PA Vaccine Conversations on Twitter

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Vaccine Hesitancy Project Update based on August 26, 2022 – September 1, 2022

The CMU centers for:
Informed DEmocracy And Social cyber-security
Computational Analysis of Social and Organizational Systems

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.
Report Overview August 26 – September 1

- Mandates, Masks, Boosters, Children, Race are trending this week; FDA Approval, Passports, Breakthrough Infections, Myocarditis are trending this week over last;
- Popular anti-vax tweets: It Is Now Undeniable Vaccine can cause more Myocarditis in Men Under 40 Than COVID-19; Just OUT! Patrone Circ 2022; I have said repeatedly Moderna should be banned in Men<40 FDA failed Americans & this analysis is more complicated Everyone gets breakthrough eventually 1/7 https://t.co/CBmWcgYl1; I deeply regret being vaccinated for COVID-19; US Open today but Novak was not allowed to play because he is unvaccinated. Does anyone notice? Moderna is a sponsor of the US Open. https://t.co/2FiWI01klp

Popular anti-vax stories sorted by the number of retweets

Anti-vax, disinformation, and vaccine hesitancy stories sorted by the number or shares:
- expose-news.com/2022/08/27/9-in-10-covid-deaths-past-year-vaccinated UK Gov. confirms 9 in every 10 COVID Deaths over the last year have been among the Fully/Triple Vaccinated
- NoForcedBoosters.com No Forced Boosters - Some Canadian universities are forcing students, faculty, staff and visitors to receive a COVID-19 booster shot
- sensiblemed.substack.com/p/before-we-push-the-new-omicron-vaccine Before We Push the New Omicron Vaccine, Let’s See The Data
Countering disinformation August 26 – September 1

Articles and fact-checking stories debunking disinformation for the last week:


Measures for countering health disinformation

- Anti-vaccine narratives are still pervasive on social media, while there are not that many counter-narratives about the positive effects of vaccines;
- There is a need for a reframing of social media as a medically and socially valuable resource and platform because of its high impact on society;
- Healthcare organizations need to implement social media strategies to create and expand conversations countering disinformation on social media;
- It would be helpful for health communicators to cooperate with local influencers who could spread pro-vaccination messages. Another strategy could be to motivate health practitioners to use social media as a channel for communication with the public;
- "Strategies focused on meaningfully and safely engaging HCPs on social media, promoting interconnectivity across the medical and public health communities on COVID-19 vaccine truths, and sustaining these messaging efforts across vaccine implementation stages will be our best hope of preventing any more missed doses and promoting "misinformation immunity" for all." (Hernandez et al. 2021. "The COVID-19 vaccine social media infodemic healthcare providers' missed dose in addressing misinformation and vaccine hesitancy.")
Measures for countering health disinformation

- As a trusted source of information on vaccines, family physicians play a crucial role in driving vaccine acceptance;
- Sharing stories, building trust with patients, addressing pain associated with vaccination, presenting vaccination as the default approach early on, focusing on the benefits of protection, and being honest about side effects could also help to promote pro-vaccination attitudes (Shen & Dubey 2019. "Addressing vaccine hesitancy: Clinical guidance for primary care physicians working with parents”);
- It is helpful to provide more information for the patients about the possible disinformation strategies they may deal with, such as manipulating emotions to promote misinformation and conspiracy theories to sow confusion and create division. Inoculation strategy may help to prepare the community by presenting counterarguments to misinformation and raising awareness of negative emotional appeals spread by anti-vaccine campaigns;
- Framing vaccination as a concrete, actionable strategy to reduce COVID-19 risk may help to address negative emotions, increase self-efficacy and ensure the feelings of control over reducing COVID-19 risk.

