PA Vaccine Conversations on Twitter

Dr. Iuliia Alieva, Dawn Robertson, Dr. Kathleen M. Carley
Vaccine Hesitancy Project Update based on June 17, 2022 – June 23, 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 June 17 – June 23

- COVID-19 vaccine for children, myocarditis, and vaccine side effects are trending this week;

- TRENDING STORIES: CDC recommends COVID-19 vaccines for young children; CDC accepted the Advisory Committee on Immunization Practices’ (ACIP) recommendation that children ages 5 years and older should be vaccinated against COVID-19.

- ANTI-VAX, DISINFORMATION, AND VACCINE HESITANCY STORIES:
  - Pfizer’s former global head of respiratory diseases, Dr. Mike Yeadon, has been circulated this week. Here is a fact-checking story about the issues with the study interpretations; https://www.newsweek.com/fact-check-covid-vaccines-lower-sperm-quality-count-pfizer-1718063. The authors stressed that rather than being concerning, their results “confirm previous reports regarding vaccines’ overall safety and reliability despite minor short-term side effects.” Another story about this claim; https://leadstories.com/hoax-alert/2022/06/fact-check-no-long-term-impact-on-sperm-production-from-pfizer-covid-vaccination.html. NO LONG-TERM IMPACT ON SPERM PRODUCTION FROM PFIZER COVID VACCINATION -- SPERM COUNT ALSO DROPS AFTER VACCINATION;

- ANTI-VAX, DISINFORMATION, AND VACCINE HESITANCY STORIES:
  - The study about lowering sperm quality after COVID-19 has been circulated this week. Here is a fact-checking story about the issues with the study interpretations; https://www.newsweek.com/fact-check-covid-vaccines-lower-sperm-quality-count-pfizer-1718063. The authors stressed that rather than being concerning, their results “confirm previous reports regarding vaccines’ overall safety and reliability despite minor short-term side effects.” Another story about this claim; https://leadstories.com/hoax-alert/2022/06/fact-check-no-long-term-impact-on-sperm-production-from-pfizer-covid-vaccination.html. NO LONG-TERM IMPACT ON SPERM PRODUCTION FROM PFIZER COVID VACCINATION -- SPERM COUNT ALSO DROPS AFTER VACCINATION;

- ANTI-VAX, DISINFORMATION, AND VACCINE HESITANCY STORIES:

- ANTI-VAX, DISINFORMATION, AND VACCINE HESITANCY STORIES:
  - It is necessary to ensure that fact-checking links are widely shared. The suggestion is to promote them via social media communication; also through partnerships with local organizations and communities who would share this information or similar fact-checking details from journalists and researchers in the media.

Countering disinformation June 17 – June 23

- TRENDING STORIES: CDC recommends COVID-19 vaccines for young children; CDC accepted the Advisory Committee on Immunization Practices’ (ACIP) recommendation that children ages 5 years and older should be vaccinated against COVID-19.

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Priority by the number of shares of the disinformation and anti-vax stories

- odysee.com/@MaajidNawazd/EP8-Radical9 On Pfizer’s Former Global Head of Respiratory Diseases, the Whistleblower Dr Mike Yeadon (534) – this story was also detected in the previous report
- bit.ly/3tyXmpw Doug Ford’s daughter suggests Justin Bieber’s illness is somehow vaccine-related (45) - this story was also detected in the previous report
- sharyllattkisson.com/2022/06/republicans-question-cdc-and-fda-on-their-ok-for-covid-19-vaccine-for-toddlers-and-babies Republicans question CDC and FDA on their ok for Covid-19 vaccine for toddlers and babies (29)
- dailysceptic.org/2022/06/22/covid-vaccines-more-likely-to-put-you-in-hospital-than-keep-you-out BMJ Editor’s Analysis of Pfizer and Moderna Trial Data Finds Covid Vaccines More Likely to Put You in Hospital Than Keep You Out (8)

Priority by the projected impact of the disinformation and anti-vax stories

- dailysceptic.org/2022/06/17/re-evaluation-of-pfizer-trial-data-shows-zero-efficacy-say-experts Re-evaluation of Pfizer Trial Data Shows Zero Efficacy, Say Experts (3)
- sharyllattkisson.com/2022/06/republicans-question-cdc-and-fda-on-their-ok-for-covid-19-vaccine-for-toddlers-and-babies Republicans question CDC and FDA on their ok for Covid-19 vaccine for toddlers and babies (29)
- odysee.com/@MaajidNawazd/EP8-Radical9 On Pfizer’s Former Global Head of Respiratory Diseases, the Whistleblower Dr Mike Yeadon (534) – this story was also detected in the previous report
Measures for countering health disinformation

- Anti-vaccine narratives are still highly active on Twitter, 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."

