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.
Trends (tweets per week)

*These counts are from the entire PA-based conversation, which will include out-of-state tweets retweeted by in-state agents.

Top Words Used per Week July 16 – July 22

Word count in COVID-19 related tweets
High Level View by City July 16 – July 22

- Tweets here counted only if there is a city location attached
- Magnets and Microchips dropped: most tweets are mocking or sarcastic now
- Graphene Oxide: originated in Spain as a claim that the Pfizer vaccine is comprised of 99%+ toxic graphene oxide
- Door-to-door and “strike force”: Vaccine initiatives by the White House causing concern

### High Level View by County July 16 – July 22

- 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 Hashtags by City July 16 – July 22

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>Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philadelphia</td>
<td>covid19 (2170) + covid (459), Deltavariant (348), Getvaccinated (339) + vaccine (320) + vaxupphilly (273) + vaccinated (254), Covidiots (214) + Tuckeriskillingus (202) + Pandemicofotheuvenvaccinated (117)</td>
</tr>
<tr>
<td>Chester</td>
<td>Covid19 (287) + covid (92), Deltavariant (73), Tuckeriskillingus (85) + getvaccinated (83), getvaccinated (47) + getvaccinated (41), Covidiots (36) + Deltavariant (72), Tuckeriskillingus (25) + Pandemicofotheuvenvaccinated (16)</td>
</tr>
<tr>
<td>Norristown</td>
<td>covid19 (365) + covid (142), Tuckeriskillingus (85), getvaccinated (204) + vaccine (127) + vaccinated (112), getvaccinated (15), getvaccinated (148)</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>covid19 (729) + covid (172), getvaccinated (204) + vaccine (127) + vaccinated (112), getvaccinated (15), getvaccinated (148)</td>
</tr>
<tr>
<td>Erie</td>
<td>covid19 (39) + covid (9), getvaccinated (204) + vaccine (127) + vaccinated (112), getvaccinated (15), getvaccinated (148)</td>
</tr>
<tr>
<td>Allentown/Bethlehem</td>
<td>covid19 (629) + covid (249), covid19 (629) + covid (249), covid19 (629) + covid (249), covid19 (629) + covid (249), covid19 (629) + covid (249)</td>
</tr>
<tr>
<td>Other</td>
<td>covid19 (98) + covid (24), covid19 (98) + covid (24), covid19 (98) + covid (24), covid19 (98) + covid (24), covid19 (98) + covid (24)</td>
</tr>
</tbody>
</table>

### Top Hashtags by County July 16 – July 22

We’ve checked hashtags in several counties such as Allegheny, Beaver, Bradford, Butler, Cambria, Crawford, Fayette, Indiana, Lackawanna, Luzerne, Lycoming, Monroe, Pike, Potter, Somerset, West Moreland, York. 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>Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allegheny</td>
<td>covid19 (735) + covid (173), getvaccinated (206), deltavariant (160), Tuckeriskillingus (146) + Vaccinated (127) + vaccinated (113)</td>
</tr>
<tr>
<td>Butler</td>
<td>covid19 (6), fuckthevax (1), Vaccine (4), Covid19 (2), Virus (1)</td>
</tr>
<tr>
<td>Cambria</td>
<td>fuckthevax (1), Vaccine (4), Covid19 (2), Virus (1)</td>
</tr>
<tr>
<td>Fayette</td>
<td>Vaccine (4), Covid19 (2), Virus (1)</td>
</tr>
<tr>
<td>Lackawanna</td>
<td>getvaccinated (1), Virus (1)</td>
</tr>
<tr>
<td>Luzerne</td>
<td>Virus (1)</td>
</tr>
<tr>
<td>Monroe</td>
<td>Virus (1)</td>
</tr>
<tr>
<td>West Moreland</td>
<td>Virus (1)</td>
</tr>
</tbody>
</table>
The top 5 influencers* for each region related to COVID19/vaccines are as follows:

### Top Influencers by City July 16 – July 22

**Philadelphia**
- ElectionWiz (media): KeithOlbermann
- FoxNews (media): AmandaMarcotte (reporter)
- 6abc (media): CNBC (media)
- factcheckdotorg (media): drcraigwax (antiwax)
- JuliusGoat (celebrity): YoshkeZoidberg

