MEASLES RISK ASSESSMENT

OFFICE OF EPIDEMIOLOGY AND RESEARCH

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Division of Public Health
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Measles || Risk Assessment

Reason for This Qualitative Risk Assessment

- Concern for introduction of measles in Guam due to proximity and affiliation with countries and regions currently experiencing increased measles activity including the contiguous United States and the Western Pacific Region, amidst sub-optimal vaccination coverage for Guam's most vulnerable population.

Framework†

- This is an abridged rapid risk assessment developed by the Office of Epidemiology and Research, adapted from and synthesizing elements of the Centers for Disease Control and Prevention's (CDC's) Center for Forecasting and Outbreaks Analytics' Qualitative Risk Assessment Methodology. Definitions for indicators may be found here.

Indicators

Risk Posed To Guam	
Moderate	
Likelihood of Infection **Moderate**	*Impact* **Moderate**
Confidence Level in Assessment	**Moderate**

† CDC CFA Qualitative Risk Assessment Methods

Measles || Nationwide Situation

Key Points

- The number of measles cases detected in the US reported in the first quarter of CY2025 exceeds CY2024 (**Figure 1**)[1].
- In 2025, the number of cases detected is nearly 3x all cases reported in 2024, 712 cases and 285 cases respectively (**Table 1**) [1].
- Majority of cases impacted are ages 00-19yrs, however, since the last assessment, there has been a notable increase in cases reporting 20yrs or older.
- Approximately 97% of all cases in 2025 are unvaccinated or unknown.
- There have been 3 measles-related deaths, 2 confirmed and 1 under investigation.

Figure 1. Monthly measles cases by rash onset in the US, 2023-25.

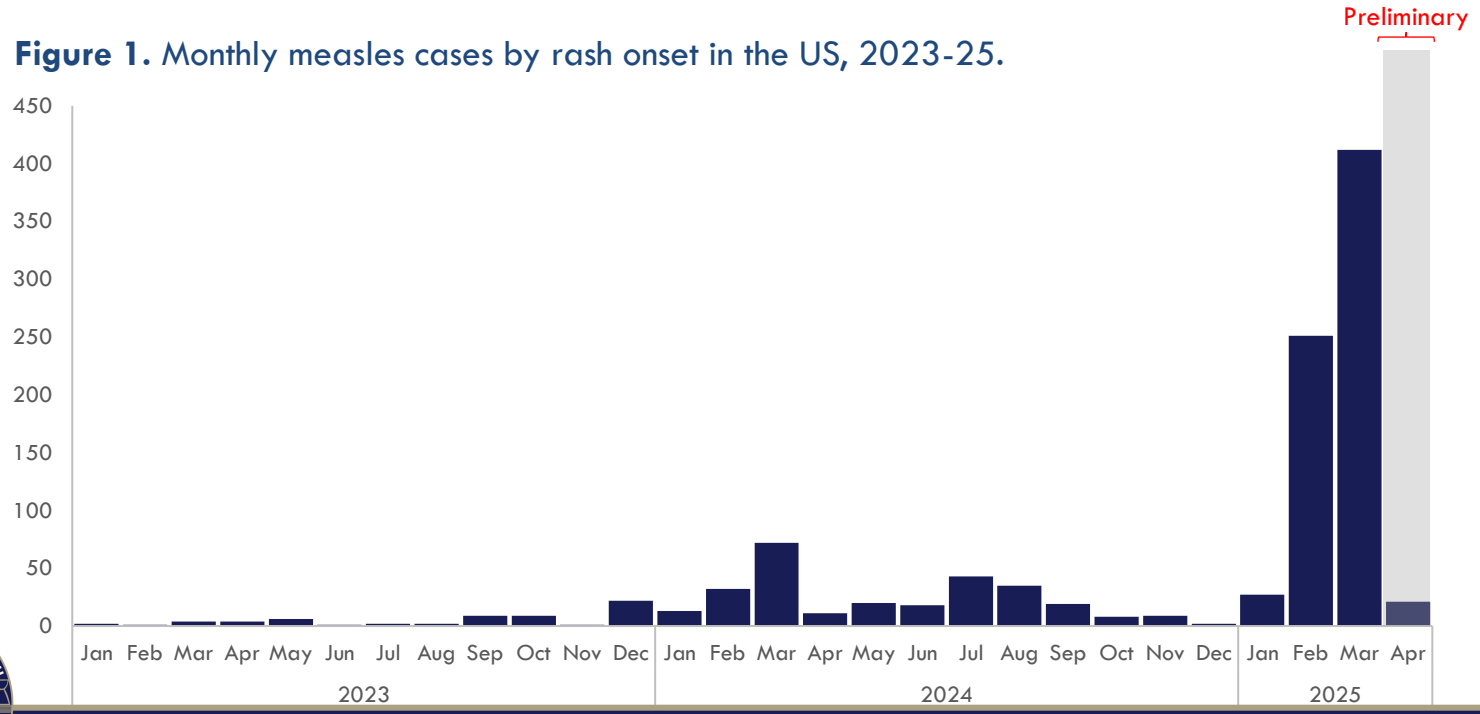


Table 1. Measles case characteristics US, 2024-2025.

