Addressing Immunization Challenges in Rural Communities

Sarah L. Patrick, MPH, PhD

July 16, 2025

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CME Disclosures

Name and Credentials	Role in Activity	Was there a relevant Financial Disclosure	List of Mitigated Disclosures
Craig Batterman, MD	Subject Matter Expert/ICAAP Immunizations Committee Member	No	N/A
Anita Chandra-Puri, MD, FAAP	Subject Matter Expert/ICAAP Immunizations Committee Member	Yes	Conslting Fees - Merck, Sequiris, Sanofi; Speakers Bureau - GSK
Roohi Wasiuddin	Subject Matter Expert/ICAAP Immunizations Committee Member	No	N/A
Sarah L. Patrick, MPH, PhD	Faculty/Presenter	No	N/A
Sharon E Hovey, MD	ICAAP CME Committee Member	No	N/A
Carissa Lee Holmes, MD	Subject Matter Expert/ICAAP Immunizations Committee Member	No	N/A
Monica Del Ciello, MPH	ICAAP Staff	No	N/A
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Alexandra Arca	ICAAP Staff	No	N/A
Brandi Vogt-Cervantes, MSGH CHES	ICAAP Staff	No	N/A
Caroline Werenskjold, MPH	ICAAP Staff	No	N/A
Rutu Ezhuthachan MD	Subject Matter Expert/ICAAP Immunizations Committee Member	No	N/A
Stephanie Atella MPH, CHES	ICAAP Staff	No	N/A
Jaime Novales, MD	CME Reviewer	No	N/A
Joe Hageman, MD	CME Reviewer	Yes	Royalties - Owlet

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Sarah L. Patrick, MPH, PhD

- MPH & PhD in Epidemiology, University of Pittsburgh Graduate School of Public Health
- CDC Epidemic Intelligence Service (EIS) Officer (Class of 1995)
- Former State Epidemiologist for South Dakota, Missouri, and Illinois (interim during COVID)
- Director of Rural Health research centers in Idaho ('97-99) and South Dakota ('00 – '08)
- IDPH Emerging Health Issues Chief, 2020-2025 (retired)

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Learning Objectives

- Addressing health beliefs and culture as they evolve
- Social media influences on vaccine uptake
- National Rural Health Association (NRHA) policy brief on pediatric vaccination rates in rural America
- Illinois measles update and new pediatric medical advisor
- 3 Illinois Vaccination Coverage Dashboards to use

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Counterscientific Beliefs

- Could influencing factors underlying vaccine hesitancy be driven by the forces that drive broader counterscientific beliefs?
- **Surface attitudes** are concrete and specific. Examples include vaccine hesitancy and climate change denialism.
- **Attitude roots** lie beneath and can include fear, vested interests, identity needs, ideologies, and worldview.

Source: http://psycnet.apa.org/fulltext/2017-29745-009.pdf

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Attitude Root	Definition	Link to Science Rejection
Hierarchical vs. egalitarian worldview	High hierarchical persons accept privilege based on static social levels; high egalitarians endorse social order free of social class.	Higher hierarchical worldviews associated with rejecting scientific findings that threaten elites (e.g., climate change)
Conspiratorial ideation	People high in conspiratorial ideation believe that it is possible for vast networks of people to execute malevolent plots in near-perfect secrecy.	They can reject scientific findings if they are perceived to be a fabrication of conspirators with hidden agendas (e.g., reject climate science as part of a socialist conspiracy to curb the influence of industry)
Social identity needs	Group members align attitudes, beliefs, and behavior to those of the group. The need for positive self-enhancement and group distinctiveness can polarize in-group attitudes away from outgroup attitudes.	People can reject scientific findings if they do not align with in-group norms and/or are embraced by rival outgroups
Vested interests	Investment in an attitude because of the personal or group gains that accrue from holding that attitude.	Reject findings w/group/personal costs (e.g., mask wearing benefit rejected over discomfort or effort needed to wear a mask).

HHS Takes Bold Step to Restore Public Trust in Vaccines by Reconstituting ACIP

Washington, DC—JUNE 9, 2025— The U.S. Department of Health and Human Services (HHS) today took a bold step in restoring public trust by totally reconstituting the Advisory Committee for Immunization Practices (ACIP), an advisory committee that makes recommendations on the safety, efficacy, and clinical need of vaccines to the Centers for Disease Control and Prevention (CDC). Under the leadership of HHS Secretary Robert F. Kennedy, Jr., the agency removed the 17 sitting members of the ACIP committee and will replace them with new members currently under consideration.

"Today we are prioritizing the restoration of public trust above any specific pro- or anti-vaccine agenda," **Secretary Kennedy said**. "The public must know that unbiased science—evaluated through a transparent process and insulated from conflicts of interest—guides the recommendations of our health agencies."

As directed by President Trump's Restoring Gold Standard Science executive order, the new ACIP members will ensure that government scientific activities are informed by the most credible, reliable, and impartial scientific evidence available.

CDC Child and Adolescent Immunization Schedule by Age (Addendum updated July 2, 2025)

"To make vaccination recommendations, healthcare providers should:

- Determine recommended vaccine by age (Table 1 — By Age)
- Determine recommended interval for catch-up vaccination (Table 2 — Catch-up)
- Assess need for additional recommended vaccines by medical condition or other indication (Table 3 — By Medical Indication)
- Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)
- Review contraindications and precautions for vaccine types (Appendix)
- Review new or updated ACIP guidance (Addendum)"

