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Vaccine Preventable Disease Overview

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Global Trends

Measles

- Based on the World Health Organization (WHO) report released on November 16, 2023, between 2021 and 2022, measles cases increased globally by 18%. In 2022, deaths increased by 43%.
- In 2022, estimated number of measles cases was 9 million, and the estimated number of deaths was 136,000
- In 2022, 37 countries experienced large or disruptive measles outbreaks. The percentage of countries experiencing outbreaks is up by 68% compared to 2021.
- Of the countries experiencing outbreaks, 28 were in Africa (76%), six in Eastern Mediterranean (16%), two in South-East Asia (5%), and one in Europe (3%).



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Top 10 Countries with Measles Outbreaks in 2022



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Rank	Country	Number of Cases
1	Yemen	25,216
2	India	14,927
3	Kazakhstan	12,985
4	Ethiopia	11,227
5	Pakistan	8,316
6	DR Congo	5,989
7	Russian Federation	4,305
8	Iraq	4,164
9	Indonesia	3,827
10	Nigeria	3,683

Measles Vaccination Coverage

- A modest increase in global vaccination coverage occurred from 2021 to 2022.
- 33 million children still missed a measles vaccine dose - nearly 22 million missed their first dose and an additional 11 million missed their second dose.
- The global vaccine coverage rate of the first dose is 83%, and second dose is 74%. This rate is well under 95% coverage with two doses requirement to protect communities from outbreaks.



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	First Dose MMR Vaccine Coverage Rate at 24 months	Second Dose MMR Vaccine Coverage Rate at 13 - 17 years
US	91.4%	91.2%
Texas	90.9%	80.9%

Measles Vaccination Coverage

- Low-income countries, where the risk of death from measles is highest, continue to have the lowest vaccination rates of 66%.
- This rate showed no recovery after the drop in vaccination rates that happened globally during the COVID-19 pandemic.
- Of the 22 million children who missed their first measles vaccine dose in 2022, over half live in just 10 countries: Angola, Brazil, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Madagascar, Nigeria, Pakistan, and Philippines.

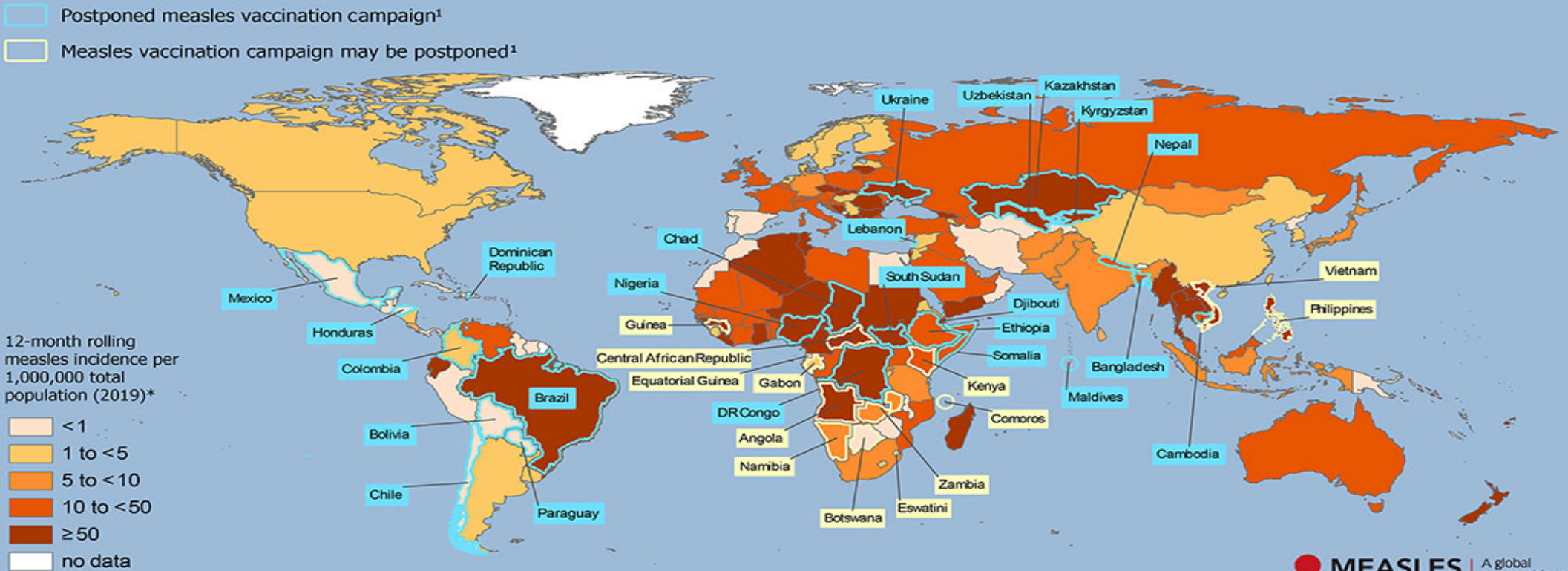


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Global Incidence of Measles

More than 117 million children at-risk of missing out on measles vaccines, as COVID-19 surges



*WHO reported measles cases and incidence rates by Member States (provisional data as of March 11, 2020).

¹ Source: Provisional information provided by immunization partners as of April 10, 2020 for planned or likely planned nationwide or subnational measles supplemental immunization activities (SIAs) and outbreak response immunization (ORI) campaigns through December 2020.



