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Facebook Post Credibility as a Predictor of Vaccine Hesitancy in the US

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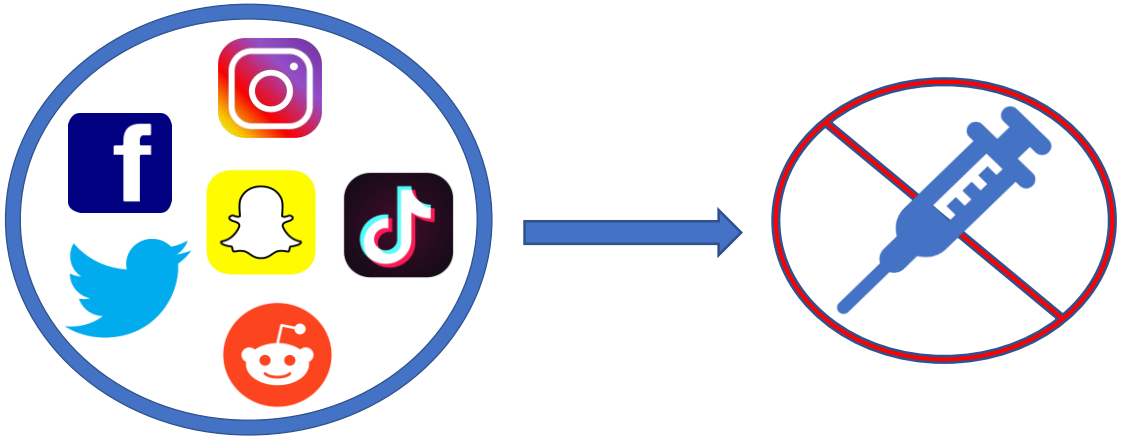
AIDH IMIA

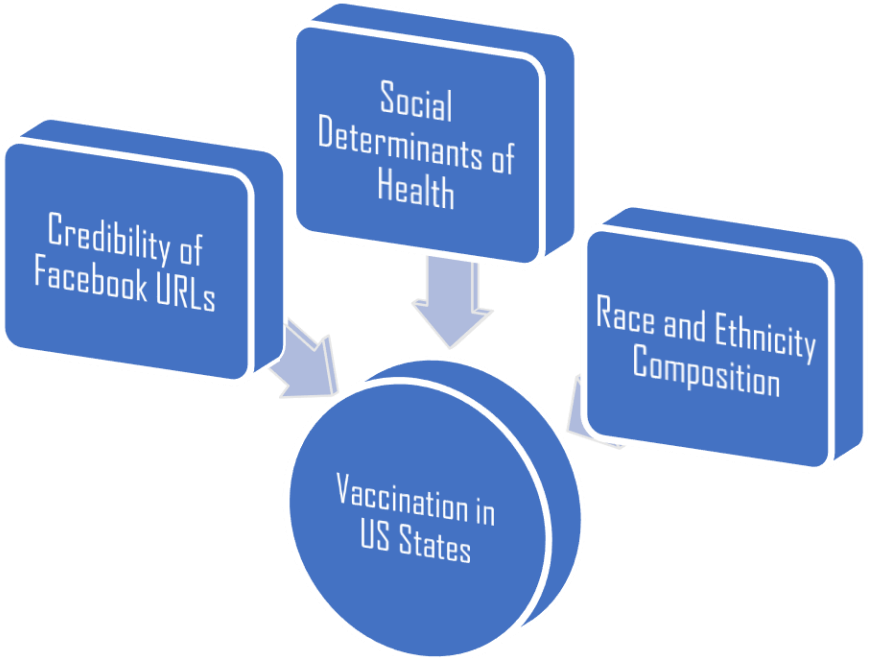
Misinformation Plays a Significant Role in Vaccine Reluctance



High probability of encountering misinformation

What kind of sources are shared on social media?