	2024	2025
Total number of cases	**285**	**712**
Age Group*	n(%)	n(%)
00 to 04 yrs	120 (42)	225 (32)
05 to 19 yrs	88 (31)	274 (38)
20 or older	77 (27)	198 (28)
Unknown	0 (0)	15 (2)
Vaccination Status		
Unvaccinated or unknown	89%	97%
One MMR Dose	7%	1%
Two MMR Doses	4%	2%
Severity		
Hospitalizations	114 (40)	79 (11)
Deaths	0	3*

**1 pending confirmation*

[1]CDC Measles Cases and Outbreaks

Measles || Nationwide Situation

Key Points

- Figure 2 depicts the cumulative reports of measles for US and Canada by state/province/territory, for CY2024 and 2025.
- The majority of cases in 2025 are concentrated in Texas, New Mexico, Kansas, Ontario, and Quebec (**Figure 2b**)[1].
- There has been an increase in the number of states in the US now reporting 1 or more measles cases.
- The US is experiencing 7 separate measles-related outbreaks, accounting for 93% of confirmed cases.
- Majority of other non-outbreak associated cases have reported recent international travel.
- Hawaii State recently reported a laboratory-confirmed measles case in an unvaccinated child with recent travel (**Figure 2c**).
- Note, **Figure 2b-c** includes data for Saskatchewan, Michigan, and Kansas, which has not yet been updated on CDC or Canadian Government website.

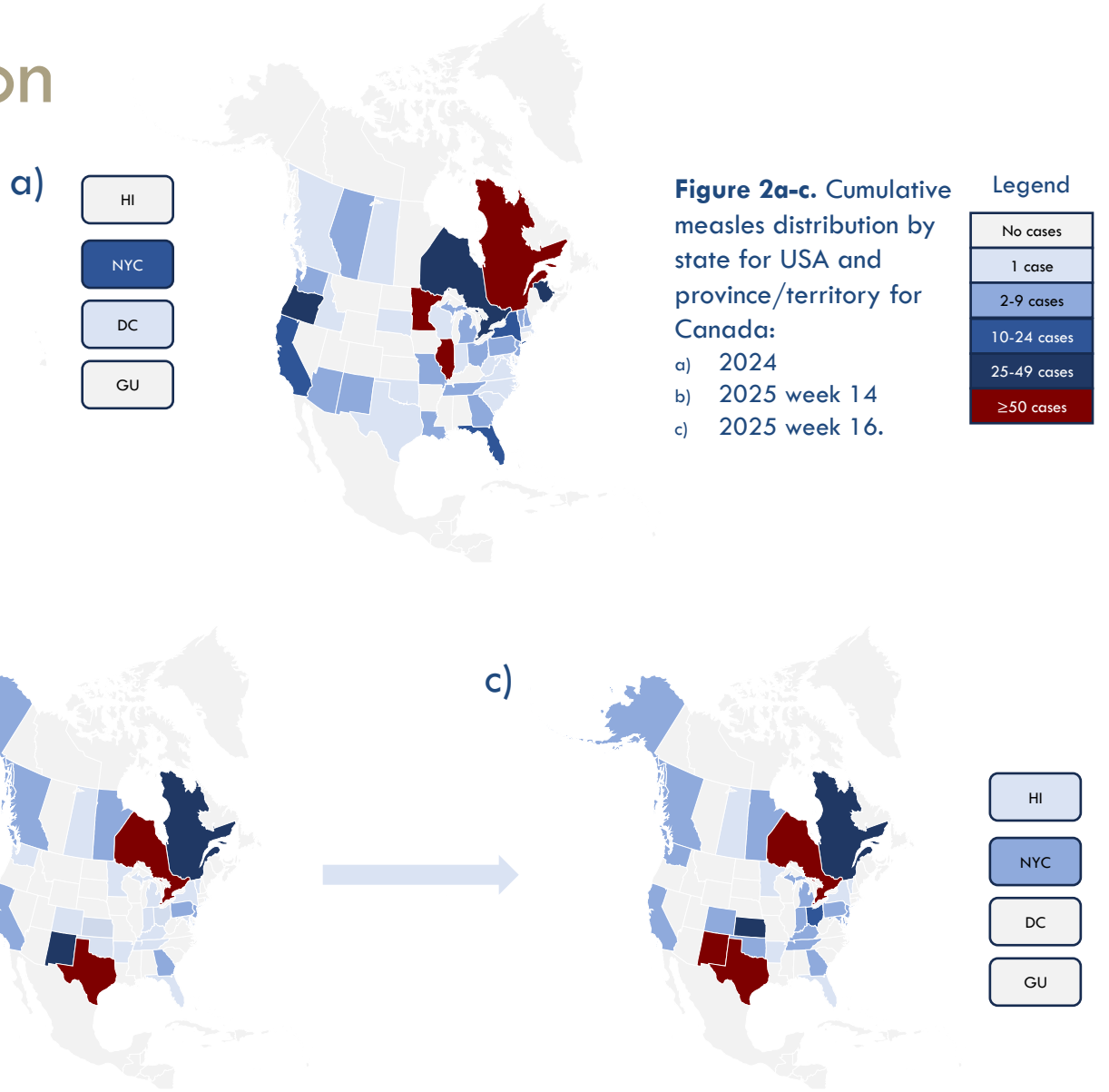


Figure 2a-c. Cumulative measles distribution by state for USA and province/territory for Canada:

a) 2024
b) 2025 week 14
c) 2025 week 16.