Poliomyelitis – Global Trends

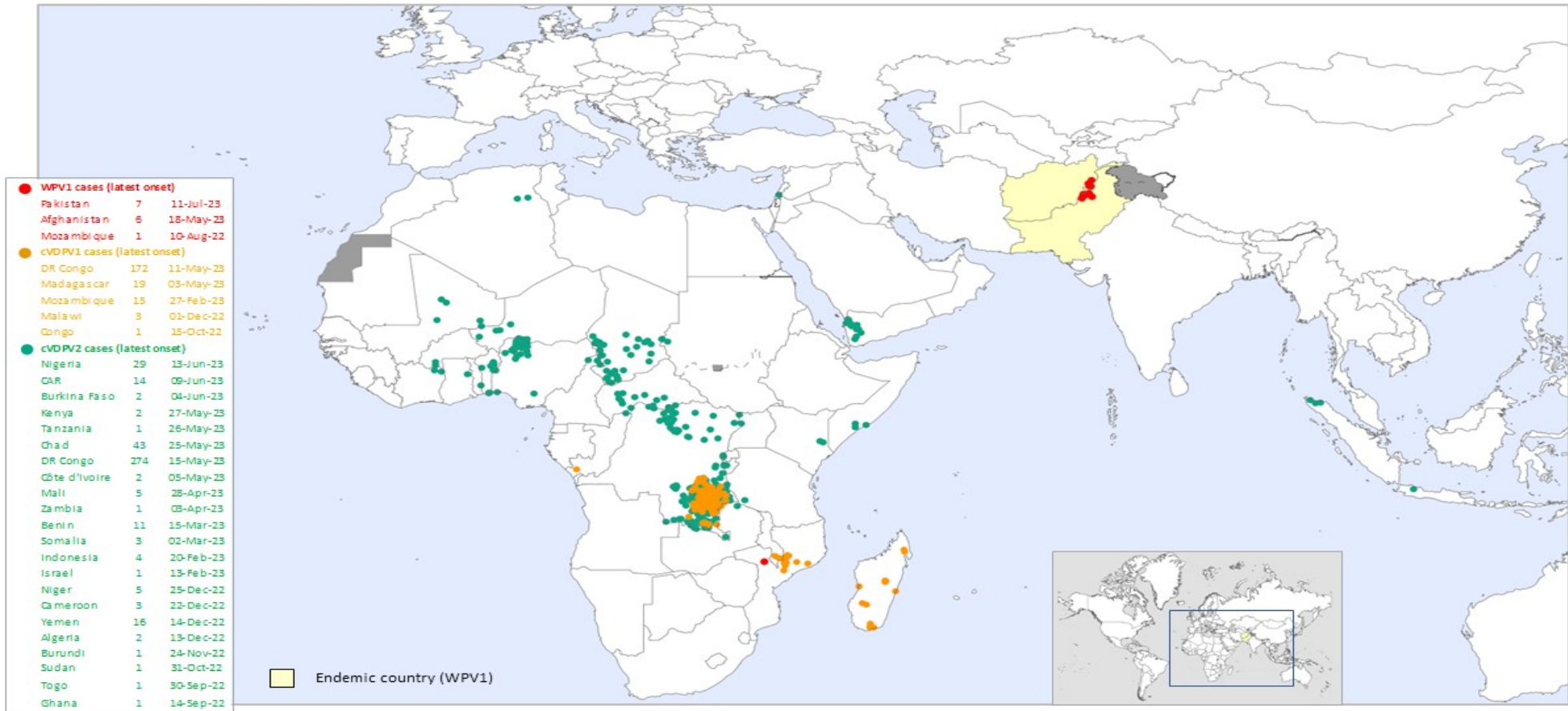


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Global WPV1 & cVDPV Cases¹, Previous 12 Months²



¹Excludes viruses detected from environmental surveillance; ²Onset of paralysis: 09 Aug. 2022 to 08 Aug. 2023

