

# PA Vaccine Conversations and Misinformation on Twitter

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Vaccine Hesitancy Project Update based on August 6 – August 12, 2021

The CMU centers for:

Informed DEMocracy And Social cyber-security

Computational Analysis of Social and Organizational Systems



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## PA Vaccine Conversation 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.
- ❑ The material contained in this report is a summary of social media content and does not represent a judgment or characterization of any individual.

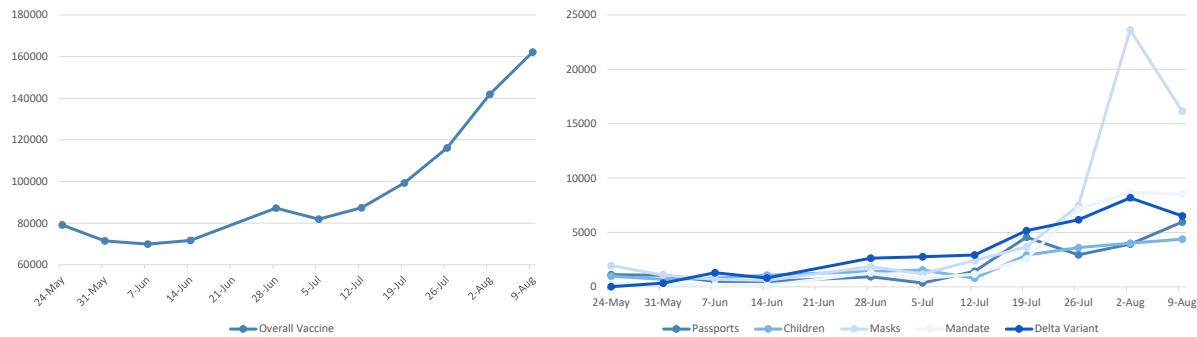
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## Trends (tweets per week) August 6 – August 12



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## High Level View by City August 6 – August 12

	Total PA	Philadelphia		Pittsburgh		Erie		Allentown/Bethlehem		Other	
Conversation	Tweets	Tweets	%	Tweets	%	Tweets	%	Tweets	%	Tweets	%
Overall Vaccine	162143	96818	59.7%	33557	20.7%	1467	0.9%	25751	15.9%	4550	2.8%
Vaccine Passports	5925	3146	3.2%	1483	4.4%	62	4.2%	1143	4.4%	91	2.0%
Not FDA Approved	1257	680	0.7%	257	0.8%	16	1.1%	266	1.0%	38	0.8%
Boosters	1298	718	0.7%	261	0.8%	11	0.7%	256	1.0%	52	1.1%
Misinfo: Shedding	58	40	0.0%	4	0.0%	2	0.1%	11	0.0%	1	0.0%
"Experimental"	1106	626	0.6%	209	0.6%	13	0.9%	238	0.9%	20	0.4%
Children	3306	1809	1.9%	664	2.0%	47	3.2%	693	2.7%	93	2.0%
Myocarditis	116	62	0.1%	26	0.1%	1	0.1%	25	0.1%	2	0.0%
Heart	1322	718	0.7%	303	0.9%	13	0.9%	252	1.0%	36	0.8%
Masks	16029	9047	9.3%	3152	9.4%	196	13.4%	2874	11.2%	760	16.7%
Infertility	49	31	0.0%	6	0.0%	1	0.1%	9	0.0%	2	0.0%
Mandates	8467	5010	5.2%	1388	4.1%	84	5.7%	1718	6.7%	267	5.9%
Natural Immunity	1392	925	1.0%	227	0.7%	3	0.2%	224	0.9%	13	0.3%
Efficacy	397	196	0.2%	72	0.2%	4	0.3%	114	0.4%	11	0.2%
Spike Proteins	247	182	0.2%	32	0.1%	3	0.2%	29	0.1%	1	0.0%
Delta Variant	8655	5087	5.3%	1523	4.5%	63	4.3%	1640	6.4%	342	7.5%
Race	2977	1963	2.0%	467	1.4%	23	1.6%	452	1.8%	72	1.6%
Ivermectin	191	90	0.1%	47	0.1%	6	0.4%	46	0.2%	2	0.0%
Military	1960	1286	1.3%	278	0.8%	20	1.4%	328	1.3%	48	1.1%
Breakthrough	1289	748	0.8%	232	0.7%	10	0.7%	259	1.0%	40	0.9%

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- Tweets here counted only if there is a city location attached
- Graphene and "Strike Force" operation conversations tapering off
- Trending disinformation narratives:
  - Ivermectin treatment for COVID
  - Vaccine mandate for US military
- "Breakthrough" infection tweets trending

## High Level View by County August 6 – August 12

County	Allegheny	Beaver	Butler	Cambria	Fayette	Indiana	Somerset	Westmoreland
Overall Vaccine	34219	44	138	67	79	20	7	111
Vaccine Passports	1495	1	6		3			
Not FDA Approved	266	2						
Boosters	269			1				2
Misinfo: Shedding	4							
"Experimental"	215		3					1
Children	673		4	1	1			3
Myocarditis	27							
Heart	305		1					
Masks	3273	8	19	20	15	3	1	18
Infertility	7			1				
Mandates	1421	2	6	1	5	1	1	5
Natural Immunity	233		3					
Efficacy	74							1
Spike Proteins	32							
Delta Variant	1562	4	12	12	8	1		6
Race	473		1		1			
Ivermectin	47							
Military	284	1	1	1	1	1		2
Breakthrough	236	3	1			1		