[1] CDC Measles Cases and Outbreaks

Disclaimer: MMR vaccination coverage and exemption estimates are based on data reported to CDC annually by the 50 states, including the District of Columbia. Each state collects data in either a Census-style survey or through a Stratified 2-stage cluster sample. Similarly, each state uses either survey style to produce their yearly estimates, thus, estimates for a single state for each season may use either survey.

Updated 04 March 2025

Measles || Nationwide Situation

Key Points

- **Figures 3** and **4** displays the MMR vaccination coverage and vaccination exemption rates reported for the nation and for select states, according to the CDC's SchoolVaxView Interactive[2]
- The vaccination coverage rate for the nation averaged approximately 94% annually since 2011 (**Figure 3**).
- Texas, New Mexico, and California, consistently reported higher coverage rates annually compared to the national average (**Figure 3**).
- Meanwhile, **Figure 4** illustrates a steady increase in vaccination exemptions offered for Texas, New Mexico, and Hawaii.

Figure 3. MMR vaccination coverage for Natl, TX, NM, CA, and HI, 2011-2024.

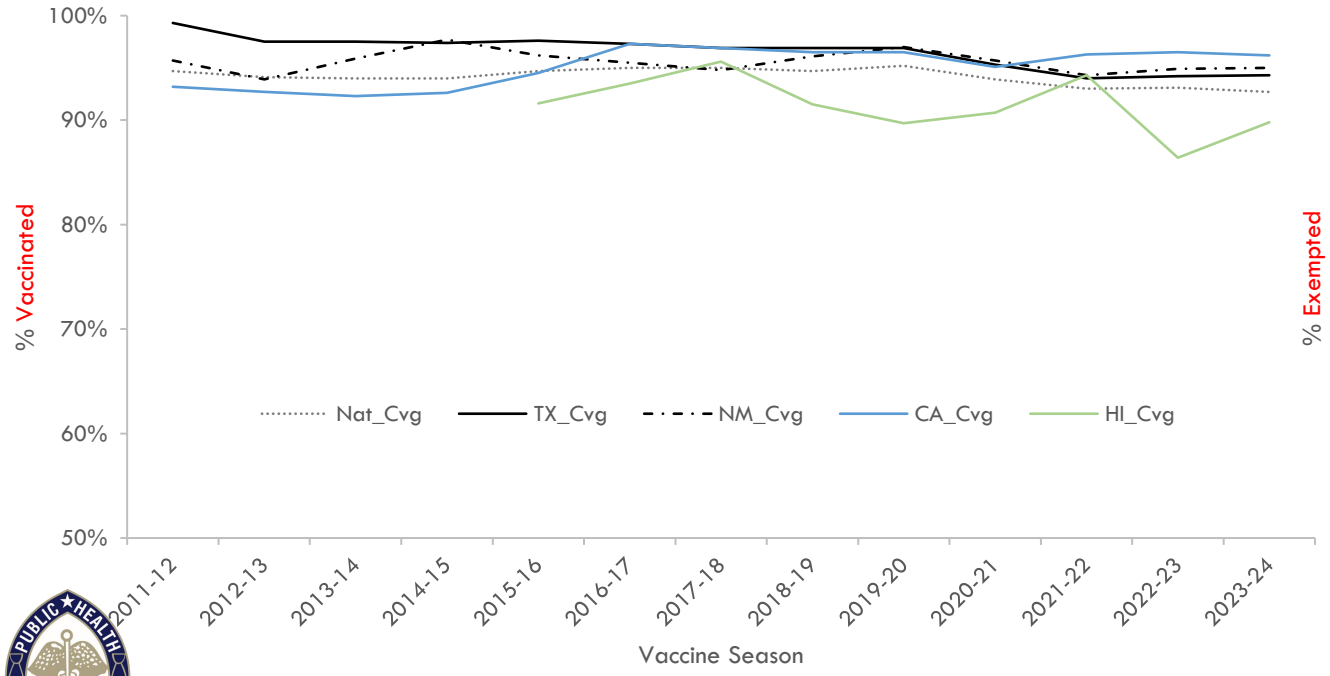
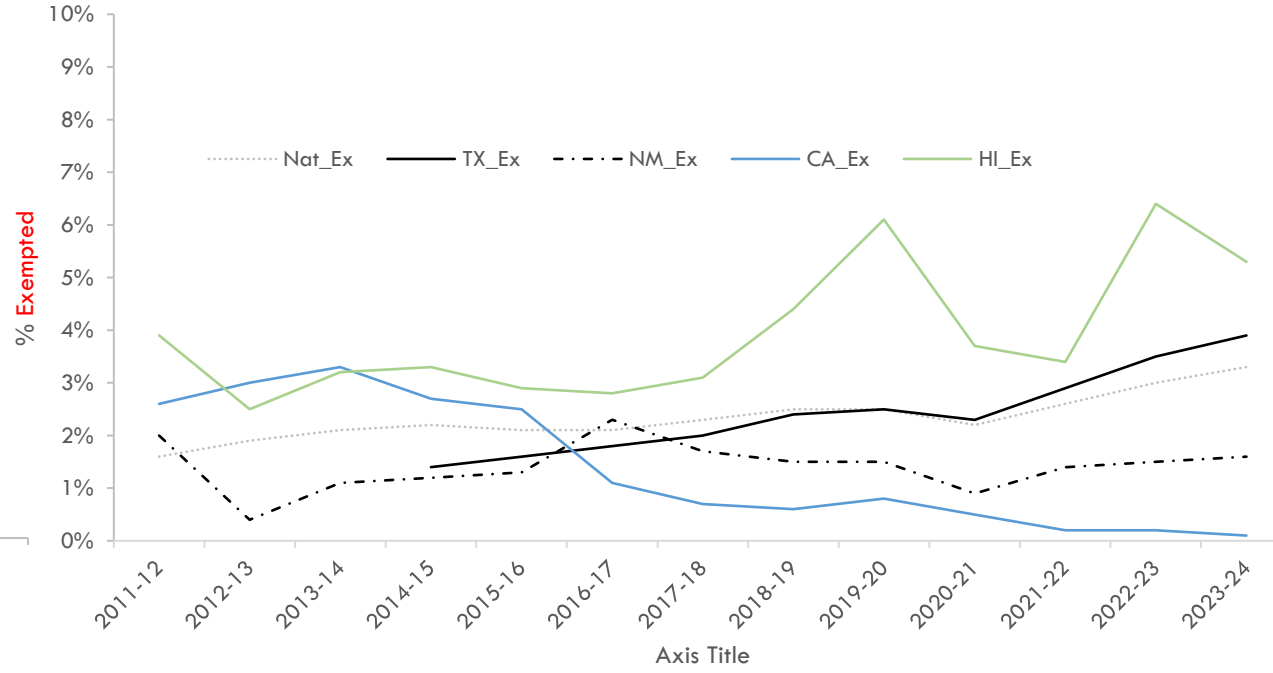