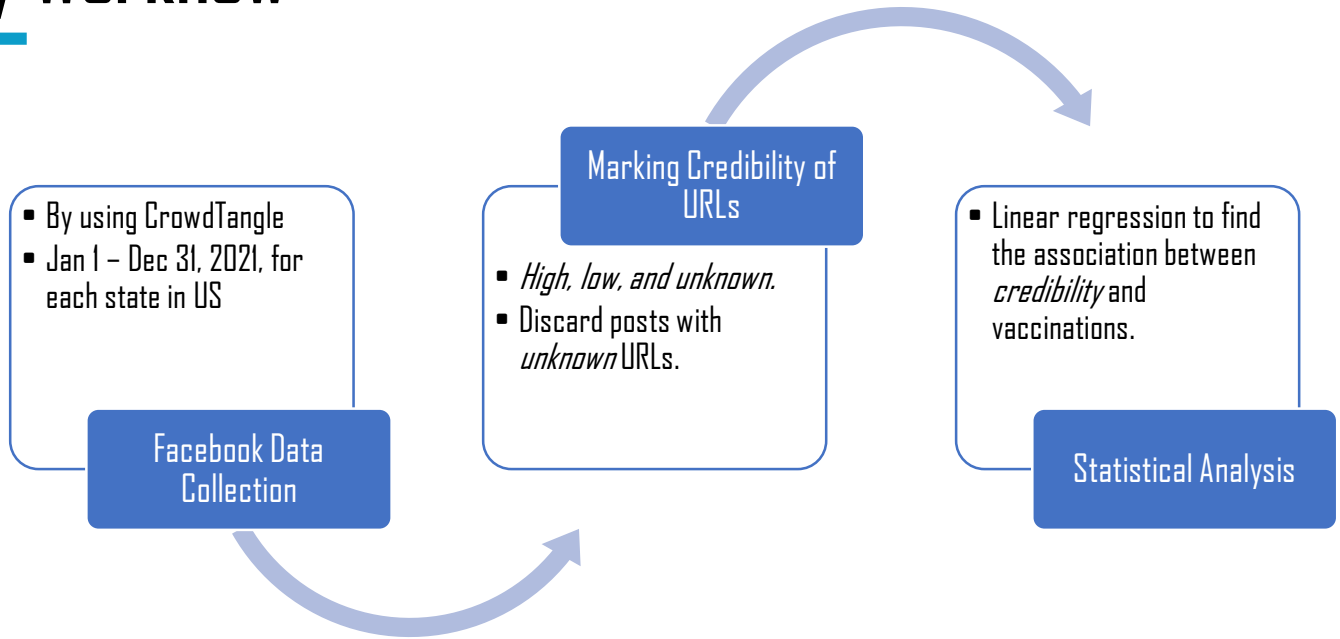
https://... ?



Hypothesis

- *States in the US with more Facebook posts with low-credibility sources and fewer posts with high-credibility sources tend to have lower vaccination rates.*

Study Workflow



Facebook Data Collection

- CrowdTangle [1].
- Select vaccine-related posts in English for each US state in 2021 filtering based on CoVaxxy keywords [2].
- Collected ~859K posts that contained URLs other than www.facebook.com.

Credibility of URLs in Facebook Posts

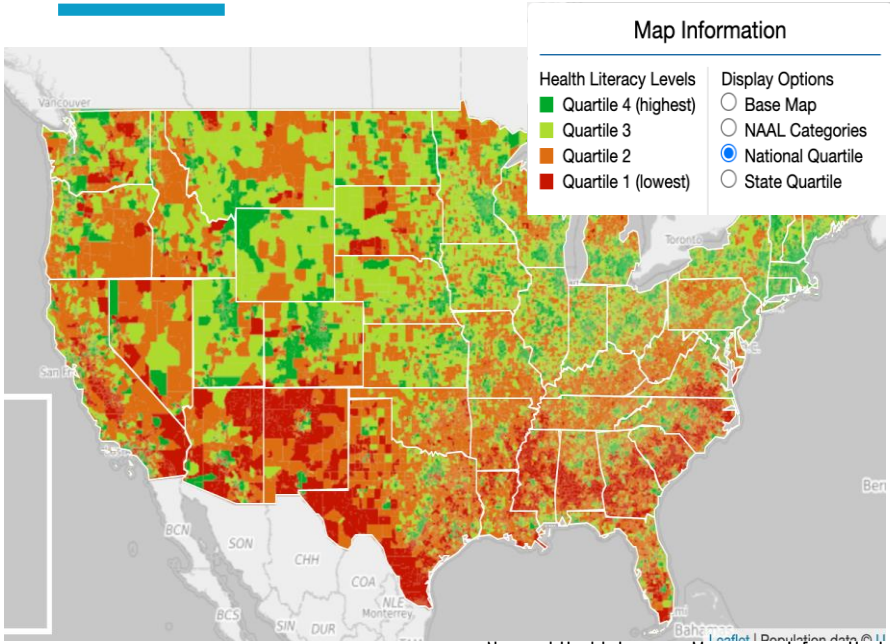
Utilizing the Iffy+ Misinfo/Disinfo list created by Iffy.news [3].

Three labels: *high, low, unknown* (discarded from analysis).

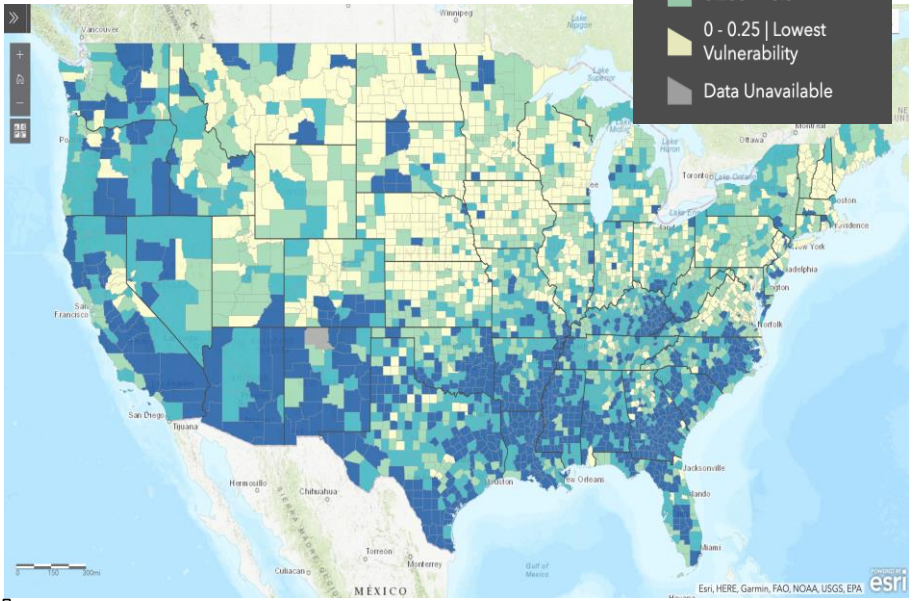
9.1% of sources were with high-credibility while 0.9% of sources were with low-credibility.

