PA Vaccine Conversations and Misinformation on Twitter

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Vaccine Hesitancy Project Update based on May 21, 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 13 – May 19, 2021
Old Discussions Continuing

Conversation	Total PA Tweets	Philadelphia Tweets	Philadelphia %	Pittsburgh Tweets	Pittsburgh %	Erie Tweets	Erie %	Allentown/Bethlehem Tweets	Allentown/Bethlehem %
Overall Vaccine	135,294	75,737	56%	32,081	24%	1,127	1%	26,349	19%
Vaccine Passports	1,134	480	42%	383	34%	12	1%	259	23%
Misinfo:" Mark of the Beast"	21	12	57%	6	29%	0	0%	3	14%
Fake Vaccine Cards	30	17	57%	3	10%	2	7%	8	27%
Not FDA approved	58	33	57%	20	34%	0	0%	5	9%
Boosters	48	27	56%	9	19%	0	0%	12	25%
Misinfo: Microchips	116	61	53%	36	31%	1	1%	18	16%
Misinfo: Shedding	59	39	66%	8	14%	0	0%	12	20%
"Experimental"	430	219	51%	92	21%	6	1%	113	26%
Children	1,420	769	54%	348	25%	16	1%	287	20%
Masks	10,696	6,502	61%	2,349	22%	102	1%	1,743	16%
Infertility	39	33	85%	5	13%	0	0%	1	3%

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Vaccine Narrative Descriptions (Newer)

❑ Infertility: mix of questioning and sharing idea that the vaccines cause infertility

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Some Observations

❑ Continuing the trend, higher population areas typical also have higher amounts of Twitter discussion about any given subject

❑ Several stories vanished from the discourse ("Luciferase", "Celebrity deaths", menstrual issues, "if you already have the vaccine" all with less than 10 total tweets)

❑ "Shedding" narrative that was more prominent last week has returned to a lower level. "Experimental" and "microchip" narratives have stayed steady

❑ Discussion of vaccines and masks jumped, most likely due to CDC announcement.

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Ongoing work

❑ Adding data on Tweets from rural/other PA locations
❑ 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 – so far, while we have seen this activity the amount of attention it has generated on Twitter has been minimal

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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

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For More Information

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