE, VACCINE DEATHS SURGE WREAKING HAVOC ON VAXXED POPULATION; bitchute.com/video/kie6MIGDiN3z WHILE RUSSIA DISTRACTS THE WORLD, PFIZER DOCUMENTS REVEAL DISASTER FOR VACCINATED POPULATION; americasvoice.news/video/Ori9KLgcXuOcRO Dr. Naomi Wolf joins War Room to talk Covid Vaccines for Babies thegatewaypundit.com/2022/05/german-study-number-suffering-severe-complications-taking-covid-vaccine-40-times-higher-previously-recorded German Study: Number of Those Suffering Severe Complications After Taking COVID Vaccine Is 40 Times Higher Than Previously Recorded; theirishsentinel.com/2022/05/01/sudden-rise-of-unvaccinated-children-with-liver-damage-were-breastfed-by-fully-vaccinated-mothers SUDDEN RISE OF UNVACCINATED CHILDREN WITH LIVER DAMAGE, WERE BREASTFED (BY FULLY VACCINATED MOTHERS); militarytimes.com/news/pentagon-congress/2022/04/28/troops-allege-militarys-covid-19-vaccine-mandate-is-a-religious-purge Troops allege military's COVID vaccine mandate is a 'religious purge'

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Trends (tweets per week) April 29 – May 5



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High Level View by City April 29 – May 5

	Total PA	Philadelphia		Pittsburgh		Erie		Allentown/Bethlehem		Other	
Conversation	Tweets	Tweets	%	Tweets	%	Tweets	%	Tweets	%	Tweets	%
Overall Vaccine	23999	10504	43.8%	9185	38.3%	205	0.9%	2943	12.3%	1162	4.8%
Vaccine Passports	86	47	0.4%	20	0.2%	1	0.5%	11	0.4%	7	0.6%
FDA Approval	41	24	0.2%	9	0.1%			6	0.2%	2	0.2%
Boosters	379	216	2.1%	76	0.8%	3	1.5%	63	2.1%	21	1.8%
Employees	227	88	0.8%	62	0.7%	1	0.5%	66	2.2%	10	0.9%
"Experimental"	241	101	1.0%	64	0.7%	1	0.5%	66	2.2%	9	0.8%
Children	647	312	3.0%	188	2.0%	7	3.4%	112	3.8%	28	2.4%
Myocarditis	43	31	0.3%	5	0.1%	2	1.0%	5	0.2%		
Heart	242	129	1.2%	54	0.6%	3	1.5%	45	1.5%	11	0.9%
Masks	1015	471	4.5%	249	2.7%	23	11.2%	122	4.1%	150	12.9%
Thrombosis/VITT	15	7	0.1%	1	0.0%			4	0.1%	3	0.3%
Mandates	1467	799	7.6%	336	3.7%	13	6.3%	240	8.2%	79	6.8%
Natural Immunity	47	27	0.3%	12	0.1%			8	0.3%		
Efficacy	422	176	1.7%	92	1.0%	5	2.4%	140	4.8%	9	0.8%
Omicron	86	54	0.5%	24	0.3%	1	0.5%	4	0.1%	3	0.3%
Delta Variant	46	15	0.1%	11	0.1%			2	0.1%	18	1.5%
Race	344	192	1.8%	89	1.0%	1	0.5%	38	1.3%	24	2.1%
Ivermectin	22	7	0.1%	10	0.1%			3	0.1%	2	0.2%
Military	45	27	0.3%	12	0.1%			5	0.2%	1	0.1%
Breakthrough	35	19	0.2%	10	0.1%			6	0.2%		

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- Conversation topics trending this week over last