**Chester**
- GovernorTomWolf (gov)
- Cleavon_MD (reporter)
- FrankLuntz (gov)
- BleacherReport (sports media)
- JamieApody (reporter)

**Norristown**
- RepThomasMassie (gov)
- RepThomasMassie (gov)
- RheaBoydMD (race discourse)
- HueyPNewton13
- CTWritePretty

**Pittsburgh**
- Pittsburgh Post-Gazette: LaBelle50
- RobertStock6 (reporter)
- VegHistory
- Irshpatriot386 (antiwax)
- mommysdog67

**Erie**
- markscheig (reporter)
- DBChirpy
- AHNtoday (gov)
- BlyntJames
- berniesbestie

**Allentown/Bethlehem**
- RightSideRonUS (antivax)
- WolfGames2021 (antivax)
- TheRickWilson
- Prez215
- POTUS (gov)

**Other**
- Acyn
- itsJeffTiedrich
- padenpur
- onepatriotchick (antiwax)
- LaBelle50
- ResistingRN
- doinright6

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

### Top Influencers by County July 16 – July 22

**Allegheny**
- itsJeffTiedrich
- RepThomasMassie (gov): JDiPaola_Trib (reporter)
- RheaBoydMD (race discourse): TeamDrydene
- CTWritePretty: CoachD_LBG
- HueyPNewton13: MikeSavPanth

**Butler**
- padenpur
- msj41817
- TDDavidHurst (reporter)
- SarahforUs (gov)
- MikeSavPanth

**Cambria**
- onepatriotchick (antiwax)
- SharpieMoore
- VincentMTiberi
- Irishpatriot386 (antiwax)
- mommysdog67

**Fayette**
- Labelle50
- RogerStock6 (reporter)
- VegHistory
- SharlabMcBride (reporter)
- thisisdking

**Lackawanna**
- ResistingRN
- RobertStock6 (reporter)
- casamato21
- SharlabMcBride (reporter)
- KingsCollege_PA

**Luzerne**
- doinright6
- nrogers_news (reporter)
- tm3rd1
- NJDColts
- kelseykruk

**Monroe**
- DocTooch
- CBAC_USA
- tm3rd1
- jflorentinord
- kelseykruk

**Westmoreland**
- WorldofOutlaws
- PooH_Bear2432
- JoshMizikar2ZNs
- MCIopiani_WTAE
- MeghanKDKA

*influencers are defined as accounts with tweets often spread by others (ordered by out-degree centrality)
Top Anti-Vaccine Retweets in PA Tweets

Remember to get vaccinated or a vaccinated person might get sick from the virus that they were vaccinated against because you’re not vaccinated.

1:35 PM - Jul 20, 2021 - Twitter for iPhone

10.3K Retweets 726 Quote Tweets 4.2K Likes

“The Covid vaccine saves lives, which is why the government is making it free!”

K. So explain to me why insulin and asthma inhalers cost so much money.

If the vaccines are really about the government trying to save your life — why do life-saving medicines cost so much?

4:45 PM - Jul 20, 2021 - Twitter for iPhone

11:45 AM - Jul 16, 2021 - Twitter for iPhone

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Other notes this week

- Healthcare professionals on treating un-vaccinated COVID patients:
  - A top retweet that was then deleted by the sender: “A full 100% of the covid patients in our ICU are anti-vax. Plus, the ways we are talked to and treated are incredibly disrespectful. How do we deal with this? I can’t even right now...”

- Vaccine Refusals in Top URLs
  - "Good evening, Congressman. Just thought I’d pass word that >15% of the officers at my command will either retire early or resign their commissions if the mandate is given."

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1/11/2022
Pennsylvania: General Conversation

- Trending stories:
  - al.com 'I'm sorry, but it's too late' Alabama doctor tells unvaccinated, dying COVID patients
  - cnn.com Congressional Democrats have a 100% vaccination rate
  - rollingstone.com Eric Clapton Will Not Play Shows Where Proof of Vaccine Is Required
  - gazette.com Philadelphia again recommends masks for indoor public spaces, regardless of vaccination status
  - thelincolnproject.org The Lincoln Project: The Lincoln Project Statement on Comcast's Refusal To Air Ad Critical Of Fox News
  - theatlantic.com The Only Thing Uniting Unvaccinated People Is That They're Unvaccinated
  - nejm.org Effectiveness of Covid-19 Vaccines against the B.1.617.2 (Delta) Variant | NEJM
  - rawstory.com Hospitalized right-wing radio host in ‘very serious condition’ regrets not being ‘vehemently pro-vaccine’; family
  - phillyvoice.com Anti-vaccine groups changing into ‘dance parties’ on Facebook to avoid detection
  - texastribune.org Texas has seen nearly 9,000 COVID-19 deaths since February. All but 43 were unvaccinated people.