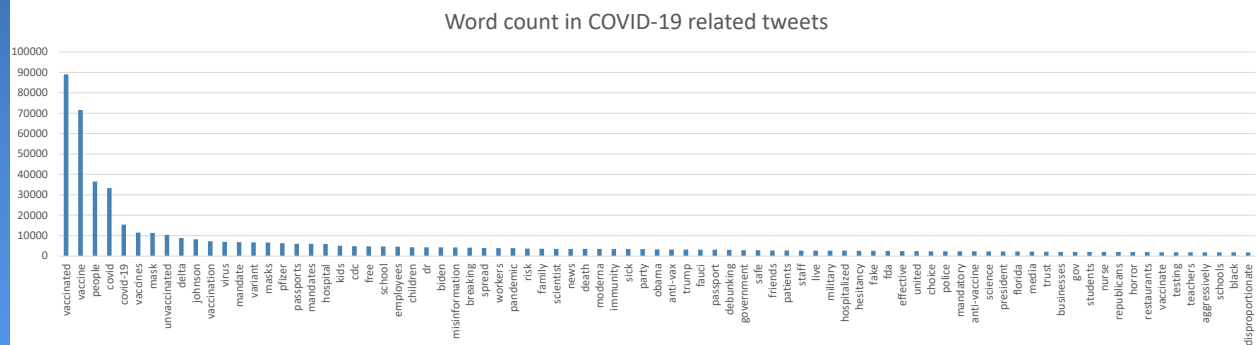
- Tweets counted here if there is a county location attached
- Race: pulled by one of the vaccine keywords plus at least one other term in ("Black", "African American", "of color", "Latin", "Hispanic", "brown", "eugenic")

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## Top Words Used per Week August 6 – August 12



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## Top Hashtags by County August 6 – August 12

❑ We've checked hashtags in several counties such as Allegheny, Butler, Cambria, Fayette, Lackawanna, Luzerne, Monroe, 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	Butler	Cambria	Fayette	Lackawanna	Luzerne	Monroe	West Moreland
covid19 (1054)	covid19 (4)	desantisvariant (7)	Covid19 (2)	Covid19 (1)	Trumpvirus (5)	deltavariant (4)	covid19 (9)
healthcarefreedom (363)	Covidvaccine (2)	maskup (5)	Scaredvaccinated (2)	gotmyshotpa (1)	covidvaccine (1)	breaking (2)	Deltavariant (2)
Getvaccinated (360)	fauci (2)	abbottvariant (2)	antimask (1)	kickcovid19communitycorps (1)	donotcomply (1)	antivax (1)	soulslosttocovid (2)
Choosefreedom (340)	naturalimmunity (2)	Getvaccinated (1)	antivaxx (1)	mandatoryvaccinations (1)	italy (1)	covid (1)	theysurvivedcovid (1)
Covidvaccine (333)	covidiots (1)	covid19 (1)	covid (1)	vaccinessavelives (1)	Vaccinepassport (1)	delta (1)	stopthespread (1)

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## Top Hashtags by City August 6 – August 12

❑ 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 (1644) + covid (458)	Covid19 (357) + covid (107)	covid19 (343) + covid (121)	covid19 (1044) + covid (213)	covid19 (34) + covid (7)	covid19 (637)	covid19 (108) + covid (24)
Getvaccinated (485)	Getvaccinated (100)	Deltavariant (72)	Healthcarefreedom (363) + choosefreedom (340)	getvaccinated (17)	getvaccinated (118)	Getvaccinated (35)
Deltavariant (299)	Deltavariant (85)	getvaccinated (71) + vaccinated (47)	Getvaccinated (358)	Deltavariant (7)	Deltavariant (115)	Deltavariant (31)
Healthcarefreedom (146)	Vaccinepassport (52)	Pfizer (46)	Deltavariant (134)	Covidiots (4)	Vaccinepassport (56)	Desantisvariant (12)
Pfizer (123)	Pfizer (43)	Mylettortorepublicans (40)	psakibomb (89)	vaccinessavelives (4)	pfizer (49)	healthcarefreedom (10)

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## Top URLs by County August 6 – August 12

