MEASLES

DIDACTIC

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U.S. Cases in 2025

Total cases

607

Age

Under 5 years: **196 (32%)**

5-19 years: **240 (40%)**

20+ years: **159 (26%)**

Age unknown: **12 (2%)**

Vaccination Status

Unvaccinated or Unknown: **97%**

One MMR dose: **1%**

Two MMR doses: **2%**

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U.S. Hospitalizations in 2025

12%

12% of cases hospitalized (74 of 607).

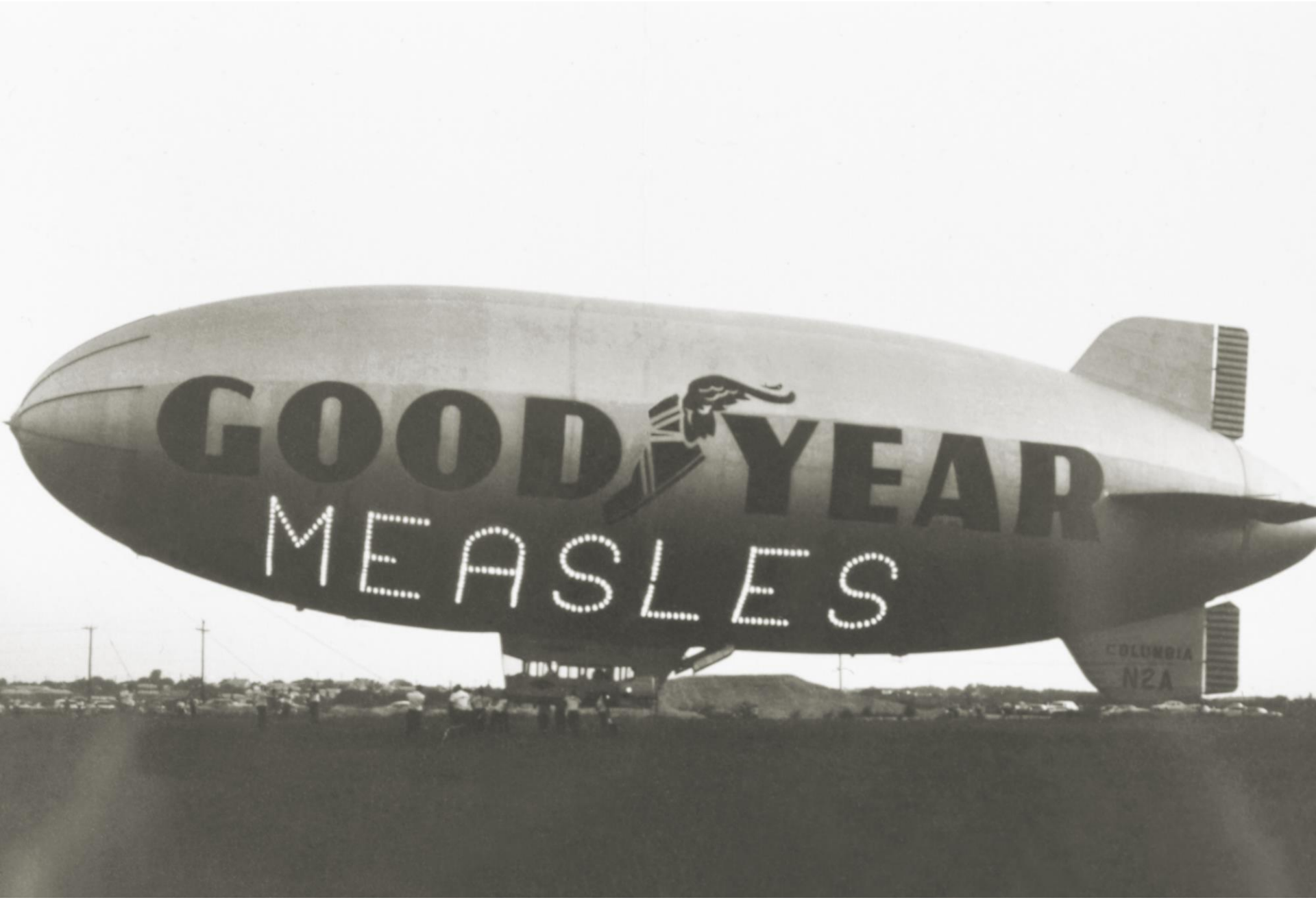
Percent of Age Group Hospitalized

Under 5 years: **21% (42 of 196)**

5-19 years: **8% (19 of 240)**

20+ years: **8% (12 of 159)**

Age unknown: **8% (1 of 12)**



https://phil.cdc.gov

What is Measles?

