

PA Vaccine Conversations on Twitter

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Vaccine Hesitancy Project Update based on May 13, 2022 – May 19, 2022

The CMU centers for:

Informed DEMocracy And Social cyber-security

Computational Analysis of Social and Organizational Systems



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1

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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2

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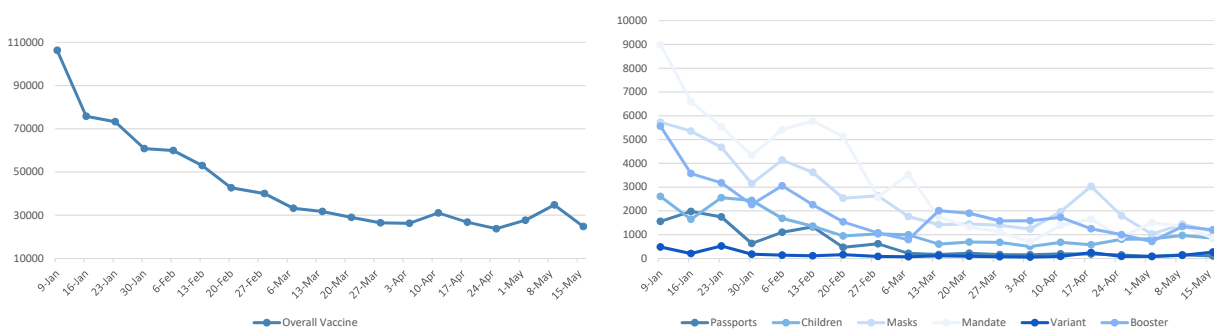
Report Overview May 13 – May 19

- ❑ Mandates, Masks, Boosters, Myocarditis and Thrombosis, Omicron and other variants are trending this week;
- ❑ Trending stories: forbes.com/sites/roberthart/2022/05/13/pfizers-covid-vaccine-protection-against-omicron-fades-just-weeks-after-second-and-third-doses-study-finds Pfizer's Covid Vaccine Protection Against Omicron Fades Just Weeks After Second And Third Doses, Study Finds; fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-expands-eligibility-pfizer-biontech-covid-19-vaccine-booster-dose Coronavirus (COVID-19) Update: FDA Expands Eligibility for Pfizer-BioNTech COVID-19 Vaccine Booster Dose to Children 5 through 11 Years; n.pr/3sAG2A3 This is how many lives could have been saved with COVID vaccinations in each state;
- ❑ Anti-vax, misinformation, and vaccine hesitancy stories: childrenshealthdefense.org/defender/chd-lawsuit-fda-pfizers-comirnaty-vaccine CHD Appeals Dismissal of Lawsuit Against FDA for 'Deceptive' Approval of Pfizer's Comirnaty Vaccine; theepochtimes.com/higher-covid-19-infection-rates-among-vaccinated-children-than-unvaccinated-cdc-data-show-4470005.html Higher COVID-19 Infection Rates Among Vaccinated Children Than Unvaccinated, CDC Data Show; rumble.com/v152jci-ep-1770-im-worried-about-this-and-you-should-be-too-the-dan-bongino-show.html Ep. 1770 I'm Worried About This, And You Should Be Too - The Dan Bongino Show; childrenshealthdefense.org/defender/pfizer-booster-covid-vaccine-wane Pfizer Booster Protection Against Omicron Wanes in Just Weeks, Study Finds; theepochtimes.com/mkt_app/people-who-pushed-idea-of-universal-vaccination-are-guilty-of-crimes-against-humanity-former-pfizer-vp-4462787.html People Who Pushed Idea of Universal Vaccination Are 'Guilty of Crimes Against Humanity': Former Pfizer VP

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Trends (tweets per week) May 13 – May 19



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High Level View by City May 13 – May 19

