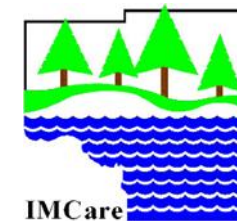
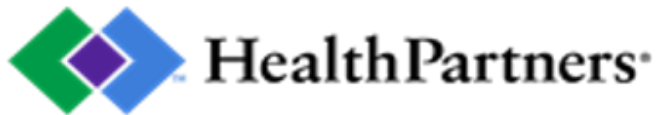


# MN Health Plans Collaborative

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# Today's Presenters

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**Presenter: Dr. Leslie King-Schultz, MD, MPH**

Dr. Leslie King-Schultz is a General Pediatrician & Co-chair of the Vaccine Committee at Hennepin Healthcare.



# Reverse the Slide: Improving Childhood Immunization Rates

Leslie King-Schultz, MD, MPH  
General Pediatrician  
Co-Chair, Vaccine Committee

April 28, 2025

# Disclosures

I have no financial disclosures or conflicts of interest. I will not be discussing any off-label use of medications or immunizations.

# Objectives

- Identify trends in immunization rate decline amongst our youngest children
- Understand the implications of declining childhood immunization coverage
- Explore areas of focus to help local communities and practitioners keep kids up-to-date
- Discuss best practices and tools to combat vaccine hesitancy

# Trends in Childhood Immunization Rates

# Global, National, and Local Decline in Childhood Immunizations

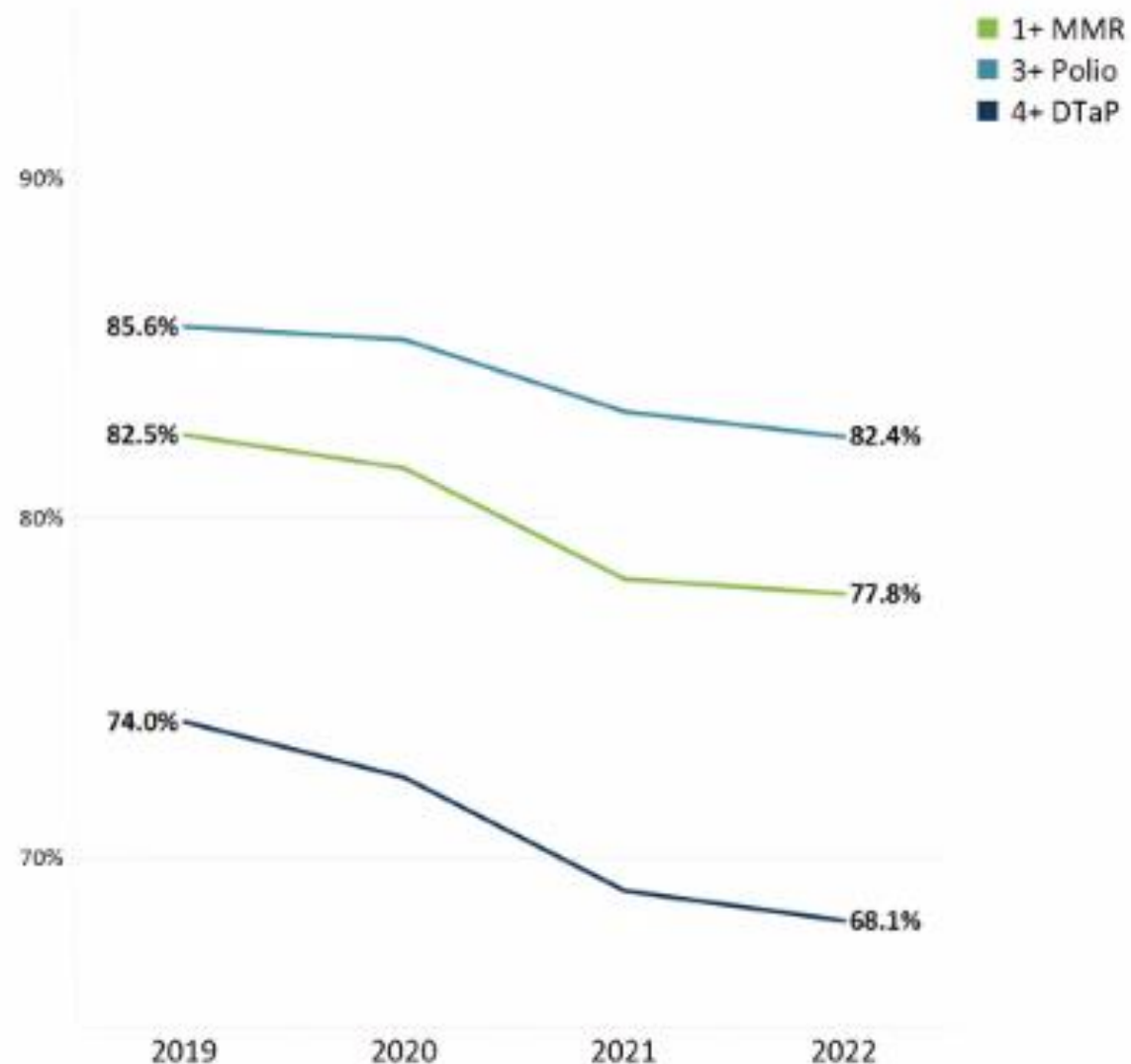


***"This is a red alert for child health. We are witnessing the largest sustained drop in childhood immunization in a generation... While a pandemic hangover was expected last year as a result of COVID-19 disruptions and lockdowns, what we are seeing now is a continued decline. COVID-19 is not an excuse. ...We will inevitably witness more outbreaks, more sick children and greater pressure on already strained health systems".***

(Catherine Russell, UNICEF Executive Director, 7/22)