Data in WHO HQ as of 08 Aug. 2023

Maternal and Neonatal Tetanus

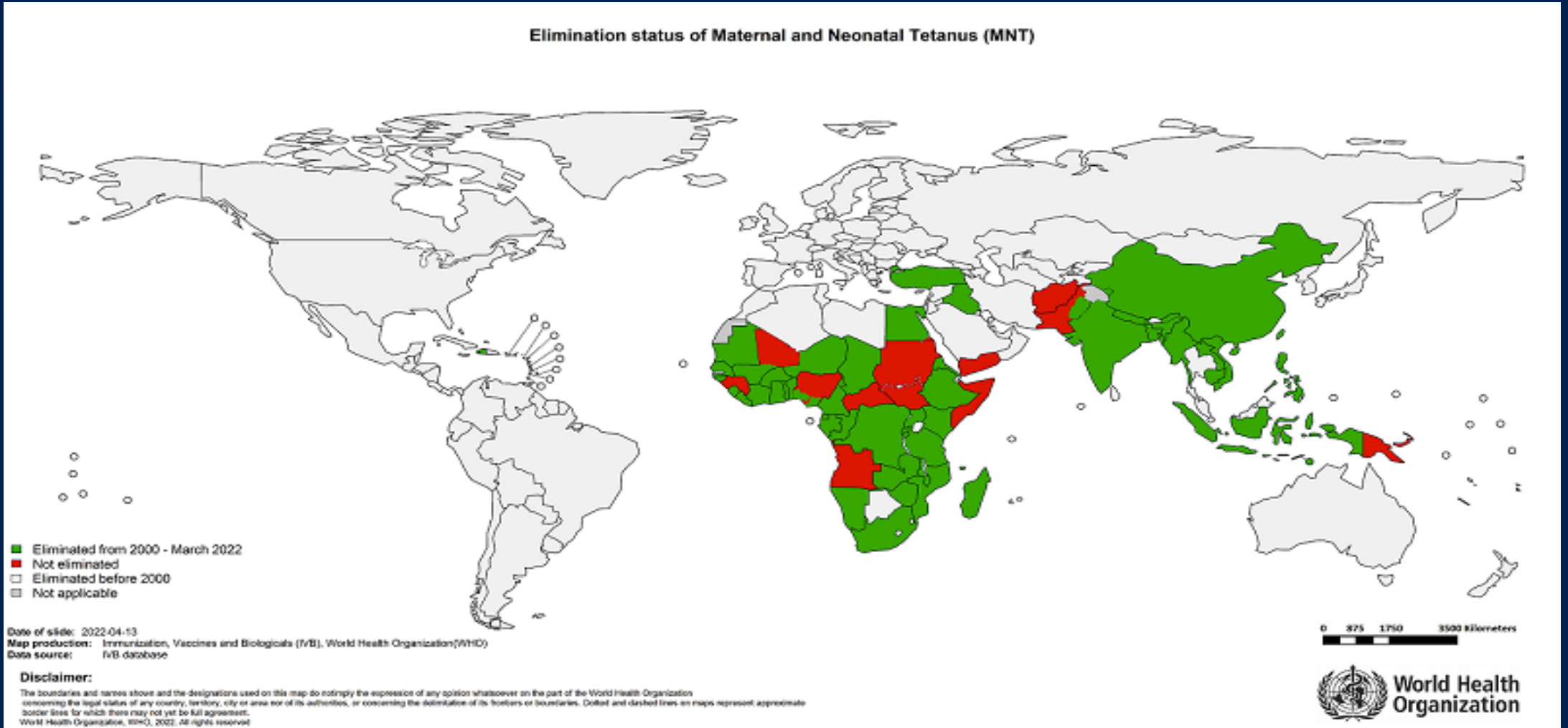


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Elimination status of Maternal and Neonatal Tetanus (MNT)





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US and Texas Trends

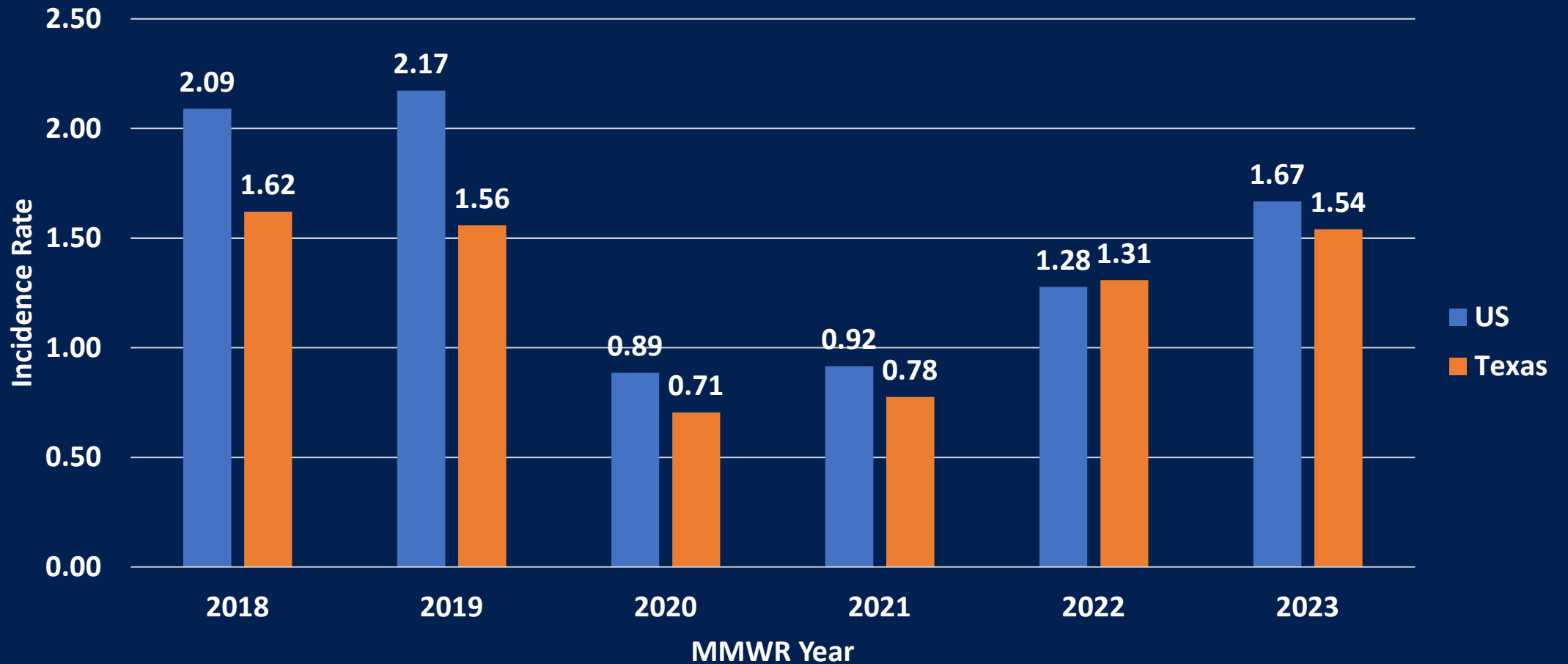
Haemophilus Influenzae, Invasive 2018-2023*



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*Confirmed and Probable cases are included. *2023 data is provisional and subject to change.*