- Mandates
- Efficacy
- "Experimental"
- Employee Mandates



High Level View by County April 29 – May 5

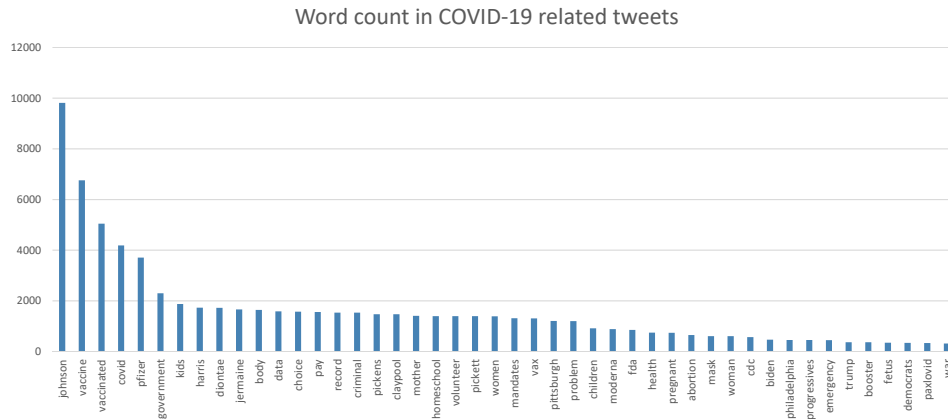
County	Allegheny	Beaver	Butler	Cambria	Fayette	Indiana	Somerset	Westmoreland
Overall Vaccine	9425	20	18	14	10	6	4	27
Vaccine Passports	26							1
FDA	9							
Boosters	79			1				2
Employees	64				1			
"Experimental"	64		1	1				
Children	198		1					
Myocarditis	5							
Heart	57							
Masks	274	1	3	9	1	2	4	6
Thrombosis/VITT	2							
Mandates	356		3	2	1	2		2
Natural Immunity	12							
Efficacy	94	1						
Omicron	26							
Delta Variant	16							
Race	94							
Ivermectin	10							
Military	12							
Breakthrough	10							

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- Race: pulled by one of the vaccine keywords plus at least one other term in ("Black", "African American", "of color", "Latin", "Hispanic", "brown", "eugenic")



Top Words Used per Week April 29 – May 5



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Top Hashtags by County April 29 – May 5

❑ We've checked hashtags in several counties such as Allegheny, Beaver, Butler, Cambria, Fayette, Indiana, Somerset, and West Moreland. After removing hashtags that were part of our search criteria, the top 5 hashtags for each county related to COVID19/vaccines are as follows*:

Allegheny	Beaver + Butler	Cambria	Fayette	West Moreland
covid19 (77)	covidvaccine (1)	nfldraft (2)	nfldraft (2)	nfldraft (5)
herewego (61)	pfizer (1)	herewego (1)	nfl (1)	steelers (1)
immunizeunder5s (61)	facediaper (1)	nfldraft (2)	steelers (1)	wearemarshall (1)
pfizer (52)	mandates (1)	herewego (1)		
pmqs (39)	masks (1)	nfldraft (2)		

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Top Hashtags by City April 29 – May 5

- ❑ After removing hashtags that were part of our search criteria, the top 5 hashtags for each region related to COVID19/vaccines are as follows:

Philadelphia	Chester	Norristown	Pittsburgh	Erie	Allentown/ Bethlehem	Other
pfizer (89)	nflraft (238)	biotech (29)	covid19 (77)	nflraft (4)	eagles (33)	nflraft (76)
covid19 (74)	flyeaglesfly (228)	covid19 (28)	herewego (61)	demvoice1 (3)	2000mules (32)	eagles (42)
vaccinesideeffects (56)	eagles (65)	eagles (19)	immunizeunder5s (61)	pfizer (3)	covid19 (31)	flyeaglesfly (19)
immunizeunder5s (48)	rockchalk (40)	news (18)	pfizer (52)	2000mules (2)	nflraft (30)	steelers (15)
2000mules (32)	covid (19)	jobs (13)	pmqs (39)	covid19 (2)	pfizer (29)	pfizer (13)

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Top URLs by County April 29 – May 5