AAP Response to ACIP changes, July 7, 2025

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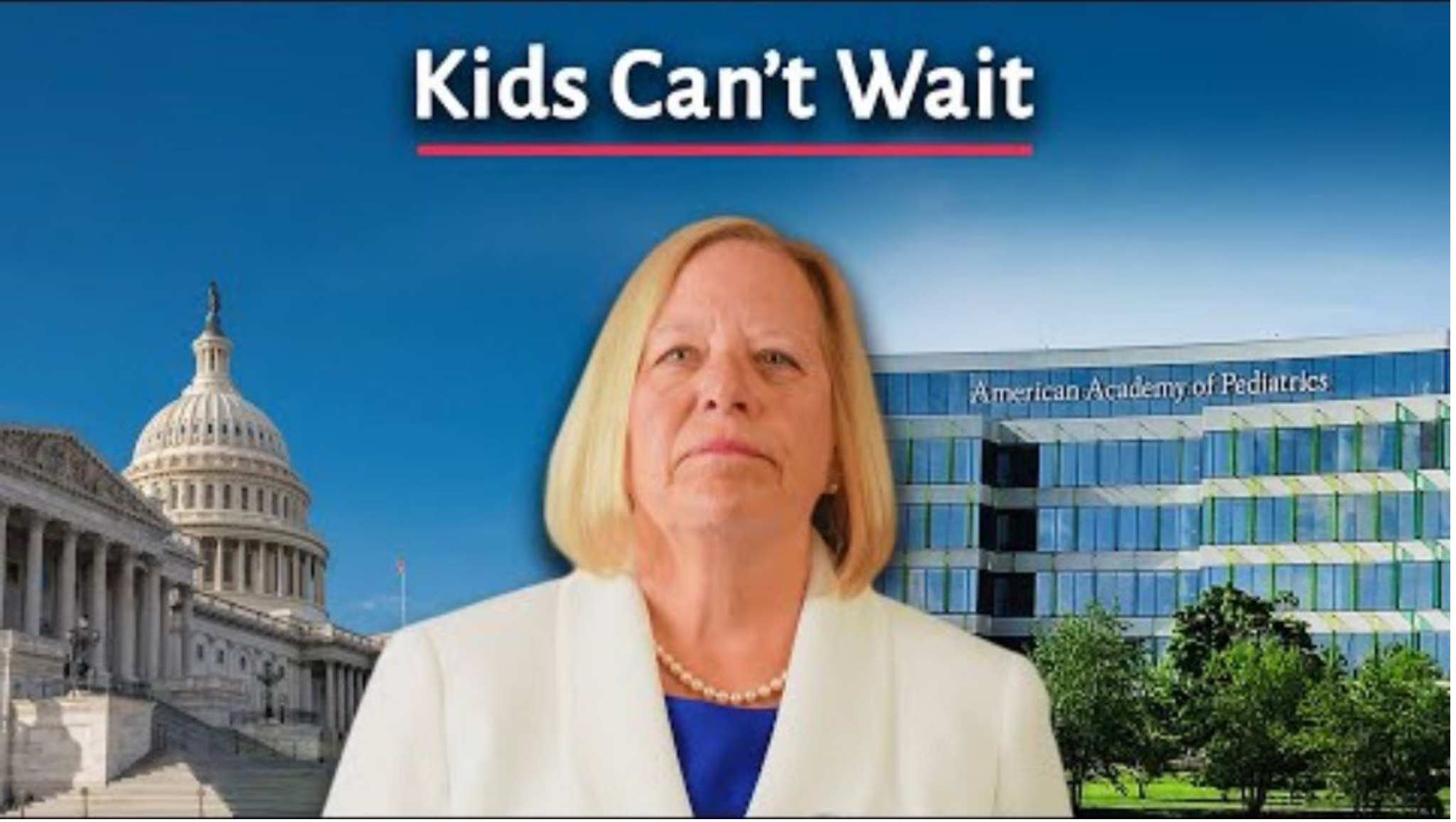

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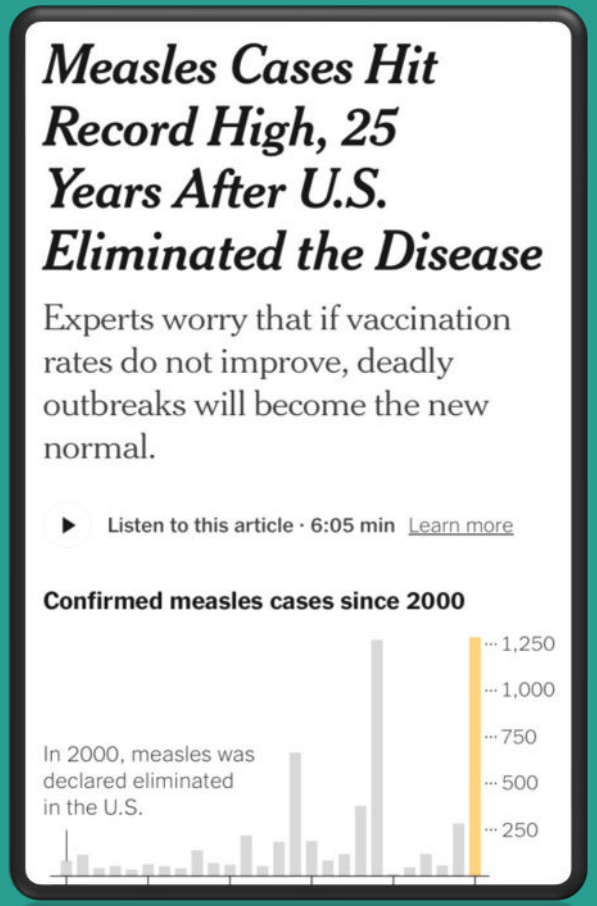
Why is this important?



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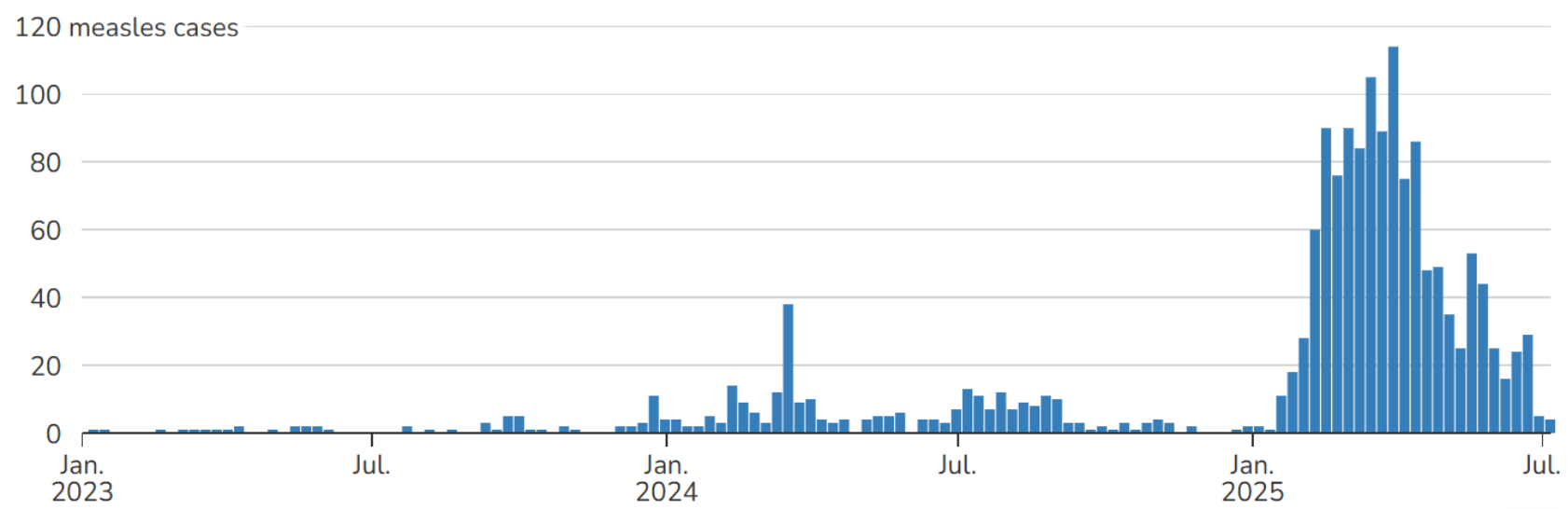