	Total PA	Philadelphia		Pittsburgh		Erie		Allentown/Bethlehem		Other	
Conversation	Tweets	Tweets	%	Tweets	%	Tweets	%	Tweets	%	Tweets	%
Overall Vaccine	20579	10679	51.9%	5851	28.4%	196	1.0%	2769	13.5%	1084	5.3%
Vaccine Passports	106	47	0.4%	29	0.5%	2	1.0%	18	0.7%	10	0.9%
FDA Approval	118	62	0.6%	27	0.5%	1	0.5%	23	0.8%	5	0.5%
Boosters	757	377	3.5%	203	3.5%	6	3.1%	126	4.6%	45	4.2%
Employees	49	19	0.2%	12	0.2%	1	0.5%	15	0.5%	2	0.2%
"Experimental"	60	29	0.3%	22	0.4%			7	0.3%	2	0.2%
Children	657	281	2.6%	246	4.2%	5	2.6%	101	3.6%	24	2.2%
Myocarditis	166	115	1.1%	19	0.3%			27	1.0%	5	0.5%
Heart	202	106	1.0%	49	0.8%	2	1.0%	39	1.4%	6	0.6%
Masks	1138	560	5.2%	284	4.9%	21	10.7%	151	5.5%	122	11.3%
Thrombosis/VITT	28	18	0.2%	6	0.1%			3	0.1%	1	0.1%
Mandates	766	416	3.9%	164	2.8%	5	2.6%	142	5.1%	39	3.6%
Natural Immunity	100	52	0.5%	29	0.5%	1	0.5%	16	0.6%	2	0.2%
Efficacy	117	65	0.6%	29	0.5%	2	1.0%	15	0.5%	6	0.6%
Omicron	433	268	2.5%	79	1.4%	2	1.0%	73	2.6%	11	1.0%
Delta Variant	64	28	0.3%	11	0.2%	4	2.0%	4	0.1%	17	1.6%
Race	331	204	1.9%	75	1.3%	2	1.0%	35	1.3%	15	1.4%
Ivermectin	14	9	0.1%	3	0.1%			2	0.1%		
Military	98	54	0.5%	26	0.4%	4	2.0%	9	0.3%	5	0.5%
Breakthrough	32	17	0.2%	6	0.1%			7	0.3%	2	0.2%

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- Conversation topics trending this week over last
 - Myocarditis and Thrombosis
 - Boosters
 - Omicron and other COVID variants



High Level View by County May 13 – May 19

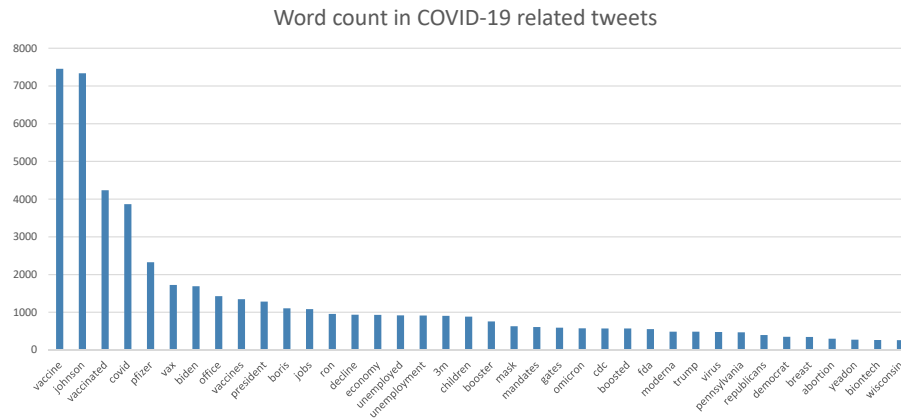
County	Allegheny	Beaver	Butler	Cambria	Fayette	Indiana	Somerset	Westmoreland
Overall Vaccine	5994	12	7	5	4	1	1	36
Vaccine Passports	29							
FDA	210		2	1				4
Boosters	13							
Employees	23							
"Experimental"	247		1					1
Children	19							1
Myocarditis	49							1
Heart	300			3	2			2
Masks	6							
Thrombosis/VITT	168							2
Mandates	29							1
Natural Immunity	30							
Efficacy	80							
Omicron	18							
Delta Variant	77			1				
Race	3							
Ivermectin	26							
Military	7							
Breakthrough	5994	12	7	5	4	1	1	36

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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 May 13 – May 19