Figure 4. Vaccination exemptions for Natl, TX, NM, CA, and HI, 2011-24.



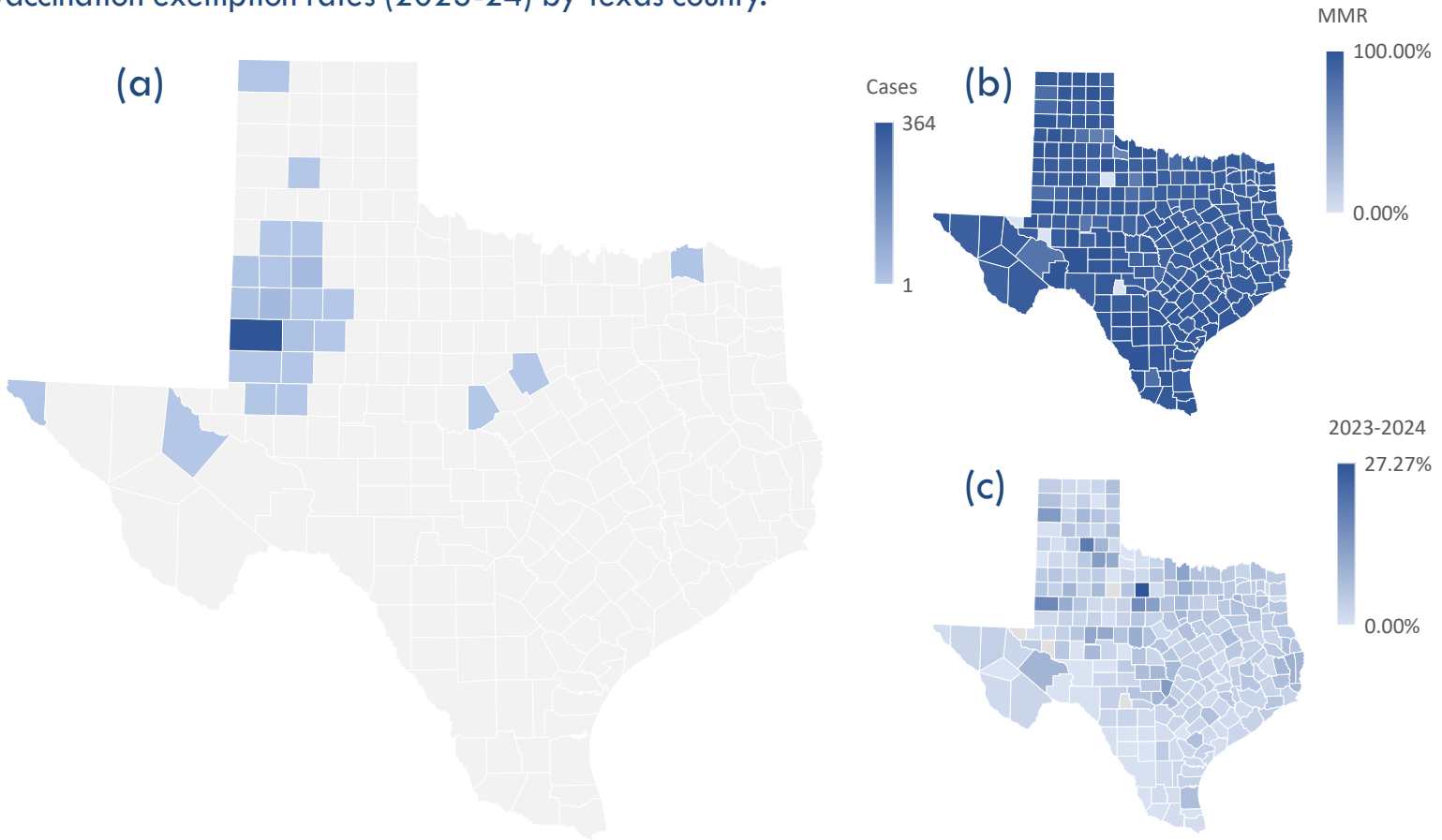
[2]CDC SchoolVaxView Interactive

Measles || Texas Outbreak

Key Points

- The current Texas measles outbreak is concentrated in the western counties, with Gaines county being the epicenter, with nearby counties adjacent to Gaines reporting cases (**Figure 5a**)[3].
- Texas averaged relatively high vaccination coverage, approximating 97% for the last 13 vaccination seasons (**Figure 5b**)[3].
- However, Gaines county reported a coverage rate of 82% (**Figure 5b**)[3].
  - Further review of the county's school-level data highlights coverage variability, ranging from 46% to 94% across the 3 public schools.
- Gaines county has also reported and sustained higher than usual exemption rates, though the county with the highest exemption rate is in Throckmorton (**Figure 5c**)[3].

Figure 5. Measles (a) case distribution (2025); (b) vaccination coverage (2023-24); and (c) vaccination exemption rates (2023-24) by Texas county.



