MEASLES RISK ASSESSMENT

OFFICE OF EPIDEMIOLOGY AND RESEARCH

08 MAY 2025

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	*Impact*
Moderate	**Moderate**
Confidence Level in Assessment	**Moderate** to **High**

Measles || Nationwide Situation

KEY POINTS

- The number of measles cases detected in the US reported in the first quarter of CY2025 exceeds CY2024 (**Table 1**)[1].
- In 2025, the number of cases detected is over 3x all cases reported in 2024, 935 cases and 285 cases respectively (**Table 1**) [1].
- Majority of cases impacted are school-age children (05 to 19yrs), followed by infants (<05yrs) and those age 20 or older. <u>Note this accounts for scale of age ranges, despite the table indicating the same proportion for both groups.</u>
- Approximately 96% of all cases in 2025 are unvaccinated or unknown.
- There are 3 measles confirmed deaths.

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

|	2024	2025
Total number of cases	**285**	**935**
Age Group*	n(%)	n(%)
00 to 04 yrs	120 (42)	285 (30)
05 to 19 yrs	88 (31)	353 (38)
20 or older	77 (27)	284 (30)
Unknown	0 (0)	13 (1)
Vaccination Status		
Unvaccinated or unknown	89%	96%
One MMR Dose	7%	2%
Two MMR Doses	4%	2%
Severity		
Hospitalizations	114 (40)	121 (13)
Deaths	0	3*

All 3 confirmed-measles deaths.

Measles || Nationwide Situation

KEY POINTS

➢ As of May 01, 2025, there are a total of 935 confirmed measles cases reported by 30 states.

➢ Compared to 16 outbreaks detected in 2024, the US reported 12 for 2025, with 93% of confirmed cases being outbreak-associated.

➢ Despite growth in number of outbreaks detected, the magnitude of cases reported is slowing.

➢ **Figure 1** represents measles cases by **a)** month 2023-2025, and **b)** week 2024-205.

➢ **Figure 1a** demonstrates an overall decline in measles case detection in the US, approximately 60% less than March 2025

➢ **Figure 1b** presents additional granularity indicating a steadying or slowing weekly case detection rate.