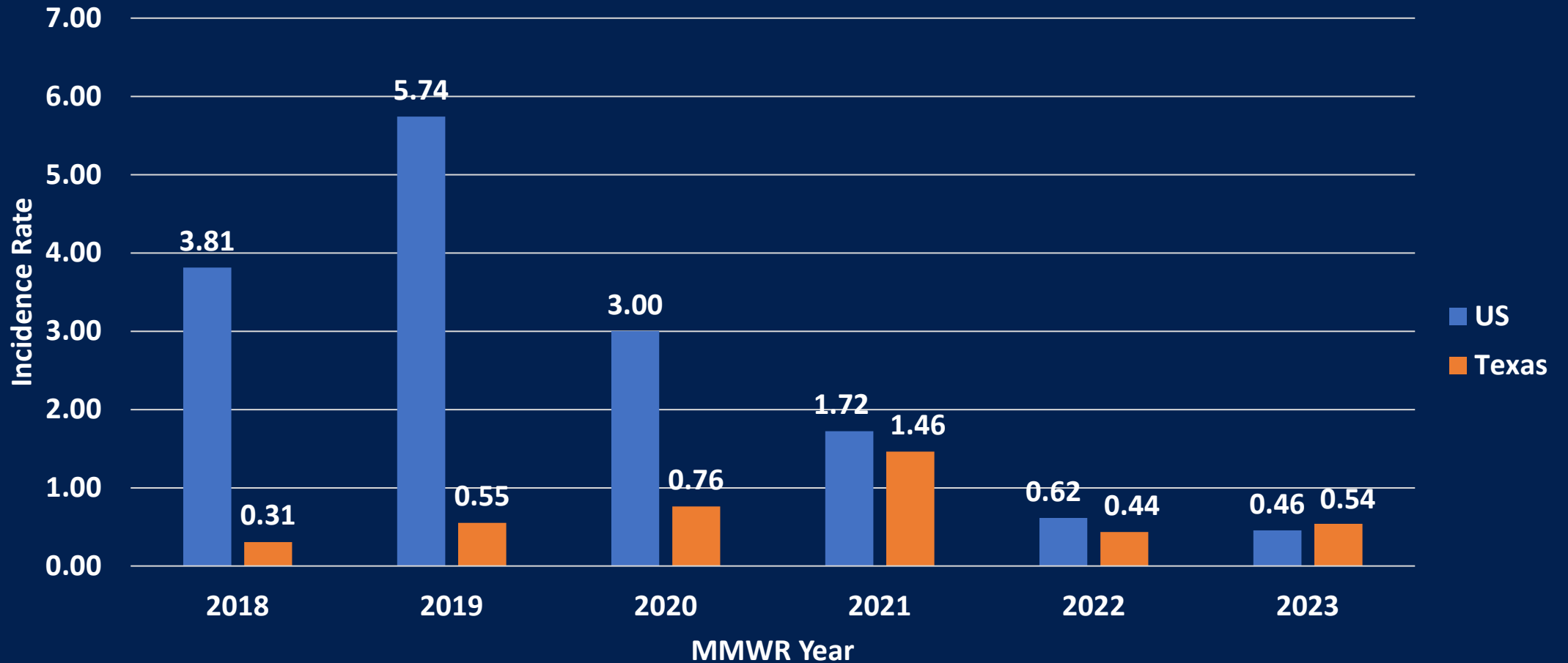
Hepatitis A, Acute 2018-2023*



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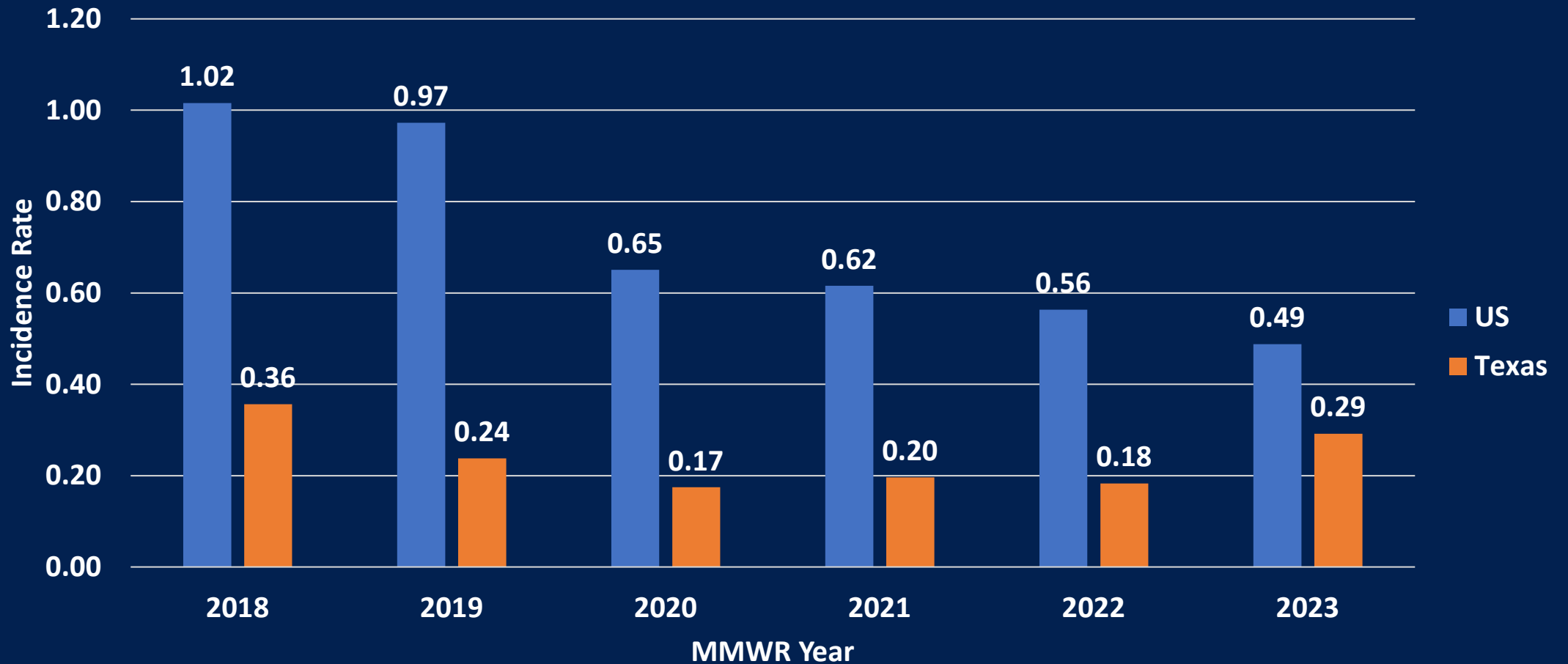
Hepatitis B, Acute 2018-2023*