Disclaimer: The following information is based on my interpretation of the ongoing outbreak. I do not receive situation reports from the State Health Department. All figures were developed based on data obtained through the Health Department website and is not a product of the Health Department. Vaccination data is also provided in the hyperlink at the bottom of the page.

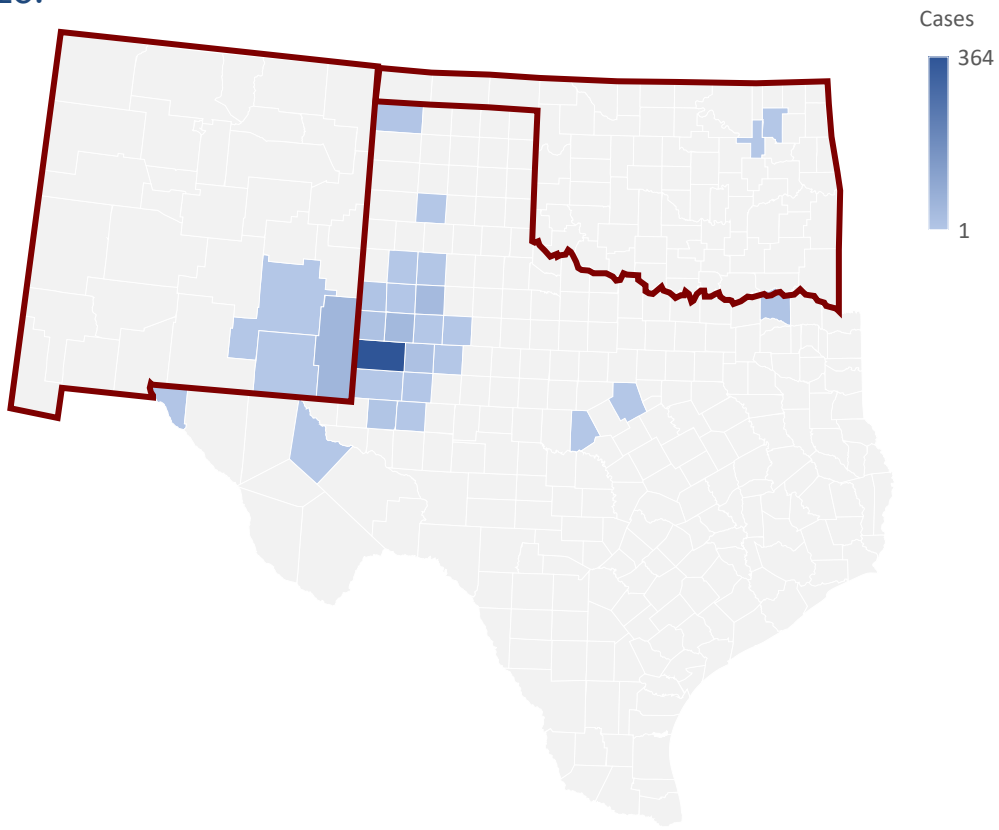
[3]Texas Department of Health Measles Outbreak

Measles || New Mexico Outbreak

Key Points

- New Mexico reported a total of 58 cases detected in Lea County adjacent to Gaines County, Eddy County, and Chaves County, NM (**Figure 6**).[4]
- Discordant with national data, measles in New Mexico is equally affecting those age 05-17yrs and those older than 18yrs.
- Approximately 71% of all NM cases are unvaccinated.
- New Mexico also reported a deceased resident of Lea County who tested positive for measles on March 06.
- Oklahoma is the second state associated with the TX measles outbreak, reporting a total of 9 confirmed and 3 probable cases in the northeastern counties.
- All 12 (confirmed and probable) are unvaccinated.