Trends (tweets per week in PA) August 26 – September 1
### High Level View by City August 26 – September 1

#### Conversation topics trending this week over last:
- FDA Approval
- Passports
- Breakthrough Infections
- Mandates
- Myocarditis

#### Conversation by City:

<table>
<thead>
<tr>
<th>Conversation</th>
<th>Total PA Tweets</th>
<th>Philadelphia Tweets</th>
<th>Pittsburgh Tweets</th>
<th>Erie Tweets</th>
<th>Allentown/Bethlehem Tweets</th>
<th>Other Tweets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Vaccine</td>
<td>28396</td>
<td>15071</td>
<td>8360</td>
<td>215</td>
<td>3138</td>
<td>1612</td>
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<tr>
<td>Vaccine Passports</td>
<td>240</td>
<td>69</td>
<td>148</td>
<td>2</td>
<td>19</td>
<td>1</td>
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<tr>
<td>FDA Approval</td>
<td>97</td>
<td>46</td>
<td>20</td>
<td>2</td>
<td>25</td>
<td>4</td>
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<tr>
<td>Boosters</td>
<td>741</td>
<td>326</td>
<td>271</td>
<td>4</td>
<td>87</td>
<td>53</td>
</tr>
<tr>
<td>Employees</td>
<td>91</td>
<td>25</td>
<td>28</td>
<td>1</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td>&quot;Experimental&quot;</td>
<td>46</td>
<td>30</td>
<td>8</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Children</td>
<td>326</td>
<td>207</td>
<td>76</td>
<td>2</td>
<td>32</td>
<td>9</td>
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<tr>
<td>Myocarditis</td>
<td>183</td>
<td>114</td>
<td>37</td>
<td>1</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>Heart</td>
<td>138</td>
<td>66</td>
<td>40</td>
<td>1</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Masks</td>
<td>789</td>
<td>394</td>
<td>182</td>
<td>11</td>
<td>88</td>
<td>114</td>
</tr>
<tr>
<td>Thrombosis/VITT</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>3</td>
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<td></td>
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<tr>
<td>Mandates</td>
<td>1233</td>
<td>737</td>
<td>246</td>
<td>18</td>
<td>196</td>
<td>36</td>
</tr>
<tr>
<td>Natural Immunity</td>
<td>59</td>
<td>32</td>
<td>18</td>
<td>1</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Efficacy</td>
<td>40</td>
<td>23</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Omicron</td>
<td>230</td>
<td>125</td>
<td>54</td>
<td>38</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Delta Variant</td>
<td>44</td>
<td>28</td>
<td>4</td>
<td>12</td>
<td></td>
<td></td>
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<tr>
<td>Race</td>
<td>572</td>
<td>311</td>
<td>156</td>
<td>5</td>
<td>68</td>
<td>32</td>
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<tr>
<td>Ivermectin</td>
<td>25</td>
<td>11</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Military</td>
<td>122</td>
<td>69</td>
<td>25</td>
<td>2</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>Breakthrough</td>
<td>90</td>
<td>50</td>
<td>19</td>
<td>1</td>
<td>18</td>
<td>2</td>
</tr>
</tbody>
</table>

#### High Level View by County August 26 – September 1

- 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 August 26 – September 1

![Bar chart showing word count in COVID-19 related tweets]

Top Hashtags by County August 26 – September 1

- 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*:

<table>
<thead>
<tr>
<th>County</th>
<th>Top Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allegheny</td>
<td>covid19 (50), pfizer (49), moderna (35), vaccine (32), vaccineinjuries (23)</td>
</tr>
<tr>
<td>Beaver + Butler</td>
<td>covidvaccine (3), vaccine (1), vaccinesideeffects (1)</td>
</tr>
<tr>
<td>Somerset</td>
<td>defunddc (1), vaccine (1), endvaxmandates (1)</td>
</tr>
</tbody>
</table>

*Hashtags are listed in descending order of frequency.
After removing hashtags that were part of our search criteria, the top 5 hashtags for each region related to COVID19/vaccines are as follows:

<table>
<thead>
<tr>
<th>Region</th>
<th>Philadelphia</th>
<th>Chester</th>
<th>Norristown</th>
<th>Pittsburgh</th>
<th>Erie</th>
<th>Allentown/Bethlehem</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hashtags</td>
<td>covid19 (58)</td>
<td>covid19 (7)</td>
<td>covid19 (14)</td>
<td>covid19 (50)</td>
<td>pfizer (5)</td>
<td>covid19 (26)</td>
<td>covid19 (15)</td>
</tr>
<tr>
<td></td>
<td>pfizer (58)</td>
<td>pfizer (5)</td>
<td>pfizer (12)</td>
<td>pfizer (49)</td>
<td>maskup (4)</td>
<td>pfizer (22)</td>
<td>moderna (7)</td>
</tr>
<tr>
<td></td>
<td>moderna (37)</td>
<td>bigpharma (3)</td>
<td>longcovid (11)</td>
<td>moderna (35)</td>
<td>moderna (2)</td>
<td>moderna (14)</td>
<td>pfizer (5)</td>
</tr>
<tr>
<td></td>
<td>vaccine (36)</td>
<td>longcovid (3)</td>
<td>moderna (10)</td>
<td>vaccine (32)</td>
<td>vaccine (2)</td>
<td>longcovid (10)</td>
<td>stopsheshots (5)</td>
</tr>
<tr>
<td></td>
<td>longcovid (29)</td>
<td>fauci (2)</td>
<td>vaccineinjuries (5)</td>
<td>vaccineinjuries (23)</td>
<td>covidscam (1)</td>
<td>mrna (10)</td>
<td>covidisnotover (4)</td>
</tr>
</tbody>
</table>

Top URLs by County August 26 – September 1

- Allegheny
  - trib.al/W0ALkYl Nate Silver: ‘Liberal elites’ pressured Pfizer to delay vaccine until after 2020 election (35)
  - NoForcedBoosters.com No Forced Boosters - Some California universities are forcing students, faculty, staff and visitors to receive a COVID-19 booster shot (25)
  - Allegheny.gov No Forcibly Vaccinating Students: University System of Alabama’s Updated COVID-19 Booster Schedule (5)

- Beaver + Butler
  - Al.com: CDC Vaccine Rates for Children in Alabama (1)
  - NoForcedBoosters.com No Forced Boosters: Students at Miami University are being forced to receive a COVID-19 booster shot (1)

- Cambria
  - n.pr/8c8rJ5t No Forcibly Vaccinating Students: University System of Alabama’s Updated COVID-19 Booster Schedule (1)
  - n.pr/3TqfQFP Mirror.com: Parenting: Schools are requiring students to receive COVID-19 boosters (1)

- Fayette
  - n.pr/3UxwLG5 Nabiha: FDA authorizes first COVID-19 booster shot (3)
  - n.pr/3R4NIEZ Nate Silver: ‘Liberal elites’ pressured Pfizer to delay vaccine until after 2020 election (1)
  - n.pr/3Ayldbz Moderna Sues Pfizer and BioNTech Over COVID Vaccine Technology (1)

- Indiana
  - n.pr/3Tf8N0R Mayor Says No Virtual Learning, Giving Unvaccinated Black Teens Zero Alternative Options (1)
  - n.pr/3UxwLG5 Nabiha: FDA authorizes first COVID-19 booster shot (1)
  - trivelpulse.com/news/impacting-travel/japan-lifts-covid-testing-requirements-for-vaccinated-travelers (1)

- Moreland
  - n.pr/3UxwLG5 Nabiha: FDA authorizes first COVID-19 booster shot (1)
  - no-forced-boosters.com No Forced Boosters - Some California universities are forcing students, faculty, staff and visitors to receive a COVID-19 booster shot (1)
  - n.pr/3Ayldbz Moderna Sues Pfizer and BioNTech Over COVID Vaccine Technology (1)
Analysis of Tweeters - Super Spreaders