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Measles 2018-2023*



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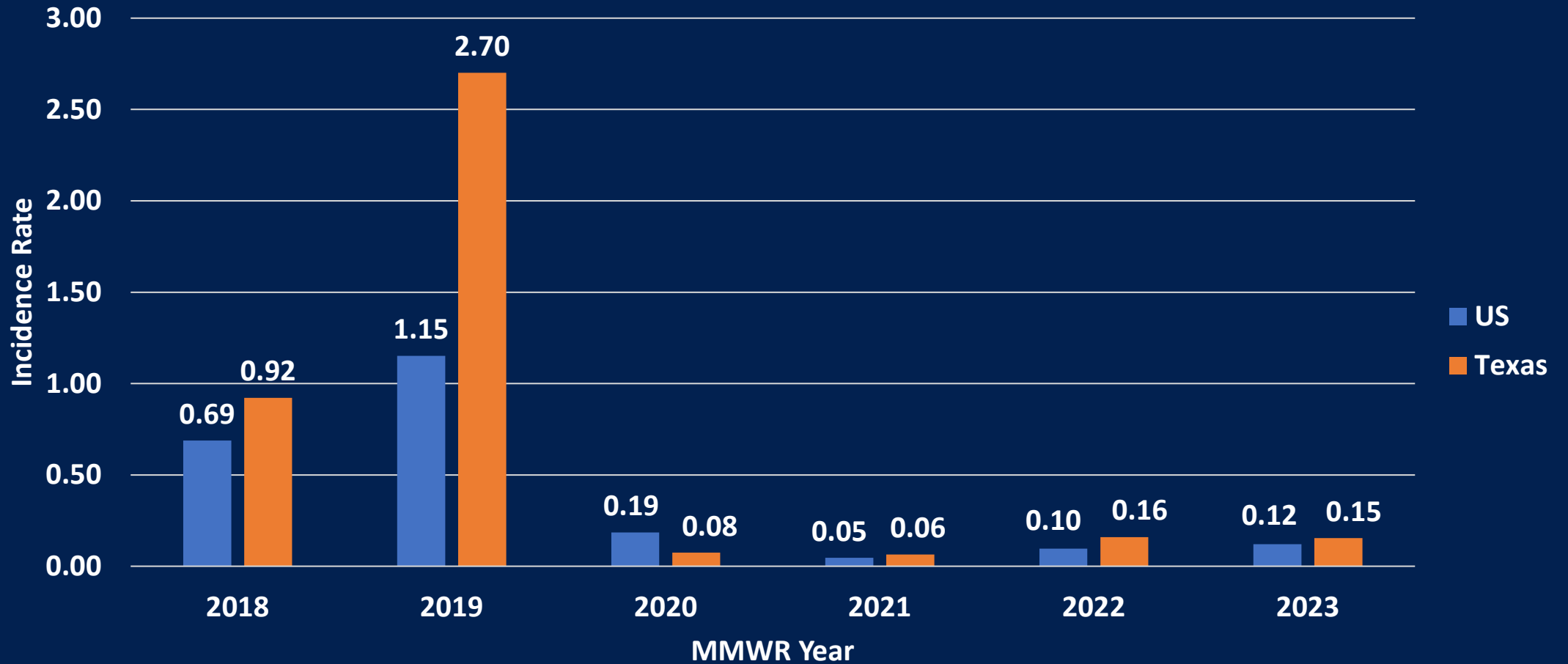
Mumps 2018-2023*