- Highly contagious viral disease relevant to clinical practice
- Caused by the measles virus (Paramyxovirus family)
- Transmitted via respiratory droplets
- Symptoms: high fever, cough, coryza, conjunctivitis, Koplik spots, followed by a maculopapular rash

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History and Impact

- Documented since the 9th century
- Historically a major cause of pediatric morbidity and mortality
- 1963: Introduction of measles vaccine
- Profound decrease in incidence and mortality globally

Measles Virus Characteristics

- RNA virus, genus Morbillivirus
- Only one serotype—simplifies vaccine strategy
- No animal reservoir—eradication is possible
- Natural infection provides lifelong immunity

Transmission and Contagiousness

- R0 = 12–18, among the highest of any infectious disease
- Airborne and droplet spread—can remain infectious in the air for up to 2 hours
- Infectious from ~4 days before to 4 days after rash onset

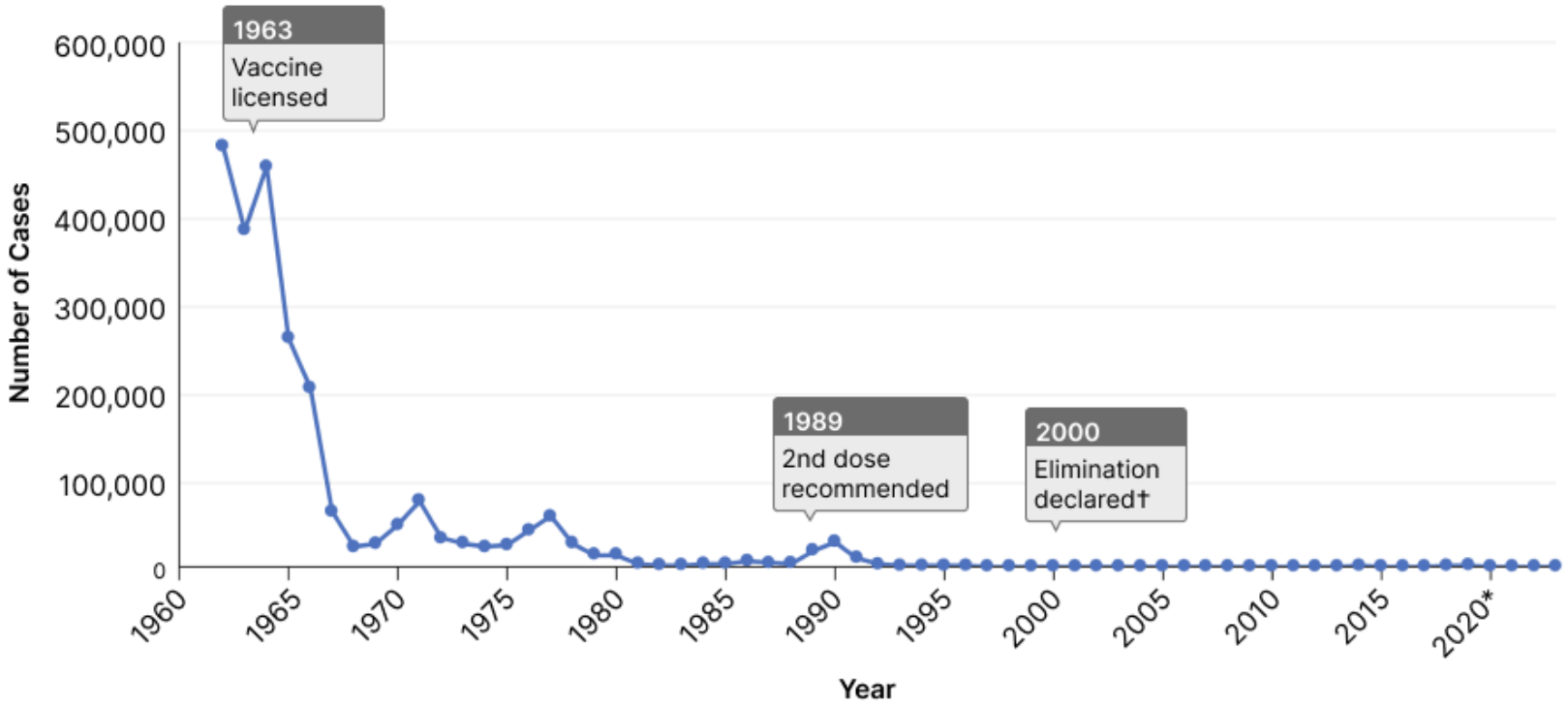
Clinical Course and Complications

- Incubation: ~10–12 days
- Prodrome: fever, cough, coryza, conjunctivitis
- Rash: appears 3–5 days after symptoms begin
- Complications: otitis media, pneumonia (most common cause of death), encephalitis, SSPE, death
- Vulnerable populations: infants, immunocompromised patients, pregnant women