Allegheny	Butler + Beaver	Fayette	Indiana	West Moreland
bbc.co.uk/news/uk-politics-61256397 Deadline for publishing Lebedev peerage documents missed (84)	wisconsinexaminer.com/brief/interview-sen-johnson-says-it-may-be-true-that-covid-vaccines-cause-aids In an interview on the right-wing social media site Rumble, Sen. Johnson said it "may be true" that COVID-19 vaccines cause AIDS (1)	wisconsinexaminer.com/brief/interview-sen-johnson-says-it-may-be-true-that-covid-vaccines-cause-aids In an interview on the right-wing social media site Rumble, Sen. Johnson said it "may be true" that COVID-19 vaccines cause AIDS (1)	filtermag.org/opioid-addiction-vaccine-trial An Opioid Vaccine Is Not the Answer (1)	foxnews.com/media/hunter-biden-white-house-meetings-ron-johnson Sen. Johnson on new Hunter Biden reports: 'This is corruption at the highest level' (1)
politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (41)	bitchute.com/video/byKMd5CMgKDY AS COVID DISAPPEARS FROM THE NEWS CYCLE, VACCINE DEATHS SURGE WREAKING HAVOC ON VAXXED POPULATION (1)			wsj.com/articles/espn-anchor-sage-steele-sues-network-alleging-violation-of-free-speech-rights-11651104160 ESPN Anchor Sage Steele Sues Network, Alleging Violation of Free-Speech Rights (1)
youtu.be/U3bXXaU06eQ Pfizer can't hide this ANYMORE Redacted with Natali and Clayton Morris (38)	bitchute.com/video/kie6MIGDn3z WHILE RUSSIA DISTRACTS THE WORLD, PFIZER DOCUMENTS REVEAL DISASTER FOR VACCINATED POPULATION (1)			
icandecide.org/pfizer Pfizer Documents Produced by the FDA in FOIA Litigation (31)				
dailycaller.com/2022/05/03/fda-covid-19-coronavirus-influenza-flu-vaccine-annual The FDA Finally Admits We Should Treat COVID-19 Like The Flu (29)				