Weekly Measles Cases by Rash Onset Date, US

2023 – July 8, 2025

Total cases
1288

Age

Under 5 years: **368 (29%)**
5-19 years: **469 (36%)**
20+ years: **439 (34%)**
Age unknown: **12 (1%)**

Vaccination Status

Unvaccinated or Unknown: **92%**
One MMR dose: **4%**
Two MMR doses: **4%**

States with Confirmed Cases, 2025				
Alaska	Illinois	Minnesota	North Dakota	Texas
Arkansas	Indiana	Missouri	Ohio	Utah
Arizona	Iowa	Montana	Oklahoma	Vermont
California	Kansas	Nebraska	Oregon	Virginia
Colorado	Kentucky	New Jersey	Pennsylvania	Washington
Florida	Louisiana	New Mexico	Rhode Island	
Georgia	Maryland	New York	South Dakota	
Hawaii	Michigan	North Carolina	Tennessee	

Growing Tide

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SINCE THE COVID-19 PANDEMIC, 90% OF COUNTRIES HAVE SEEN A DECLINE IN STRENGTH OF BELIEF IN SAFETY OF VACCINES

CHANGE IN BELIEF IN SAFETY OF VACCINES 2015-2019 MEAN VS. 2023

(Change in percentage points of general population who **strongly agree** vaccines are safe)

Priority countries

Source: The Global Listening Project, 2023; The Vaccine Confidence Project, 2015 - 2019.
Q. How strongly do you agree or disagree with each of the following statements about vaccines in general? (Strongly agree only)
Base: General population (The Global Listening Project: c. 1,000 respondents per country; The Vaccine Confidence Project)

Education Level and Vaccine Support

Legend:
Blue: more education than High School
Green: High School education
Gray: Primary school education

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Impact on Pediatrician Practice

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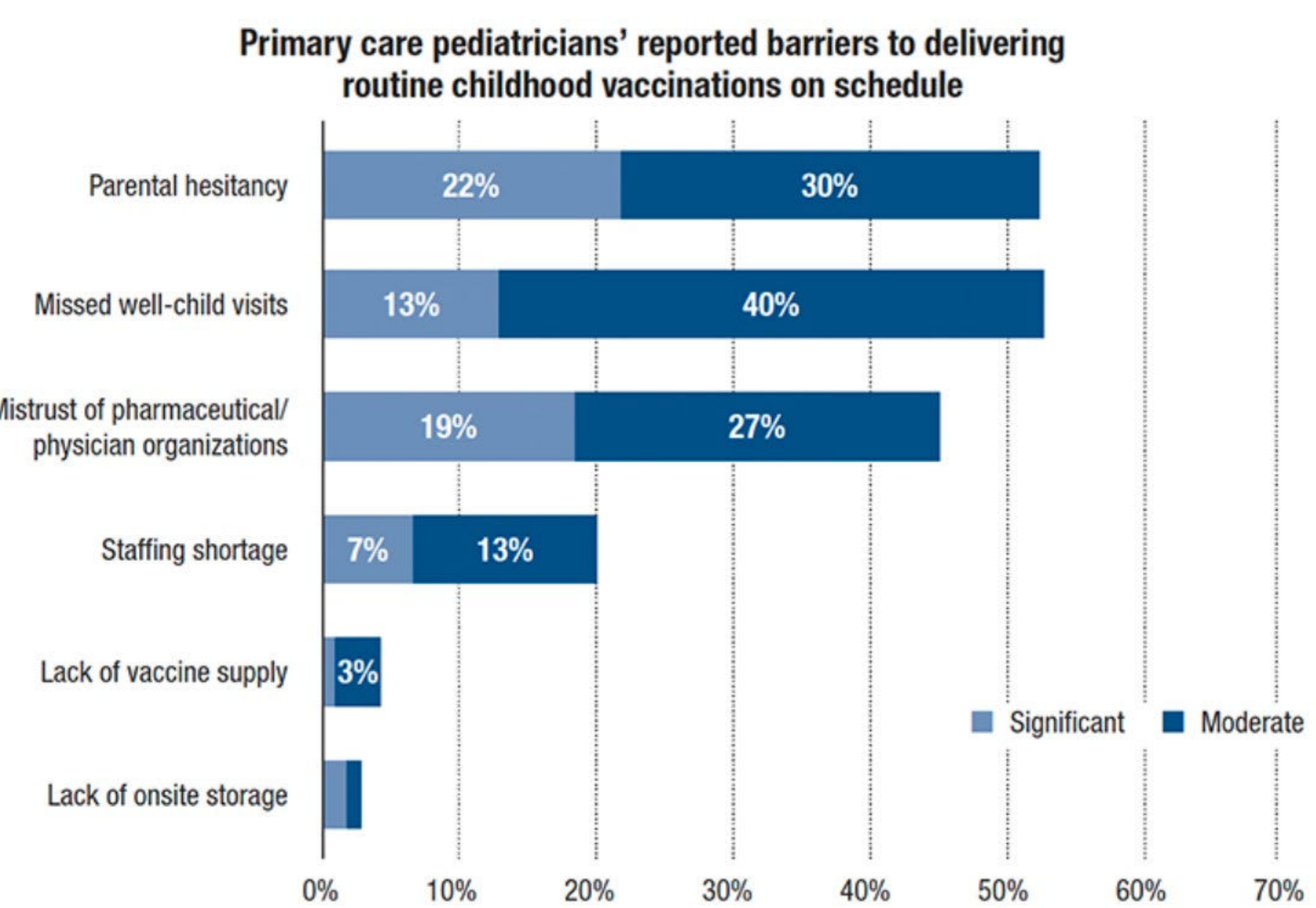