Figure 1. Monthly measles cases by rash onset in the US, by **a)** month and year 2023-25; and, **b)** week and year 2024-25.
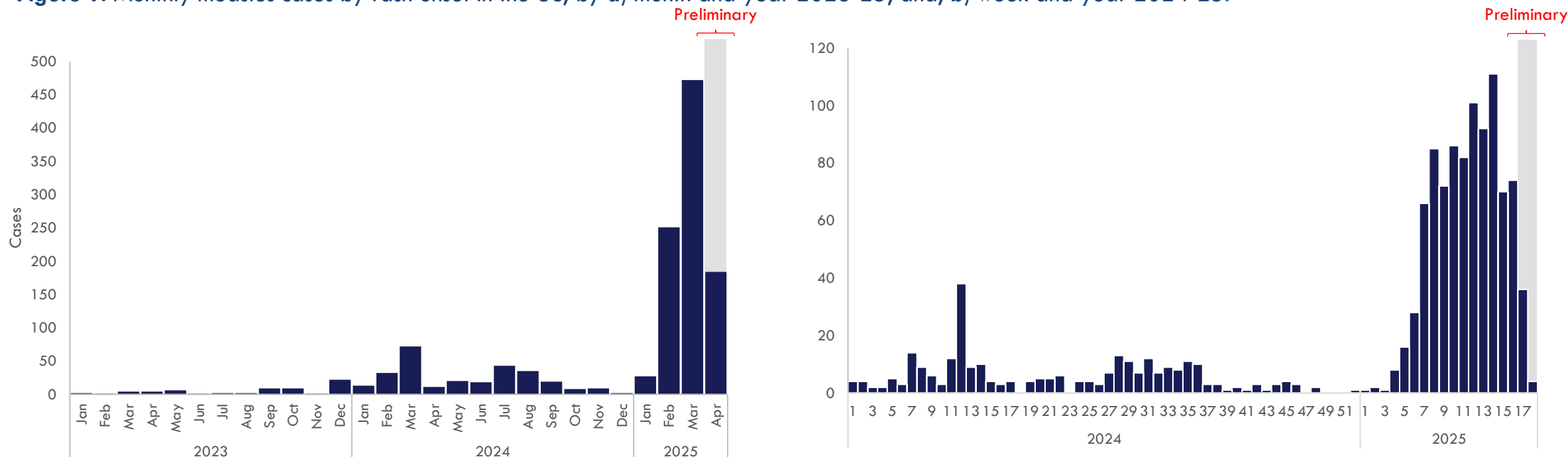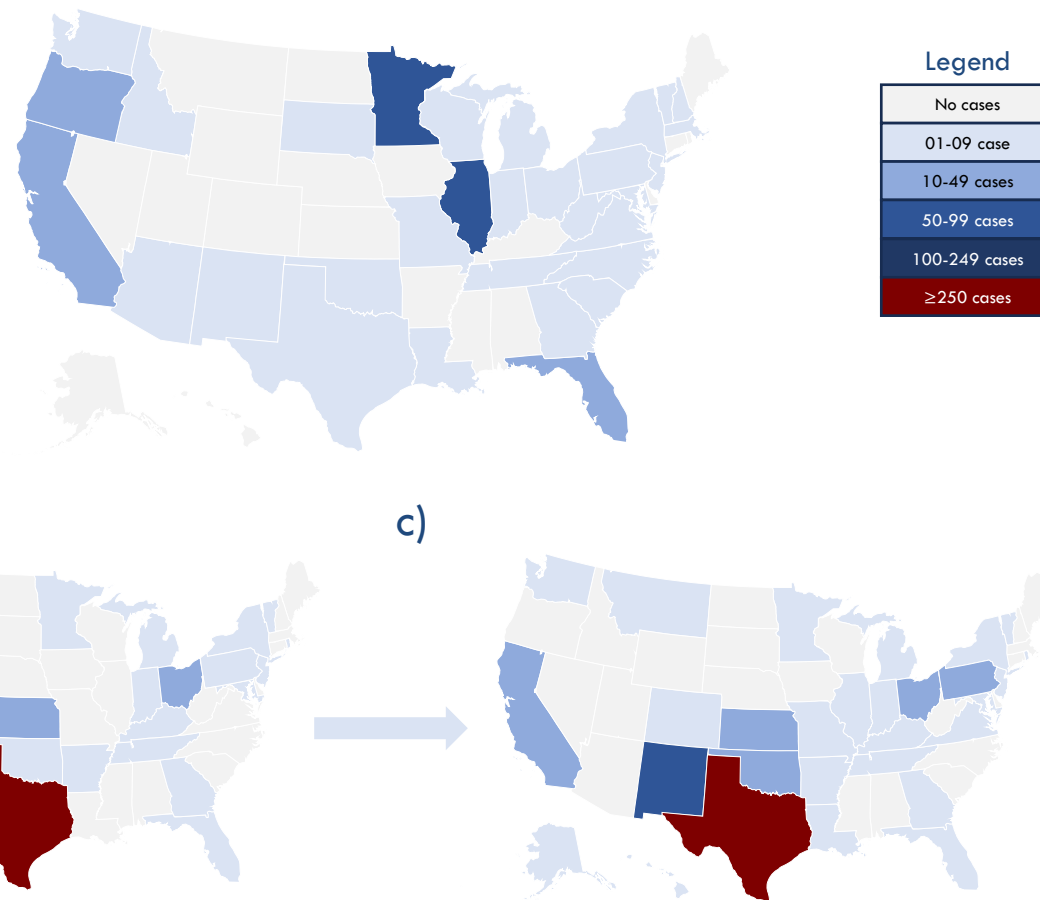
Measles || Nationwide Situation

KEY POINTS

➢ **Figure 2** depicts the cumulative reports of measles for US jurisdictions for CY2024 and 2025.