5/25/2022



Top Hashtags by County May 13 – May 19

- ❑ 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	Somerset	West Moreland
steelers (186)	covidvaccine (2)	socialsecurity (1)	piaa (2)
covid19 (63)	hyperinflation (2)	taxpayers (1)	steelers (2)
pfizer (39)	covid19 (1)	votethemout (1)	mprcco2022 (1)
vaccine (28)	hssn (1)	women (1)	nfl (1)
winteriscoming (25)	wpial (1)	workingclass (1)	saints (1)

5/25/2022



Top Hashtags by City May 13 – May 19

- ❑ 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
covid19 (96)	covid19 (14)	covid19 (24)	steelers (186)	steelers (10)	covid19 (37)	steelers (23)
pfizer (89)	immunizeunder5s (3)	pfizer (16)	covid19 (63)	bluevoices (2)	immunizeunder5s (30)	fauci (15)
bansoffourbodies (63)	bluevoices (2)	coronavirus (10)	pfizer (39)	covid19 (2)	covidvaccine (18)	covid_19 (14)
news (47)	eagles (2)	jets (10)	vaccine (28)	pfizer (2)	steelers (16)	vaccine (14)
winteriscoming (37)	longcovid (2)	covidvaccine (9)	winteriscoming (25)	abortionishealthcare (1)	coronavirus (15)	pfizer (5)

5/25/2022



Top URLs by County May 13 – May 19

Allegheny	Butler + Beaver	Fayette	West Moreland
washingtonpost.com/opinions/2022/05/16/elise-stefanik-tucker-carlson-buffalo-shooting-great-replacement/ How Elise Stefanik and the GOP sanitize 'great replacement' ugliness (40)	thehill.com/news/349166-fetterman-undergoing-procedure-to-implant-pacemaker Fetterman undergoes procedure to implant pacemaker (1)	mailplus.co.uk/edition/news/politics/180878/boris-working-from-home-doesnt-work Boris: Working from home doesn't work (1)	n.pr/3Mc9Iw This is how many lives could have been saved with COVID vaccinations in each state (1)
forbes.com/sites/robertthart/2022/05/13/pfizers-covid-vaccine-protection-against-omicron-fades-just-weeks-after-second-and-third-doses-study-finds/ Pfizer's Covid Vaccine Protection Against Omicron Fades Just Weeks After Second And Third Doses, Study Finds (31)	trmlx.com/eua-vaccine-mandated-by-dod EUA Vaccine Mandated by DOD (1)	yahoo.com/entertainment/eric-clapton-covid-vaccine-skeptic-postpones-shows-185853525.html Vaccine skeptic Eric Clapton postpones shows after testing positive for COVID (1)	sfchronicle.com/health/article/covid-cases-san-francisco-17171776.php Why is the COVID case rate in San Francisco so much higher than the U.S. right now? (1)
thetimes.co.uk/article/boris-johnson-can-rip-up-northern-ireland-protocol-attorney-general-rules-3xmcv8ws8 Boris Johnson can rip up Northern Ireland protocol, attorney-general rules (29)			thedirect.com/article/star-wars-rian-johnson-trilogy-cancellation-rumors Star Wars Boss Debunks Rian Johnson Trilogy's Cancellation Rumors (1)
childrenshealthdefense.org/defender/chd-lawsuit-fda-pfizers-comirnaty-vaccine CHD Appeals Dismissal of Lawsuit Against FDA for 'Deceptive' Approval of Pfizer's Comirnaty Vaccine (18)			
mailplus.co.uk/edition/news/politics/180878/boris-working-from-home-doesnt-work Boris: Working from home doesn't work (17)			