**Rates of up-to-date  
immunizations amongst  
toddlers declined in  
2020 and have not  
recovered**

Up-to-date by 24 months by 2-year-old cohort in Minnesota

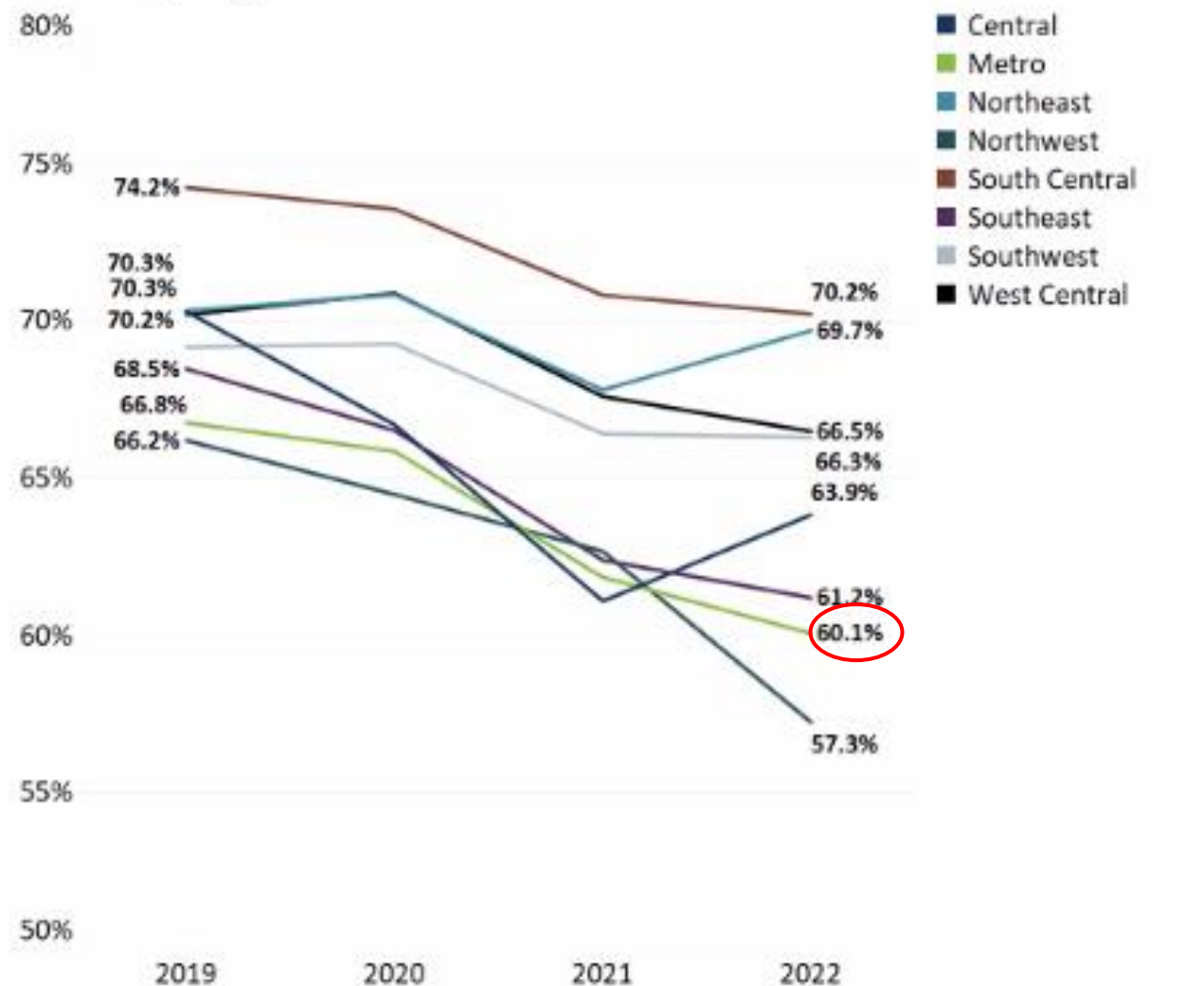




Consistent trend across  
nearly all regions of the  
state

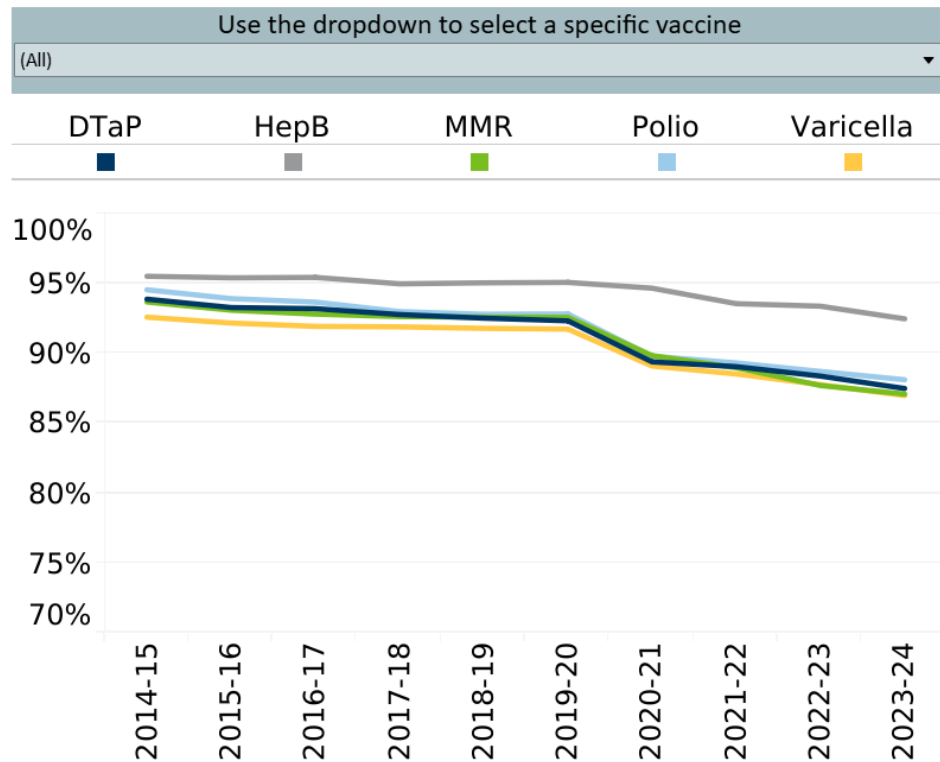
Worst in Metro and  
Northwest MN

Up-to-date by 24 months for 2 year old Minnesota  
children by region

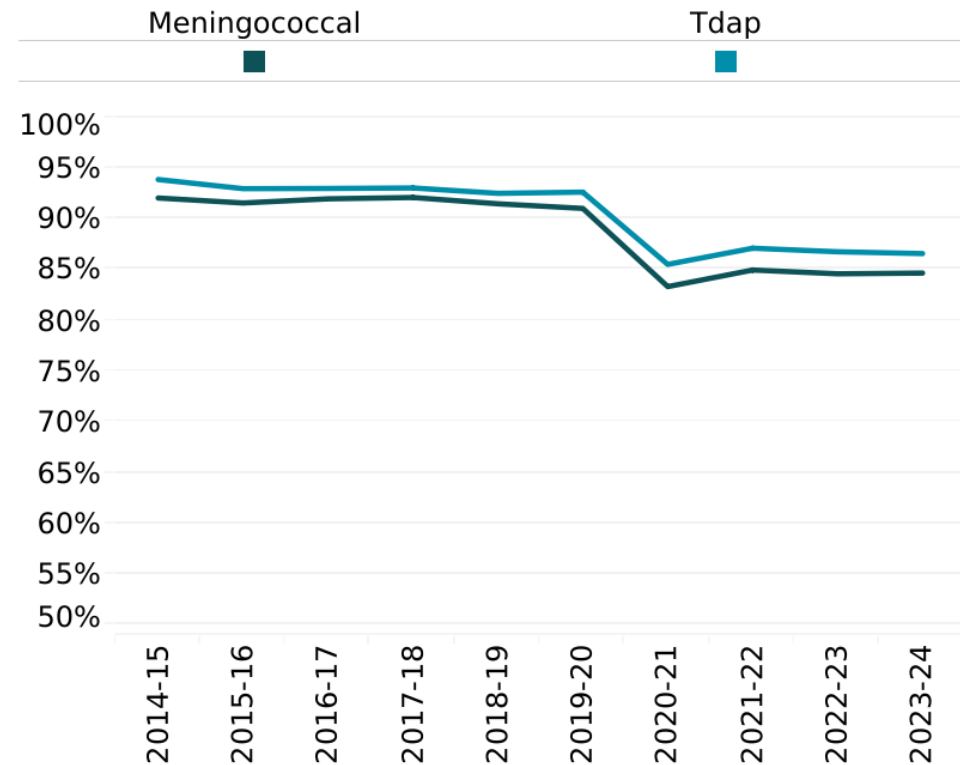


## Similar declines amongst school aged children & adolescents

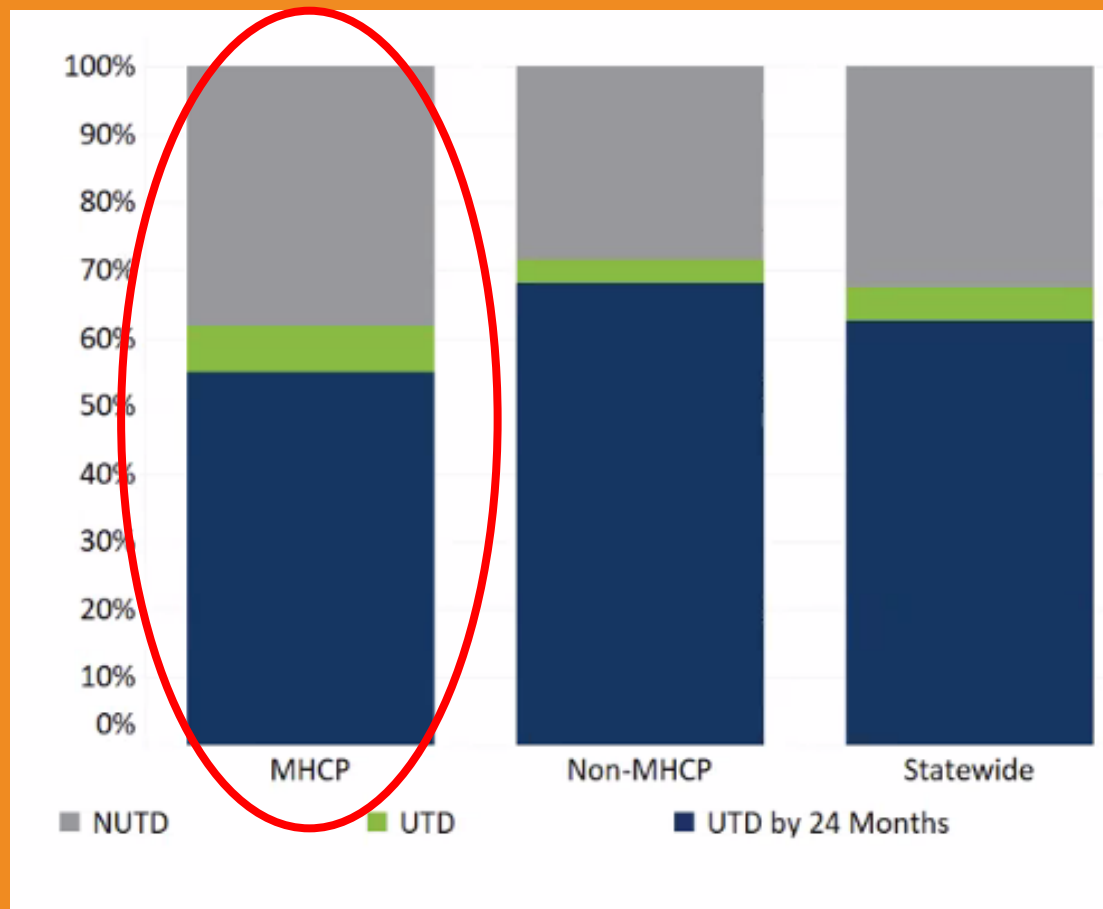
Statewide Percent of Kindergarten Students Fully Vaccinated, by School Year



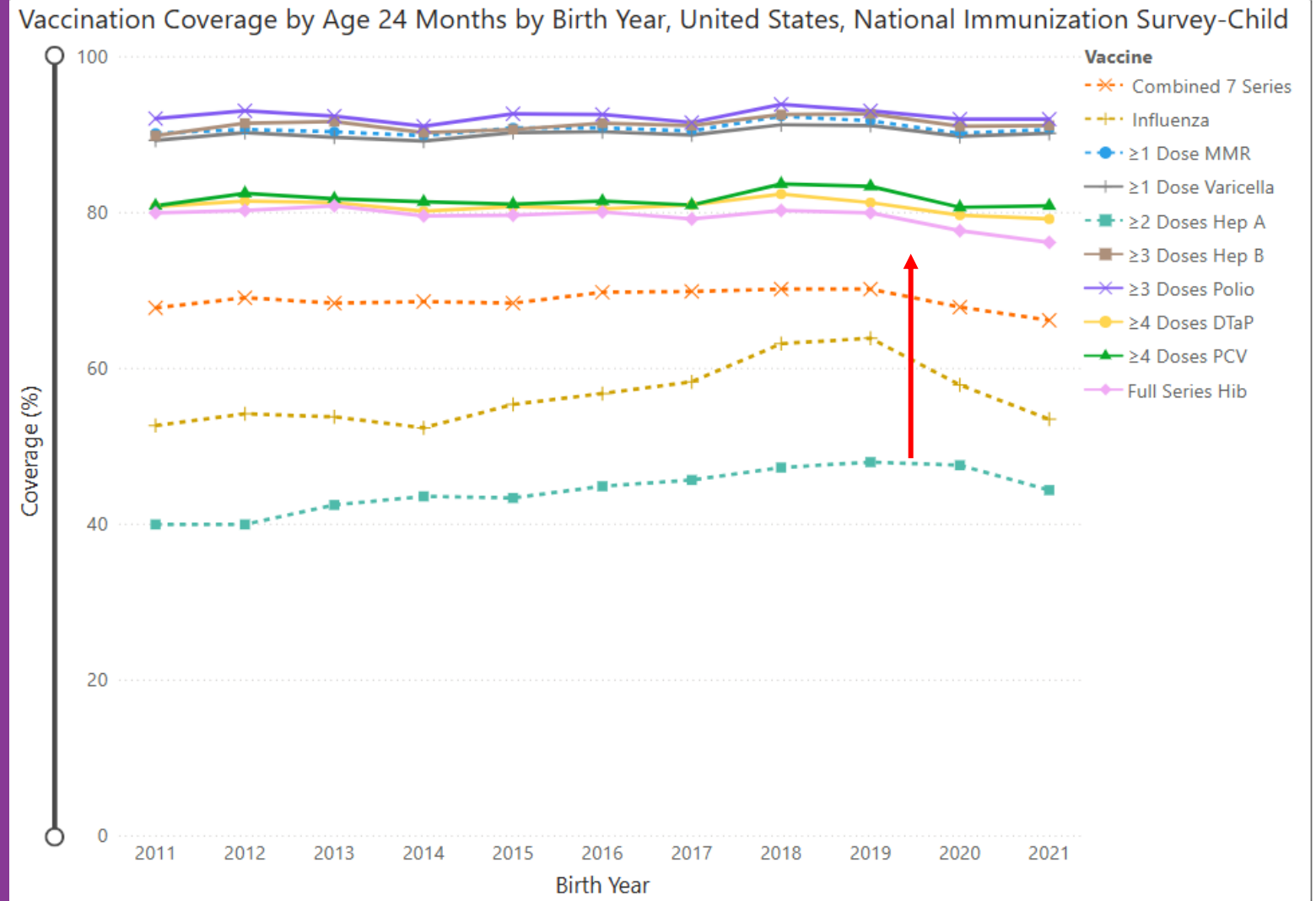
Statewide Percent of 7th Grade Students Fully Vaccinated, by School Year