Top URLs by City April 29 – May 5

Philadelphia	Chester	Norristown	Pittsburgh	Erie	Allentown/ Bethlehem	Other
politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (78)	drive.google.com/file/d/10T2uUc4j9I2cVpsD1pr5cBqUq5z/view Google document in Hebrew, describes positive correlation between heart attacks and COVID-19 vaccine, citing research by Professor Retzef Levi M.Sc. (9)	politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (13)	bbc.co.uk/news/uk-politics-61256397 Deadline for publishing Lebedev peerage documents missed (84)	erie.gov/vax (3)	politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (23)	politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (6)
americasvoice.news/video/Or9KlscX uOORO Dr. Naomi Wolf joins War Room to talk Covid Vaccines for Babies (60)	phmp.org/pfizers-documents Public Health and Medical Professionals for Transparency Documents (5)	thegatewaypundit.com/2022/05/german-study-number-suffering-severe-complications-taking-covid-vaccine-40-times-higher-previously-recorded German Study: Number of Those Suffering Severe Complications After Taking COVID Vaccine is 40 Times Higher Than Previously Recorded (11)	politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (41)	wisconsinexaminer.com/brief/interview-sen-johnson-says-it-may-be-true-that-covid-vaccines-cause-aids In an interview on the right-wing social media site Rumble, Sen. Johnson said it "may be true" that COVID-19 vaccines cause AIDS (3)	phmp.org/pfizers-documents Public Health and Medical Professionals for Transparency Documents (16)	wisconsinexaminer.com/brief/interview-sen-johnson-says-it-may-be-true-that-covid-vaccines-cause-aids In an interview on the right-wing social media site Rumble, Sen. Johnson said it "may be true" that COVID-19 vaccines cause AIDS (5)
propublica.org/article/secret-irs-files-reveal-how-much-the-ultra-wealthy-gained-by-shaping-trumps-big-beautiful-tax-cut Secret IRS Files Reveal How Much the Ultra-wealthy Gained by Shaping Trump's "Big, Beautiful Tax Cut" (51)	icandecode.org/pfizer Pfizer Documents Produced by the FDA in FOIA Litigation (4)	wsj.com/articles/the-shadow-crew-who-encouraged-elon-musks-twitter-takeover-tesla-jack-dorsey-11651760112 The Shadow Crew Who Encouraged Elon Musk's Twitter Takeover (8)	youtu.be/U3bXxUO6eQ Pfizer can't hide this ANYMORE Redacted with Natali and Clayton Morris (38)	erie.gov/health/rabies Free Rabies Vaccination Clinics (2)	wisconsinexaminer.com/brief/interview-sen-johnson-says-it-may-be-true-that-covid-vaccines-cause-aids In an interview on the right-wing social media site Rumble, Sen. Johnson said it "may be true" that COVID-19 vaccines cause AIDS (16)	evanhospital.com/virus (4)
thegatewaypundit.com/2022/05/german-study-number-suffering-severe-complications-taking-covid-vaccine-40-times-higher-previously-recorded German Study: Number of Those Suffering Severe Complications After Taking COVID Vaccine is 40 Times Higher Than Previously Recorded (43)	militarytimes.com/news/pentagon-congress/2022/04/28/troops-allege-militarys-covid-19-vaccine-mandate-is-a-religious-purge Troops allege military's COVID vaccine mandate is a "religious purge" (4)	brownstone.org/articles/on-what-basis-did-pfizer-claim-95 On What Basis Did Pfizer Claim 95%? (7)	icandecode.org/pfizer Pfizer Documents Produced by the FDA in FOIA Litigation (31)	bioprocessonline.com/doc/carc-t-cell-therapy-vaccines-to-address-breast-ovarian-cancers-2003 CAR T-cell Therapy, Vaccines To Address Breast, Ovarian Cancers (1)	theirishsentinel.com/2022/05/01/sudden-rise-of-unvaccinated-children-with-liver-damage-were-breastfed-by-fully-vaccinated-mothers SUDDEN RISE OF UNVACCINATED CHILDREN WITH LIVER DAMAGE, WERE BREASTFED BY FULLY VACCINATED MOTHERS (15)	twitter.com/AnaFuentesHomes/status/1520395961281003521 Tweet: "Canadians will die first on the job program..." (4)
theirishsentinel.com/2022/05/01/sudden-rise-of-unvaccinated-children-with-liver-damage-were-breastfed-by-fully-vaccinated-mothers SUDDEN RISE OF UNVACCINATED CHILDREN WITH LIVER DAMAGE, WERE BREASTFED BY FULLY VACCINATED MOTHERS (25)	politico.com/newsletters/west-wing-playbook/2022/04/27/why-did-kamala-take-the-pfizer-pill-00028229 Why did Kamala take the Pfizer pill? (4)	phmp.org/pfizers-documents Public Health and Medical Professionals for Transparency Documents (7)	dailycaller.com/2022/05/03/fda-covid-19-coronavirus-influenza-flu-vaccine-annual The FDA Finally Admits We Should Treat COVID-19 Like The Flu (29)	dailycaller.com/2022/04/28/exclusive-beacon-of-misinformation-sen-ron-johnson-calls-for-answers-from-dhs-over-bidens-disinformation-board-slams-nina-jankowicz EXCLUSIVE: Sen. Ron Johnson Calls For Answers From DHS Over Biden's 'Disinformation' Board, Slams Nina Jankowicz (1)	icandecode.org/pfizer Pfizer Documents Produced by the FDA in FOIA Litigation (14)	wsj.com/articles/espn-anchor-sage-steele-sues-network-alleging-violation-of-free-speech-11651104160 ESPN Anchor Sage Steele Sues Network, Alleging Violation of Free-Speech Rights (4)

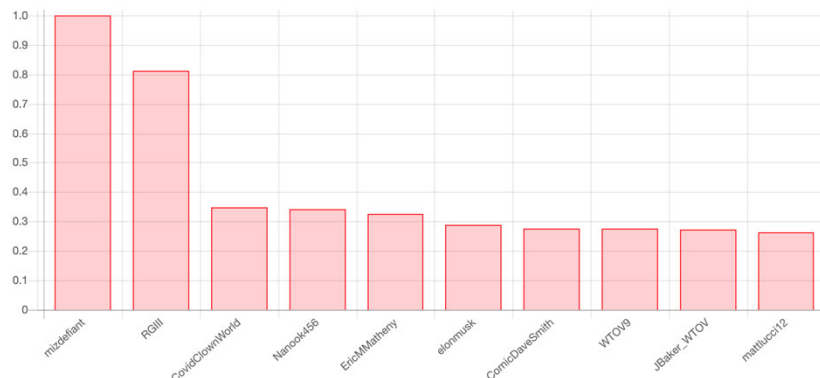
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Analysis of Tweeters - Super Spreaders

- ❑ Super Spreaders are users which generate content that is shared often, and hence spread information effectively.