Source: AAP Periodic Survey 2022

AAP News, June 1, 2024

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Rural Community Vaccination Barriers

- Qualitative interviews of Washington State Extension staff in 2023 focusing on COVID-19 vaccine uptake (all ages).
- Theory of Planned Behavior used and solicits barriers that are:
  - Attitude-related
  - Subjective norms-related and/or
  - Control-related
- 9 barriers identified

Source: https://doi.org/10.3390/vaccines12121442

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Attitude

- Rural = socially distanced
- Perception that urban communities received vaccine earlier, so it was less important to rural residents.
- Vaccine ineffective
- Language and technology

Subjective Norms

- Rules and regs developed with and for urban residents
- Polarization
- Visual breakdown of community trust

Control

- Mandates = Lost autonomy
- Changing vaccine technology and perceived quickened approvals

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What does cognitive processing have to do with vaccine communication?

- Research panel of 1200 who self-identify as either
  - Pro COVID-19 vaccine (n = 400)
  - Neutral toward the COVID-19 vaccine (n = 400) or
  - Anti-COVID-19 vaccine (n = 400)

- They were virtually provided information on vaccine effectiveness, side effects, and the corresponding probabilities of 8 different approved (any country) COVID-19 vaccines and asked about willingness to receive the vaccine. The length of time the user held their mouse over each box to view information was measured. They were asked how much negative emotion they would feel if they experienced each potential side effect. Similarly, they were asked how much positive emotion they would feel if they avoided/were protected from a side effect. End-of-study demographics and vaccine uptake and future planning followed.

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COVID-19 vaccine refusal is driven by deliberate ignorance and cognitive distortions: Results

- All 3 groups deliberately ignored **some or all vaccine evidence information**
- Exhaustive review of evidence presented without examining probabilities of side effects was associated with increased vaccine acceptability
- Persons who focused on extreme side effects more often refused vaccine.
- There was a psychologically stronger response to negative events than to positive ones.
- All 3 groups gave more weight to the low probability of side effects, though to different degrees.
- Suggestions for practice include:
  - Asking patients "Would you classify yourself as pro-, neutral, or anti-vaccine?"
  - For anti-vaccine persons, focus first on building trust.
  - The evidence base moves more acceptability among people who classify as neutral.

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Where is Information Sought in the US?

By age group

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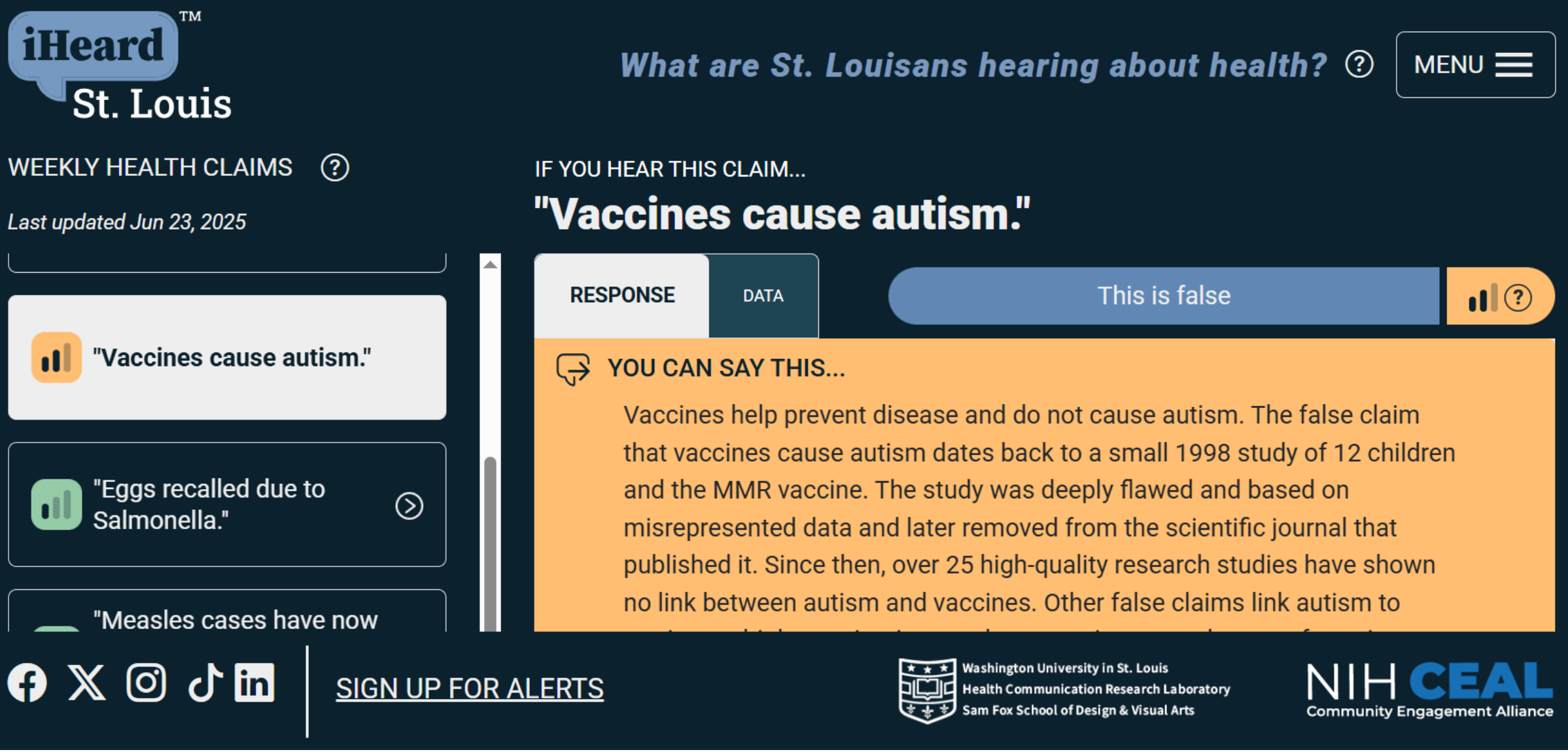
AVERAGE DAILY TIME SPENT ON DIFFERENT MEDIA CHANNELS