## Disproportionate Effects

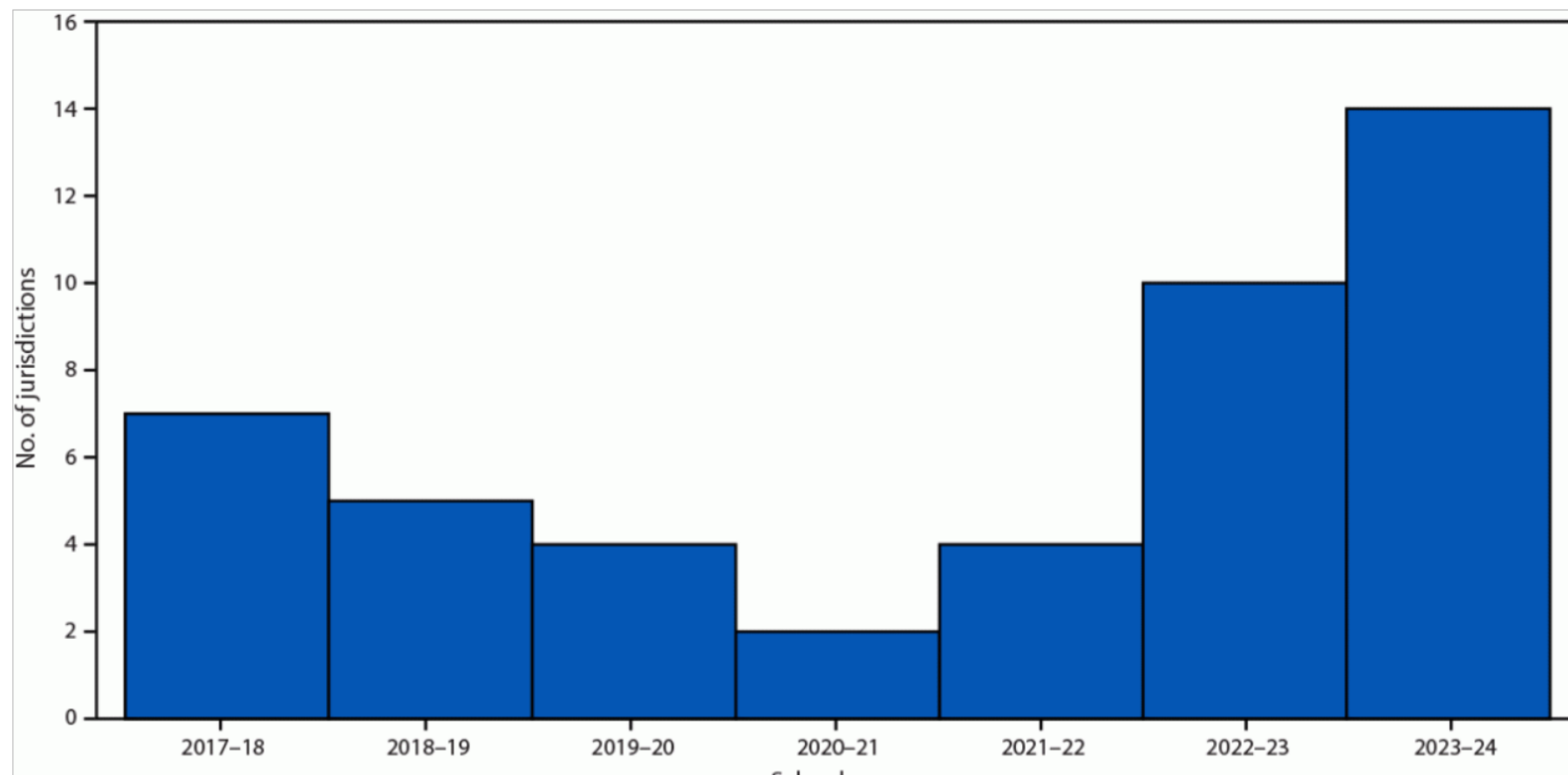


National Data shows  
more dramatic decline  
in 2020 which has  
persisted



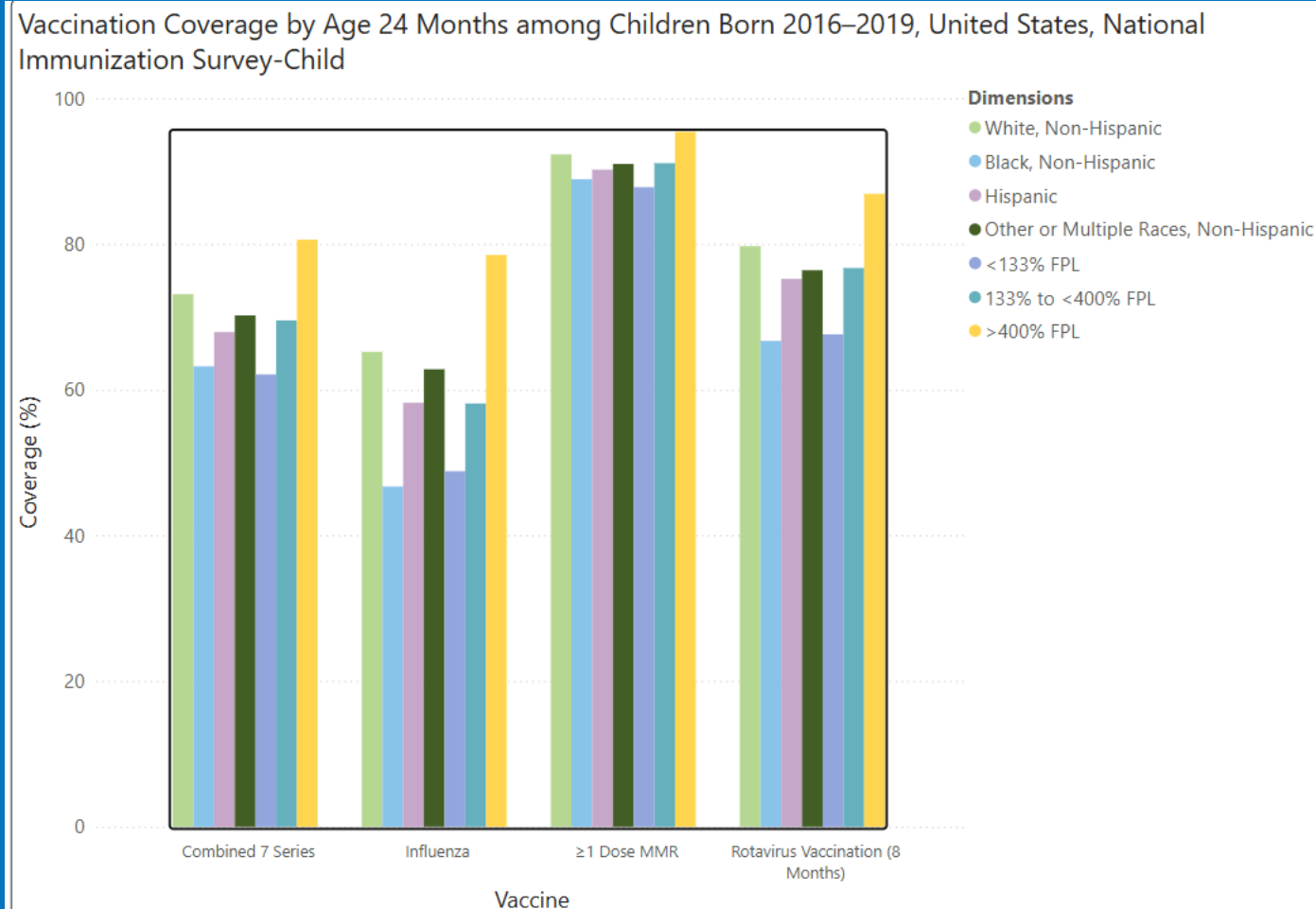
Largest group of schools with <95% vaccine coverage for Kindergarteners in 2024

**FIGURE 2. Number of jurisdictions that could not potentially achieve  $\geq 95\%$  coverage\*<sup>†</sup> with measles, mumps, and rubella vaccine among kindergartners — United States, 2017–18 to 2023–24 school years**



Source: Seither R, Yusuf OB, Dramann D, et al. Coverage with Selected Vaccines and Exemption Rates Among Children in Kindergarten — United States, 2023–24 School Year. MMWR Morb Mortal Wkly Rep 2024; 73:925–932.

Disparities by race and socioeconomic status also notable nationwide



# Why the Slide?



HEALTH  
Local health officials report threats, vandalism and harassment during the pandemic, study finds

By Salvador Rizzo  
March 17, 2022 at 4:00 p.m. EDT



- COVID Shutdown
- Distrust of government institutions, public health
- Amplified vaccine hesitancy
  - Twice as many parents cite concerns about vaccine side effects post-COVID compared with prior<sup>1</sup>

## Contributing Factors for Declining Rates

<sup>1</sup>Shah et al. 2022. *Pediatrics*, vol 150 (3), e2022057855.