➢ The majority of cases in 2025 are concentrated in Texas, New Mexico, Kansas, and Ohio (**Figure 2b and c**)[1].

➢ Since the previous report (**Figure 2b**), there has been an increase in the number of states in the US now reporting 1 or more measles cases, including Montana, Louisiana, Virginia, and Rhode Island (**Figure 2c**)

➢ The US is experiencing 12 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 second laboratory-confirmed measles case in an unvaccinated child with recent travel. No new suspected measles cases have been reported.

a)

Figure 2a-c. Cumulative measles distribution by state for USA:
a) 2024
b) 2025 week 16
c) 2025 week 18.

Legend
No cases
01-09 case
10-49 cases
50-99 cases
100-249 cases
≥250 cases

b)

c)

[1]CDC Measles Cases and Outbreaks

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.

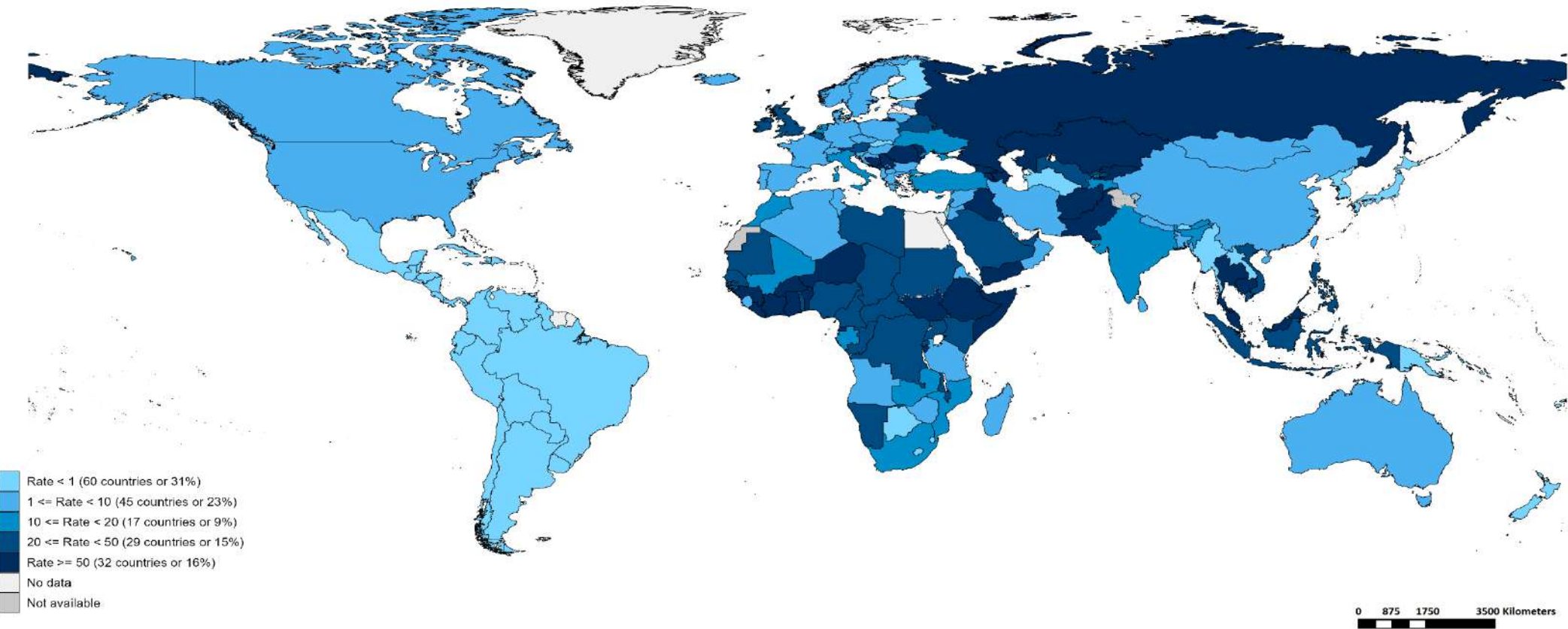**Figure 3.** MMR vaccination coverage for Natl, TX, NM, CA, and HI, 2011-2024.
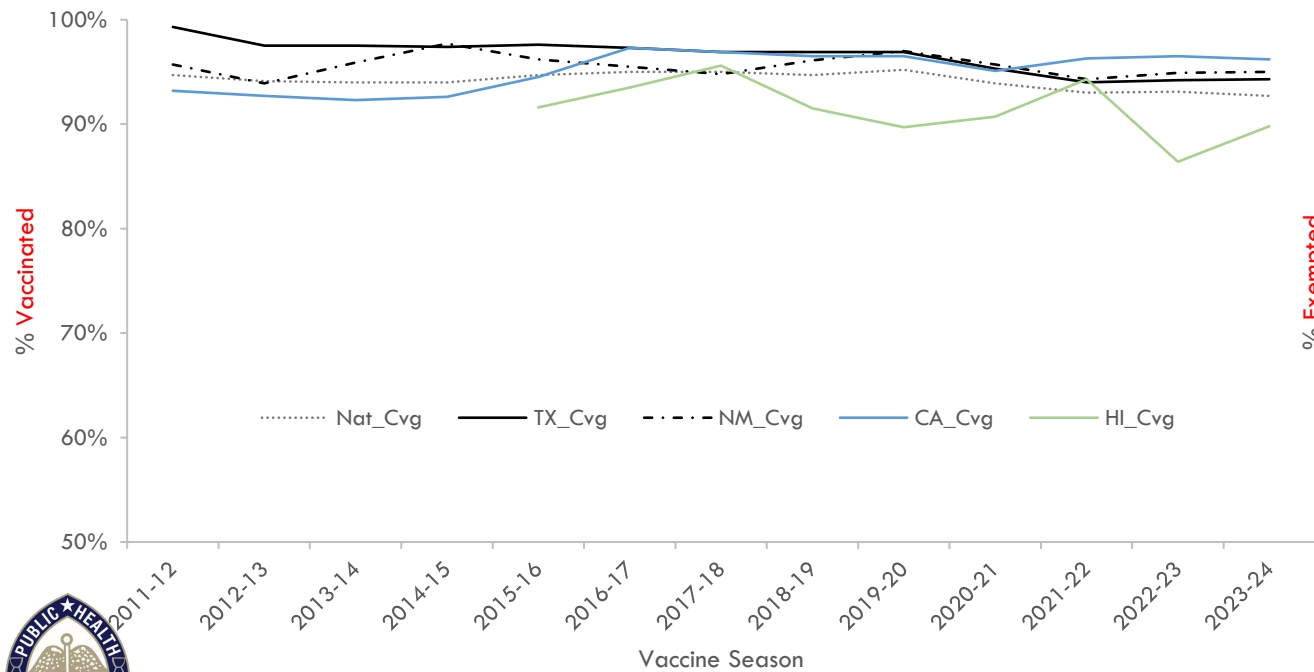
Figure 4. Vaccination exemptions for Natl, TX, NM, CA, and HI, 2011-24.
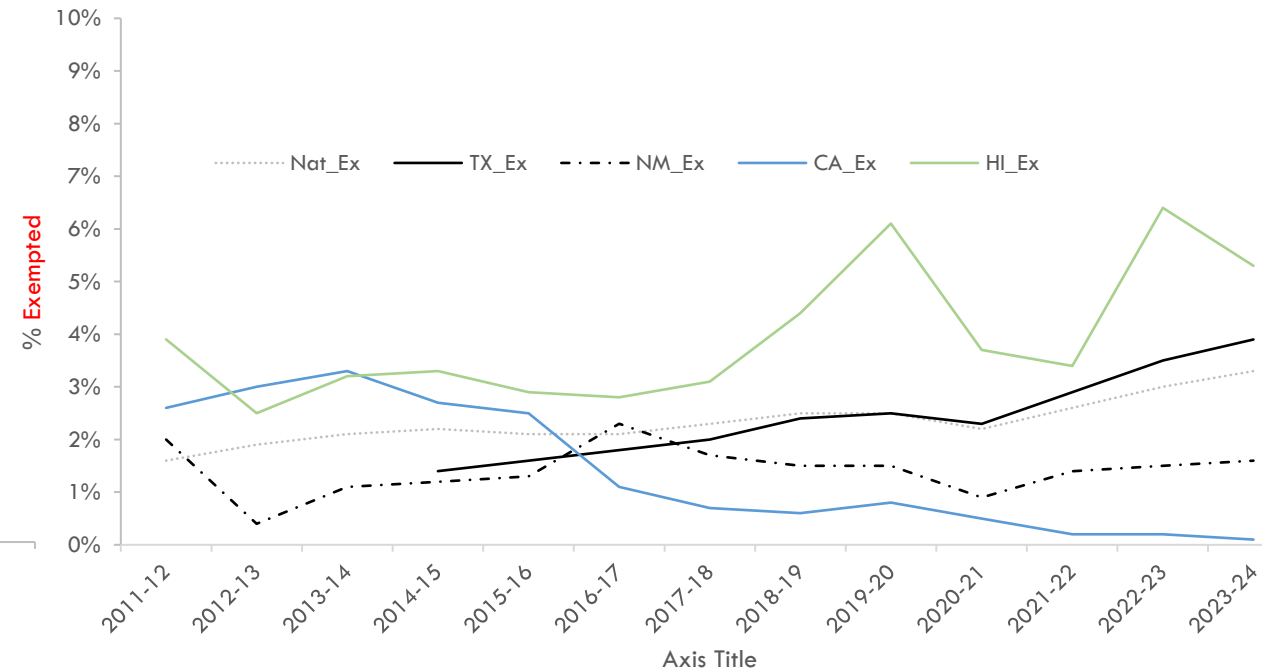
Measles ‖ Global Situation