Allegheny	Butler	Cambria	Fayette	Lackawanna	Luzerne
<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (396)	<a href="https://cbsloc.al/3yVf5x">https://cbsloc.al/3yVf5x</a> Pittsburgh Diocese Urging Mask-Wearing, Vaccinations For Catholics (2)	<a href="http://onward.g/2Vzsr8t">http://onward.g/2Vzsr8t</a> James Franklin 'Pleading' With Penn State Fans To Get Vaccinated (1)	<a href="https://www.newsweek.com/ihu-covid-researcher-predicts-lambda-variant-will-run-problem-us-1616658">https://www.newsweek.com/ihu-covid-researcher-predicts-lambda-variant-will-run-problem-us-1616658</a> IHU COVID Researcher Predicts Lambda Variant Will 'Run Into a Problem' in the U.S. (2)	<a href="https://www.ijpost.com/breaking-news/pfizer-ceos-israel-visit-cancelled-because-he-is-unvaccinated-report-661100">https://www.ijpost.com/breaking-news/pfizer-ceos-israel-visit-cancelled-because-he-is-unvaccinated-report-661100</a> Pfizer CEO's Israel visit canceled because he is not fully vaccinated (2)	<a href="https://fox56.com/news/local/organizations-react-to-vaccine-or-test-requirement-by-governor-wolf">https://fox56.com/news/local/organizations-react-to-vaccine-or-test-requirement-by-governor-wolf</a> Organizations react to 'vaccine or test' requirement by Governor Wolf (2)
<a href="https://trib.al/ds4AffU">https://trib.al/ds4AffU</a> Anti-vax nurse injects 8,600 with saline instead of COVID vaccine: police (284)	<a href="https://pittsburgh.cbslocal.com/2021/08/07/spork-bloomfield-pittsburgh-will-require-proof-of-covid-19-vaccine/">https://pittsburgh.cbslocal.com/2021/08/07/spork-bloomfield-pittsburgh-will-require-proof-of-covid-19-vaccine/</a> Popular Bloomfield Restaurant Spork To Require Proof Of COVID-19 Vaccination And Masks (2)	<a href="https://apple.news/AmqY8FUETK2aHIN72Q">https://apple.news/AmqY8FUETK2aHIN72Q</a> DUw Highly Vaccinated States Keep Worst Covid-19 Outcomes in Check as Delta Spreads, WSJ Analysis Shows (1)	<a href="https://www.reuters.com/world/europe/suspected-saline-switch-sparks-vaccine-stir-germany-2021-08-10/">https://www.reuters.com/world/europe/suspected-saline-switch-sparks-vaccine-stir-germany-2021-08-10/</a> Suspected saline switch sparks vaccine stir in Germany (2)	<a href="http://apne.ws/VNw96Vb">http://apne.ws/VNw96Vb</a> Tyson Foods, Microsoft to require vaccination for US workers (1)	<a href="https://abcn.ws/3lt78EO">https://abcn.ws/3lt78EO</a> Protests against mandated COVID-19 vaccines pop up across US (1)
<a href="https://summit.news/2021/08/11/study-finds-most-highly-educated-americans-are-also-the-most-vaccine-hesitant">https://summit.news/2021/08/11/study-finds-most-highly-educated-americans-are-also-the-most-vaccine-hesitant</a> Study Finds Most Highly Educated Americans Are Also the Most Vaccine Hesitant (249)	<a href="http://a.msn.com/05/en-us/AAMW7Zocid-st">http://a.msn.com/05/en-us/AAMW7Zocid-st</a> Doctor who did early research on COVID vaccine: this is not a pandemic of the unvaccinated (1)	<a href="https://news.yahoo.com/florida-doctors-exhausted-americans-states-141507568.html?oc=social-sh&amp;soc_src=tw&amp;tr=ct=tw">https://news.yahoo.com/florida-doctors-exhausted-americans-states-141507568.html?oc=social-sh&amp;soc_src=tw&amp;tr=ct=tw</a> Florida doctors are exhausted and angry as the state's COVID-19 surge unleashes pandemonium inside hospitals: 'Humanly, you just break at some point' (1)	<a href="http://a.msn.com/01/en-us/AAMW7M7ocid-st">http://a.msn.com/01/en-us/AAMW7M7ocid-st</a> Anti-vax Virginia couple gets home detention on Capitol riot charge (1)	<a href="http://dlvr.it/5SDkSt">http://dlvr.it/5SDkSt</a> The family of an unvaccinated Florida man who died of COVID before he could get a shot will hold a vaccine and testing site at his funeral (1)	<a href="https://bit.ly/37v38it">https://bit.ly/37v38it</a> Vaccine Passports Are Nothing New. Travelers Already Use Them. (1)
<a href="https://breaking911.com/vaccinated-west-virginia-man-dies-of-covid-health-department-says/">https://breaking911.com/vaccinated-west-virginia-man-dies-of-covid-health-department-says/</a> Vaccinated West Virginia Man Dies of COVID, Health Department Says (227)	<a href="http://apne.ws/WFjxCxh">http://apne.ws/WFjxCxh</a> Posts misrepresent Pfizer data on vaccine efficacy (1)	<a href="https://thehill.com/policy/transportation/568849-missouri-taxi-company-refuses-vaccinated-masked-customers">https://thehill.com/policy/transportation/568849-missouri-taxi-company-refuses-vaccinated-masked-customers</a> Missouri taxi company refuses vaccinated, masked customers (1)	<a href="http://hill.cm/CSO3B1">http://hill.cm/CSO3B1</a> Podcast King Joe Rogan says vaccine passports move US 'closer to dictatorship' (1)	<a href="http://dlvr.it/5SGgMW">http://dlvr.it/5SGgMW</a> What experts are learning about Lambda, a coronavirus 'variant of interest' (1)	<a href="https://bit.ly/3fAhdxH">https://bit.ly/3fAhdxH</a> California to Mandate COVID-19 Vaccines for Health Workers (1)
<a href="https://www.huffpost.com/entry/dick-farrel-newsmax-right-wing-scandemic-dies-of-covid_n_610F5d3e4b041dfbaaabc6?ncid=engmodushpmg00000004">https://www.huffpost.com/entry/dick-farrel-newsmax-right-wing-scandemic-dies-of-covid_n_610F5d3e4b041dfbaaabc6?ncid=engmodushpmg00000004</a> Ex-Newsmax Host Who Attacked 'Lying Freak' Dr. Fauci Over 'Scandemic' Has Died Of COVID (114)	<a href="http://hill.cm/vd92nEq">http://hill.cm/vd92nEq</a> Moderna says everyone will need booster shots soon as vaccines wear off (1)	<a href="https://twitter.com/Acosta/status/1424454623994208270">https://twitter.com/Acosta/status/1424454623994208270</a> COVID-19 cases among kids overwhelming Florida hospitals, doctor tells CNN. (1)	<a href="https://cnb.cx/2U41Xm">https://cnb.cx/2U41Xm</a> The social network for doctors is full of vaccine disinformation (1)	<a href="http://dlvr.it/5SKsOd">http://dlvr.it/5SKsOd</a> Rightwing radio host and anti-vaxer dies of Covid (1)	<a href="https://fox56.com/news/local/big-crowds-at-schuylkill-county-fair-doh-sets-up-vaccine-clinic">https://fox56.com/news/local/big-crowds-at-schuylkill-county-fair-doh-sets-up-vaccine-clinic</a> Big crowd at Schuylkill County Fair, DOH sets up vaccine clinic (1)

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## Top URLs by City August 6 – August 12

