PA Vaccine Conversations and Misinformation on Twitter

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Vaccine Hesitancy Project Update based on November 19 – November 25, 2021

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 about the current pandemic, such as COVID-19 regulations, mandates, masks, pro-and anti-vaccination campaigns, as well as other topics related to COVID-19 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.
Report Overview November 12 – November 18

- This week's trending stories cover vaccination for children, vaccination mandates, sports, boosters, and others;
- Story about experimental chewing gum that reduces COVID-19 spread is popular on Instagram. The gum is being developed at the University of Pennsylvania;
- Smallpox conspiracy theories are widely spread on Reddit and other social media platforms.

Trends (tweets per week) November 19 – November 25
High Level View by City November 19 – November 25

- Trending conversations:
  - Boosters
  - Employee mandates
  - No “omicron” yet
  - Overall downward trend in amount of vaccine conversation

<table>
<thead>
<tr>
<th>Conversation</th>
<th>Overall Vaccine</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>15341</td>
<td>27</td>
<td>106</td>
<td>22</td>
<td>15</td>
<td>62</td>
</tr>
</tbody>
</table>

- 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”)
Top Words Used per Week November 19 – November 25

Top Hashtags by County November 19 – November 25

- 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>Beaver + Butler</th>
<th>Cambria</th>
<th>Fayette</th>
<th>West Moreland</th>
</tr>
</thead>
<tbody>
<tr>
<td>steelers (472)</td>
<td>covid19 (1)</td>
<td>covid19 (3)</td>
<td>boycottcnn (1)</td>
<td>chargers (2)</td>
</tr>
<tr>
<td>covid19 (441)</td>
<td>boosterd (1)</td>
<td>steelers (2)</td>
<td>disgusting (1)</td>
<td>covid19 (2)</td>
</tr>
<tr>
<td>vaccine (134)</td>
<td>full3rddose (1)</td>
<td>vaxxed (1)</td>
<td>hollywoodhypocrite (1)</td>
<td>steelers (2)</td>
</tr>
<tr>
<td>herewego (130)</td>
<td>steelersnation (1)</td>
<td>vikings (1)</td>
<td>patriots (1)</td>
<td>breaking (1)</td>
</tr>
<tr>
<td>johnsonout (100)</td>
<td>vaccination (1)</td>
<td></td>
<td>unmasked (1)</td>
<td>herewego (1)</td>
</tr>
</tbody>
</table>
Top Hashtags by City November 19 – November 25

- 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 (604)</td>
<td>probowhite (525)</td>
<td>covid19 (146)</td>
<td>steelders (461)</td>
<td>covid19 (28)</td>
<td>covid19 (245)</td>
<td>covid19 (76)</td>
</tr>
<tr>
<td>vaccine (184)</td>
<td>covid19 (73)</td>
<td>china (62)</td>
<td>covid19 (429)</td>
<td>steelders (14)</td>
<td>vaccine (49)</td>
<td>probowhite (36)</td>
</tr>
<tr>
<td>vaquihally (175)</td>
<td>billgates (39)</td>
<td>pakistan (61)</td>
<td>probowhite (166)</td>
<td>breaking (4)</td>
<td>probowhite (34)</td>
<td>steelders (29)</td>
</tr>
<tr>
<td>waukesha (112)</td>
<td>covid (17)</td>
<td>vaccine (27)</td>
<td>vaccine (134)</td>
<td>foxnews (3)</td>
<td>misinformation (17)</td>
<td>eagles (18)</td>
</tr>
<tr>
<td>covid (99)</td>
<td>vaccinated (16)</td>
<td>vaccinated (20)</td>
<td>herewego (129)</td>
<td>history (3)</td>
<td>fauci (16)</td>
<td>vaccine (15)</td>
</tr>
</tbody>
</table>

Top URLs by County November 19 – November 25

<table>
<thead>
<tr>
<th>Allegheny</th>
<th>Butler + Beaver</th>
<th>Cambria</th>
<th>Indiana</th>
<th>Fayette</th>
<th>West Moreland</th>
</tr>
</thead>
</table>
### Top URLs by City November 19 – November 25

<table>
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<tr>
<th>Philadelphia</th>
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<th>Norristown</th>
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</tr>
</thead>
</table>

### 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>RWMalone MD</td>
<td>685</td>
</tr>
<tr>
<td>pfizer</td>
<td>395</td>
</tr>
<tr>
<td>catturd2</td>
<td>358</td>
</tr>
<tr>
<td>WHCDS</td>
<td>331</td>
</tr>
<tr>
<td>PhilsandJenn</td>
<td>306</td>
</tr>
<tr>
<td>CDC.gov</td>
<td>304</td>
</tr>
<tr>
<td>SteelerNation</td>
<td>283</td>
</tr>
<tr>
<td>TotalSportsEnt</td>
<td>282</td>
</tr>
<tr>
<td>_SNPodcast</td>
<td>281</td>
</tr>
<tr>
<td>Juiceup_3</td>
<td>265</td>
</tr>
</tbody>
</table>