- Negative stories:
  - childrenshealthdefense.org Federal Lawsuit Seeks Immediate Halt of COVID Vaccines, Cites Whistleblower Testimony Claiming CDC Is Under-Counting Vaccine Deaths
  - neurology.com Anthrax and Gulf War Illness (GWI): Evidence for the Presence of Harmful Anthrax Antigen PA63 In the Serum of Veterans with GWI
  - ncbi.nlm.nih.gov The Anthrax Vaccine Program: An Analysis of the CDC's Recommendations for Vaccine Use
  - openvax.org COVID Vaccine Landing
  - childrenshealthdefense.org CDC 'Corrects' Number of Reported Deaths After COVID Vaccines by Dumping Foreign Reports
  - thetrial.thebulwark.com Pick Your Political Poison
  - audacity.com Philadelphia Zoo plans to use experimental COVID-19 vaccine to protect high-risk animals
  - childrenshealthdefense.org Sign Up for our Free News and Updates!
  - childrenshealthdefense.org Journalist Alex Berenson Tells The Defender: ‘They Are Censoring Dissenting Views and That Is Wrong’
  - childrenshealthdefense.org Hundreds Injured by COVID Vaccines Turn to GoFundMe for Help With Expenses

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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.
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.
Popular Tweets by Retweet Count

1. "The NFL just informed clubs that if a game cannot be rescheduled during the 18-week season in 2021 due to a COVID outbreak among unvaccinated players, the teams with the outbreak will FORfeit and be credited with a loss for playoff seeding, per source. Massive implications.

Retweets: 278

2. "The Lincoln Project is calling forFa..." by trendsworth "They have made clear: Their bottom line comes before anything else — even the health and safety of the American people. https://slate.com/2021/11/09/ "

Retweets: 118

3. "Wake up from my nap and see NFL players talking about their desire to retire rather than getting the vaccine because they "branding for something" but when it was time to stand up for Kap" by trendsworth "I'm trying to see something

Retweets: 109

4. "Rona Bragonier please retweet if you get the COVID vaccine and didn't die I'm trying to see something

Retweets: 91

5. "Jerrye Hill So a vaccine that's proven to be wildly effective and protects people against a potentially deadly virus will get a NFL player to retire but not the threat of instant brain trauma that they expose themselves to every game. Get it?

Retweets: 86

6. "Jason c. "you can still get covid if you get the vaccine" - "the bullets still kill you if you wear a bulletproof vest"

Retweets: 74

Trending Negative Tweets

America’s Frontline Doctors filed a motion to stop the use of Emergency Use Authorization COVID vaccines for anyone under 18, anyone with natural immunity or anyone who hasn’t received informed consent.

CBS News

46-year-old Brandon died six days after contracting COVID. He had told his mom that he wanted to wait before getting the vaccine.

"I wanted [his friends] to see his ashes. I wanted them to know, "Look, Brandon is dead because he did not take the vaccine," his mother said.
Trending Negative Tweets

Charlie Kirk
@charliekirk

If Democrats want people to trust the vaccines they're trying to force on us, they should make the CDC Director testify under oath about why the number of deaths reported to VAERS increased by 6,000 compared to last week.

Did 6,000 people suddenly die? Americans deserve to know.

1:56 PM · Jul 21, 2021 · Twitter Web App

2,900 Retweets 91 Quote Tweets 8,785 Likes

Robert Barnes
@barneslaw

Want to reduce vaccine hesitancy? Make #BigPharma liable for any injuries caused by the vaccine. Otherwise, no #SkinInTheGame.

4:58 PM · Jul 22, 2021 · Twitter for Android

1,025 Retweets 45 Quote Tweets 3,746 Likes

Hashtag clouds

General conversation

Negative sentiments
For More Information

- Dr. 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/