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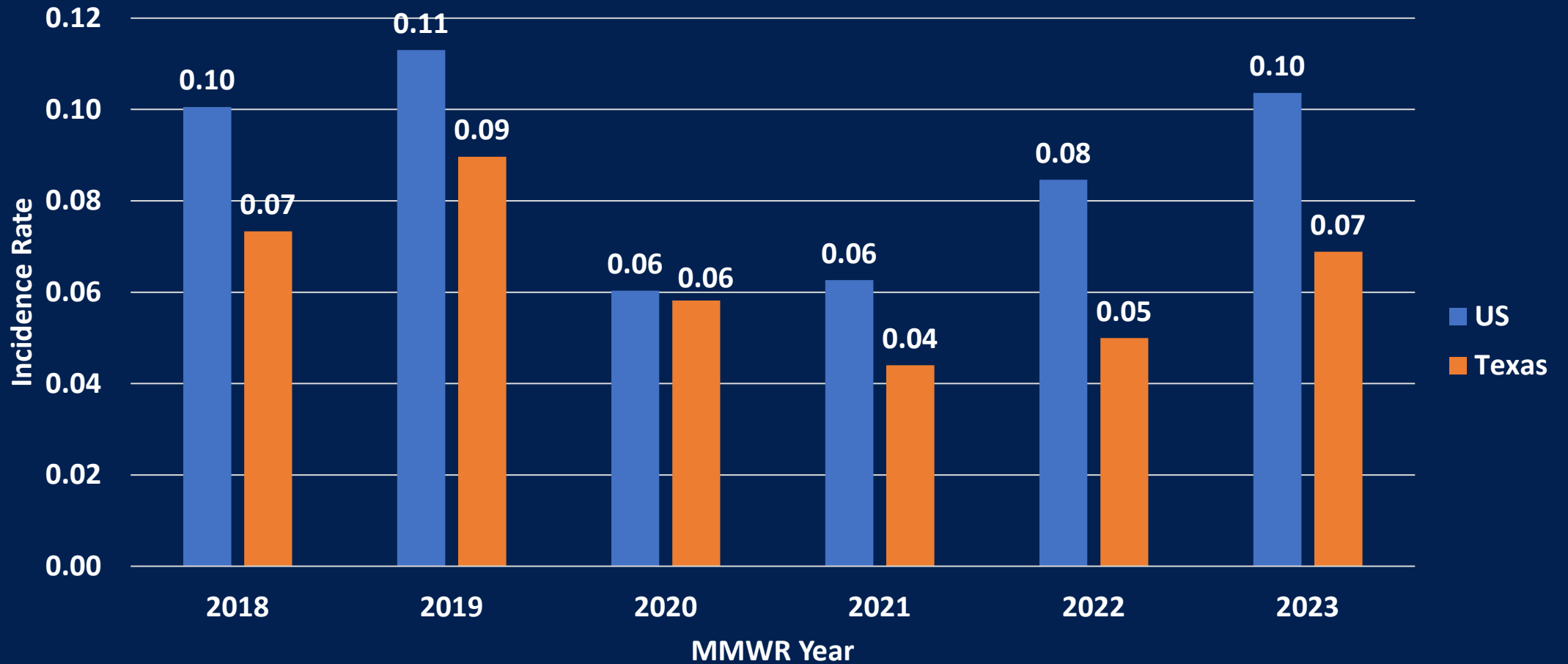
Meningococcal Disease, Invasive 2018-2023*



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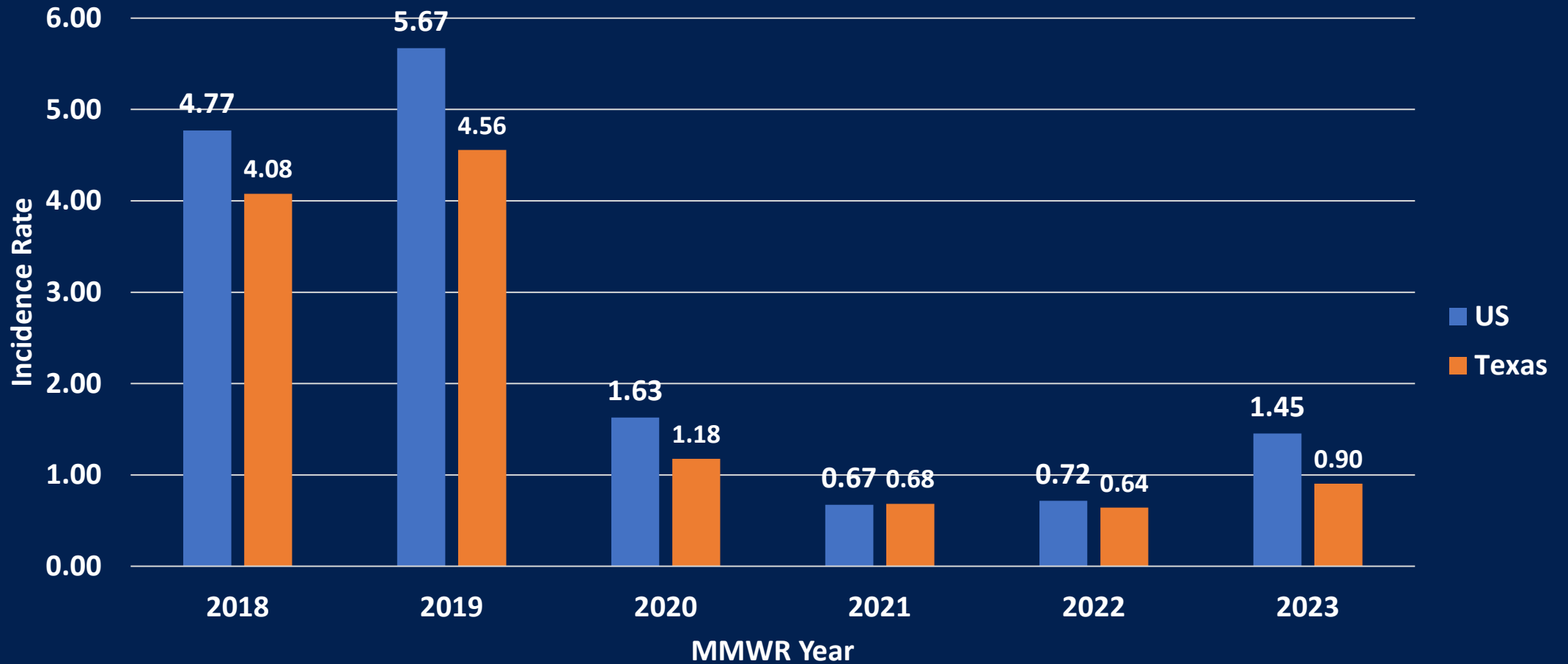
Pertussis 2018-2023*