(By age group)

	18 - 24	25 - 34	35 - 44	45 - 54	55 - 64
Media channel most used (average time spent per day)	**Social media (2h46)**	**Social media (2h22)**	Broadcast/Linear TV (2h29)	Broadcast/Linear TV (2h43)	Broadcast/Linear TV (3h13)
Second most used media channel (average time spent per day)	Music streaming (2h34)	Broadcast/ Linear TV (2h18)	**Social media (1h51)**	**Social media (1h24)**	Broadcast radio (1h04)
Third most used media channel (average time spent per day)	Broadcast/ Linear TV (1h52)	Online TV/ Streaming (1h46)	Online TV/ Streaming (1h34)	Online TV/ Streaming (1h12)	**Social media (1h03)**
Fourth most used media channel (average time spent per day)	Online TV/ Streaming (1h49)	Podcasts (1h02)	Music streaming (1h28)	Broadcast radio (1h05)	Online TV/ Streaming (0h55)
Fifth most used media channel (average time spent per day)	Podcasts (0h59)	Broadcast radio (1h00)	Broadcast radio (1h07)	Music streaming (1h02)	Music streaming (0h38)

Global Listening Project

Source: GWI, 2023
Q. How often do you visit or use these services?
Base: Influencers across Japan, Germany, the UK, and the US (18 – 24: 32,622; 25 – 34: 46,345; 35 – 44: 47,920; 45 – 54: 46,207; 55 – 64: 47,604)



Example of counter-messaging from https://stl.iheard.org/

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iHeard™ St. Louis

What are St. Louisans hearing about health?

MENU

WEEKLY HEALTH CLAIMS

Last updated Jun 23, 2025

"Vaccines cause autism."

"Eggs recalled due to Salmonella."

IF YOU HEAR THIS CLAIM...

"Measles cases have now been detected in Missouri, southern Illinois."

RESPONSE | DATA

Latest info suggests this claim is true

YOU CAN SAY THIS...

As of April 23rd, one measles case was confirmed in Taney County near Branson, MO, and another case was found in Southern Illinois, 120 miles from St. Louis. It was the first measles case in both states in 2025. Measles is highly contagious and can linger in the air for hours after someone coughs or sneezes. People are contagious before a rash appears. It is

SIGN UP FOR ALERTS

Washington University in St. Louis
Health Communication Research Laboratory
Sam Fox School of Design & Visual Arts

NIH CEAL Community Engagement Alliance

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Social Media Impact on Vaccine Decision-Making

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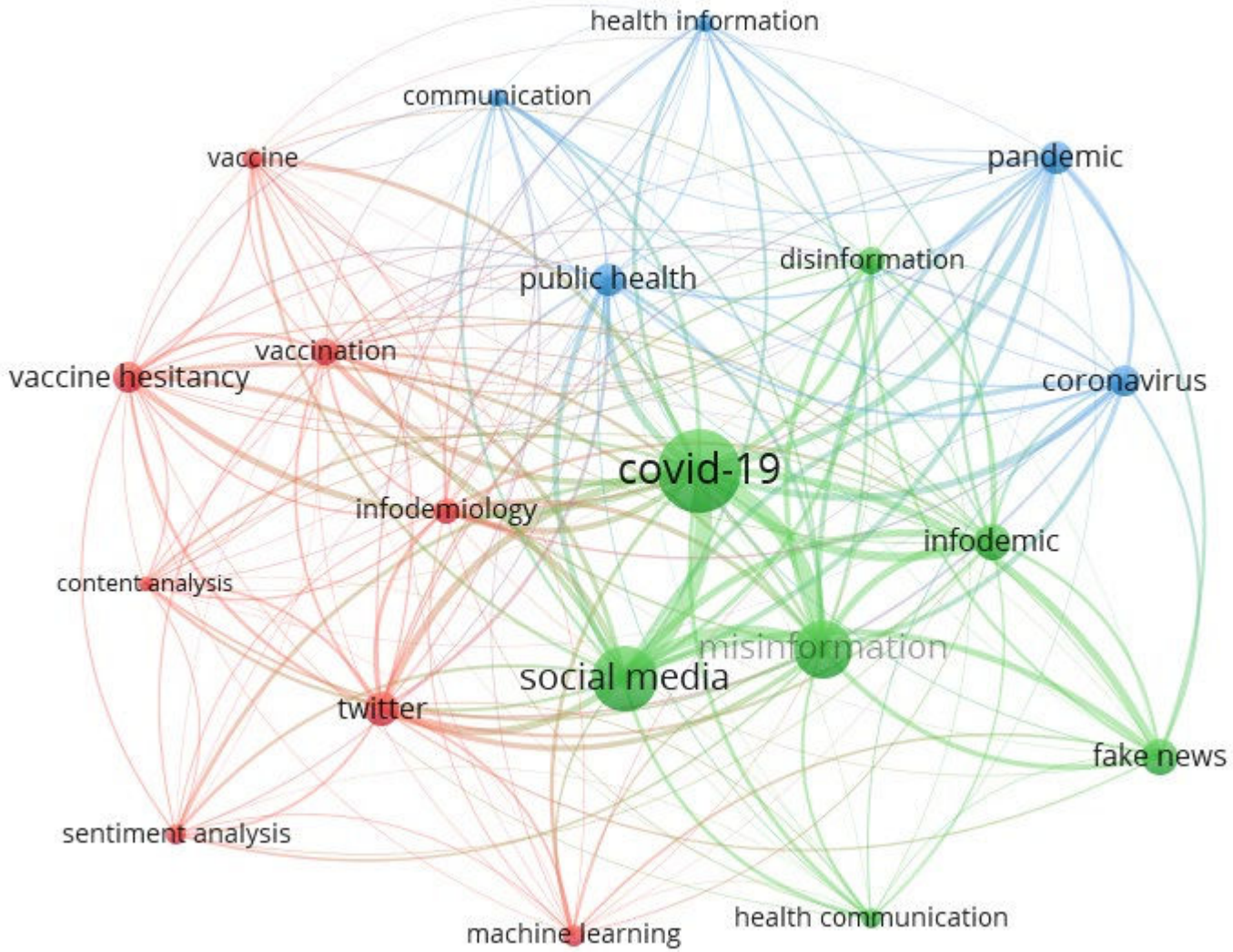