Final dataset: ~96K posts containing ~64K unique URLs.

Health Literacy and Social Vulnerability



National Health Literacy Mapping to Inform Health Care Policy, 2014 [4]



CDC/ATSDR, 2022 [5]

Statistical Analysis

Dependent Variable:

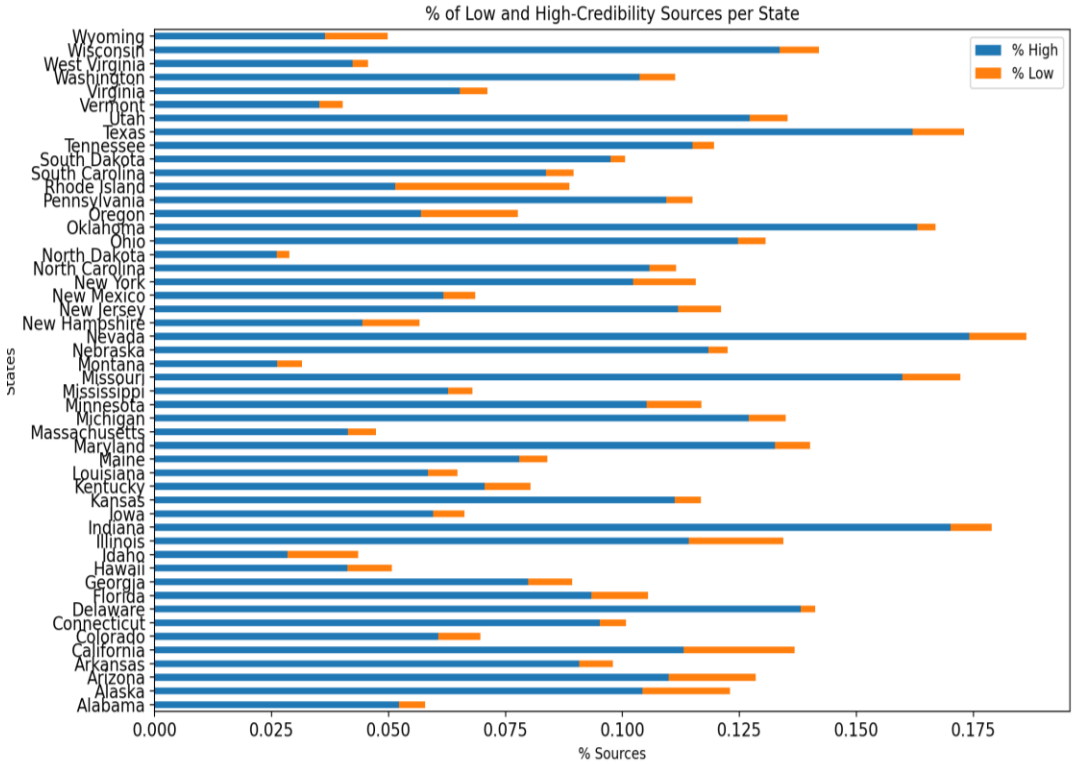
- New weekly vaccinations

Independent Variable:

- Credibility (*low* or *high*)

Control Variables:

- Health Literacy (HL)
- Social Vulnerability Index (SVI)
- Race/Ethnicity Composition [6]



Results

Table 1. Results from Linear Regression model where standard errors were clustered per state and week.

Variable	Estimate	Std. Error	P- value
Credibility - Low	**-0.41**	**0.09**	**P < 0.001**
HL	0.03	0.06	0.6
SVI	-1.56	1.09	0.15
Hispanic Population (%)	1.9	1.24	0.13
Black Population (%)	0.07	1.35	0.96
Asian Population (%)	-0.002	2.61	0.99

Conclusion

The study showed an association between post credibility on Facebook and new weekly vaccinations at the state level in the US.

The analysis might suggest that social media users in some locations do not distinguish between low and high-credibility sources.

Results emphasize the relevance of social media listening to help overcome future emergencies.

Thank you!

- Questions?

References

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3. Iffy+. Iffy+ Mis/Disinfo Sites n.d. https://iffy.news/iffy-plus/ (accessed November 5, 2022).
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5. CDC. CDC/ATSDR Social Vulnerability Index 2022 https://www.atsdr.cdc.gov/placeandhealth/svi/index.html (accessed November 5, 2022).
6. United States Census Bureau. State Population by Characteristics: 2010-2019 n.d. https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html (accessed November 5, 2022).