5/25/2022

10

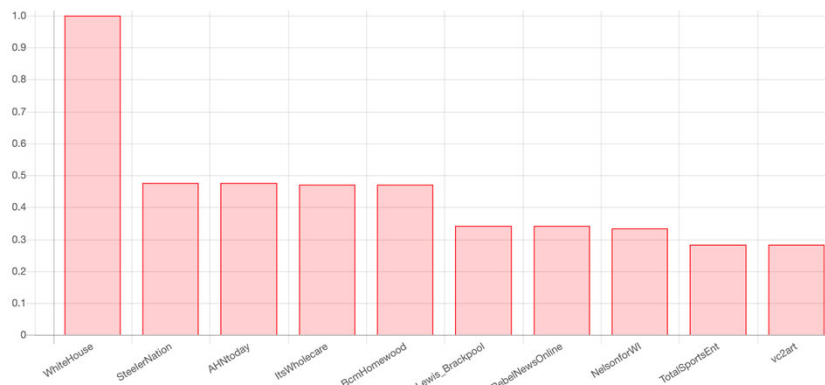


Top URLs by City May 13 – May 19

Philadelphia	Chester	Norristown	Pittsburgh	Erie	Allentown/ Bethlehem	Other
forbes.com/sites/roberthart/2022/05/13/pfizer-covid-vaccine-protection-against-omicron-fades-just-weeks-after-second-and-third-doses-study-finds Pfizer's Covid Vaccine Protection Against Omicron Fades Just Weeks After Second And Third Doses, Study Finds (52)	jamanetwork.com/journals/jama/fullarticle/2792524 Association of Prior BNT162b2 COVID-19 Vaccination With Symptomatic SARS-CoV-2 Infection in Children and Adolescents During Omicron Predominance (6)	rumble.com/v152ici-ep-1770-im-worried-about-this-and-you-should-be-too-the-dan-bongino-show.html Ep. 1770 I'm Worried About This, And You Should Be Too - The Dan Bongino Show (152)	washingtontimes.com/opinions/2022/05/16/elise-stefanik-tucker-carson-buffalo-shooting-great-replacement How Elise Stefanik and the GOP sanitize 'great replacement' ugliness (40)	erie.gov/vax (4)	forbes.com/sites/roberthart/2022/05/13/pfizers-covid-vaccine-protection-against-omicron-fades-just-weeks-after-second-and-third-doses-study-finds Pfizer's Covid Vaccine Protection Against Omicron Fades Just Weeks After Second And Third Doses, Study Finds (20)	thesavvyone.com/2022/05/15/operation-leaked-emails-intelligence-coup-boris-johnson Operation Surprise: leaked emails expose secret intelligence coup to install Boris Johnson (7)
washingtontimes.com/opinions/2022/05/16/elise-stefanik-tucker-carson-buffalo-shooting-great-replacement How Elise Stefanik and the GOP sanitize 'great replacement' ugliness (35)	bit.ly/3NaKAR5 COVID-19 Vaccine Effectiveness Monthly Update (5)	washingtontimes.com/opinions/2022/05/16/elise-stefanik-tucker-carson-buffalo-shooting-great-replacement How Elise Stefanik and the GOP sanitize 'great replacement' ugliness (9)	forbes.com/sites/roberthart/2022/05/13/pfizers-covid-vaccine-protection-against-omicron-fades-just-weeks-after-second-and-third-doses-study-finds Pfizer's Covid Vaccine Protection Against Omicron Fades Just Weeks After Second And Third Doses, Study Finds (31)	eriecountypa.gov/departments/health-services-and-programs/clinics (4)	soundcloud.com/revolutionaries/vaccine-lies Vaccine Lies song (16)	nydailynews.com/snyde/ny-covid-eric-clapton-vaccine-20220517-odns2uabfdeq57287us74wvq-story.html Eric Clapton catches COVID-19 after calling vaccine efforts a 'mass psychosis' (6)
mailplus.co.uk/edition/news/politics/180878/boris-working-from-home-doesnt-work Boris: Working from home doesn't work (28)	nytimes.com/interactive/2020/us/covid-19-vaccine-doses.html See How Vaccinations Are Going in Your County and State (4)	childrenshealthdefense.org/defender/pfizer-booster-covid-vaccine-wane Pfizer Booster Protection Against Omicron Wanes in Just Weeks, Study Finds (7)	thetimes.co.uk/article/boris-johnson-can-rip-up-northern-ireland-protocol-attorney-general-rules-jamoy-Boris Boris Johnson can rip up Northern Ireland protocol, attorney-general rules (29)	