Source: [The Role of Social Media in Health Misinformation and Disinformation During the COVID-19 Pandemic: Bibliometric Analysis]

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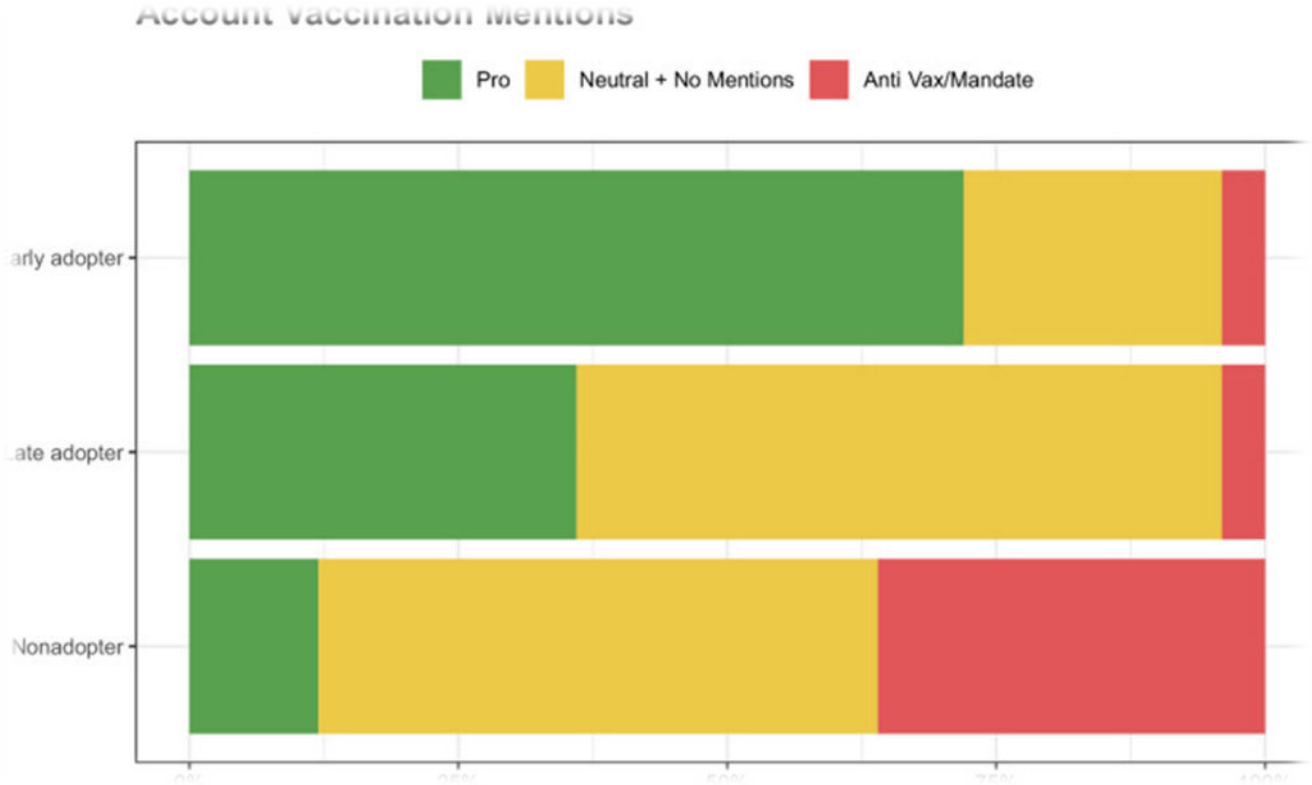
Impact of X/Twitter Messaging on COVID-19 Vaccine Uptake



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How are we doing in Illinois?

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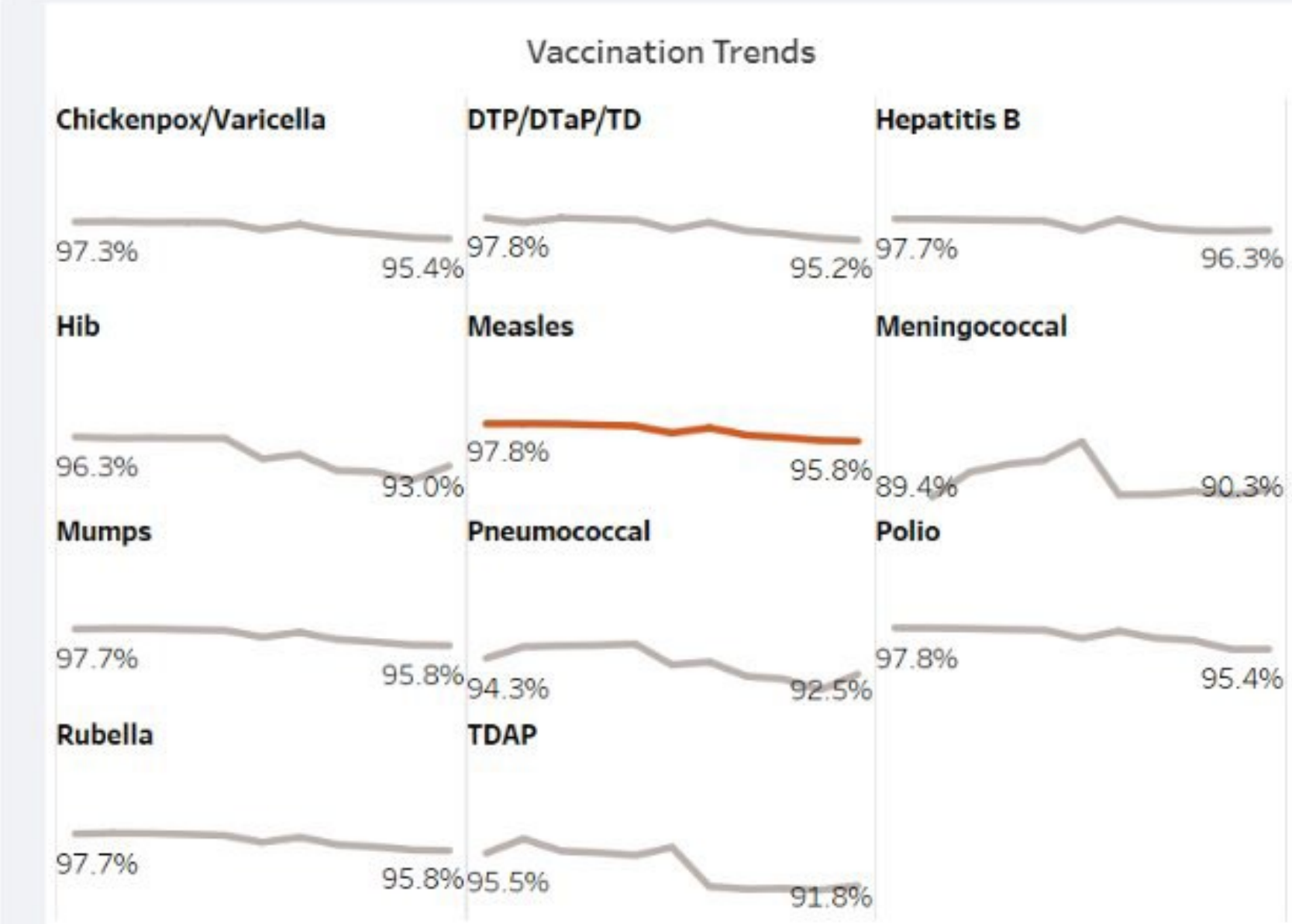
IDPH
Illinois Department of Public Health