- Slow rate of growth of primary care providers compared with other specialties
  - Increased rate of burn-out <sup>1</sup>
  - Fewer after-hours options
  - Less advanced scheduling options <sup>2</sup>
- 
- Large number of visits in first 2 years
    - 10-12 unique well visits
    - 19-24 different shots



## Health Care Access Remains Low Post-COVID

1. <https://bhw.hrsa.gov/sites/default/files/bureau-health-workforce/state-of-the-primary-care-workforce-report-2024.pdf>

2. Mackwood, M, et al. JAMA Health Forum. 2025;6(2):e245237. doi:10.1001/jamahealthforum.2024.5237

# Implications of Declining Immunization Rates

***“Immunization is a global health and development success story, saving millions of lives every year.”***  
**- WHO**

**Vaccines are one of the most important public health achievements of the past century. (CDC)**

**Vaccines are “a victim of their own success”**

**Why Does It Matter?**

# By The Numbers

**Between 1994-2023, vaccines prevented <sup>1</sup>**

508 million lifetime illnesses

32 million hospitalizations

1.13 million deaths

Saved \$780 billion in direct costs

\$2.9 trillion in societal costs



***Prior to routine HIB vaccine <sup>3</sup>***

1 in 200 children developed *invasive*  
HIB disease each yr

**Post vaccine:** 36 cases in 8 yrs

***Pneumococcal vaccination over  
first 8 years prevented: <sup>2</sup>***

13,000 deaths

200,000 cases of severe illness

***Rotavirus vaccine prevents <sup>2</sup>***  
Over 40,000 hospitalizations/yr

<sup>1</sup> Zhou F, Jatlaoui TC, Leidner AJ, et al. MMWR Morb Mortal Wkly Rep 2024;73:682–685.

<sup>2</sup> Zhou et al. 2014. *Pediatrics*, 133(4):577-85.

<sup>3</sup> CDC Pink Book. Chapter 8: *Haemophilus influenzae*. Available at: <https://www.cdc.gov/vaccines/pubs/pinkbook/hib.html>

# Polio

*“THEN”*

Polio was once one of the most feared childhood diseases in the U.S.



“On the day before Halloween, Frankie (my twin brother) had trouble breathing. He was rushed to the Hospital where he was promptly given a spinal tap and placed in an iron lung. By the next morning, a diagnosis of polio had been confirmed. Frankie died on the evening of November 1, just 61 hours after admission to the hospital. I was admitted to the same hospital, with a diagnosis of paralytic polio, on the night Frankie was buried. A few days later my mother suffered a miscarriage. Eight children out of our first-grade classroom of 24 were soon diagnosed with paralytic polio; three children died including my twin (Frankie).”

- Janice Flood Nichols, author of “Twin Voices: A Memoir of Polio, the Forgotten Killer,”

# Polio “NOW”

The New York Times

## *How Lagging Vaccination Could Lead to a Polio Resurgence*

In its original form, the virus survives in just two countries. But a type linked to an oral vaccine used in other nations has already turned up in the West.

HEALTH AND SCIENCE

## New York declares state of emergency over polio to boost low vaccination rates

PUBLISHED FRI, SEP 9 2022-12:01 PM EDT | UPDATED FRI, SEP 9 2022-8:17 PM EDT



Spencer Kimball  
@SPENCEKIMBALL

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### KEY POINTS

- New York Gov. Kathy Hochul on Friday declared a state of emergency to boost polio vaccination rates.

TV

The Exchange

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HEALTH · PUBLIC HEALTH

## The World Health Organization has added the U.S. to its list of countries with circulating polio. It joins the likes of Somalia, Yemen, and Israel

BY ERIN PRATER



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Global perspective Human stories

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FOR DISABILITY  
SYMPTOMS IN

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Secretary-General

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## First polio outbreak in 30 years declared in Mozambique

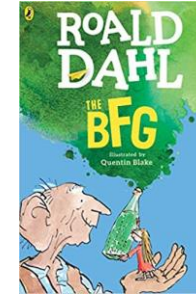
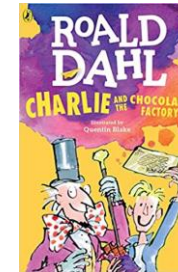




# Measles

*“THEN”*

Measles is one of the most contagious diseases humans have ever faced.



“My eldest daughter caught measles when she was seven years old. As the illness took its usual course I can remember reading to her often in bed and not feeling particularly alarmed about it. Then one morning, when she was well on the road to recovery, I was sitting on her bed showing her how to fashion little animals out of coloured pipecleaners, and when it came to her turn to make one herself, I noticed that her fingers and her mind were not working together and she couldn’t do anything. “Are you feeling all right?” I asked her. “I feel all sleepy,” she said. In an hour, she was unconscious. In twelve hours she was dead.” - Roald Dahl

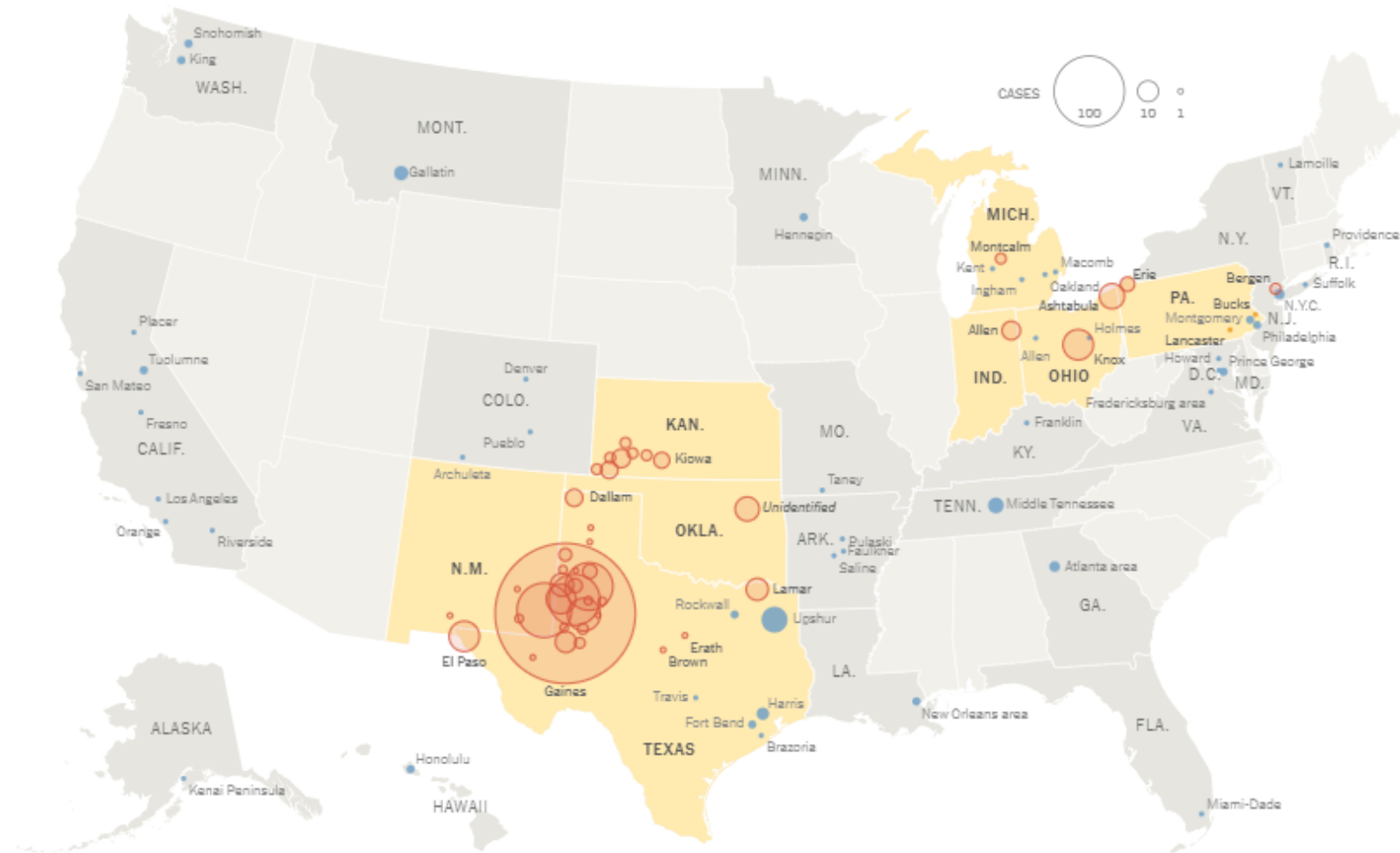
# Measles “NOW”

## The New York Times

outbreak is likely to persist for a year, according to Texas health officials.