cnbc.com/2020/06/16/biogen-raises-3point5-million-from-bill-gates-investment-firm.html Bill Gates' climate-change investment firm bets on lab-produced breast milk (3)	theepochtimes.com/mkt_app/people-who-pushed-idea-of-universal-vaccination-are-guilty-of-crimes-against-humanity-former-pfizer-vp-4462787.html People Who Pushed Idea of Universal Vaccination Are 'Guilty of Crimes Against Humanity': Former Pfizer VP (9)	washingtontimes.com/opinions/2022/05/16/elise-stefanik-tucker-carson-buffalo-shooting-great-replacement How Elise Stefanik and the GOP sanitize 'great replacement' ugliness (6)
fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-expands-eligibility-pfizer-biontech-covid-19-vaccine-booster-dose Coronavirus (COVID-19) Update: FDA Expands Eligibility for Pfizer-BioNTech COVID-19 Vaccine Booster Dose to Children 5 through 11 Years (23)	sharvattkisson.com/2022/05/internal-cdc-docs-on-the-agencys-false-covid-vaccine-claims Internal CDC docs on the agency's false Covid vaccine claims (4)	cnbc.com/2020/06/16/biogen-raises-3point5-million-from-bill-gates-investment-firm.html Bill Gates' climate-change investment firm bets on lab-produced breast milk (7)	childrenshealthdefense.org/defender/chd-lawsuit-fda-pfizers-comirnaty-vaccine-chd Appeals Dismissal of Lawsuit Against FDA for 'Deceptive' Approval of Pfizer's Comirnaty Vaccine (18)	newsweek.com/ted-cruz-bill-would-give-troops-refusing-covid-vaccine-honorable-discharge-1705415 Ted Cruz Bill Would Give Troops Refusing COVID Vaccine Honorable Discharge (3)	karger.com/Article/FullText/520500 Ocular Surface Erosion after Suspected Exposure to Evaporated COVID-19 Vaccine (8)	evanhospital.com/virus (5)
npr/3sAG2A3 This is how many lives could have been saved with COVID vaccinations in each state (20)	theepochtimes.com/higher-covid-19-infection-rates-among-vaccinated-children-than-unvaccinated-cdc-data-show-4470005.html Higher COVID-19 Infection Rates Among Vaccinated Children Than Unvaccinated, CDC Data Show (4)	forbes.com/sites/roberthart/2022/05/13/pfizers-covid-vaccine-protection-against-omicron-fades-just-weeks-after-second-and-third-doses-study-finds Pfizer's Covid Vaccine Protection Against Omicron Fades Just Weeks After Second And Third Doses, Study Finds (7)	fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-expands-eligibility-pfizer-biontech-covid-19-vaccine-booster-dose Coronavirus (COVID-19) Update: FDA Expands Eligibility for Pfizer-BioNTech COVID-19 Vaccine Booster Dose to Children 5 through 11 Years (15)	shc7.com/amp/ausd-covid19-vaccine-mandate/11835912 AS BOOSTER RATES LAG, ANALYSIS SHOWS RISE IN DEATHS AMONG VACCINATED (2)	jamanetwork.com/journals/jama/fullarticle/2792524 Association of Prior BNT162b2 COVID-19 Vaccination With Symptomatic SARS-CoV-2 Infection in Children and Adolescents During Omicron Predominance (7)	childrenshealthdefense.org/defender/chd-lawsuit-fda-pfizers-comirnaty-vaccine-chd Appeals Dismissal of Lawsuit Against FDA for 'Deceptive' Approval of Pfizer's Comirnaty Vaccine (3)