Figure 5. Measles incidence rate (per million) in the last 12months, by country; Global Update April 2025

Rate < 1 (60 countries or 31%)
1 <= Rate < 10 (45 countries or 23%)
10 <= Rate < 20 (17 countries or 9%)
20 <= Rate < 50 (29 countries or 15%)
Rate >= 50 (32 countries or 16%)
No data
Not available

0   875   1750   3500 Kilometers

World Health Organization

Map production: World Health Organization, 2025. All rights reserved
Data source: IVB Database

Disclaimer: The boundaries and names shown and the designations used on this map do notimply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.
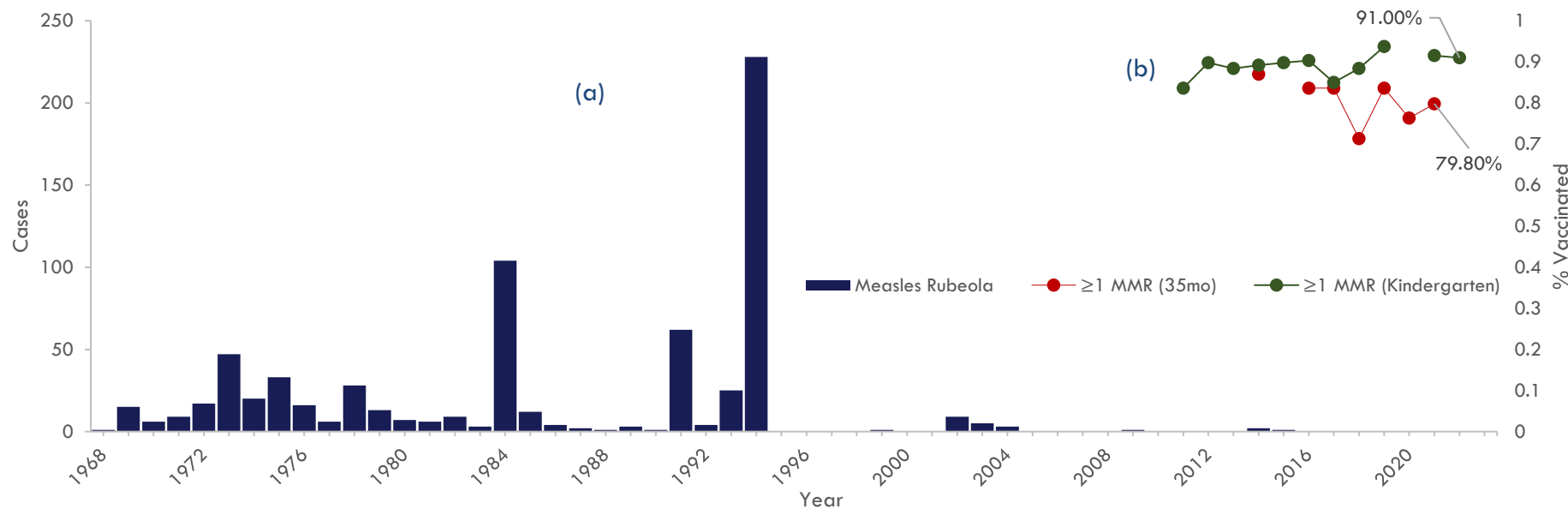
Measles ‖ Guam Situation