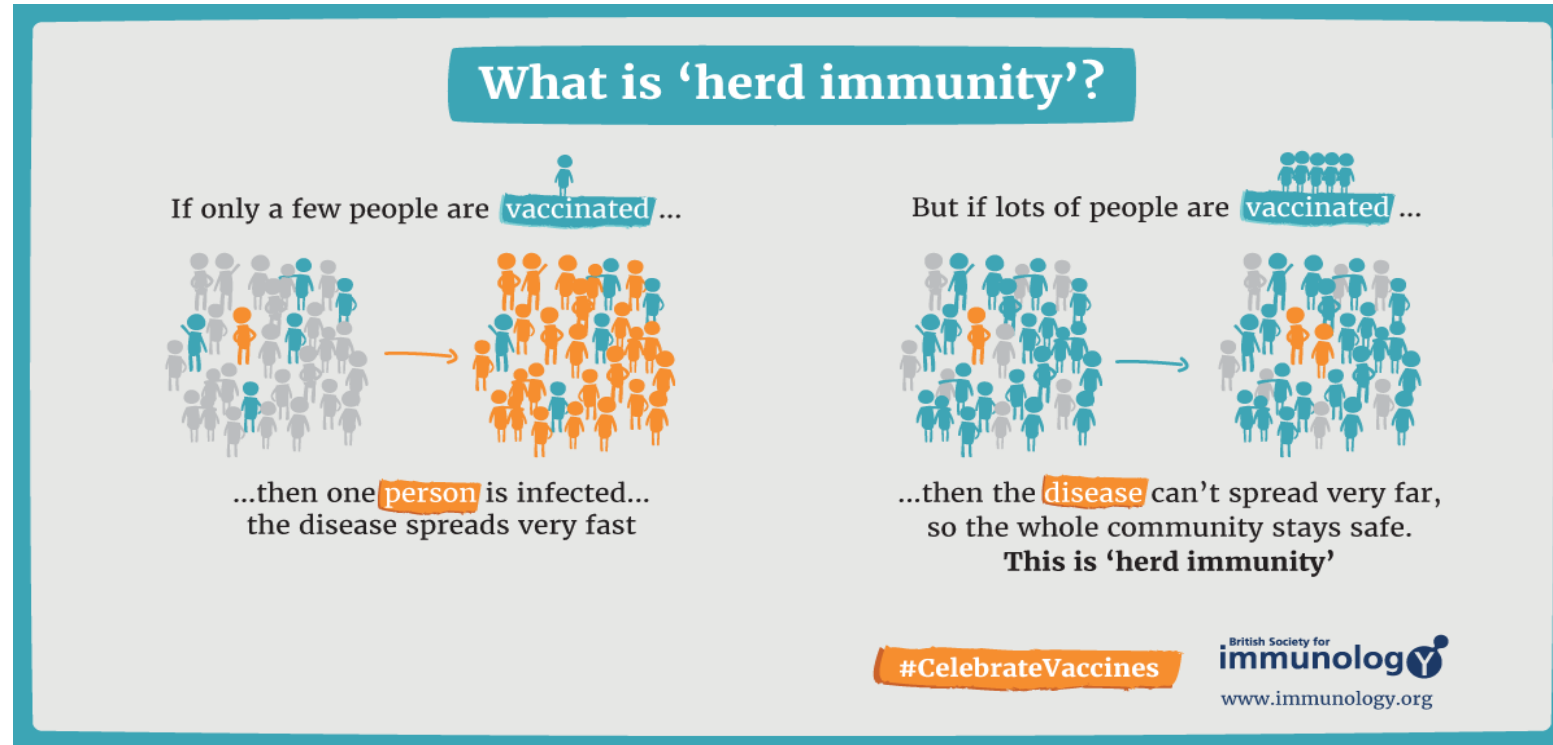
### Measles cases by county in 2025

○ Outbreaks ● Isolated cases ● Other cases linked to outbreaks





# Herd immunity



The more contagious an infection, the higher the percentage of the population required for herd immunity

- Measles – 95%
  - Kindergarteners in MN (2 doses): 87%
  - Toddlers in MN (1 dose): 80%
- Polio – 80%
  - Kindergarteners in MN (4 doses): 82%
  - Toddlers in MN (3 doses): 83%



# Other Vaccine Preventable Diseases

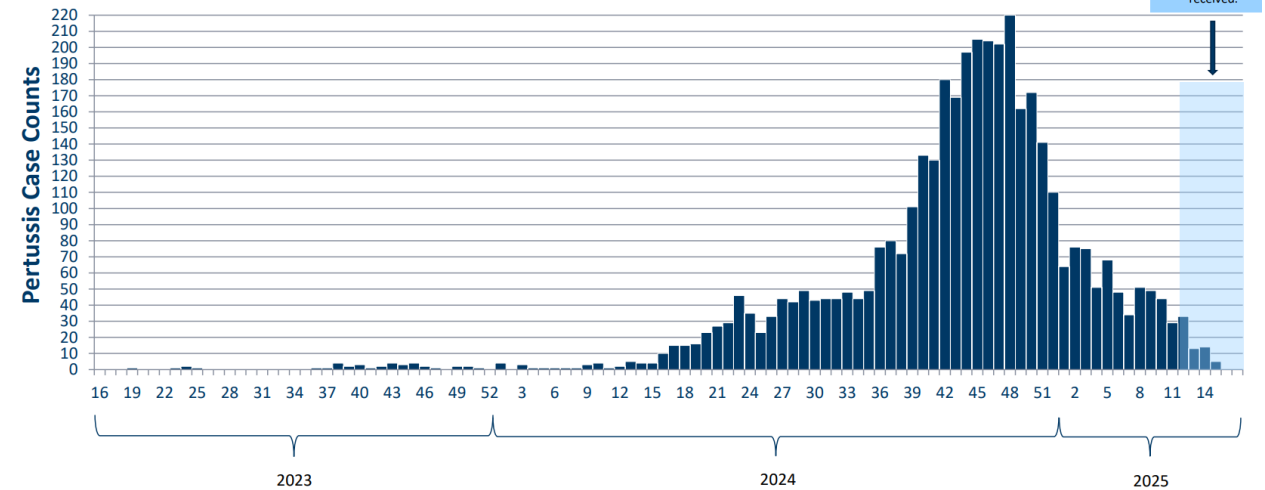
## Pertussis

- 654 cases in MN in 2025 so far
- Average age = 11 years
- Highest risk for infants

## Varicella

- 82 cases so far in 2025
- 70% were unvaccinated
- Data challenging due to lack of testing

Number of Probable, Confirmed, and Suspect Pertussis Cases Reported  
by Notification Week - Minnesota 2023-2025 (updated through 04/10/2025)



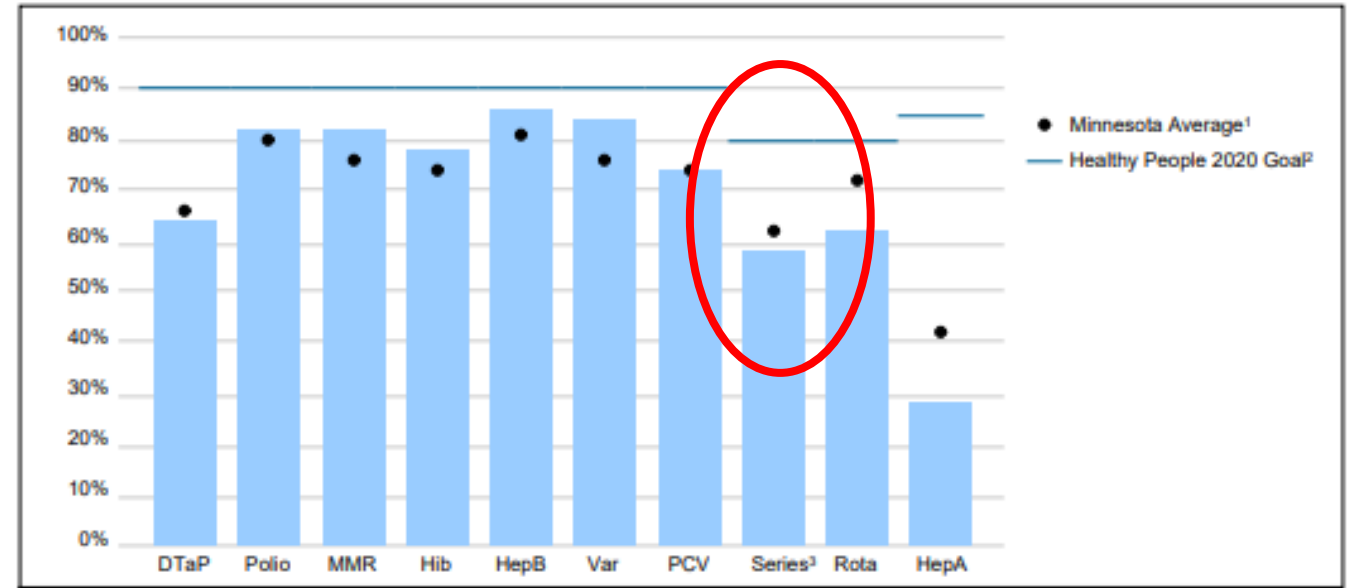
# Targets for Intervention

- Common quality metric used by healthcare institutions, MN Community Measurement Project & Other Payors
- 10 Vaccines
  - Hep B, Rotavirus, Dtap, Polio, PCV, Hib, Hep A, MMR, Varicella, Influenza
- All doses of all vaccines received prior to 24 months

Assessment of Immunization Rates by 24 Months

1938

Client Records

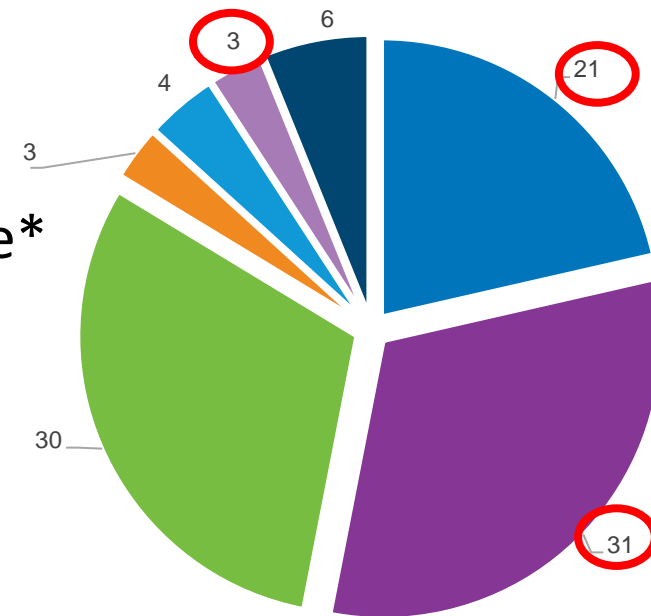


## Combo 10

# Combo 10

- Kids who come in regularly and on time are generally up-to-date on vaccines
- Over 50% of those who are not UTD by 24 months are due to timing delays in their visits
- Only 7% are due to vaccine refusal
  - 3% MMR only
  - 4% all vaccines
  - 30% influenza – large portion received first dose\*

Reasons for Incomplete Vaccine Series



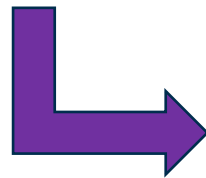
Data from one Hennepin Healthcare clinic for children ages 24-35 mo by Feb 2025