Analysis of Tweeters - Super Spreaders

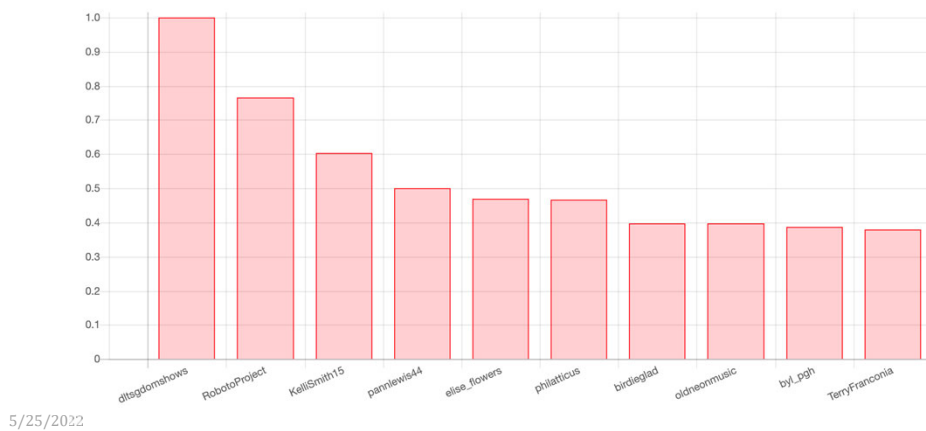
- ❑ Super Spreaders are users which generate content that is shared often, and hence spread information effectively.



5/25/2022

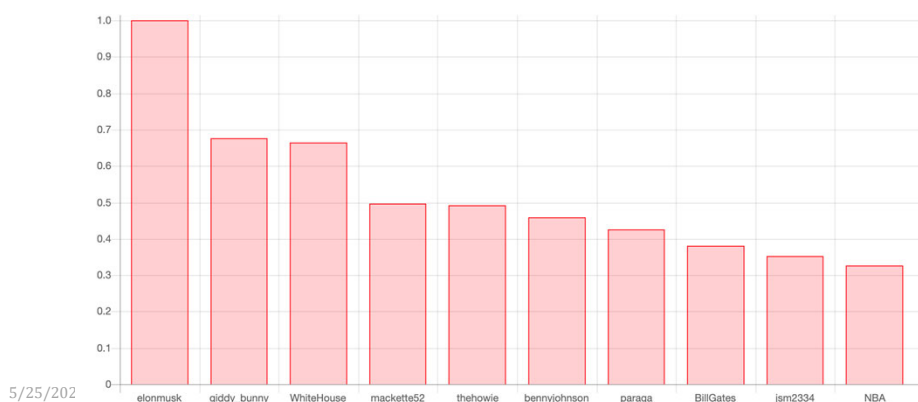
Analysis of Tweeters - Super Friends

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



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.



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
WhiteHouse[+]	398
US_FDA[+]	231
elonmusk[+]	219
SteelerNation[+]	215
TotalSportsEnt	209
vc2art	209
ClayTravis[+]	176
pfizer[+]	175
bennyjohnson[+]	169
POTUS[+]	153
WhiteHouse[+]	398
US_FDA[+]	231
elonmusk[+]	219

5/25/2022



Trending Tweets May 13 – May 19

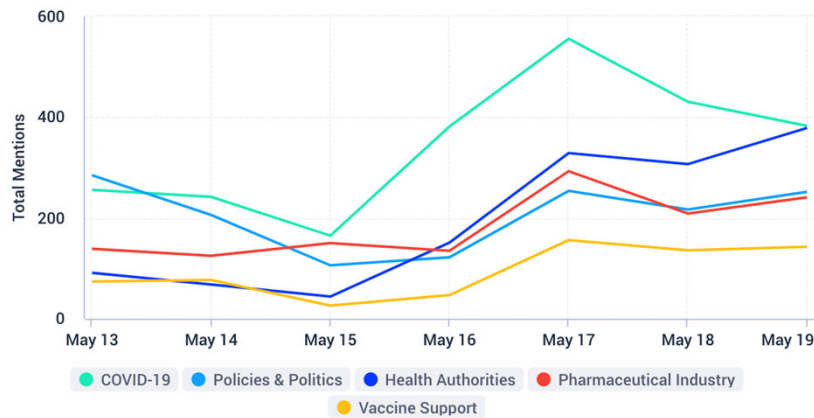
Tweets that are the most forwarded, either by retweet, reply, or quote:

- ❑ When President Biden took office, millions were unemployed and there was no vaccine available. In the last 15 months, the economy has created 8.3M jobs and the unemployment rate stands at 3.6% — the fastest decline in unemployment to start a President's term ever recorded;
- ❑ Pfizer says do not breast feed. Baby formula runs scarce. Bill Gates promotes new artificial breast milk technology. All within 2 weeks;
- ❑ BREAKING: A new peer-reviewed study shows that immunity against Omicron "fades rapidly" after a second and third injection of Pfizer and BioNTech's COVID vaccine. The science has supported our position on vaccines from the beginning;
- ❑ My name is Tom Nelson, and I am a Democrat running to defeat Ron Johnson. Unlike Ron, I will never go to Russia on the 4th of July. Instead, I will bring civility back to Wisconsin to build a better world for my children. Can you retweet, follow, and help get me to 40k?
- ❑ 1. So today I want to write a thread I've been nervous to write. In January and February, according to CDC data, 42% of ppl who died of Covid were vaccinated. It's possible that in the near future, a MAJORITY of people dying of Covid may be vaccinated. <https://t.co/FXZovXBBEW>;
- ❑ Four cadets at the Air Force Academy may not graduate because they have refused the COVID-19 vaccine. They may have to pay back thousands of dollars in tuition costs;
- ❑ @thehowie I'm not surprised at all. That was to inoculate the public. As a prominent vaccine advocate, you should understand that. Yale is the epicenter of the woke mind virus attempting to destroy civilization;
- ❑ Republicans who have pushed "great replacement theory" of late: Elise Stefanik Ron Johnson Dan Patrick Scott Perry JD Vance As experts in this movement point out, they all employ the scam of disguising this vile ideology in racially neutral packaging: <https://t.co/DaoprzCEX>;
- ❑ Friends daughter turned five last week. They went to 3 pharmacies but none had pediatric COVID vax dose. Their pediatrician's office only offers it at periodic clinics, the next of which is about a month away. Now she has COVID;
- ❑ Huge election today in Pennsylvania, and an update on the vaccine you must see. <https://t.co/uTq3JXwHa5>

5/25/2022



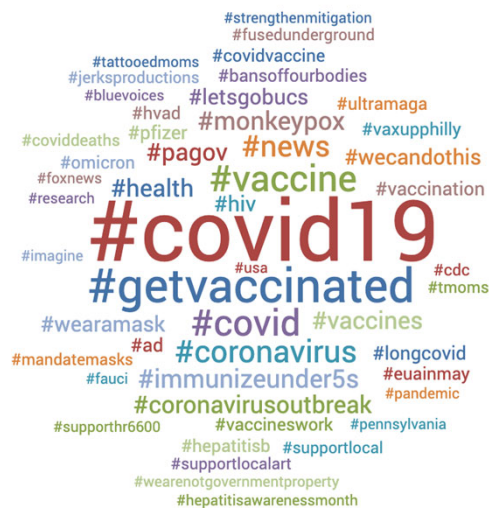
General PA Conversation May 13 – May 19



5/25/2022



PA Hashtag Cloud May 13 – May 19



5/25/2022



Trending Posts on Facebook May 13 – May 19

WPXI-TV Pittsburgh May 17, 2022 at 4:00 AM

"Every home in the U.S. is eligible to order a third round of free at-home tests," the website reads. "Order yours today."

Coronavirus: 3rd round of free rapid COVID-19 tests available from US
WPXI.COM

398 201 246

WTAE-TV Pittsburgh May 13, 2022 at 10:30 AM

The district says the change came because Allegheny County has moved into the medium COVID-19 transmission level, according to the CDC.

Masks are back on in Pittsburgh Public Schools
WTAE.COM

209 175 15

WPXI-TV Pittsburgh May 17, 2022 at 10:45 AM

BREAKING: The U.S. Food and Drug Administration has authorized a booster shot of the Pfizer-BioNTech vaccine for children ages 5-11.

FDA authorizes Pfizer's COVID-19 booster shot for 5- to 11-year-olds
WPXI.COM

184 130 14

WPXI-TV Pittsburgh May 19, 2022 at 12:15 AM

Three schools in the Pittsburgh Public School District are transitioning to synchronous remote instruction for the remainder of the week due to rising COVID-19 case numbers.

Three Pittsburgh Public Schools closed due to positive COVID-19
WPXI.COM

249 68 57

WPXI-TV Pittsburgh May 17, 2022 at 7:00 AM

With covid cases on the rise again, it's renewing questions about getting that second COVID-19 booster shot.

