

# PA Vaccine Conversations and Misinformation on Twitter

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Vaccine Hesitancy Project Update based on May 28, 2021

The CMU centers for:

Informed DEMocracy And Social cyber-security

Computational Analysis of Social and Organizational Systems



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- ❑ This report is an effort to summarize social media conversations around COVID-19 issues in Pennsylvania, focusing 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.

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## High Level View May 20 – May 26, 2021

Conversation	Total PA		Philadelphia		Pittsburgh		Erie		Allentown/ Bethlehem		Other	
	Tweets	%	Tweets	%	Tweets	%	Tweets	%	Tweets	%	Tweets	%
Overall Vaccine	79,169	42,981	54%	18,088	23%	629	1%	16,470	21%	1,001	1%	
Vaccine Passports	1,121	503	45%	327	29%	9	1%	267	24%	15	1%	
Not FDA approved	20	7	35%	7	35%	0	0%	5	25%	1	5%	
Boosters	50	21	42%	16	32%	0	0%	13	26%	0	0%	
Misinfo: Microchips	80	43	54%	26	33%	0	0%	9	11%	2	3%	
Misinfo: Magnets	63	28	44%	25	40%	2	3%	7	11%	1	2%	
Misinfo: Shedding	32	12	38%	6	19%	2	6%	11	34%	1	3%	
"Experimental"	439	157	36%	159	36%	7	2%	114	26%	2	0%	
Children	966	488	51%	269	28%	12	1%	184	19%	13	1%	
Myocarditis	126	54	43%	21	17%	0	0%	51	40%	0	0%	
Masks	1,962	1,128	57%	377	19%	14	1%	406	21%	37	2%	
Infertility	18	12	67%	6	33%	0	0%	0	0%	0	0%	
Mandates	291	158	54%	53	18%	1	0%	72	25%	7	2%	
Ingredients	23	16	70%	6	26%	0	0%	1	4%	0	0%	
"ExposeFacebook"	918	356	39%	392	43%	12	1%	146	16%	12	1%	

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- Previously found narratives with 10 or less tweets not shown (e.g. MarkoftheBeast, fake vaccine cards)
- New discussions: magnets, myocarditis, ExposeFacebook
- "Shedding" discussion dropped from higher level the week before



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## Vaccine Narrative Descriptions (Newer)

- Magnets: Related to the microchip conspiracy stories, both pushing of misinformation and sharing scorn for it
- Myocarditis: Related to discussion of vaccines and children, both discussion of news and pushing of anti-vax narratives
- Mandates: Mixed discussions on vaccine mandates for schools and in other areas
- Ingredients: non-microchip related discussion and misinformation about vaccine ingredients
- ExposeFacebook: discussion of a potentially dubious report about Facebook censoring anti-vax narratives on its platform, connecting Big Tech worries and vaccine worries. Mix of questioning and misinformation discussion.

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## Ongoing work

- Separating out more clearly the pro-misinformation and anti-misinformation discussions and which narratives occur together in time
- Looking more closely at proponents of misinformation that are targeting officials/health agencies – we have a list and are currently conducting a network analysis

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## Background

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## Process Description

- To get a broad sense of the Twitter conversation about vaccines and vaccine misinformation we have collected tweets based on a combination of keyword-based and location-based methods.
- Locations are assigned to tweets based on a mix of the following: Twitter's own location-based search operations, Twitter's annotations, and our own machine-learning based tool.
- We are focused on the 5 following locations:
  - 4 larger city areas: Philadelphia, Pittsburgh, Allentown/Bethlehem, Erie
  - 1 area comprised of as much of the rest of PA as is possible (rural areas plus other smaller urban areas) – this is not currently shown in these slides

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## Types of Discussions

- It is helpful to be aware that Twitter conversations around vaccines and vaccine misinformation may contain a variety of types of discussions:
  - Pro-vaccine news and information
  - Honest questions/concerns about vaccines
  - Informative responses to questions
  - Misinformation and disinformation about vaccines
  - Informative responses to misinformation/fact-checking
  - Pro-vaccine satire/sarcasm/personal attacks against proponents of anti-vaccine views
  - Anti-vaccine satire/sarcasm/personal attacks against proponents of pro-vaccine views/government and medical professionals

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## Vaccine Narrative Descriptions (Older)

- Overall Vaccine Conversation: tweets that mention any of a set of vaccine keywords
- Vaccine Passports: mix of discussions mentioning vaccine passports
  - Misinfo: "Mark of the Beast" – religiously-tinged conspiracy theory that vaccines and vaccine passports represent the mark of the Devil from an interpretation of Christian end times scripture
  - Mixed: Non-Religious Government control narratives – mix of questioning and outright conspiracy
  - Fake vaccine cards – discussions of creating fake IDs (both pro and anti-making the IDs)
- Vaccine Ingredients
  - Misinfo: Luciferase - religious-tinged conspiracy that the compound is of the Devil (Luciferase is a real compound related to bioluminescence), mix of misinformation and those scorning the misinformation
  - Misinfo: Microchips – conspiracy theory that microchips for population control are in the vaccines, Twitter conversation is mix of sharing conspiracy and sharing scorn for it
- Vaccine Side effects
  - Mixed: Menstrual ghost effects/shedding – questioning and/or passing of misinformation about vaccine's ability to "hop" from person to person affecting menstrual patterns
  - Mixed: Herpes – questioning and/or passing of misinformation that vaccines cause herpes
  - Misinfo: Celebrity deaths – discussions blaming the death of DMX and Prince Phillip on them getting COVID vaccines

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## Vaccine Narrative Descriptions (older cont.)

- Need for vaccine
  - Misinfo: "if you have already had the disease" then you don't need the vaccine – mix of questioning and misinformation
- Vaccine administration
  - Not FDA approved – discussion/misinformation about emergency use authorization
  - Boosters – news and discussion of whether boosters are just a cash grab
- Johnson and Johnson fallout – discussions of the pause in use of J&J vaccine in US, mix of questioning, news discussion, and misinformation related to vaccine safety/confounding all three vaccines in the US

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## Vaccine Narrative Descriptions (older cont.)

- Experimental: mix of discussions, mostly misinformation or correcting misinformation that COVID vaccines are entirely experimental
- Children: mix of discussions about announcement to allow use of more vaccines for teenagers, mix of news, pro-content, anti-content, and misinformation
- Masks: mix of discussions about vaccines and masks
- Infertility: mix of questioning and sharing idea that the vaccines cause infertility

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## For More Information

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