Philadelphia	Chester	Norristown	Pittsburgh	Erie	Allentown/ Bethlehem	Other
<a href="https://buff.ly/3fWYwof">https://buff.ly/3fWYwof</a> Vocal anti-vaccine broadcaster dies from COVID-19 complications (630)	<a href="https://chute.rocky.fr/ToKk7S29H">https://chute.rocky.fr/ToKk7S29H</a> A FINAL WARNING TO HUMANITY FROM FORMER PFIZER CHIEF SCIENTIST MICHAEL YEADON (241)	<a href="https://www.dailymail.co.uk/new/article/3879972/jessica-maiolo-removed-Team-USA-Painball-fat-shaming-teen-hospitalised-COVID-19.html">https://www.dailymail.co.uk/new/article/3879972/jessica-maiolo-removed-Team-USA-Painball-fat-shaming-teen-hospitalised-COVID-19.html</a> Fitness trainer Jessica Maiolo is booted from Team USA Painball after 'fat-shaming' high school football star, 17, in hospital with COVID by saying 'he doesn't need a vaccine, he needs a f***ing treadmill' (149)	<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (396)	<a href="http://vaccines.gov">http://vaccines.gov</a> (6)	<a href="https://www.ijpost.com/breaking-news/pfizer-ceos-israel-visit-cancelled-because-he-is-unvaccinated-report-661100">https://www.ijpost.com/breaking-news/pfizer-ceos-israel-visit-cancelled-because-he-is-unvaccinated-report-661100</a> Pfizer CEO's Israel visit canceled because he is not fully vaccinated (85)	<a href="https://on.wsj.com/2XfeuDh">https://on.wsj.com/2XfeuDh</a> Vaccination Status Has Americans Picking Sides (13)
<a href="http://vaccines.gov">http://vaccines.gov</a> (484)	<a href="https://abcn.ws/2VGKxZ">https://abcn.ws/2VGKxZ</a> COVID-19 live updates: Florida, Texas account for nearly 40% of new hospitalizations (76)	<a href="https://ktvo.com/news/local/after-legal-threat-2-kirkville-dental-students-dont-have-to-get-mandatory-covid-vaccine">https://ktvo.com/news/local/after-legal-threat-2-kirkville-dental-students-dont-have-to-get-mandatory-covid-vaccine</a> After legal threat, 2 Kirkville dental students don't have to get mandatory COVID vaccine (92)	<a href="https://trib.al/ds4AffU">https://trib.al/ds4AffU</a> Anti-vax nurse injects 8,600 with saline instead of COVID vaccine: police (283)	<a href="https://www.ijpost.com/breaking-news/pfizer-ceos-israel-visit-cancelled-because-he-is-unvaccinated-report-661100">https://www.ijpost.com/breaking-news/pfizer-ceos-israel-visit-cancelled-because-he-is-unvaccinated-report-661100</a> Pfizer CEO's Israel visit canceled because he is not fully vaccinated (6)	<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (67)	<a href="http://vaccines.gov">http://vaccines.gov</a> (10)
<a href="https://trib.al/ds4AffU">https://trib.al/ds4AffU</a> Anti-vax nurse injects 8,600 with saline instead of COVID vaccine: police (325)	<a href="http://vaccines.gov">http://vaccines.gov</a> (49)	<a href="https://www.israelnationalnews.com/News/News.aspx/309262">https://www.israelnationalnews.com/News/News.aspx/309262</a> Natural infection vs vaccination: Which gives more protection? (60)	<a href="https://summit.news/2021/08/11/study-finds-most-highly-educated-americans-are-also-the-most-vaccine-hesitant">https://summit.news/2021/08/11/study-finds-most-highly-educated-americans-are-also-the-most-vaccine-hesitant</a> Study Finds Most Highly Educated Americans Are Also the Most Vaccine Hesitant (249)	<a href="http://apne.ws/nkubXNW">http://apne.ws/nkubXNW</a> COVID-19: Delta infections may produce similar virus levels regardless of vaccination status, early analysis suggests (6)	<a href="https://on.wsj.com/2XfeuDh">https://on.wsj.com/2XfeuDh</a> Vaccination Status Has Americans Picking Sides (66)	<a href="https://twitter.com/therecount/status/142297596125169280">https://twitter.com/therecount/status/142297596125169280</a> Gov. Ron DeSantis (R-FL) complains that "Joe Biden has taken to himself to try to single out Florida over COVID." (9)
<a href="https://sharyatkinson.com/2021/08/covid-19-natural-immunity-compared-to-vaccine-induced-immunity-the-definitive-summary">https://sharyatkinson.com/2021/08/covid-19-natural-immunity-compared-to-vaccine-induced-immunity-the-definitive-summary</a> Covid-19 natural immunity compared to vaccine-induced immunity: The definitive summary (249)	<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (42)	<a href="http://vaccines.gov">http://vaccines.gov</a> (47)	<a href="https://breaking911.com/vaccinated-west-virginia-man-dies-of-covid-health-department-says/">https://breaking911.com/vaccinated-west-virginia-man-dies-of-covid-health-department-says/</a> Vaccinated West Virginia Man Dies of COVID, Health Department Says (227)	<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (5)	<a href="https://www.dailymail.co.uk/health/article-2861829/Fauci-fears-new-vaccine-resistant-covid-variant-emerge-predicts-cases-hit-200k-day.html">https://www.dailymail.co.uk/health/article-2861829/Fauci-fears-new-vaccine-resistant-covid-variant-emerge-predicts-cases-hit-200k-day.html</a> Now Dr. Fauci says he fears vaccine-resistant COVID variant could emerge this fall and warns US is 'in trouble' - a day after saying the nation is on same 'trajectory' as UK where cases have DECLINED (64)	<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (8)
<a href="https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus">https://www.thedailybeast.com/anti-vax-radio-host-and-former-newsmax-anchor-dick-farrel-dies-of-coronavirus</a> Anti-Vax Radio Host Who Called Fauci a 'Power Tripping Lying Freak' Dies of COVID (209)	<a href="https://www.bitchute.com/video/FPehqf1TeDo/">https://www.bitchute.com/video/FPehqf1TeDo/</a> DR. MIKE YEADON, FORMER PFIZER VP LATEST MESSAGE - EVERYONE MUST LISTEN (41)	<a href="https://news.sky.com/story/covid-19-delta-infections-produce-similar-levels-of-virus-regardless-of-vaccination-status-suggests-early-analysis-12374244">https://news.sky.com/story/covid-19-delta-infections-produce-similar-levels-of-virus-regardless-of-vaccination-status-suggests-early-analysis-12374244</a> COVID-19: Delta infections may produce similar virus levels regardless of vaccination status, early analysis suggests (44)	<a href="https://www.huffpost.com/entry/dick-farrel-newsmax-right-wing-scandemic-dies-of-covid_n_610F5d3e4b041dfbaaabc6?ncid=engmodushpmg00000004">https://www.huffpost.com/entry/dick-farrel-newsmax-right-wing-scandemic-dies-of-covid_n_610F5d3e4b041dfbaaabc6?ncid=engmodushpmg00000004</a> Ex-Newsmax Host Who Attacked 'Lying Freak' Dr. Fauci Over 'Scandemic' Has Died Of COVID (114)	<a href="http://erie.gov/vax">http://erie.gov/vax</a> (4)	<a href="http://vaccines.gov">http://vaccines.gov</a> (62)	<a href="https://trib.al/ds4AffU">https://trib.al/ds4AffU</a> Anti-vax nurse injects 8,600 with saline instead of COVID vaccine: police (7)

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## Top Influencers by County August 6 – August 12

❑ The top 5 influencers\* for each region related to COVID19/vaccines are as follows:

Allegheny	Butler	Cambria	Fayette	Lackawanna	Luzerne	Monroe	West Moreland
QasimRashid	TheDanKingerski	onepatriotchi ck (antivax)	VincentMTiberi	AFTunion	FOX56WOLF	DocTooch	MartyGriffinKD
z_mccoy06	DWBerkley	Zeskaroo	KodyRinehart	ryancoyle35	metsno1fan	NASCARonReddit	JeremyHanscom6
KDKA	terrellsmith	rumbunter	BroncoBaby10	jameseshelman	BigDan5309	ARaj_Energy	gillie
SamIam1985CA	MikeSchnelle	NicoleFuschino	BishyBooBoo	AFTPA	MelanieZayastv	th3italianpanda	MCipriani_WTAE
mattfreedpghpg	MelindaKDKA	realjasonstru	mommydog67	cathyde	jtheller2	SICKemAJ	gillian19

\*influencers are defined as accounts with tweets often spread by others (ordered by out-degree centrality)

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## Top Influencers by City August 6 – August 12

❑ The top 5 influencers\* for each region related to COVID19/vaccines are as follows:

Philadelphia	Chester	Norristown	Pittsburgh	Erie	Allentown/ Bethlehem	Other
CNN	JakeLobin	Cleavon_MD	QasimRashid	DBChirpy	realTuckFrumper	tundeolaniran
6abc	drCraigwax	ElectionWiz	z_mccoy06	ETNreisenweber	ClaudetteGGibs1	POTUS
PHLPublicHealth	sclagmen (antivax, conspiracy spread)	Matthew_4_Trump	KDKA	ErieNewsNow	Out5p0ken	Mavumavu91
FOX29philly		Flattielover	SamIam1985CA	ECDOH	LouisRBridgema3	JackPosobiec
PhillyInquirer	SicarioScott	goodblackdude	ezrelevant	ParisSaid_	Kimberl19156775	catturd2

\*influencers are defined as accounts with tweets often spread by others (ordered by out-degree centrality)

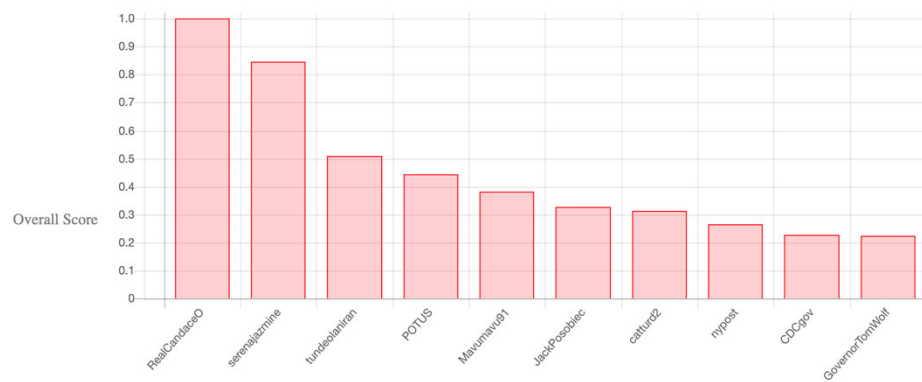
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## Analysis of Tweeters - Super Spreaders

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



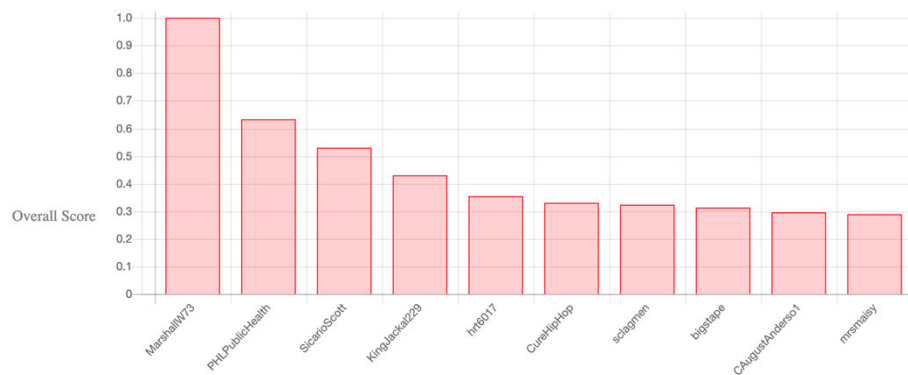
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## Analysis of Tweeters - Super Friends

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



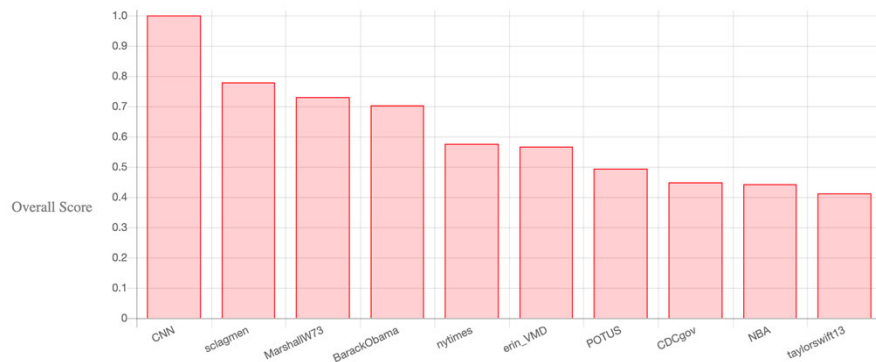
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## Analysis of Tweeters - Other Influencers

- 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
<a href="#">catturd2</a>	1,183
<a href="#">CDCgov</a>	1,034
<a href="#">POTUS</a>	873
<a href="#">GovernorTomWolf</a>	810
<a href="#">CNN</a>	692
<a href="#">GovRonDeSantis</a>	671
<a href="#">JackPosobiec</a>	631
<a href="#">Mavumavu91</a>	569
<a href="#">FoxNews</a>	565
<a href="#">RealCandaceO</a>	558