# Combo 10

- Not all the combo 10 vaccines are created equal

DTaP	IPV	MMR	HiB	HepB	VZV	PCV	HepA	RV	FLU
79.58%	94.29%	89.99%	89.99%	95.5%	92.69%	77.88%	90.59%	72.67%	70.97%

- Rotavirus
  - Must be started by 15 weeks of age
  - No doses after 8 months of age



Appointment scheduling & rescheduling  
Vaccine only visits  
2-dose rotavirus series

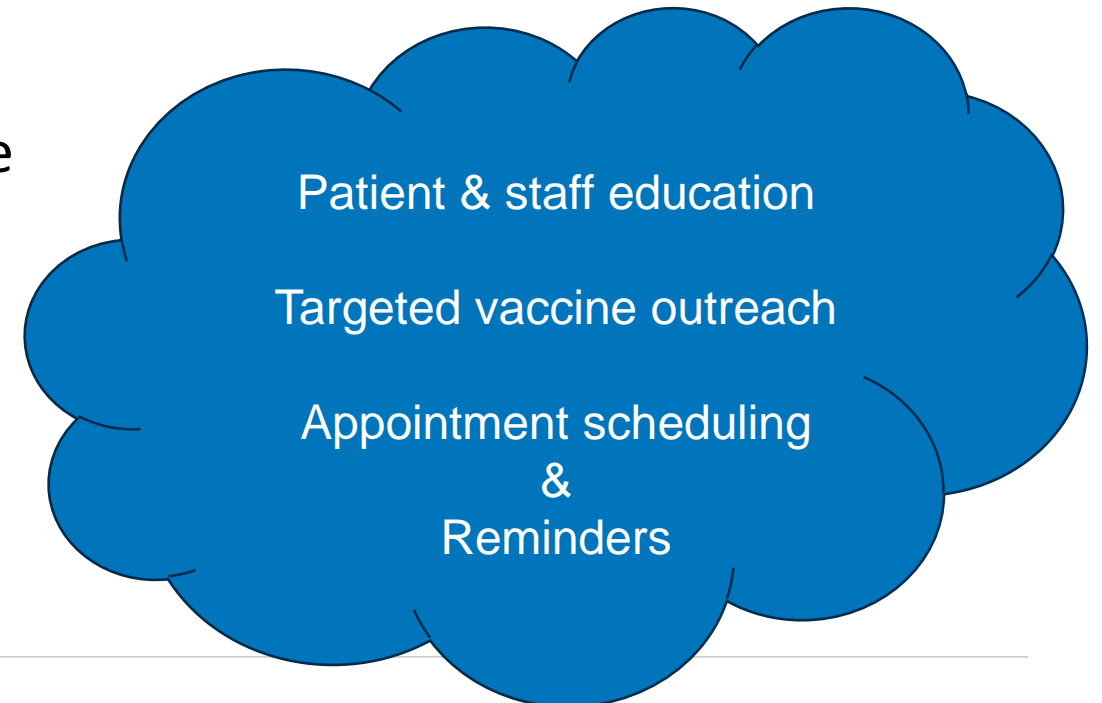
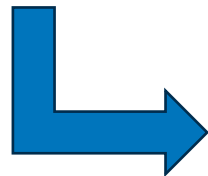
*(HHS now up to 79% completion after  
implementing in fall of 2022)*

# Combo 10

- Not all the combo 10 vaccines are created equal

DTaP	IPV	MMR	HiB	HepB	VZV	PCV	HepA	RV	FLU
79.58%	94.29%	89.99%	89.99%	95.5%	92.69%	77.88%	90.59%	72.67%	70.97%

- Dtap/PCV
  - Boosted at 15 months of age
  - Timing nuances with the vaccine schedule
  - Spacing of Dtap dosing
  - Elimination of dosing if too delayed

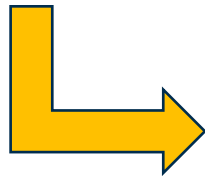


# Combo 10

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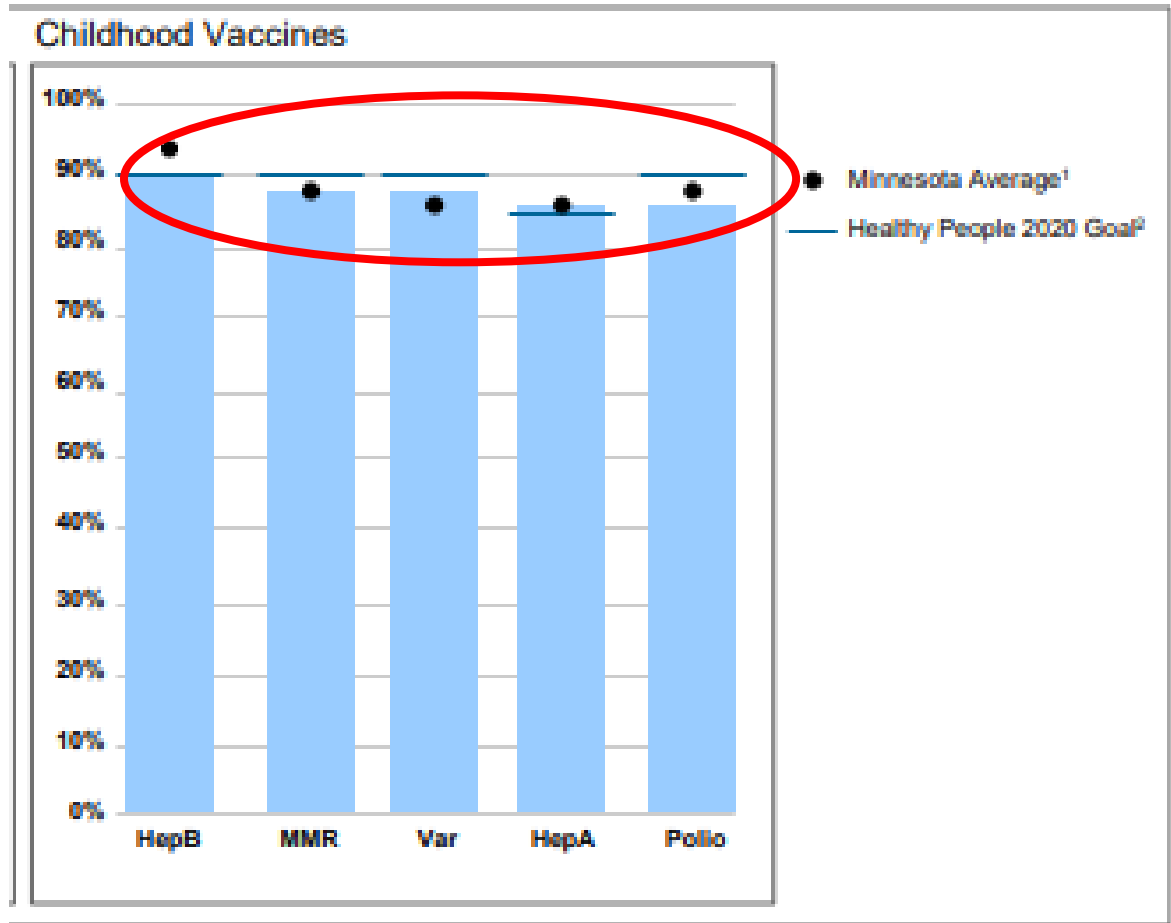
DTaP	IPV	MMR	HiB	HepB	VZV	PCV	HepA	RV	FLU
79.58%	94.29%	89.99%	89.99%	95.5%	92.69%	77.88%	90.59%	72.67%	70.97%

- Influenza
  - High rates of refusal
  - Seasonality of dosing
  - Many receive first dose, but not second





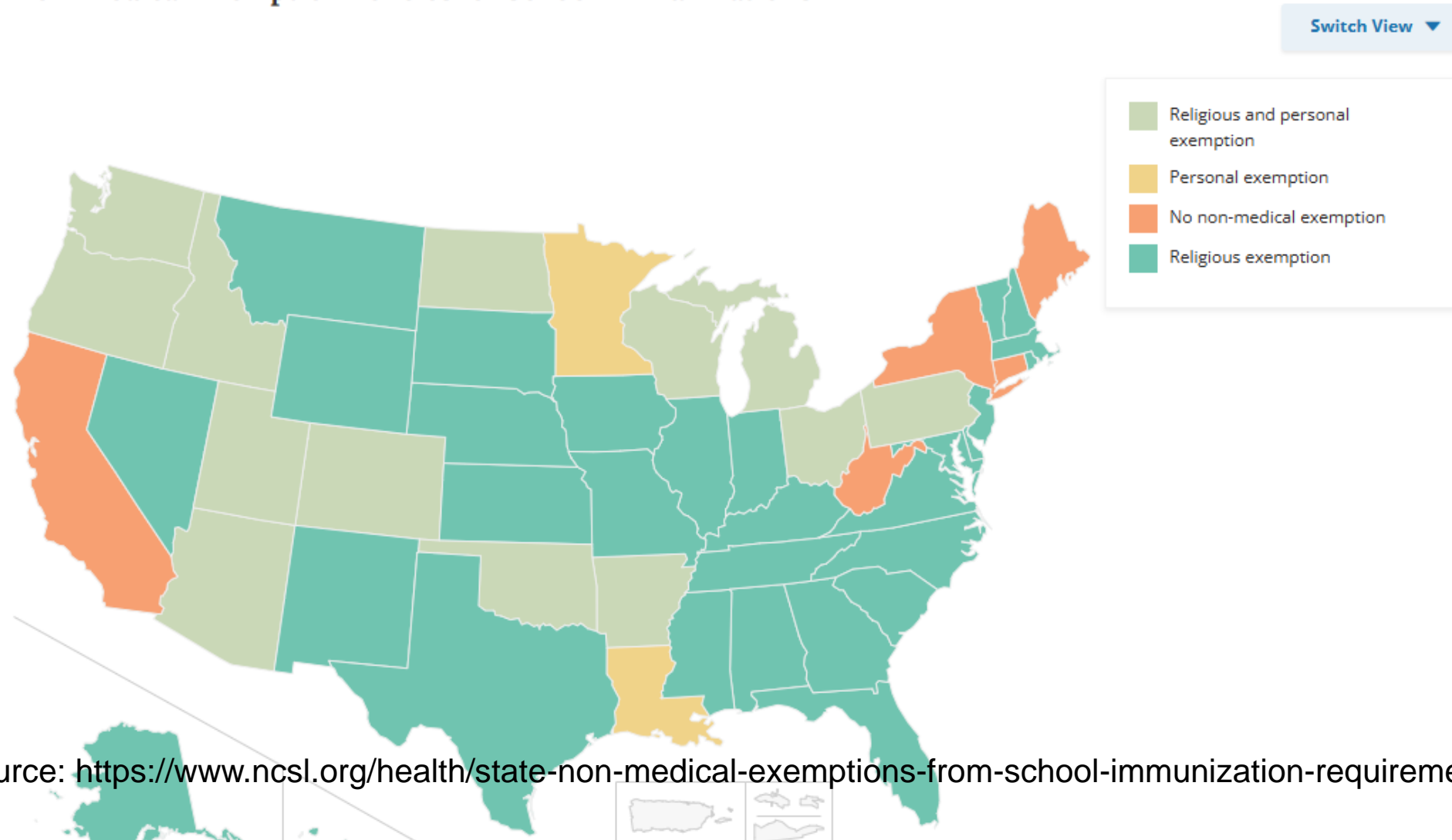
- MMR+Varicella
- Dtap+Polio
- (Hep A)
- Given 4-5 yrs of age