Prevention and Vaccination

- MMR vaccine: standard for prevention
- Schedule: 1st dose at 12–15 months, 2nd dose at 4–6 years
- Catch-up vaccination and adult immunization strategies
- >97% efficacy after 2 doses
- Herd immunity threshold ~95%
- Role of pharmacists in vaccine administration and education

Reported Measles Cases in the United States from 1962 – 2023*



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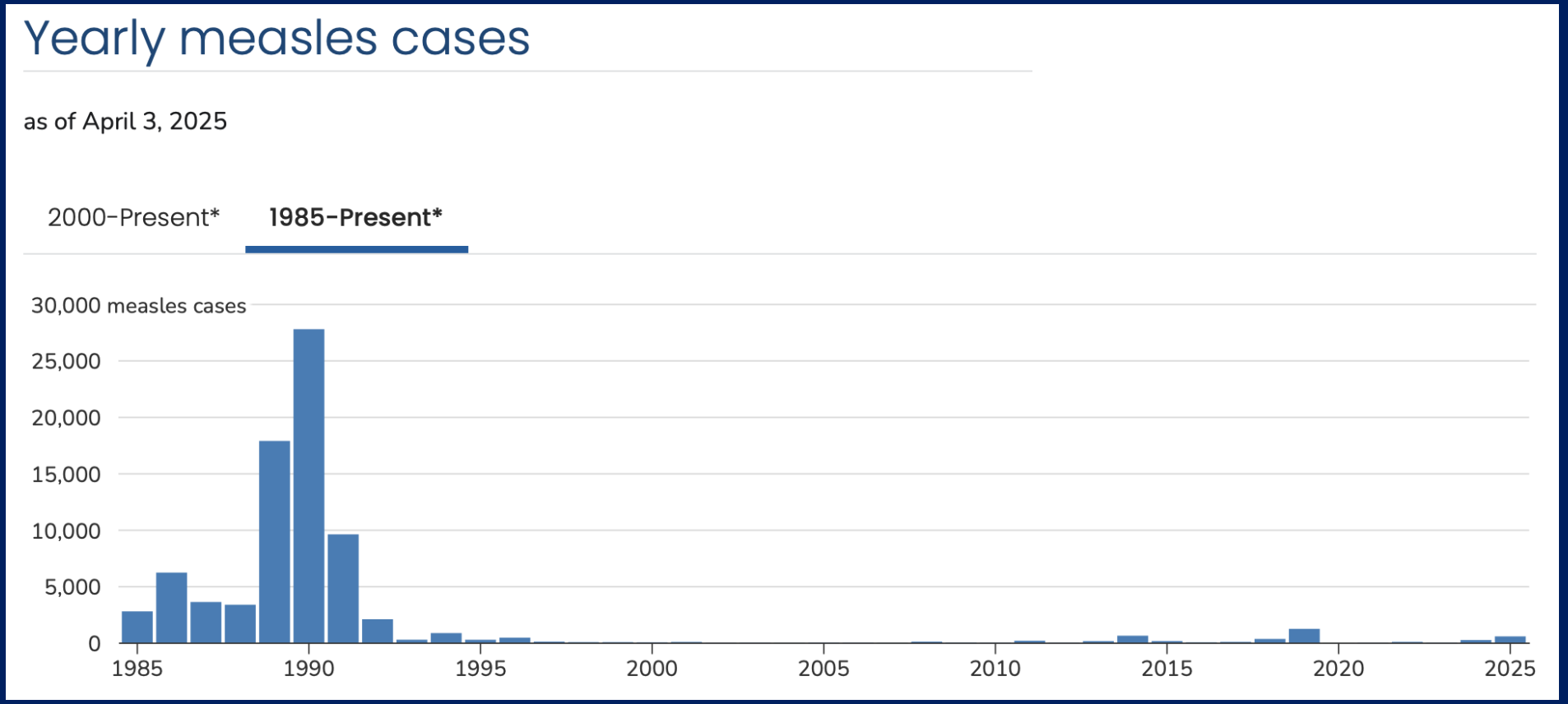
Measles in the US from 1985 to Present