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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) June 17 – June 23

High Level View by City June 17 – June 23

- Conversation topics trending this week over last
  - Children’s vaccines
  - Myocarditis
High Level View by County June 17 – June 23

<table>
<thead>
<tr>
<th>County</th>
<th>Allegheny</th>
<th>Beaver</th>
<th>Butler</th>
<th>Cambria</th>
<th>Fayette</th>
<th>Indiana</th>
<th>Somerset</th>
<th>Westmoreland</th>
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</thead>
<tbody>
<tr>
<td>Overall Vaccine</td>
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<td>Vaccine Passports</td>
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<td>Myocarditis</td>
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<tr>
<td>Thrombosis/VITT</td>
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<td>Efficacy</td>
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<td>Race</td>
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<td>Ivermectin</td>
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<td>Military</td>
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<td>Breakthrough</td>
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</tr>
</tbody>
</table>

- 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 June 17 – June 23

Word count in COVID-19 related tweets
Top Hashtags by County June 17 – June 23

- 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>Allegheny</th>
<th>Fayette</th>
</tr>
</thead>
<tbody>
<tr>
<td>covid19 (186)</td>
<td>thisispoliticsnotscience (1)</td>
</tr>
<tr>
<td>canwtalkaboutit (41)</td>
<td></td>
</tr>
<tr>
<td>covidvaccine (40)</td>
<td></td>
</tr>
<tr>
<td>pfizer (34)</td>
<td></td>
</tr>
<tr>
<td>vaccineinjured (27)</td>
<td></td>
</tr>
</tbody>
</table>

Top Hashtags by City June 17 – June 23

- 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>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>covid19 (211)</td>
<td>covid19 (27)</td>
<td>covidvaccine (34)</td>
<td>covid19 (186)</td>
<td>bluevoices (7)</td>
<td>covidvaccine (130)</td>
<td>covid19 (32)</td>
</tr>
<tr>
<td>pfizer (86)</td>
<td>covidvaccine (9)</td>
<td>pfizer (30)</td>
<td>canwtalkaboutit (41)</td>
<td>wtpblue (7)</td>
<td>coronavirustips (108)</td>
<td>vaccine (27)</td>
</tr>
<tr>
<td>covidvaccine (52)</td>
<td>canwtalkaboutit (7)</td>
<td>billgatesbioterrorist (18)</td>
<td>covidvaccine (40)</td>
<td>covid19 (3)</td>
<td>canwtalkaboutit (41)</td>
<td>paxlovid (10)</td>
</tr>
<tr>
<td>justinhieber (47)</td>
<td>coronavirustips (7)</td>
<td>faucihrprison (17)</td>
<td>pfizer (34)</td>
<td>demvoice (1)</td>
<td>coronavirussymptoms (32)</td>
<td>canwtalkaboutit (5)</td>
</tr>
<tr>
<td>vaccineinjured (33)</td>
<td>pfizer (7)</td>
<td>pfizerdocs (17)</td>
<td>vaccineinjured (27)</td>
<td>bidendelivers (2)</td>
<td>longcovid (22)</td>
<td>fauci (5)</td>
</tr>
</tbody>
</table>

7/12/2022
Affirmatively against Covid-19

Twitter: @MaajidNawaz: OnlineLibrary.wiley.com/doi/10.1111/andrt.13209 Covid-19 vaccination BNT162b2 temporarily impairs semen concentration and total motile count among semen donors (2)

Macleay.com/news/politics-government/white-house/article/26263027.html DeSantis reverses course, allowing Florida doctors to order COVID vaccines for young kids (1)

The PostMillennial.com/breaking-biden-wants-money-to-fend-off-the-second-pandemic-says-all-american-children-should-get-covid-vax BREAKING: Biden wants money to 'fend off the second pandemic', says all American babies should get Covid vac (57)

Twitter: @MaajidNawaz: OnlineLibrary.wiley.com/doi/10.1111/andrt.13209 Covid-19 vaccination BNT162b2 temporarily impairs semen concentration and total motile count among semen donors (48)

Romper.com/parenting/covid-vaccine-5-under-little-kids I'll Be First In Line To Vaccinate My Kids, But I'll Never Forget That We Were Last (1)