## Pre-Kindergarten Vaccines

# Improving Pre-Kindergarten Vaccines

## Non-Medical Exemption Policies for School Immunizations



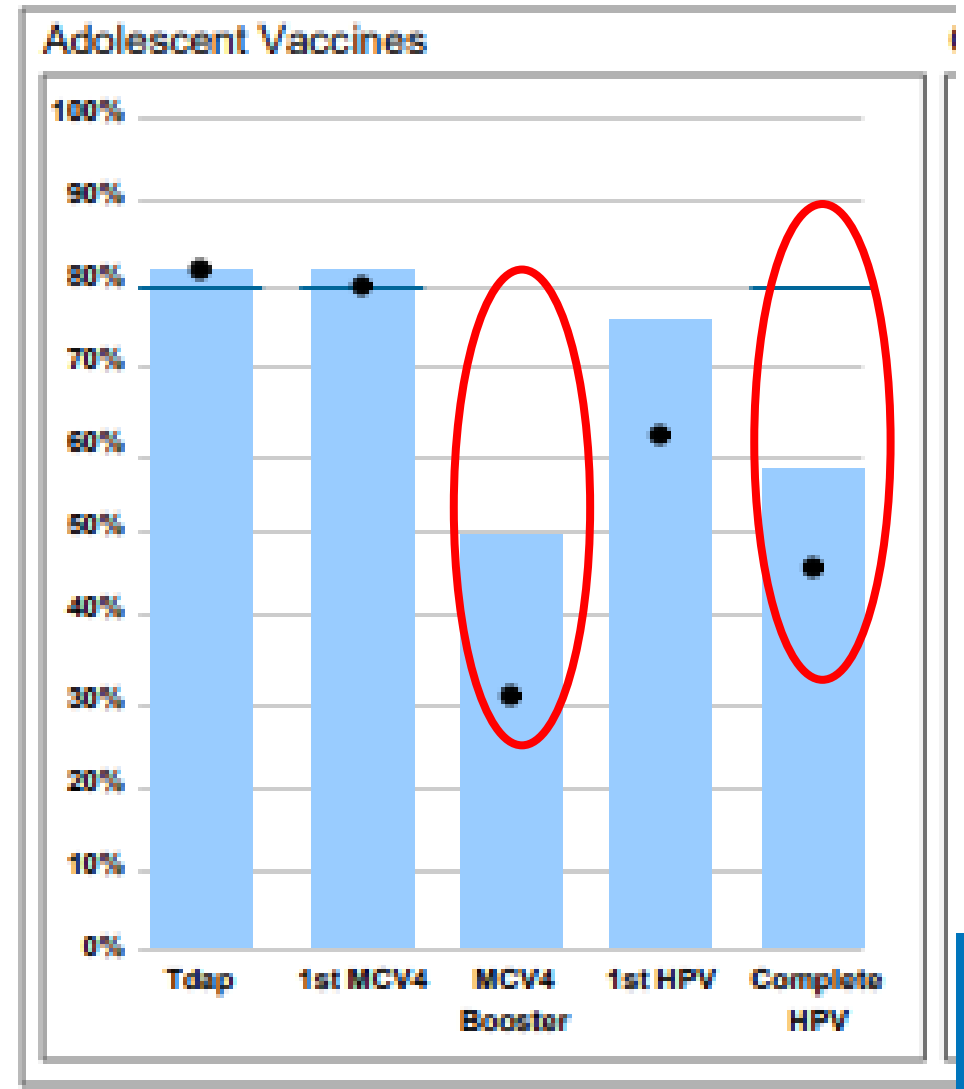
O-  
with

Source: <https://www.ncsl.org/health/state-non-medical-exemptions-from-school-immunization-requirements>

Two intervals:

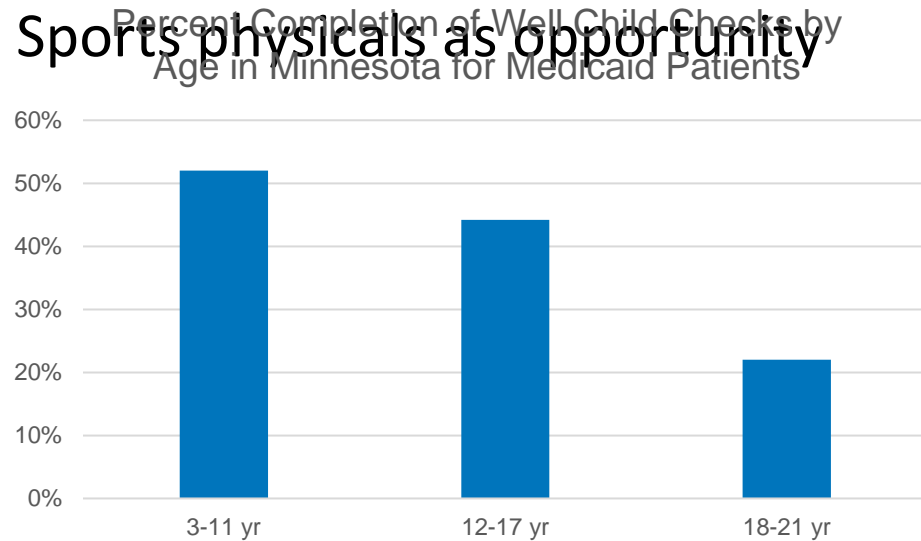
- 11 year visit
  - Tdap
  - Meningococcal ACWY
  - HPV
    - 2<sup>nd</sup> dose 6 months after first
- 16 year visit
  - Meningococcal ACWY booster
  - Consider Men B in at risk youth

## Adolescent Vaccination

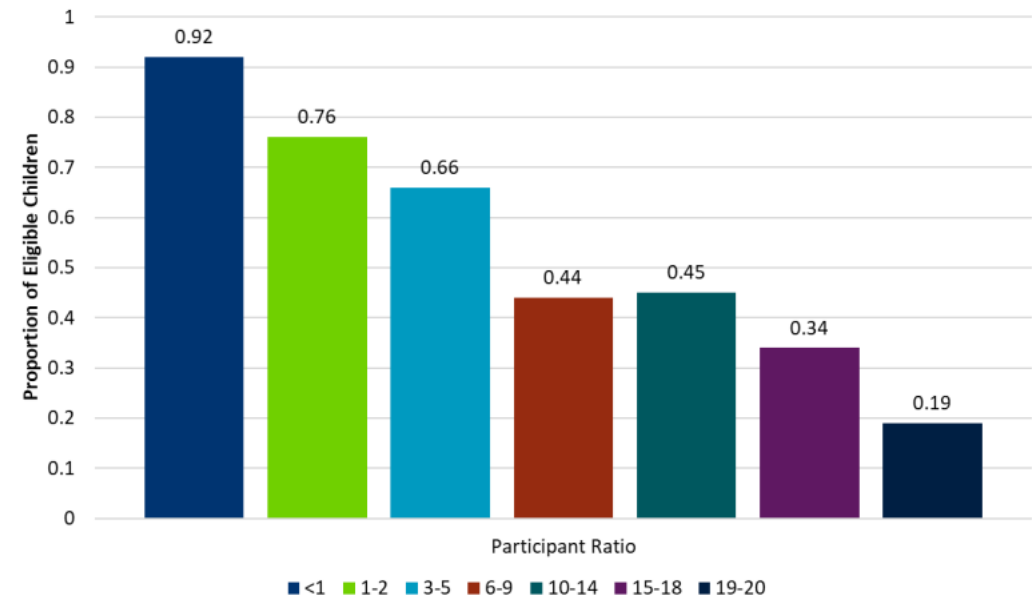


# Adolescent Vaccines

- School requirements for Tdap & Meningococcal
- HPV
  - Vaccine hesitancy
  - Earlier initiation
- Emphasize annual visits
- Sports physicals as opportunity



**Figure 3. Participation Rate of Medicaid-Eligible Children Living in Minnesota Completing Child & Teen Checkups by Age, FFY 2018**



Source: Minnesota Health Care Programs (MHCP) Data

Data from: Medicaid.gov 2024 Medicaid and CHIP Scorecard

# Meeting Patients and Community “Where They Are”

## Mobile Runs for Patients



## Community Pop-Up Clinics and Town Halls



**PICA** What's the Deal With The COVID Vaccine? Part 3

**BACK BY POPULAR DEMAND!!**

Our experts from Hennepin Healthcare will be available to talk about:

- ♥ Booster Shots
- ♥ Vaccines for Kids
- ♥ YOUR Questions!

When: Thursday, October 7, 2021  
Time: 1:00 p.m. to 2:00 p.m.

Zoom ID: <https://us06web.zoom.us/j/87566208983>

Meeting ID: 875 6620 8983

Speakers:

- Dr. Eileen Crespo
- Dr. Dawn Martin

Questions? Contact your Advocate.