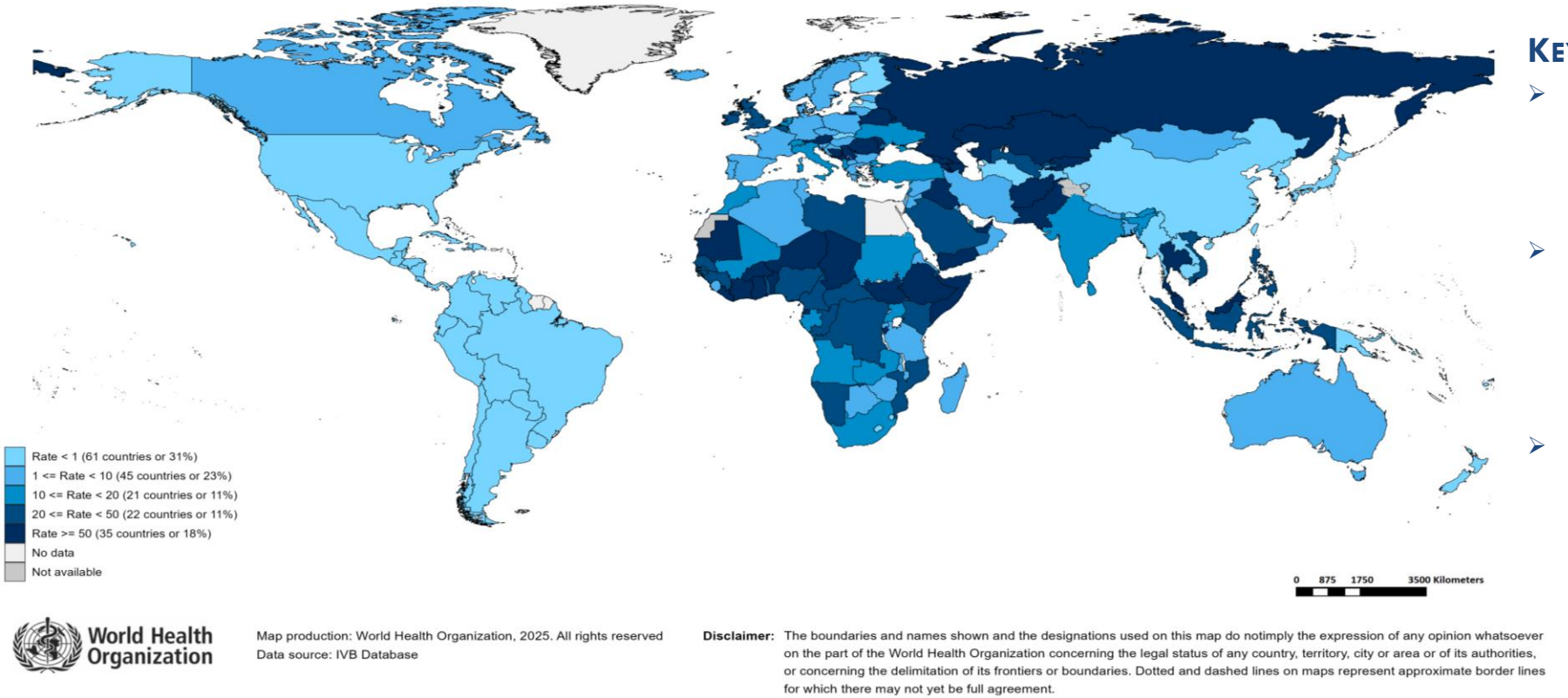
Figure 6. Measles case distribution by county, New Mexico, 2025.



[4]New Mexico Department of Health Measles Guidance Dashboard, [5]Oklahoma State Department of Health

Measles || Global Situation

Figure 7. Measles incidence rate (per million) in the last 12months, by country.



Key Points

- **Figure 7** illustrates the countries with the highest measles incidence rates across the globe, as detected by the World Health Organization (WHO).5
- Measles continues to be a risk across the globe, with the highest incidence rates detected (and endemic) in parts of the World Health Organization African Region, European Region, and South-East Asian Region.
- More comprehensive data may be found here.