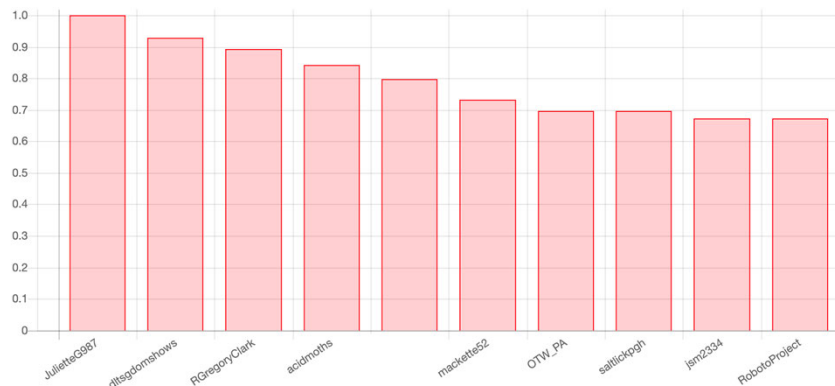
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Analysis of Tweeters - Super Friends

- ❑ Super Friends are users that exhibit frequent two-way communication, facilitating large or strong communication networks.

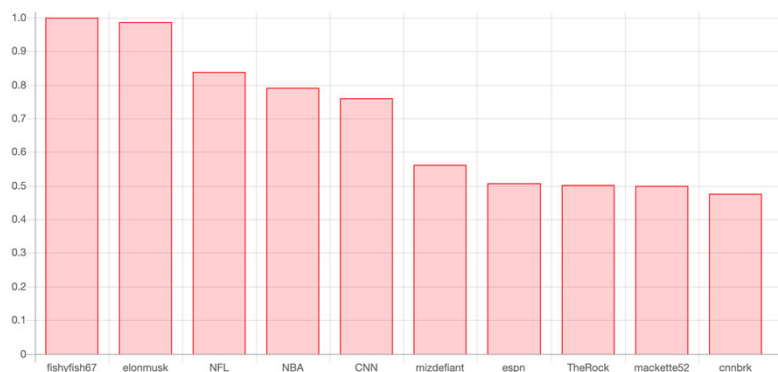


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Analysis of Tweeters - Other Influencers

- ❑ Other Influencers are users which have an active network presence, by tweeting often or mentioning users often, and operate in central parts of the conversation, such as by using important hashtags, or mentioning important users.



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Accounts Referenced by the Most Tweets

- ❑ This shows the tweeters that are most often referenced (e.g. mentioned) in PA tweets. Value is the number of tweets that reference the agent.

Agent Label	Value
elonmusk[+]	435
pfizer[+]	289
LifeBrand_AI	252
US_FDA[+]	240
ReverendWarnock[+]	197
TheOtherMandela[+]	195
valdemings	193
CaptMarkKelly	192
CortezMasto[+]	191
Maggie_Hassan	190
CDCgov[+]	182
GovernorTomWolf	178
POTUS[+]	173

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Trending Tweets April 29 – May 5

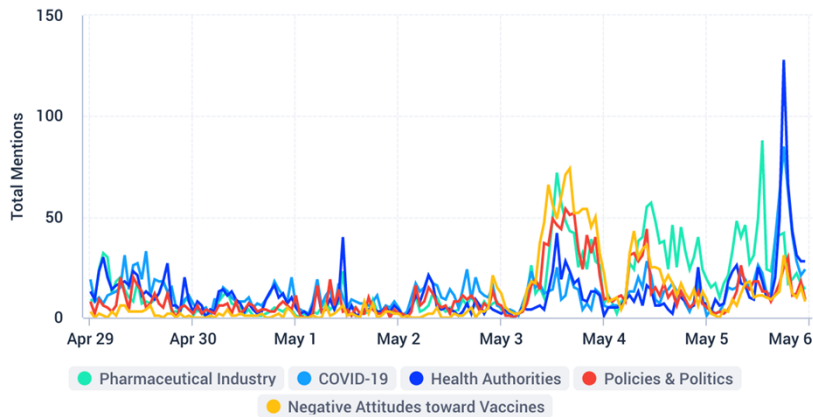
Tweets that are the most forwarded, either by retweet, reply, or quote:

- ❑ I am a 34 year old mother of 5 who has never had a criminal record, I pay my taxes, work full time, volunteer, homeschool my kids. Yet because I choose not to get vaccinated for Covid 19 my government has put me on a no fly list. I am unable to leave my county or fly within it.
- ❑ Pittsburgh now has Kenny Pickett handing the ball off to Najee Harris and throwing the ball to Chase Claypool, Diontae Johnson, George Pickens and Pat Freiermuth. They looking like a PROBLEM #NFLDraft
- ❑ After two years of “get vaccinated or be banished from society” we’re back to “my body my choice?”
- ❑ Progressives have given away their two favorite go to responses on abortion. “My body my choice” rings pretty hollow after Vax mandates. “It’s a women’s issue” is tough if there’s no definition of woman.
- ❑ Roe was leaked to take heat off of the Pfizer data dump. The vaccine information is bad, very very bad. Pfizer, CDC and our government all lied.
- ❑ The next time you choose to throw away your vote by voting for Jill Stein or Gary Johnson or sitting on your hands because you think all parties are the same, remember you’ve already cost the women of America their reproductive liberties.
- ❑ Pfizer data released today. 80,000 pages. Pfizer knew vaccine harmed the fetus in pregnant women, and that the vaccine was not 95% effective, Pfizer data shows it having a 12% efficacy rate.
- ❑ With the 181st pick in the 2022 #NFLDraft, the Philadelphia Eagles select LB Kyron Johnson. @LifeBrand_AI | #FlyEaglesFly
<https://t.co/ICCDijqce8>
- ❑ Defeat Rubio. Take the Ohio seat. Defeat Ron Johnson. Re-elect Raphael Warnock. Take the Pennsylvania seat. Take the North Carolina seat.
- ❑ Pfizer just made \$26,000,000,000 in Q1 from vaccine sales. Progressives, should they solve world hunger or is that just on @elonmusk ?
- ❑ Surprised to learn that Kamala Harris who is asymptomatic, healthy, and quadruple vaccinated is getting Paxlovid, a drug reserved for high-risk patients per the FDA label.

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General PA Conversation April 29 – May 5



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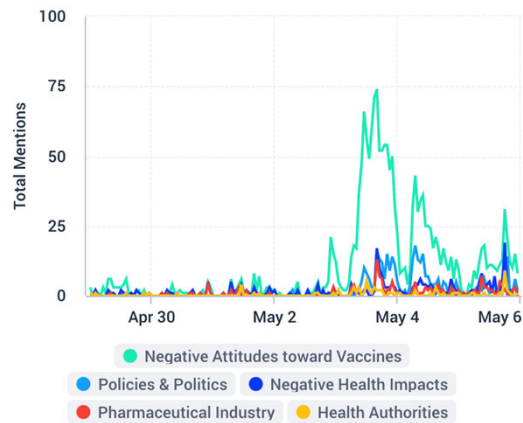
PA Hashtag Cloud April 29 – May 5



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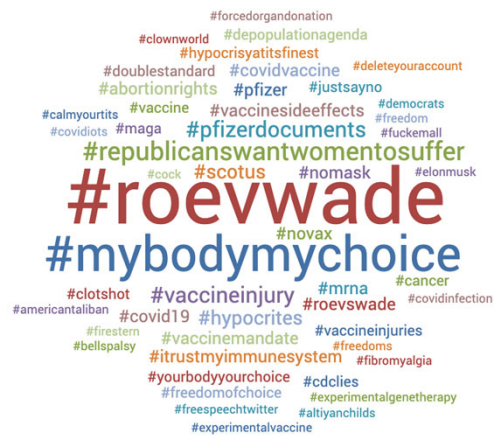
Negative Attitudes April 29 – May 5