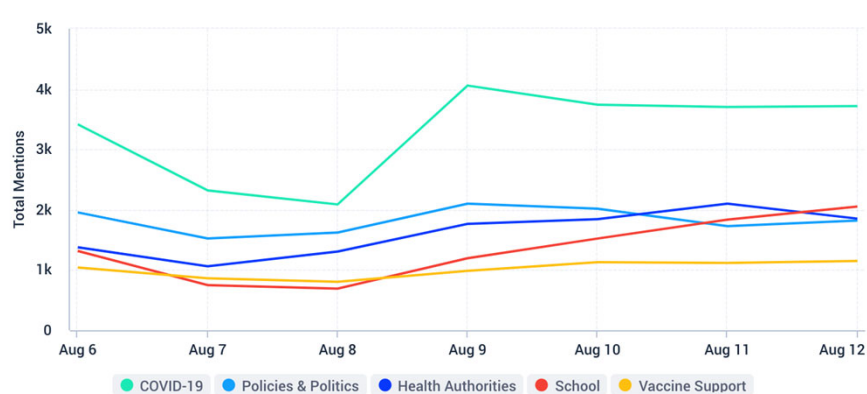
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## General PA Conversation August 6 – August 12

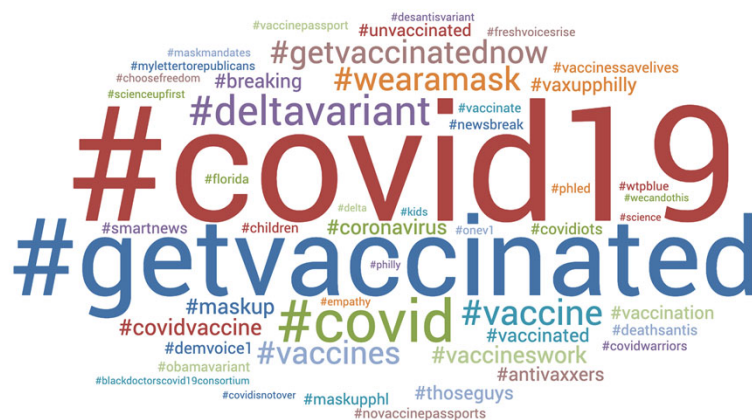


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## PA Hashtag Cloud August 6 – August 12



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## Trending PA stories August 6 – August 12

- ❑ [Vaccines.gov](https://www.vaccines.gov) - Find COVID-19 vaccine locations near you (376 Mentions)
- ❑ [thedailybeast.com](https://www.thedailybeast.com) - Anti-Vaxxer Florida Radio Host and Former Newsmax Anchor Dies of COVID (155 Mentions)
- ❑ [phila.gov](https://www.phila.gov) - Protect yourself and others from Delta: masks required indoors and at large outdoor gatherings in Philadelphia | Department of Public Health (134 Mentions)
- ❑ [theatlantic.com](https://www.theatlantic.com) - 90,000 Students, Vaccines Optional (73 Mentions)
- ❑ [nypost.com](https://www.nypost.com) - Anti-vax nurse injects 8,600 with saline instead of COVID vaccine (95 Mentions)
- ❑ [realrawnews.com](https://www.realrawnews.com) - Marines Rebuke Def. Sec.: "No Mandatory Vaccinations for My Marines." (59 Mentions)

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## Trending PA tweets August 6 – August 12


- |   |  |
|---|--|
| <p>1  <b>Ashish K. Jha, MD, MPH</b><br/> <a href="https://twitter.com/ashishkjha">@ashishkjha</a></p> <p>Today, the 5 most vaccinated states (14M people) had 580 people in hospital, 12 deaths In the 5 least vaccinated states (16M people)? 6,600 hospitalized, 104 deaths Per capita , least vaccinated states have 10X hospitalizations and 7X deaths So yeah, vaccines are working</p> <p style="text-align: right;"><b>555</b><br/>Retweets</p> | <p>3  <b>T</b><br/> <a href="https://twitter.com/taratesoro">@taratesoro</a></p> <p>CDC disclosed that it's still a possibility for the vaccinated to get covid, however the vaccine would make the symptoms WAY LESS SEVERE. like what abt that don't y'all understand... IT WAS NEVER A SECRET THAT THE VACCINATED COULD STILL CONTRACT COVID</p> <p style="text-align: right;"><b>404</b><br/>Retweets</p> |
| <p>2  <b>tunde olaniran</b><br/> <a href="https://twitter.com/tundeolaniran">@tundeolaniran</a></p> <p>this scientist debunking vaccine misinformation is giving <a href="https://t.co/mj9E6wnMCx">https://t.co/mj9E6wnMCx</a></p> <p style="text-align: right;"><b>502</b><br/>Retweets</p>   | <p>4  <b>Poppa Cinco</b><br/> <a href="https://twitter.com/jaredj5">@jaredj5</a></p> <p>No lie if somebody I knew told me they bought a fake vaccination card I wouldn't talk to them for the rest of my life</p> <p style="text-align: right;"><b>370</b><br/>Retweets</p>   |
| <p>5  <b>Jake Lobin</b><br/> <a href="https://twitter.com/jakelobin">@jakelobin</a></p> <p>Average COVID hospital stay: \$73,300 Average vaccine: \$0.00</p> <p style="text-align: right;"><b>346</b><br/>Retweets</p>   |  |


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## Trending PA tweets August 6 – August 12

6  **Imani**  
@youdoingtoomuch  
That lawsuit gon be nasty  
336 Retweets



8  **Britni Danielle**  
@britnidwrites  
Baltimore's vaccine campaign is HILARIOUS 😂 Get the vax, Debra! <https://t.co/yWbjkczVn5>  
318 Retweets

7  **aquma**  
@aquma  
Being sober is now required for driving a car – here's how alcoholics feel about that  
330 Retweets

9  **Allison Carter**  
@allisoncarter  
"I trust my immune system" is such a weird reason not to get the vaccine. Yeah, I trust mine to protect me too, which is why I gave it a detailed dossier on what the virus looks like so it can handle it.  
312 Retweets

10  **Dr. Catherine Weaver**  
@kateweaverut  
I want the world to see the blatant hypocrisy we see in Texas everyday. Schools aren't allowed to require testing, vaccinations or masks by mandate of our Governor, but you can't go see your elected officials unless your test negative first. Help this go viral. @dandrezner <https://t.co/HCMnHimmux>  
301 Retweets

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21

## Top PA Twitter Authors August 6 – August 12

By mentions	By influence
@erin_vmd	@questlove
@iridescentashes	@6abc
@prpeep	@malcolmnance
@blyntjames	@fox29philly
@louisrbridgema3	@accuweather
@cdekeane	@nbcphiladelphia
@dhladylaw	@ericfisher
@btilma	@brithume
@bob_levitt	@phillyinquirer
@chris_1791	@danieljgillies