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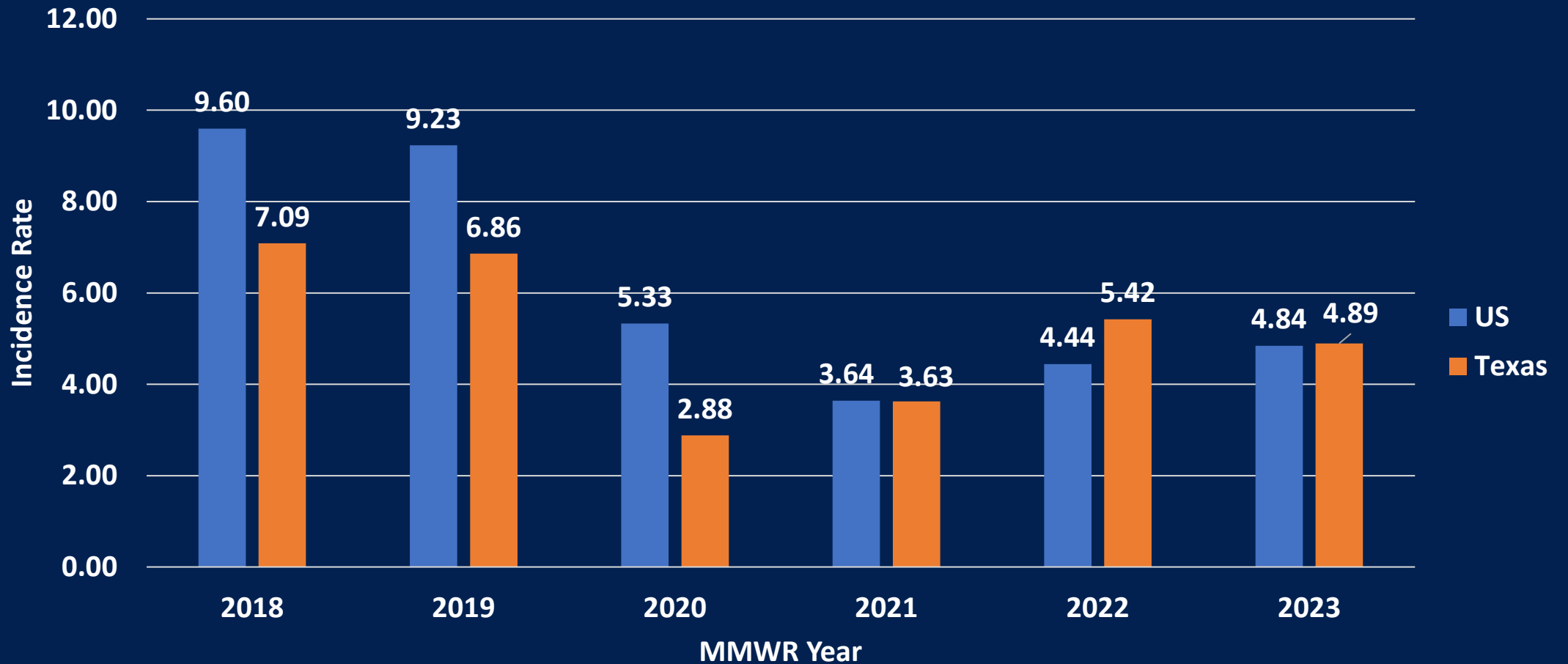
Streptococcus Pneumoniae, Invasive 2018-2023*