**Trending Tweets November 19 – November 25**

- Tweets that are the most forwarded, either by retweet, reply, or quote:
  - Rome Italy against the vax mandates https://t.co/M452qYjslb
  - if you're at Thanksgiving and someone says their decision to not get vaccinated doesn't affect anyone else, cut your slice of pie like this to demonstrate how that is very untrue https://t.co/PFq95dJ2vA
  - #ProBowlVote Jalen Hurts #ProBowlVote Devonta Smith #ProBowlVote Dallas Goedert #ProBowlVote Jason Kelce #ProBowlVote Lane Johnson #ProBowlVote Jordan Mailata #ProBowlVote Javon Hargrave #ProBowlVote Darius Slay 1 RT = 1 Vote for our guys!
  - On Sunday, two days after the Rittenhouse verdict, 5 were killed and 40 injured in a Middle East style terror attack, yet today it is completely out of the news. If you don’t think the media has the power to cover up ubiquitous vaccine injury you are not paying attention.
  - I’m introducing a bill that allows insurance providers to deny coverage for Covid related treatment to those who refuse to be vaccinated. Do your part or pay your own way. Freedom isn’t free.
  - we all know that the pinks followed protocols and tried to stay safe as possible, and they are all vaccinated. it’s just that it’s still inevitable to be infected from the virus because simply we can’t see it. y’all should understand that and don’t blame it to anyone
  - How many liberals are asking managers of grocery stores if the turkeys have been vaccinated?
  - CNN is reporting that hospitalization rates are rising among the vaccinated. Hmmm!
  - BREAKING: President Biden will require essential, nonresident travelers crossing U.S. land borders, such as truck drivers, to be fully vaccinated beginning on Jan. 22 - AP
  - For the 2nd time in 5 days, our ER cared for another little boy for myocarditis. The first one was 8 years old. This time, a 10 year old (boy). Just so we’re clear here people, climate change does not cause myocarditis in innocent children. I am in tears.
General PA Conversation November 19 – November 25

PA Hashtag Cloud November 19 – November 25
Negative Attitudes November 19 – November 25

Negative Hashtag Cloud November 19 – November 25
Trending Posts on Facebook November 19 – November 25

Pittsburgh Steelers

We will activate QB Ben Roethlisberger from the Reserve/Covid-19 List to the 53-man roster, with him expected to start Sunday night against the Los Angeles Chargers. More on SteelCitySteelers.

11:34 AM 11/23

WPXI-TV Pittsburgh

I think my plan was that the first 30 percent of nurses were still unvaccinated against COVID-19. APEX Healthcare WPXI is learning about the scramble to avoid a vaccine crisis for seniors in our area.

9:00 PM 11/23

KDKA-TV CBS Pittsburgh

This will be a very difficult winter for the unvaccinated,” Allegheny County Executive Rich Fitzgerald said.

11:04 PM 11/23

WPXI-TV Pittsburgh

A statement official with PGV said they are investigating "a vaccine administration error" but declined to comment specifically on the case. 

10:17 AM 11/24

WTVJ-TV Pittsburgh

A 4-year-old toddler given COVID-19 vaccine instead of flu shot.

2:30 PM 11/24

NYU-TV Pittsburgh

After a 3-hour hearing Monday, United States District Judge Cathy CONSEQUENTIAL a local union official and a group of healthcare workers employees union and county police to halt a COVID-19 vaccine job requirement. See more

10:37 PM 11/24

Trending Posts on Instagram November 19 – November 25

EXCLUSIVE — REP FRED KELLER: 195 HOUSE REPUBLICANS, 50 SENATORS SUPPORT MEASURE TO NULLIFY BIDEN'S VACCINE MANDATE

Mark Zuckenberg wanted to make Facebook and Instagram a not a vaccine administration error: "We’re looking into this, but we can’t yet share any specific details on the case.

1:08 PM 11/23

The number of Americans applying for first-time claims reached the lowest level since November 2020, with the number of claims falling to 310,000.

2:19 PM 11/23

Facebook botched the perfect plan for Facebook to fight misinformation, linked to the anti-vaxx movement.

5:31 PM 11/23

The Centers for Disease Control and Prevention has reported that the two main vaccines are now more than 90% effective in preventing severe COVID-19.

9:35 PM 11/23

We will activate QB Ben Roethlisberger from the Reserve/Covid-19 List to the 53-man roster, with him expected to start Sunday night against the Los Angeles Chargers.

10:33 AM 11/24

WRAL-TV Raleigh

The Covi-19 surge in the U.S. is expected to continue into the winter months, with a peak expected in December.

3:45 PM 11/24

The number of Americans applying for first-time claims reached the lowest level since November 2020, with the number of claims falling to 310,000.

6:41 PM 11/24

Facebook botched the perfect plan for Facebook to fight misinformation, linked to the anti-vaxx movement.

9:31 PM 11/24

The Centers for Disease Control and Prevention has reported that the two main vaccines are now more than 90% effective in preventing severe COVID-19.
Trending Posts on Reddit November 19 – November 25

For More Information

- Director Kathleen M. Carley - kathleen.carley@cs.cmu.edu
  - [http://www.casos.cs.cmu.edu/bios/carley/carley.html](http://www.casos.cs.cmu.edu/bios/carley/carley.html)
- IDeaS website - [https://www.cmu.edu/ideas-social-cybersecurity/](https://www.cmu.edu/ideas-social-cybersecurity/)
- CASOS website - [http://www.casos.cs.cmu.edu/](http://www.casos.cs.cmu.edu/)
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- Twitter: @IDeaSCMU
- YouTube: IDeaS Center
- Ask to be on our Email-Distro Lists