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## Trending Negative PA stories August 6 – August 12






- ❑ [rawstory.com](http://rawstory.com) - Right-wing shock jock dies from COVID-19 weeks after he called vaccines 'poison' (43 Mentions)
- ❑ [childrenshealthdefense.org](http://childrenshealthdefense.org) - Sign Up for our Free News and Updates! (41 Mentions)
- ❑ [rumble.com](http://rumble.com) - VAXX POISON (26 Mentions)
- ❑ [childrenshealthdefense.org](http://childrenshealthdefense.org) - Exclusive Interview: Mom Whose 14-Year-Old Son Developed Myocarditis After Pfizer Vaccine No Longer Trusts CDC, Public Health Officials (21 Mentions)
- ❑ [thehill.com](http://thehill.com) - Texas Republican leader dies of COVID-19 five days after (19 Mentions)
- ❑ [ghionjournal.com](http://ghionjournal.com) - The Smoking Jab: Fauci and the NIH Knew Covid-19 "Vaccines" Could Lead to Antibody-Dependent Enhancement (18 Mentions)

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## Trending Negative PA tweets August 6 – August 12






- 1  **Lindy Li**  
@lindyli  
Suspicious that Ron DeSantis is suddenly pushing Regeneron so hard Costs \$1500 per dose while vaccines are FREE. Company has a history of kickbacks Is this another case of insider trading? He had a call with Regeneron's CEO last week. Any campaign donations involved? **104** Retweets
- 2  **Jake Flores**  
@feraljokes  
Joe Rogan really went on his show that 11 million people listen to and said that vaccines are causing covid mutations and the reason scientists aren't talking about it is because they're afraid of getting canceled. We are all going to die. **96** Retweets
- 3  **Marjorie Taylor Greene**  
@mtgreene  
A distant family member, who is vaccinated, got covid. Her symptoms were worse than her unvaccinated husband & brother in law, who both got covid as well. The covid vax did not stop her from catching it & did not make her case more mild. Stop Vaccine Mandates! **56** Retweets
- 4  **Ted Lieu**  
@tedlieu  
I simply note that Texas mandates vaccines such as the polio vaccine if a child wants to go to childcare or school. Because we all want freedom from polio. #ChooseFreedom **47** Retweets
- 5  **Forrest Maready**  
@forrestmaready  
Thinking of opening a mask-free, vaccine-free restaurant. Also a movie theater, an airline, and a football league. Possibly a small nation. Anyone care to join me? **34** Retweets

1/11/2022 \*support for vaccines may appear in this section if the comments on that post were expressing criticism of that post



26

## Trending Negative PA tweets August 6 – August 12

- 6  **Thomas Massie**  
@repthomasmassie  
Pfizer's trial data showed no efficacy of the vaccine for those with evidence of prior infection. FDA published this 8 months ago. The political scientists at CDC are trying to show otherwise by contriving studies that FDA would laugh out of the room if presented for approval!  
33 Retweets
- 7  **Charlie Kirk**  
@charliekirk11  
Mandating every member of our military to take an experimental vaccine is a national security threat.  
29 Retweets
- 8  **Emerald Robinson**  
@emeraldrobinson  
You're not "anti-vaccines." You're "anti-human gene therapy with no long term genetic studies done."  
27 Retweets
- 9  **Wu-Tang Is For The Children**  
@wutangkids  
Ron #DeathSantis is pushing Regeneron COVID treatment which costs between \$1,500-\$6,500 PER treatment over a free vaccine because he definitely doesn't have any stock in it and he is definitely not getting any kickbacks from the company <https://t.co/A5hmJjaP3C>  
26 Retweets
- 10  **Charlie Kirk**  
@charliekirk11  
The left spent four years saying conservatives weren't advocating for "basic human rights" but now they say no one is entitled to the basic human rights of traveling, eating, free association, or speech unless you take an experimental vaccine. Anyone else find that odd? 🤔  
24 Retweets

1/11/2022 \*support for vaccines may appear in this section if the comments on that post were expressing criticism of that post.



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## Top PA Negative Twitterers August 6 – August 12

By mentions	By influence
@deplorablewill3	@malcolmnance
@dc_demented	@fox29philly
@kevskewl	@chuckwendig
@jwetzal70	@factcheckdotorg
@tackingcaleuche	@burtonbrown
@christi06249366	@leadershipfreak
@mishao1989	@maxkennerly
@susiem57	@joebanner13
@tdbgolfer	@scottmovienerd
@kevincloskey	@mattglantz

\*support for vaccines may appear in this section if the comments on that post were expressing criticism of that post.


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## Trending Posts on Facebook August 6 – August 12



**Chris Stigall**  
 Aug 12, 2021 at 10:44 AM

Hey journalists. Look what I did. Journalism! You should try it.


**Chris Stigall**  
 @ChrisStigall


Just communicated with a senior children's hospital employee who said throwing around the term "overrun with COVID" is total nonsense. They are busy. But not primarily with COVID positive kids. It's kids who've been isolated for a year now contracting other respiratory illness.



 723 62 299


**WFMZ**  
 Aug 12, 2021 at 11:05 AM

The union that represents about 10,000 guards in Pennsylvania's state prisons told Gov. Tom Wolf Thursday it plans legal action to stop his effort to force them to get COVID-19 vaccines over the next month.

**See less**


**Prison guards union warns Wolf of legal action over**  
 WFMZ.COM


 1.2K 671 147


**6abc Action News**  
 Aug 12, 2021 at 1:00 PM
 

**Fake COVID vaccine card sales are ramping up**  
 6ABC.COM
 

 744 799 129
 

**FOX 29**  
 Aug 12, 2021 at 9:41 PM
 


**Fully vaccinated couple tests positive for COVID**  
 FOX29.COM
 

 848 1.0K 437
 

**CASOS**  
 Carnegie Mellon University
 


29


## Trending Posts on Facebook August 6 – August 12


**Congressman Guy Resch...**  
 Aug 12, 2021 at 11:01 AM


The Biden Administration is holding illegal immigrants at the border with little to no testing, then busing and flying them to different parts of the country. Democrats will tell you this has nothing to do with the spike in COVID numbers. I'll let you decide for yourself.