KEY POINTS

➢ **Figure 6a-b** 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 6a**).

➢ The vaccination coverage rate for Guam hovered around 80% for 2014-2021 (**Figure 6b**)[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 6. 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 7**).

➤ All AFR cases will be investigated.

➤ 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 4 weeks (excluding week 18).

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

[6]CDC ChildVaxView
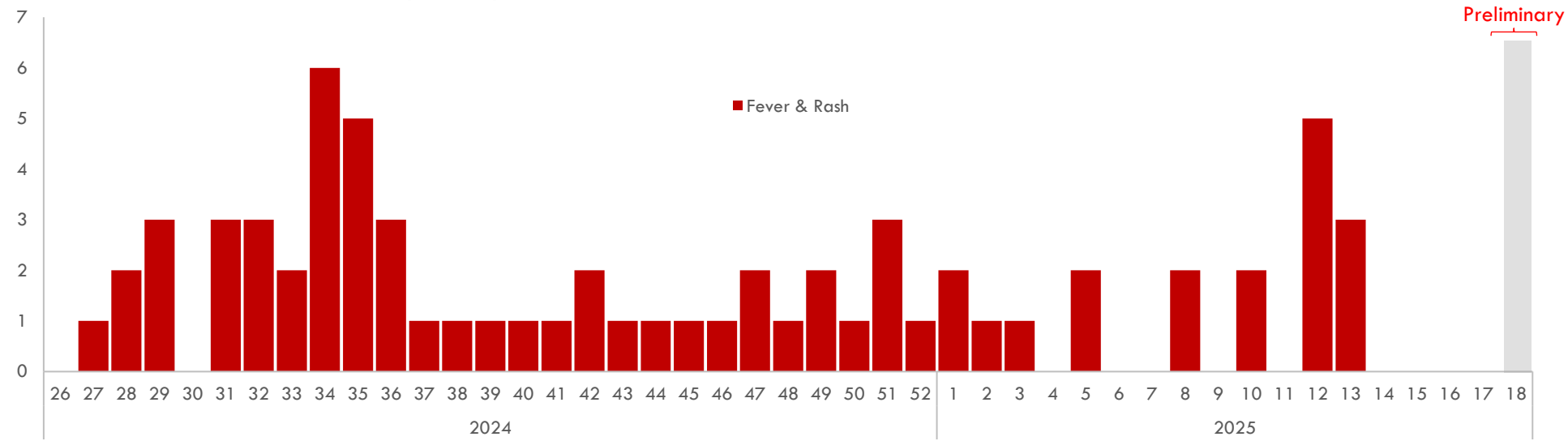
Measles ‖ Assessment and Limitations

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	*Impact*
Moderate	**Moderate**
Confidence in Assessment	**Moderate** to **High**

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.