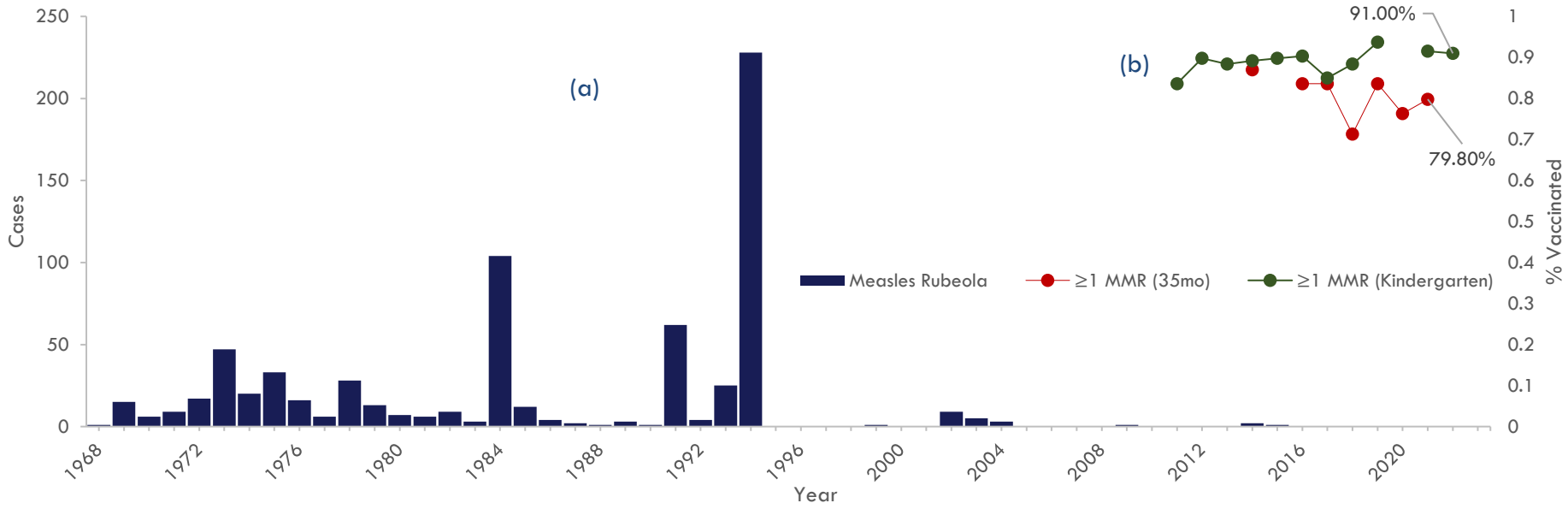
[5]WHO Measles and Rubella Global Update, Feb 2025

Measles || Guam Situation

Key Points

- Figure 8 represents the number of measles cases detected in Guam (left axis) and the percentage immunized with ≥1 dose of MMR vaccine by age 35 months obtained through the National Immunization Survey, accessed via CDC ChildVaxView.
- The last measles case detected in Guam was in 2014, whereas the last major measles outbreak occurred in 1994 with a total of 228 cases detected (**Figure 8a**).
- The vaccination coverage rate for Guam hovered around 80% for 2014-2021 (**Figure 8b**)[6]. This is substantially lower than the national average and insufficient to provide effective prevention should measles enter Guam.
- Vaccination coverage for Kindergarten students, however, has remained comparably higher, averaging 89% since 2011.[2]

Figure 8. Measles (a) case report by year since 1968, and (b) MMR vaccination coverage by year, Guam, 1968-2025.



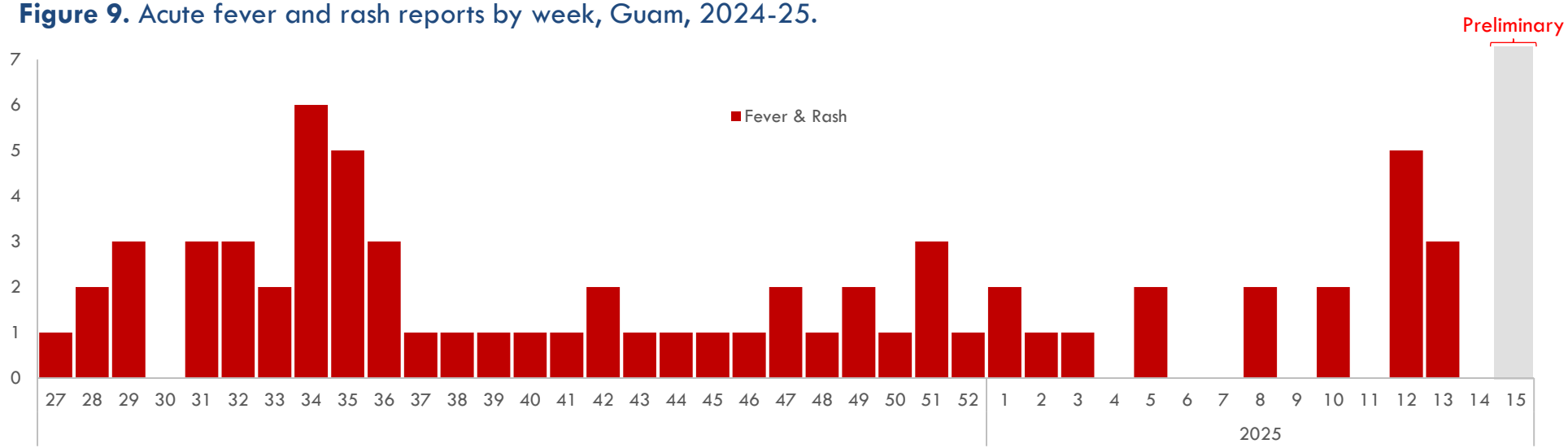
[2]CDC SchoolVaxView Interactive, [6]CDC ChildVaxView,

Measles || Guam Situation

Key Points

- Though tests are not routinely/frequently ordered, Guam does monitor indicators for measles through weekly syndromic surveillance reports of acute fever and rash (AFR) seen in the emergency rooms at GMHA and GRMC (**Figure 9**).
- <u>All AFR cases will be investigated.</u>
- Although there has been an increase of AFR reports in the earlier half of fall, the reports have since then declined and tapered entering late 2024.
- There have been no AFR cases reported in the past two weeks.