Fact vs. Fiction: Getting the second COVID-19 booster shot
WPXI.COM

317 293 18

KDKA-TV | CBS Pittsburgh May 17, 2022 at 2:30 PM

The announcement comes as COVID-19 cases are rising again in some areas of the country.

Government offers third round of free, at-home COVID-19 tests
CBSNEWS.COM

195 93 34

21 WFMJ May 18, 2022 at 4:16 PM

U.S. officials say the COVID-19 pandemic could get worse in the U.S. in the weeks ahead, and more people could be advised to again wear masks indoors.

A third of US should be considering masks, officials say
WFMJ.COM

202 118 31

21

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Trending Posts on Instagram May 13 – May 19

Stop dismissing the risk of long covid
Opinion by Ezekiel J. Emanuel

postopinions May 13, 2022 at 8:09 PM

A guest opinion from Ezekiel J. Emanuel, an oncologist, medical ethicist and...
See more

2.4K 93

5/25/2022

AP apnews May 16, 2022 at 5:18 PM

The U.S. death toll from COVID-19 has surpassed 1 million, a once-unimaginable figure that only hints at the multitudes of loved ones and friends staggered by grief and frustration. The confirmed number of dead is equivalent to a 9/11 attack every day for 336 days. It is roughly equal to how many Americans died in the Civil War and World War II combined. It's as if Boston and Pittsburgh were wiped out. "It is

New-Case Rates in the Region
Philly, suburbs → Philadelphia → South Jersey

The seven-day average of new cases in Philadelphia, the Pennsylvania suburban counties, and South Jersey per 100,000 residents. Rates do not include results from at-home tests.

phillyinquirer May 18, 2022 at 12:41 PM

South Jersey is seeing a new COVID-19 case spike, as New Jersey's infections...
See more

428 71

thefiveinc May 17, 2022 at 5:39 PM

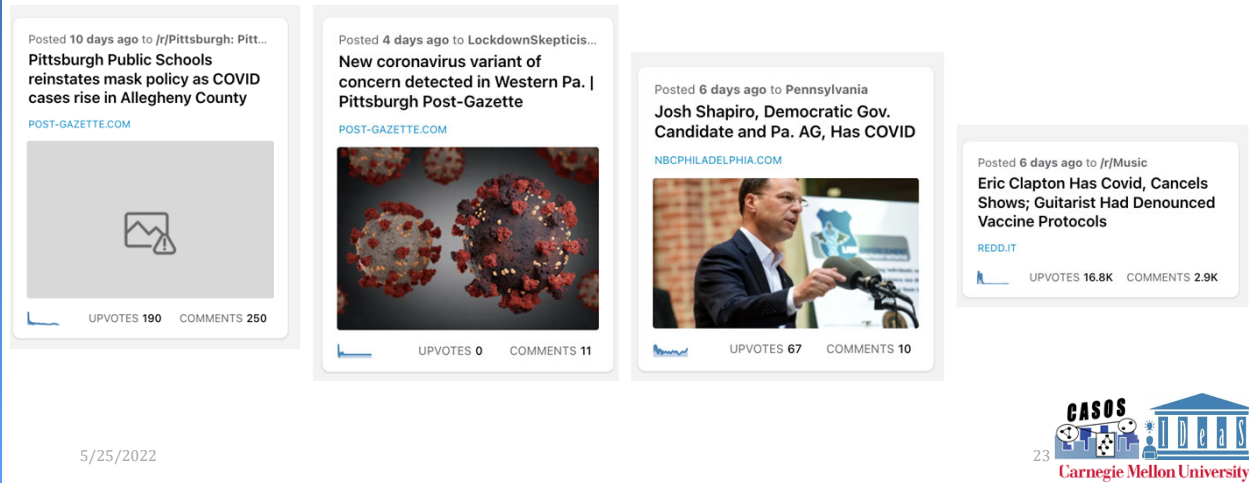
Is mask insanity back? #FoxNews

29.2K 2.7K 225

22

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Trending Posts on Reddit May 13 – May 19



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)
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