Apple.news/A8LMcTKpfSbalxDvRkhmwTA FDA authorizes Pfizer and Moderna Covid vaccines for infants, toddlers, and preschoolers (46)

@Romper: CDC recommends COVID-19 vaccines for children down to 6 months of age (51)

Apple.news/AvYDMp_dP0lOvEChjSpAy Americans connect extreme heat and climate change to their own lives, a survey finds (1)
Analysis of Tweeters - Super Spreaders

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

- kylekitchen
- richdaw12
- renfriepenaloza
- magicjohnson
- xmrreports
- POTUS
- AngelLiz
- MajidNiazi
- SenRandPaul
- berniejohnson

Analysis of Tweeters - Super Friends

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

- SbromeuJ22
- stevedeplopt
- RocketProject
- PgdDisclosure
- rhipporthorres
- InfRainbow182
- marshalle2
- dave_anderson
- MichaelrockCB
- allegany412
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>MaajidNawaz[+]</td>
<td>583</td>
</tr>
<tr>
<td>OdyseeTeam</td>
<td>563</td>
</tr>
<tr>
<td>JesseKellyDC[+]</td>
<td>508</td>
</tr>
<tr>
<td>POTUS[+]</td>
<td>464</td>
</tr>
<tr>
<td>RonFilipkowski</td>
<td>457</td>
</tr>
<tr>
<td>SenRonJohnson[+]</td>
<td>371</td>
</tr>
<tr>
<td>ArgyLoz</td>
<td>358</td>
</tr>
<tr>
<td>CDCgov[+]</td>
<td>308</td>
</tr>
<tr>
<td>ClayTravis[+]</td>
<td>306</td>
</tr>
<tr>
<td>pfizer[+]</td>
<td>283</td>
</tr>
<tr>
<td>MaajidNawaz[+]</td>
<td>583</td>
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<tr>
<td>OdyseeTeam</td>
<td>563</td>
</tr>
<tr>
<td>JesseKellyDC[+]</td>
<td>508</td>
</tr>
</tbody>
</table>
Trending Tweets June 17 – June 23

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

- WATCH NOW FREE The latest “Radical - with @MaajidNawaz” exclusive to @OdyseeTeam Ep8 - On Pfizer Whistleblower, Former global Head of Respiratory Diseases, Dr Mike Yeadon https://t.co/8aVxqWl9g;
- I asked, “Can you tell me if anyone on the vaccine approval committees ever received money from the people who make vaccines?” Fauci: “People who receive royalties are not required to divulge them.” https://t.co/oJYlm2fvG;
- BIDEN: “We need more money. We don’t just need more money for vaccines for children, we need more money to plan for the second pandemic. There’s gonna be another pandemic.” https://t.co/THFJaHR5t6;
- FDA official Dr. Peter Marks says vaccinated kids have a 5 fold increase of myocarditis. Why on earth are they pushing the COVID vaccine on babies? We still don’t know the long-term safety profile of these vaccines. https://t.co/Yn3idR3dr;
- “When people are vaccinated, they can feel safe that they are not going to get infected” —Fauci He just tested positive for Covid https://t.co/kKBD1dpm24;
- Dr. Fauci told us in May of last year, “When people are vaccinated they can feel safe that they are not going to get infected.” A year later, after four covid shots, Fauci got covid. Whoops! https://t.co/Sd6nIjrgw;
- NEW - Pfizer’s primary mRNA injections “temporarily” impair semen concentration and total motile count among donors. The scope of the study did not include the effects of additional "booster" injections. https://t.co/wRlAb1zq;
- Today, I endorsed ACIP’s recommendation that all children 6 months through 5 years of age should receive a #COVID19 vaccine. Parents, I strongly encourage you to get your children vaccinated against COVID-19. More: https://t.co/x490w5v1q;
- I am in my mid 30s, been vaccinated three times for COVID, and have largely avoided it for awhile. End last month, I got it and have been coughing ever since. Today, I checked and I have some light scarring in my lungs. https://t.co/Or25vra1q;
- For parents across the U.S., today is a day of relief. The FDA has authorized the first COVID-19 shots for kids under five. As early as next week, pending CDC recommendations, parents will be able to offer their youngest the protection of a COVID-19 vaccine.

General PA Conversation June 17 – June 23

![Graph showing total mentions from June 17 to June 23](image-url)
PA Hashtag Cloud June 17 – June 23

Negative Attitudes June 17 – June 23
Negative Hashtag Cloud June 17 – June 23

Trending Posts on Facebook June 17 – June 23
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