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

<table>
<thead>
<tr>
<th>Agent Label</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TomPelissero</td>
<td>3006</td>
</tr>
<tr>
<td>RapSheet</td>
<td>2168</td>
</tr>
<tr>
<td>NFL</td>
<td>621</td>
</tr>
<tr>
<td>AdamSchefter</td>
<td>611</td>
</tr>
<tr>
<td>TheOtherMandela</td>
<td>517</td>
</tr>
<tr>
<td>21stgonemad</td>
<td>475</td>
</tr>
<tr>
<td>CGJXXIII</td>
<td>435</td>
</tr>
<tr>
<td>JClarkNBCS</td>
<td>410</td>
</tr>
<tr>
<td>PHLEaglesNation</td>
<td>355</td>
</tr>
<tr>
<td>ClayTravis</td>
<td>351</td>
</tr>
<tr>
<td>TomPelissero</td>
<td>3006</td>
</tr>
<tr>
<td>NFL</td>
<td>621</td>
</tr>
</tbody>
</table>

Trending Tweets August 26 – September 1

- Tweets that are the most forwarded, either by retweet, reply, or quote:
  - BIG: Moderna SUEING Pfizer over Covid vaccines for mRNA technology from 2010-2016. Get it? [https://t.co/K7zpU5UjtF](https://t.co/K7zpU5UjtF)
  - Senator Ron Johnson wants Social Security and Medicare on the chopping block every year. He's the same guy who said if Republicans get control of Congress, they’ll try to get rid of the ACA again—denying insurance to people with preexisting conditions. These guys never stop.
  - Ron Johnson is the guy who wants to slash Social Security and Medicare. I'm the guy who's going to beat him.
  - It Is Now Undeniable Vaccine can cause more Myocarditis in Men Under 40 Than COVID-19; Just OUT! Patrone Circ 2022; I have said repeatedly Moderna should be banned in Men<40 FDA failed Americans & this analysis is more complicated Everyone gets breakthrough eventually 1/7 [https://t.co/CBmWcgYl1](https://t.co/CBmWcgYl1)
  - I deeply regret being vaccinated for COVID-19
  - We haven’t had mask mandates for most indoor activities in Ontario since March. There are hospitals operating without vax mandates for nurses and doctors. Why is Western mandating boosters and masks for students against public health guidelines? Read & RT [https://t.co/P9EtRanjx9](https://t.co/P9EtRanjx9)
  - US Open today but Novak was not allowed to play because he is unvaccinated. Does anyone notice? Moderna is a sponsor of the US Open. [https://t.co/2FIW101klp](https://t.co/2FIW101klp)
  - Trump did not mandate the vaccine. That was Biden.
  - NEW - German Health Minister Lauterbach says vaccination limits the COVID pandemic because vaccinated people develop symptoms quickly and stay home, while unvaccinated people develop symptoms more slowly [https://t.co/IKB1pIlaXs](https://t.co/IKB1pIlaXs)
  - My cousin died in her sleep after a "mild" case of COVID. She had no pre-existing conditions and was fully vaccinated. This is the 5th relative I have lost to COVID.
General PA Conversation August 26 – September 1

Source: VCTR Project Dashboard

PA Hashtag Cloud August 26 – September 1

Source: VCTR Project Dashboard
Negative Attitudes August 26 – September 1

Negative Hashtag Cloud August 26 – September 1
Trending Posts on August 26 – September 1

An informational video from the Cybersecurity and Infrastructure Security Agency (CISA), an agency of the Department of Homeland Security (DHS), encourages Americans to report their family members on social media for challenging federal government claims about COVID-19. watch.com/news/photo

A world-first video urges Americans to report family members who challenge government COVID-claims on social media.

See more.

Trending Posts on Instagram August 26 – September 1

President Biden traveled to Pennsylvania to promote his proposal to bolster police forces across the nation and reduce gun crime, which includes hiring and training 100,000 police officers over the next five years. “I’m kind of not giving the kind of help they need. Folks, look, we’re in a situation in this country where we have to give them additional resources they need to get their job done,” Biden said.

9/26/2022 Source: CrowdTangle Dashboard
Trending Posts on Reddit August 26 – September 1

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/
- Facebook: @IDeasCMU
- Twitter: @IDeaSCMU
- YouTube: IDeaS Center
- Ask to be on our Email-Distro Lists