Source: **Illinois School Vaccination Dashboard** covering academic years 2014-2015 through 2024-2025. All counties and reporting schools included.

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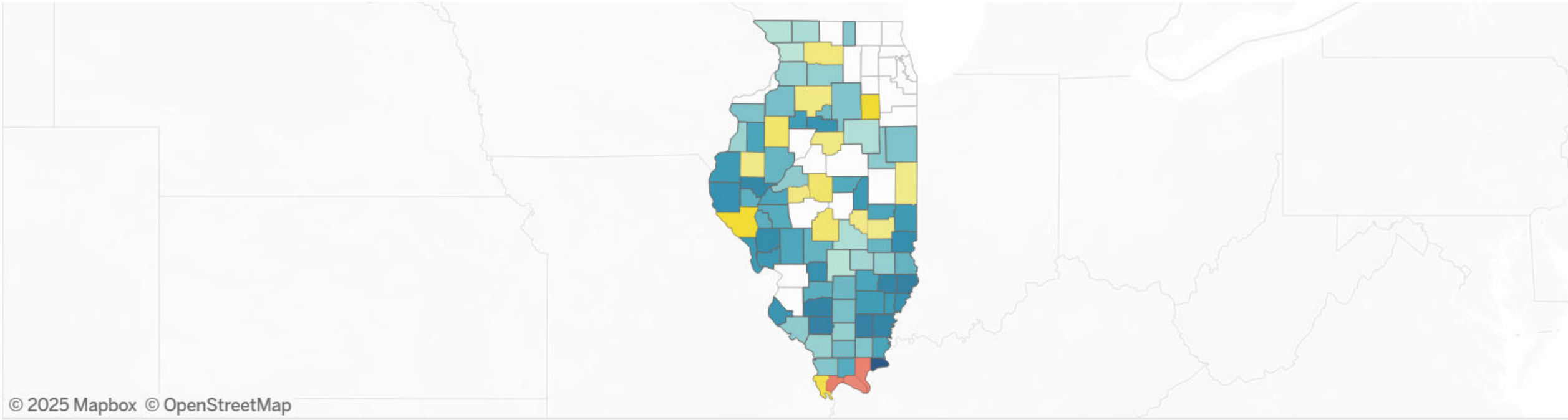
During the **'24-'25** school year **1,141 (96.8%)** out of 1,179 schools reported on **Measles**

To change school year and Vaccine go to the 'Filters' button

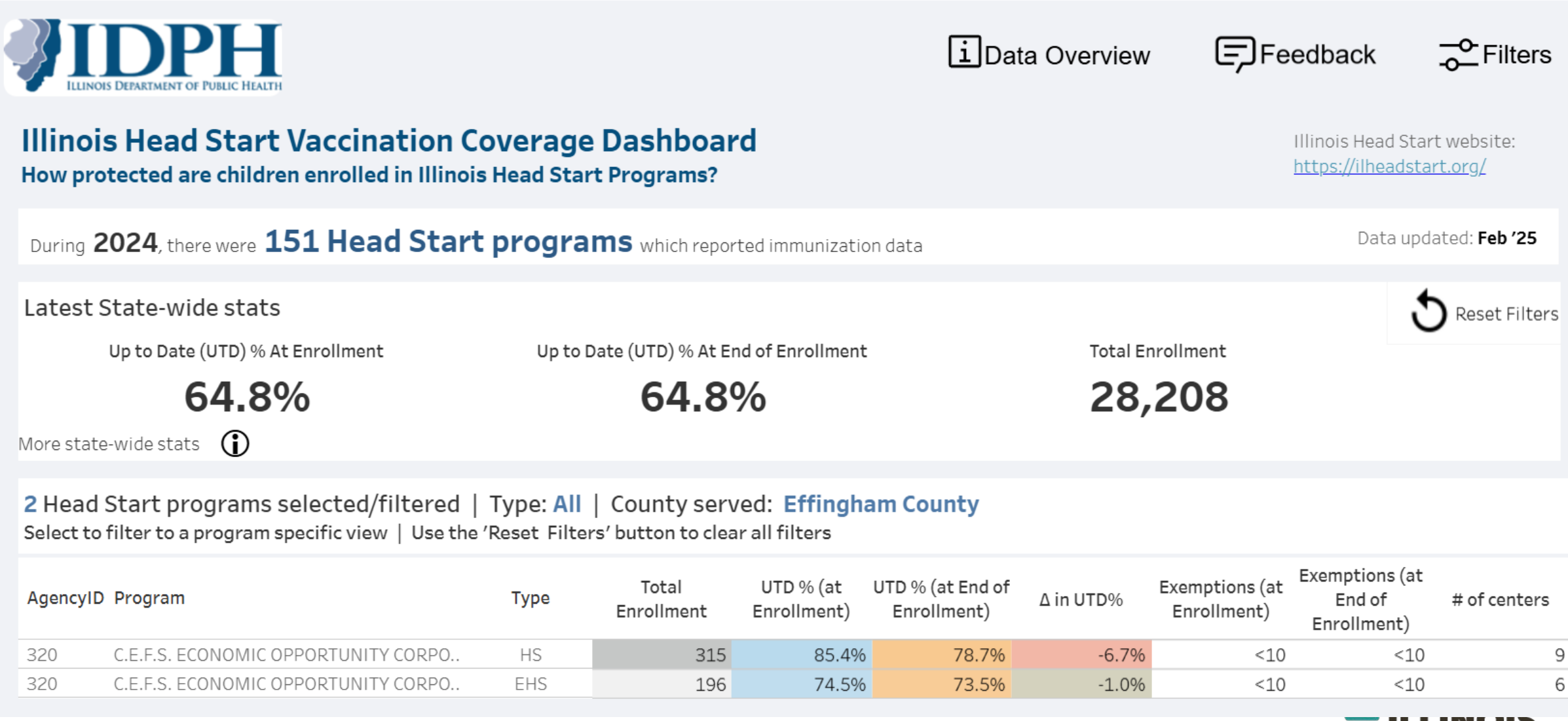
Illinois map of school vaccination coverage protection