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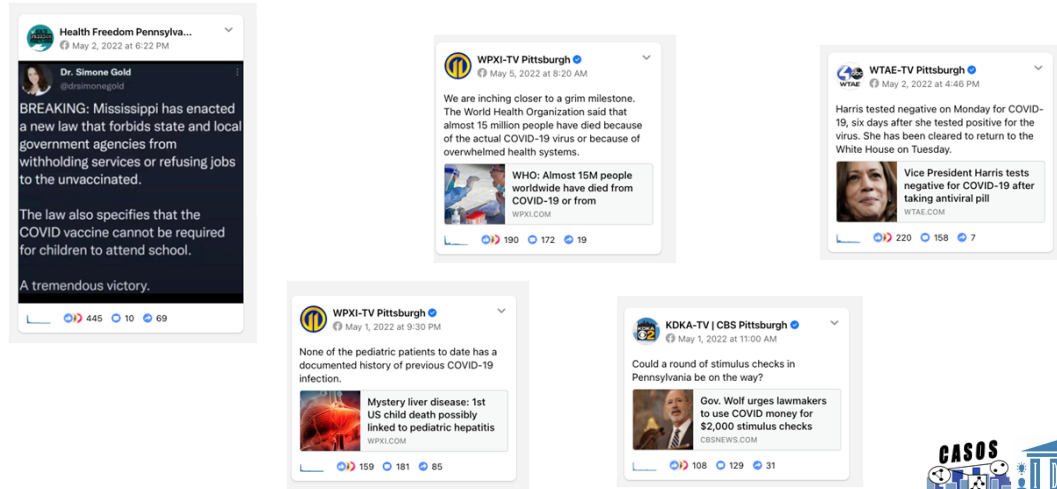
Negative Hashtag Cloud April 29 – May 5



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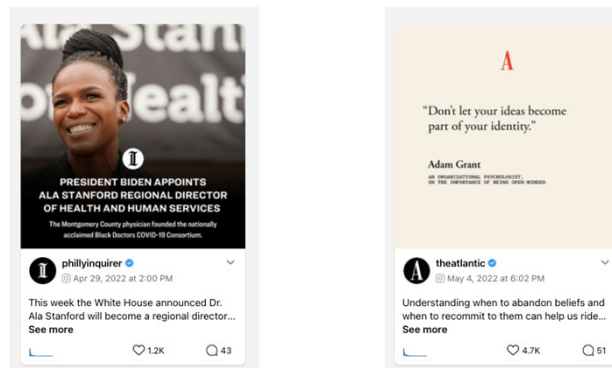
Trending Posts on Facebook April 29 – May 5



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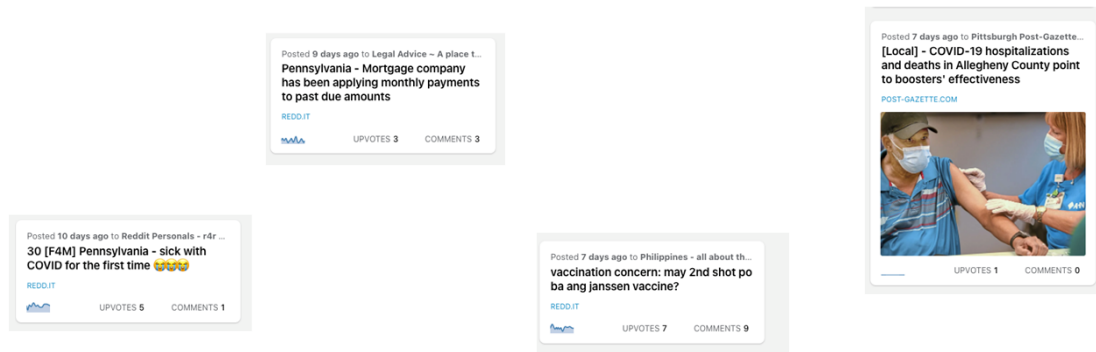
Trending Posts on Instagram April 29 – May 5



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Trending Posts on Reddit April 29 – May 5



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For More Information

- ❑ Director Kathleen M. Carley - kathleen.carley@cs.cmu.edu
 - ❑ <http://www.casos.cs.cmu.edu/bios/carley/carley.html>
- ❑ IDEaS website - <https://www.cmu.edu/ideas-social-cybersecurity/>
- ❑ CASOS website - <http://www.casos.cs.cmu.edu/>
- ❑ Social Cybersecurity Working Group - <http://social-cybersecurity.org>
- ❑ Facebook: [@IDEasCMU](https://www.facebook.com/IDEasCMU)
- ❑ Twitter: [@IDEaSCMU](https://twitter.com/IDEaSCMU)
- ❑ YouTube: [IDEaS Center](https://www.youtube.com/IDEaS%20Center)
- ❑ Ask to be on our Email-Distro Lists

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