**See less**


 148 67 37


**100.7 Star**  
 Aug 12, 2021 at 5:15 PM

Chet Hanks, son of celebrity couple Tom Hanks and Rita Wilson, shared his candid thoughts on the COVID vaccine.


**Chet Hanks on vaccines: 'I have the right to not get that s\*\*\*\*'**  
 AUDACY.COM


 23 0 1


**Onward State**  
 Aug 12, 2021 at 3:05 PM
 

**Penn State Details On-Arrival COVID-19 Testing Plans**  
 ONWARDSTATE.COM
 

 211 205 9
 

**TribLive**  
 Aug 12, 2021 at 2:15 PM
 

**Pennsylvania's weekly covid cases at highest point in nearly 3 months**  
 TRIBLIVE.COM
 

 76 43 6
 

**CBS Philly**  
 Aug 13, 2021 at 8:28 AM
 

**Most Of The Philadelphia Region Turns Red On CDC**  
 PHILADELPHIA.CBSLOCAL.COM
 

 83 101 33
 

**Chris Stigall**  
 Aug 13, 2021 at 7:14 AM
 

**Pfizer, Moderna seen reaping billions from COVID-19 vaccine**  
 REUTERS.COM
 

 63 14 15
 

**FOX 29**  
 Aug 12, 2021 at 4:10 PM
 

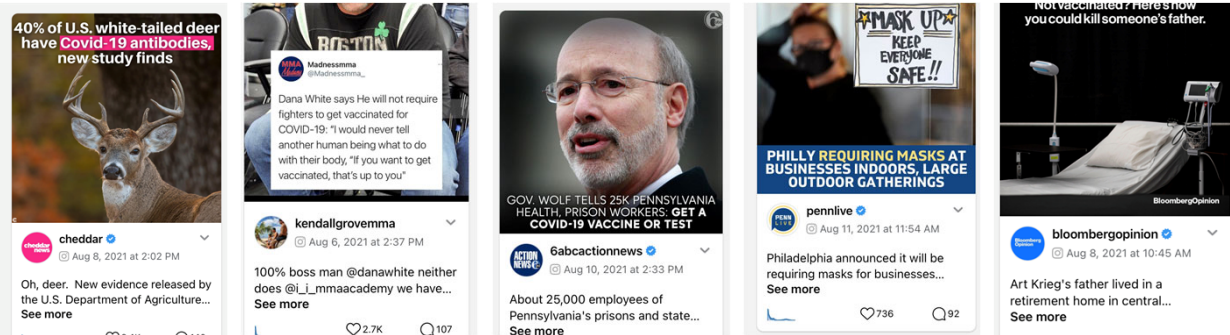
**'COVID fee': 2 colleges in West Virginia, Alabama**  
 FOX29.COM
 

 539 367 112
 

**CASOS**  
 Carnegie Mellon University
 

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## Trending Posts on Instagram August 6 – August 12



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## Trending Posts on Reddit August 6 – August 12

Posted 4 days ago to autotldr  
Fake COVID-19 vaccination  
cards worry college officials

REDD.IT



32  
r/COVID19PGH Posted by u/A\_lunch\_lady 3 days ago  
Do you think mask mandates will come back?

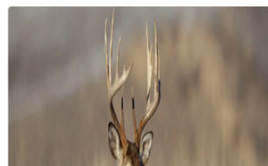
My husband's employer dropped mask mandates for everyone when Wolf said we could. Now he's a risk for losing his job if he masks on his own accord due to the politicization of mask wearing. We have a high risk kiddo at home. I'm honestly beside myself trying to figure out what to do. Do you think there's any chance a State mandate for indoor mask use will come back?

75 Comments Share Save Hide Report

80% Upvoted

Posted 4 days ago to Resisting the ...  
COVID-19 antibodies found in  
white-tail deer in  
Pennsylvania, indicating...

WPXI.COM



Posted 4 days ago to Pittsburgh Po...  
[Local] - Pennsylvania  
coronavirus update: 4,000  
cases added over 3 days,...

POST-GAZETTE.COM



Posted 4 days ago to Penn State Un...  
Thoughts on Universal Indoor  
Masking

REDD.IT

UPVOTES 0 COMMENTS 87

Posted by u/frogelsir 7 days ago  
38 Gov. Tom Wolf: State Won't Mandate Masks In  
Schools

pittsburgh.cbslocal.com/2021/0...  
44 Comments Share Save

Posted by u/DOHSPHONEY 3 days ago  
44 COVID-19 Hospitalizations At UPMC Children's  
Almost Doubles In Days

pittsburgh.cbslocal.com/2021/0...  
35 Comments Share Save

Posted 2 days ago to Teachers  
COVID-19 LITIGATION  
OBSERVATIONS

REDD.IT

UPVOTES 37 COMMENTS 31



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## General Trends August 6 – August 12

- ❑ This week's data shows the overall population concern with mask mandates as well as other regulations such as required vaccination;
- ❑ Vaccine passports narrative is back to the main list of vaccine hesitancy discourse issues on Twitter that illustrates the overall concern with vaccination requirements;
- ❑ Fake vaccination cards raise concern on other social media platforms like Reddit and Facebook;
- ❑ A lot of issues related to the upcoming school year and COVID-19 regulations illustrate population concerns with requirements for vaccination and masks for children and students;
- ❑ Discussion of infected cases among vaccinated vs unvaccinated people, also the 'Big Pharma' conspiracy forms the basis for disinformation raising doubts about vaccine effectiveness;
- ❑ More efforts to politicize vaccination are identified. This week's hashtags illustrate the trend (with hashtags like #healthcarefreedom, #choosefreedom demonstrate political divide in addition to #abbottvariant, #desantisvariant, #obamavariant, #psakibomb #MyLetterToRepublicans);
- ❑ This week's disinfo story ([rumble.com](https://www.rumble.com) - DEADLY SHOTS! Former Pfizer Employee Confirms Poison in COVID 'Vaccine') again illustrates a disinformation campaign about Pfizer vaccine that the health workers could address in communication with their patients.

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## For More Information

- ❑ Director Kathleen M. Carley - [kathleen.carley@cs.cmu.edu](mailto: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-Center)
- ❑ Ask to be on our Email-Distro Lists

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