¿Preguntas? Contacte a su

<https://www.hennepinhealthcare.org/mobilehealth/>  
<https://youtu.be/ICA58nnFUag?si=25b1jK225BBwSa13>

# Addressing Vaccine Hesitancy

## Origins of Hesitancy

- Negative healthcare experiences
- Media bubble
- Social network
- Historical and cultural factors

Source: Voices for Vaccines “Becoming Trusted Messengers

“If you don’t behave, the doctor will give you a shot”

“Vaccines are not punishment but an important part of keeping you healthy”

“Go ahead and give the vaccines, but I can’t watch”

The presence of a loving, supportive caregiver during a painful process will help mitigate the anxiety and pain the child may experience.

“It won’t hurt, just be tough. You’re a big boy.”

Vaccines do hurt. There are ways we can make them hurt less. And your doctor and your parent will help you through it. You can do hard things.

Studies show that over 60% of adults express fear of needles <sup>1</sup>

Over 30% will avoid vaccinations as a result of their needle phobia<sup>1</sup>

## Pain & Needles



## Vaccines can be stressful for child & parent

Encourage families to ask about options to reduce stress and pain



BUZZY BEE



SHOT BLOCKER



LIDOCAINE CREAM



24% SUCROSE OR SUGAR WATER

Sugar water is ideal for infants during shots or blood draws. A few drops are given inside the cheek or on the tongue before the procedure.



COMFORT HOLDS

DISTRACTION



# Pain & Needles

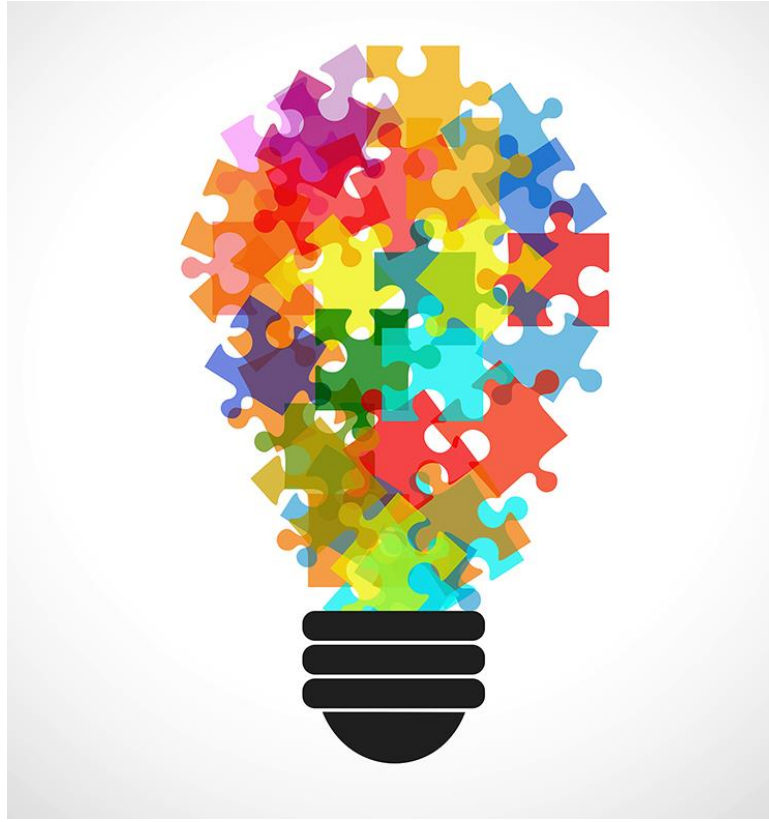
# Limits & Challenges

## Limitations in our knowledge & science

- No alternative explanation
  - No clear etiology for autism
- Population-based studies
  - Unable to control for all factors
- Difficult to “prove” the negative or absence of something

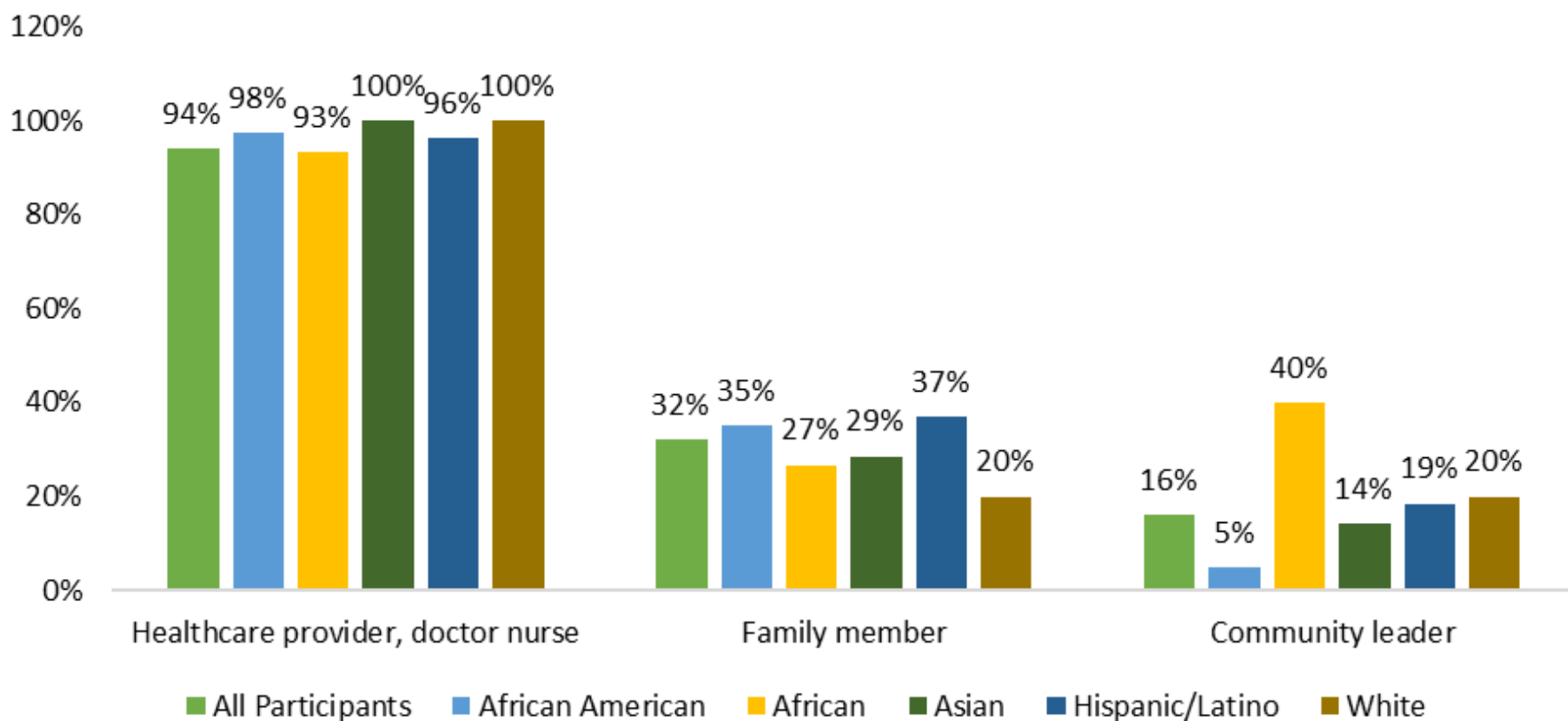
## Challenges in messaging

- 65% of videos are anti-vaccine<sup>1</sup>
- Give greater importance to story from a friend or family rather than numbers or data from doctor or CDC



**What Can We Do to Address Hesitancy?**

### Who do you trust for vaccine information?



## What We Say Matters

### Collective Duty

- Focus on the community and societal benefit first  
BEFORE talking about benefit to individual

### Health not disease

- Focus on vaccines as a way of keeping us healthy and helping children have long and productive lives  
INSTEAD of vaccines protecting from disease and death

### Trainer not actor

- Focus on vaccines as a helper, trainer or teacher for our immune system which is what protects us INSTEAD of the vaccines as the protectors

Source: FrameWorks Institute. 2023. Reframing the Conversation about Child and Adolescent. Washington, DC: FrameWorks Institute.

# The Long Game – Partnership

- Many programs around vaccine hesitancy focus on motivational interviewing
- This process centers on:
  - Partnership between provider and patient/parent
    - Guide rather than Dictator
  - Autonomy in decision making
  - Respect
  - Empathy
- Emphasis on active listening, reflecting back, open-ended questions
- Assessing readiness to change

# Motivational Interviewing: Two Examples

- NDSU Center for Immunization Research & Education
- E-P-E
  - Elicit – what does the patient know? Where are they coming from?
  - Provide – provide information to address their concerns (after asking permission, avoid confrontational statements that use “I” or “you”)
  - Elicit – Where does this leave the parent in their decision making?
- Voices for Vaccines “Becoming Trusted Messengers”
- 4 As
  - Ask – open ended questions about family concerns
  - Acknowledge – find truths in what they say and acknowledge where they are coming from
  - Affirm – affirm where the person is on their journey
    - “It’s okay to have questions”
  - Answer – after getting permission, share what you know or how you will get more information for them

Source: <https://www.ciremitraining.org/>

Source:

<https://www.voicesforvaccines.org/course/becoming-trusted-messengers/>

# Summary



# Take Home Points

- Childhood immunization rates are declining due to variety of factors related to COVID, healthcare access, changing societal messages regarding vaccine safety and hesitancy
- Increased vulnerability to vaccine-preventable illnesses has real consequences including rising cases and larger outbreaks of these diseases
- Strategies for improving vaccine rates for children should be based on local data and focusing on areas of deficiency to help move the needle
- Goal is improvement not perfection
- Addressing vaccine hesitancy will rely on relationship and partnership between families and trusted messengers in their community and healthcare organizations

# Questions & Comments

**Well-child  
visits  
are time  
well  
spent.**



**Well-child  
visits  
are time  
well  
spent.**





# Thank You!

**Evaluation** – [link at sign-off](#)



**Certificate of Participation** –upon completion of Evaluation



**Recording** - [Performance Improvement Project \(PIP\): Healthy Start for Minnesota Children - Stratis Health](#)