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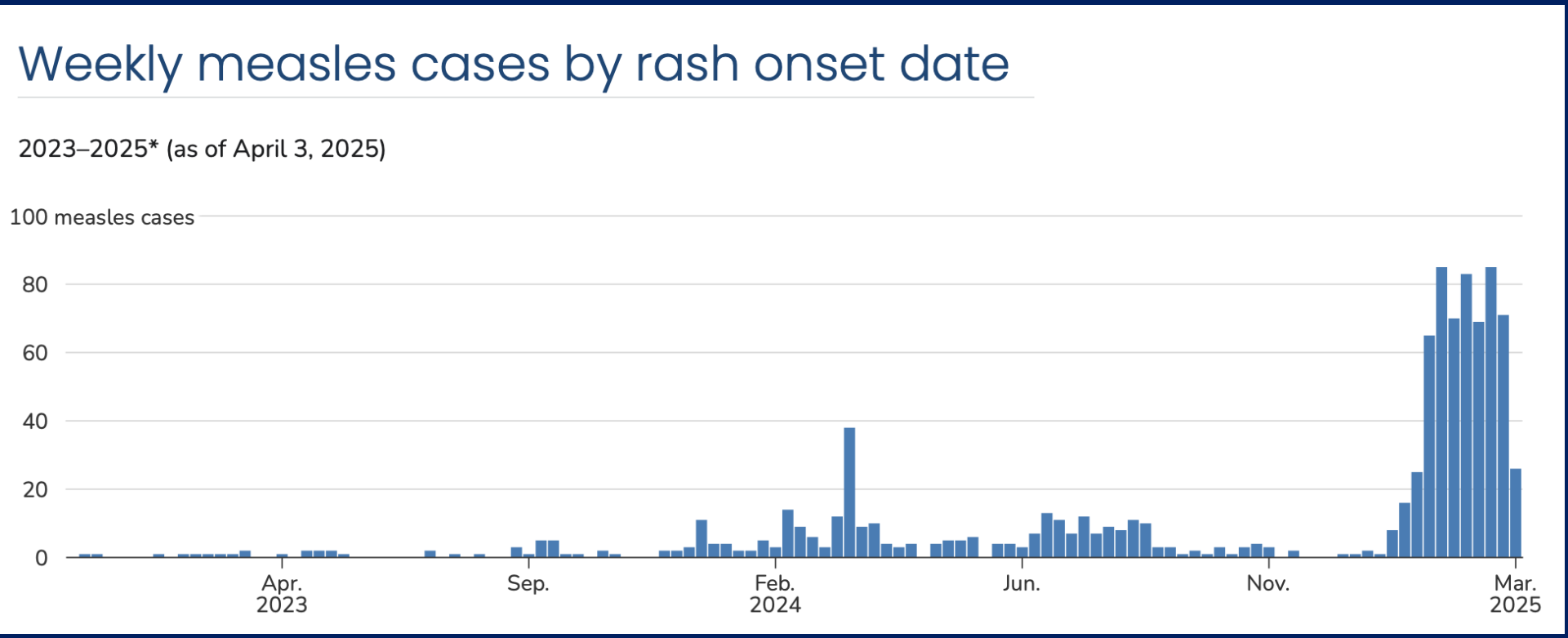
Measles in the US from 2023 to 2025



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Global Epidemiology I

- >80% decline in deaths since 2000
- Vaccination averted ~60 million deaths between 2000 and 2023
- 2023: ~107,500 deaths (unvaccinated/<5y)
- Resurgence due to vaccine hesitancy and pandemic-related service disruptions
- High burden regions: Sub-Saharan Africa, Southeast Asia