Figure 9. Acute fever and rash reports by week, Guam, 2024-25.



[6]CDC ChildVaxView

Measles || Assessment and Limitations

ASSESSMENT

This assessment concludes a **MODERATE** risk for Guam's vulnerable population (<18yrs) due to low vaccination coverage in the presence of a highly infectious virus.

- Measles is a highly contagious virus, with a R_0 estimated between 12-18, and a case fatality rate of 0.1% in HIC, 1-3% in LMICs.
- Measles infections are increasing at a rapid rate in the US, where measles is considered eliminated since 2003 and where sporadic infections are primarily the result of international travel.
  - Measles infections are also rising internationally, and in popular travel destinations for Guam residents.
- The last measles case detected in Guam was in 2014.
- Vaccination offers the best prevention against measles infection; and a vaccination coverage of 93-95% of the population provides optimal community protection.
  - Guam vaccination coverage for measles is suboptimal, at approximately 80% in 35months received at least a single dose.

Risk Posed To Guam	
Moderate	
Likelihood of Infection **Moderate**	*Impact* **Moderate**
Confidence in Assessment	**Moderate**

LIMITATIONS

- The degree of uncertainty is due to the following factors:
  - Lack of rapid accessibility to accurate (and credible) data ranging from case severity and epidemiologic risk factors of cases occurring in the US;
  - Limited accuracy of Guam's current vaccination coverage data for the most vulnerable population;
  - Sole interpretation of currently available data by the Territorial Epidemiologist.

Measles || Assessment Definitions

Likelihood of Infection

- **Extremely low**: An extremely small number of people are likely to be exposed, the pathogen is not very infectious, or the population is highly immune. We expect an extremely low prevalence of infection in the population, far less than 1% of the population.
- **Very low**: A very small number of people are likely to be exposed, the pathogen is not very infectious, or the population is highly immune. We expect a very low prevalence of infection in the population.
- **Low**: There are limited opportunities for exposure for most of the population, but exposure may be high in some areas or subgroups. The pathogen has at least moderate infectiousness or significant gaps in population immunity. We expect a low prevalence of infection in the population, potentially with pockets of higher prevalence.
- **Moderate**: Many people are likely to be exposed, the pathogen has moderate to high infectiousness, or the population has low levels of immunity. We expect a moderate prevalence of infection in the population.
- **High**: Most people are likely to be exposed, the pathogen has high infectiousness, or the population has very low immunity. We expect a high prevalence of infection in the population, with most of the population affected.
- **Very high**: The vast majority of the population is likely to be exposed, the pathogen has very high infectiousness, or the population has extremely low immunity. We expect a very high prevalence of infection in the population, with the vast majority of the population affected.

Impact of Infection

- **Very low**: The pathogen is very unlikely to cause severe disease for this population, there is a very high proportion of population immunity protecting against severe disease, and/or effective treatments are widely available. The disease is very unlikely to cause disruption to normal activities or require additional resources for public health measures.
- **Low**: The pathogen is unlikely to cause severe disease for this population, there is a very high proportion of population immunity protecting against severe disease, and/or effective treatments are widely available. The disease is unlikely to cause disruption to normal activities or require additional resources for public health measures.
- **Moderate**: The pathogen causes severe disease for a substantial proportion of this population or pockets within this population, there is limited population immunity protecting people from severe disease, and/or effective treatments are not widely available or accessible. The disease may cause significant disruption to the population and require significant public health resources.
- **High**: The pathogen typically causes severe disease for this population, there is a very low proportion of population immunity protecting against severe disease, and/or effective treatments are very limited or difficult to access. The disease could cause extensive disruption to normal activities and will potentially require a large amount of public health resources.
- **Very high**: The pathogen typically causes very severe disease for this population, there is a very low proportion of population immunity protecting against severe disease, and/or there are no effective treatments. The disease could cause prolonged and extensive disruption to normal activities and will potentially require a very high level of public health resources.

Likelihood of Infection

- **Low confidence**: Assessment is based on information that is fragmented, poorly corroborated or upon data sources for which there are significant concerns or problems. There may be several information gaps that require numerous assumptions in order to draw conclusions for the assessment.
- **Moderate confidence**: Assessment is based on credibly sourced and plausible information, but the information is not of sufficient quality or corroboration to warrant a high level of confidence. The assessment acknowledges some information gaps or assumptions that underlie analysis.
- **High confidence**: Assessment is based on high-quality information from multiple sources, although such judgments are not a certainty. There are few information gaps and few assumptions are required to draw analytic conclusions.

Additional Information

Scan the QR Code to visit
the Guam Communicable Disease Dashboard.

For additional information or for general inquiries, please contact dphss.surveillance@dphss.guam.gov.