The below map of Illinois shows how protected (i.e., vaccinated against Polio) school children are within the county.
The blue, yellow, red coloring is based off of Community Immunity Thresholds (CIT). Please click on the icon below to learn more.
Select a county to reveal a secondary map that zooms into the county and shows individual schools as well as supporting data such as Social Vulnerability Index (SVI).
De-select county to return to state view.



Rural Illinois County School Reported Measles Community Immunity Thresholds, 2024-2025 School Year

Illinois Head Start Vaccination Coverage Dashboard



AgencyID	Program	Type	Total Enrollment	UTD % (at Enrollment)	UTD % (at End of Enrollment)	Δ in UTD%	Exemptions (at Enrollment)	Exemptions (at End of Enrollment)	# of centers
320	C.E.F.S. ECONOMIC OPPORTUNITY CORPO..	HS	315	85.4%	78.7%	-6.7%	<10	<10	9
320	C.E.F.S. ECONOMIC OPPORTUNITY CORPO..	EHS	196	74.5%	73.5%	-1.0%	<10	<10	6

Source: https://dph.illinois.gov/topics-services/prevention-wellness/immunization/coverage-dashboards/head-start.html

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Measles Outbreak Simulator Dashboard

Measles Outbreak Projections in Illinois Schools

Select the county, type of school funding and school district you want to see data for.
If no results are returned, confirm that the school district filter is either set to (All), or to a relevant school district in the selected county-school funding combination.

County	Funding Type	School District
Effingham	Public	(All)

Select a school from the list of relevant schools below to generate a simulation.

School District	Facility Name	Enrollment PreK-12	School Vaccination Rate
Altamont CUSD 10	Altamont Grade School	460	93.9%
Altamont CUSD 10	Altamont High School	223	97.3%
Beecher City CUSD 20	Beecher City Grade School	198	97.0%
Beecher City CUSD 20	Beecher City Jr-Sr High School	164	96.3%

Source: https://dph.illinois.gov/topics-services/prevention-wellness/immunization/coverage-dashboards/measles-outbreak-simulator-dashboard.html

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Framework of National Rural Health Associations' policy on pediatric vaccination in rural America, 2024

Availability

Affordability

Acceptability

Awareness

Activation

Resources

Hyperlinks active as of July 8, 2025

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- http://psycnet.apa.org/fulltext/2017-29745-009.pdf
- National Rural Health Association (NRHA) Rural Medical Educator Profiles, https://www.ruralhealth.us/getmedia/579a811a-cbbd-4f05-b4b0-52726a951f0b/10-04-20-RME-Project-ebook.pdf
- https://pubmed.ncbi.nlm.nih.gov/39271667/
- https://www.ruralhealth.us/getmedia/2a3e75f9-a066-474d-a47e-8503baec5008/2024-NRHA-Rural-Immunizations-policy-brief.pdf
- Mical R, Martin-Velez J, Blackstone T, Derouin A. Vaccine Hesitancy in Rural Pediatric Primary Care. J Pediatr Health Care. 2021 Jan-Feb;35(1):16-22. doi: 10.1016/j.pedhc.2020.07.003. Epub 2020 Oct 1. PMID: 33010996; PMCID: PMC7527836.
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- https://dph.illinois.gov/resource-center/communications/this-is-public-health/s2/e9.html
- Hill HA, Yankey D, Elam-Evans LD, et al. Decline in Vaccination Coverage by Age 24 Months and Vaccination Inequities Among Children Born in 2020 and 2021 — National Immunization Survey-Child, United States, 2021–2023. MMWR Morb Mortal Wkly Rep 2024;73:844–853. DOI: http://dx.doi.org/10.15585/mmwr.mm7338a3
- https://publications.aap.org/aapnews/news/28861/AAP-survey-reveals-barriers-to-routine?autologincheck=redirected

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- McKeirnan KC, Undeberg MR, Zelenko S, Meratnia G. A Qualitative Analysis of Rural Community Vaccination Barriers During the COVID-19 Pandemic. Vaccines (Basel). 2024 Dec 21;12(12):1442. doi: 10.3390/vaccines12121442. PMID: 39772102; PMCID: PMC11680148.
- Fuławka, K., Hertwig, R. & Pachur, T. COVID-19 vaccine refusal is driven by deliberate ignorance and cognitive distortions. *npj Vaccines* **9**, 167 (2024). https://doi.org/10.1038/s41541-024-00951-8
- Wegwarth, O. et al. Vaccination intention following receipt of vaccine information through interactive simulation vs text among COVID-19 vaccine-hesitant adults during the omicron wave in Germany. *JAMA Netw. Open* **6**, e2256208 (2023).

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Questions?

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Upcoming ICAAP Immunization Events

- *Addressing Vaccine Hesitancy,* Wednesday, **August 20 at 12PM.**
- *Preparing for Respiratory Virus Season*, **September 17 at 12PM.**
- In-person IDPH VFC Summits *Limited Seating!*

Free CME/CE available for ICAAP webinars!

illinoisaap.org/upcoming-events/

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