Measles in the United States

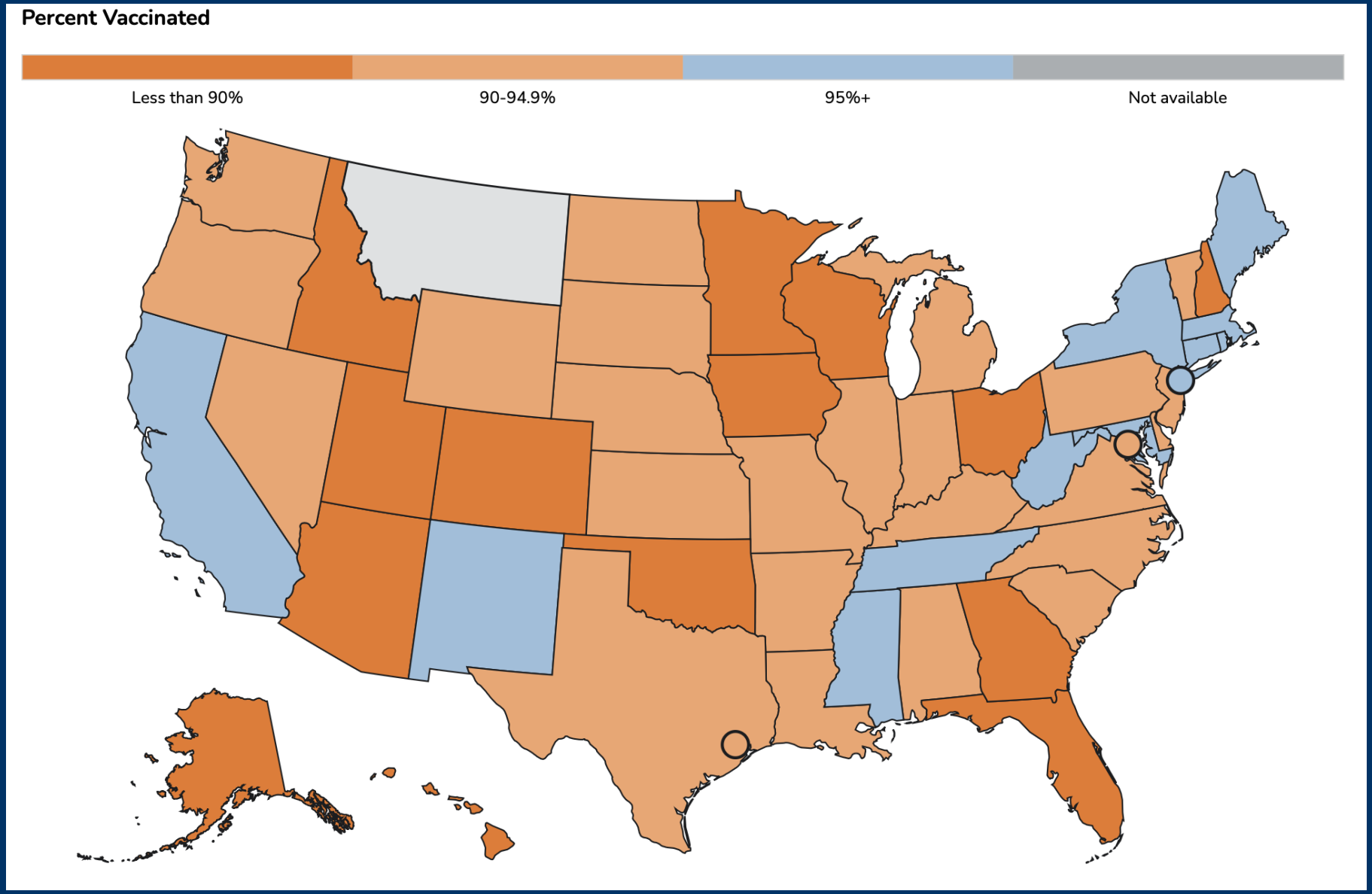
- Eliminated in 2000; resurgence due to importation and unvaccinated communities
- 2024: >160 reported cases by March; multiple outbreaks in undervaccinated populations
- Healthcare-associated exposures have occurred—importance of vaccination among HCPs

Current Outbreak: Texas and New Mexico (2025)

- Ongoing outbreak affecting multiple counties
- Almost 500 confirmed cases in Texas and 54 in New Mexico, with additional suspected cases
- Primarily affecting unvaccinated children
- Index case linked to international travel; spread in schools/daycares
- Public health response: contact tracing, PEP, vaccination clinics
- Need for vigilance in border/travel-exposed communities

Factors Driving Resurgence

- Decreased MMR coverage (COVID-19 and misinformation-related)
- Global travel reintroducing virus
- Delayed diagnosis in non-endemic areas
- Clinical suspicion and rapid isolation are essential



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Public Health Strategies for HCPs

- Ensure HCP vaccination
- Encourage patient vaccination at every encounter
- Rapid case identification, isolation, and reporting
- Pharmacists' role in immunization and counseling
- Outbreak response and education

Clinical Case Examples

- Case 1: Unvaccinated 2-year-old post-international travel; PCR confirmed; isolated promptly

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- Case 2: 35-year-old nurse with 1 MMR dose exposed; mild case confirmed
- Case 3: Pharmacist identifies symptomatic siblings; referred and outbreak prevented

Summary

- Measles is preventable but resurging
- MMR vaccine is highly effective
- Clinician vigilance and advocacy are vital
- Interprofessional collaboration is key

References

- World Health Organization (WHO)
- Centers for Disease Control and Prevention (CDC)
- Clinical Infectious Diseases, NEJM, The Lancet Infectious Diseases

Questions?

Thank you for your attention!