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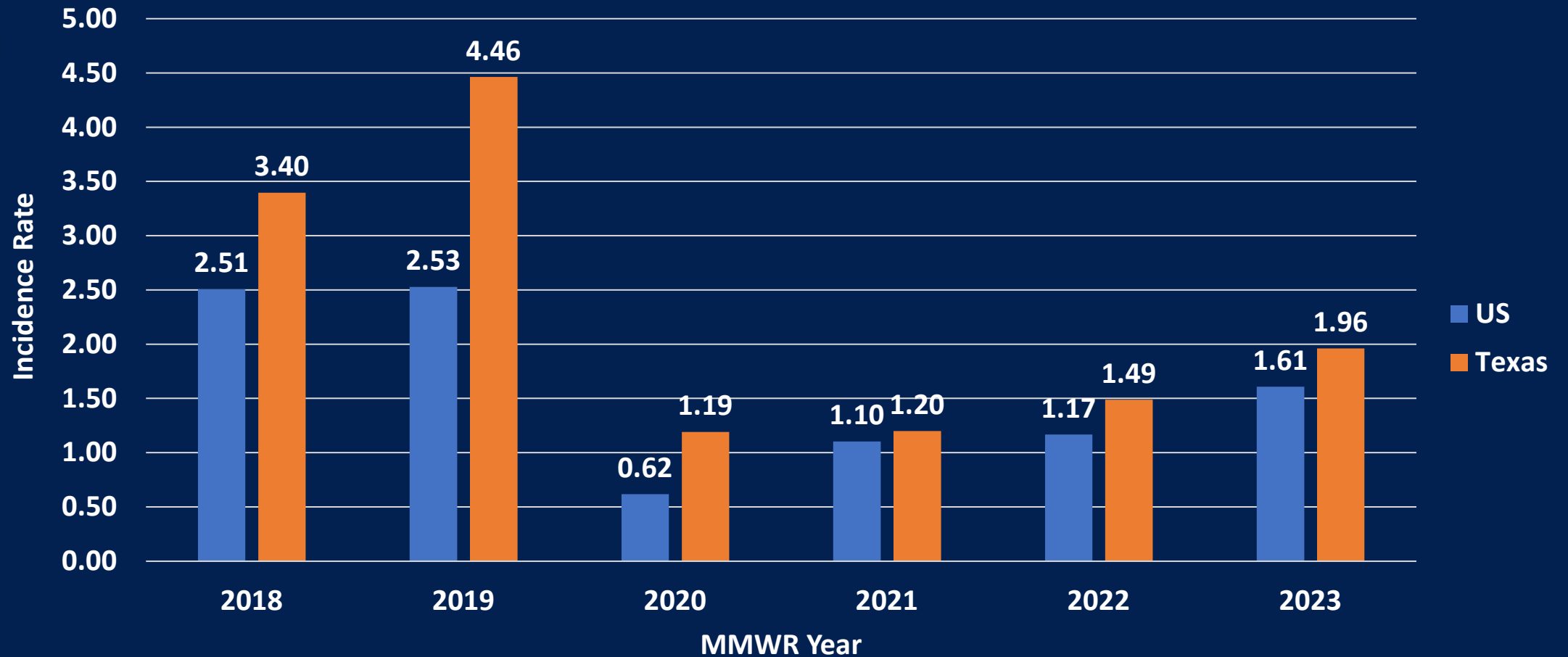
Varicella 2018-2023*



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Outbreaks – US



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Paralytic Poliomyelitis case in New York

Background

- In June 2022, a young adult was hospitalized with 5-day history of low-grade fever, neck stiffness, back pain, abdominal pain, constipation, and 2-day history of bilateral lower extremity weakness.
- Unvaccinated against poliomyelitis and immunocompetent.
- Discharged to rehabilitation 16 days after symptom onset with ongoing lower extremity flaccid weakness.
- Vaccine-derived poliovirus type 2 (VDPV2) was detected following laboratory testing.



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Further Case Investigation Details

- Investigation revealed that the case attended a large gathering eight days before symptom onset and had no international travel.
- The public health response included issuing a statewide advisory to increase health care provider awareness, enhancing surveillance, testing wastewater from Rockland and surrounding counties, assessing vaccination coverage in the community and supplying vaccines to county immunization providers.
- VDPV2 was also detected in wastewater samples from Rockland and nearby Orange County.
- No new poliomyelitis cases were identified after the initial report.



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Vaccination Coverage & Assessment

- In July 2020, three-dose polio vaccination coverage among those aged less than 24 months in Rockland was only 67%.
- It further declined to 60% by August 2022 and the zip code-specific coverage as low as 37%.
- The national vaccination coverage for polio by age 24 months was 92.7% among infants born between 2017–2018.
- The absence of international travel history pointed towards a chain of transmission within US originating with a person who received Oral Polio Vaccine (OPV) abroad.
- Paralytic polio from vaccine derived virus can occur in a community with low vaccination coverage.



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Lessons

- Vaccination with three doses of Inactivated Polio Vaccine (IPV) is more than 99% effective in preventing paralysis; however, IPV does not prevent intestinal infection and therefore does not prevent poliovirus transmission.
- This incident underscores the importance of maintaining high levels of vaccination coverage and robust acute flaccid myelitis (AFM) Surveillance to prevent paralytic polio in persons of all ages.
- In Texas, AFM is reportable under 'unusual group expressions of disease' clause of Texas Administrative Code (TAC).



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Measles Outbreak in Central Ohio

Background

- Between June 12–October 8, 2022, four internationally imported measles cases was confirmed among unvaccinated Franklin County, Ohio residents who had traveled to areas in East Africa where measles outbreaks were ongoing.
- On November 5, 2022, two unvaccinated children aged 2 years with no travel history or history of known contact with a measles case were admitted to a central Ohio hospital with rash, fever, cough, and congestion, suggestive of measles. Both tested positive for measles real-time reverse transcription–polymerase chain reaction (RT-PCR) test.
- No definitive link to the previous international importations was established.



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Epidemiology

- Duration of outbreak: October 22, 2022–December 24, 2022.
- Total of 85 cases identified in outbreak, 78 in Franklin County, and the remaining seven were in six other counties within central Ohio.
- 36 hospitalizations (42%) and 0 deaths.
- 44 cases (52%) experienced complications (otitis media [33; 39%], diarrhea [22; 26%], and pneumonia [seven; 8%])
- Median patient age: 1 year (range: 6 months–15 years)
- Among the 60 cases eligible for vaccination, only 3 (5%) received MMR vaccine.



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Hepatitis A outbreaks in US

Widespread Person-to-Person Outbreaks Across US

- First identified in 2016, still ongoing
- 37 states experienced at least one outbreak
- 44,937 cases, 27,461 (61%) hospitalizations, 424 deaths (0.9%)
- Groups at highest risk for acquiring infection or developing serious complications and should be offered vaccine to prevent or control an outbreak:
 - People who use drugs (injection or non-injection)
 - People experiencing homelessness
 - Men who have sex with men (MSM)
 - People who are or were incarcerated
 - People with chronic liver disease, including cirrhosis, hepatitis B or C



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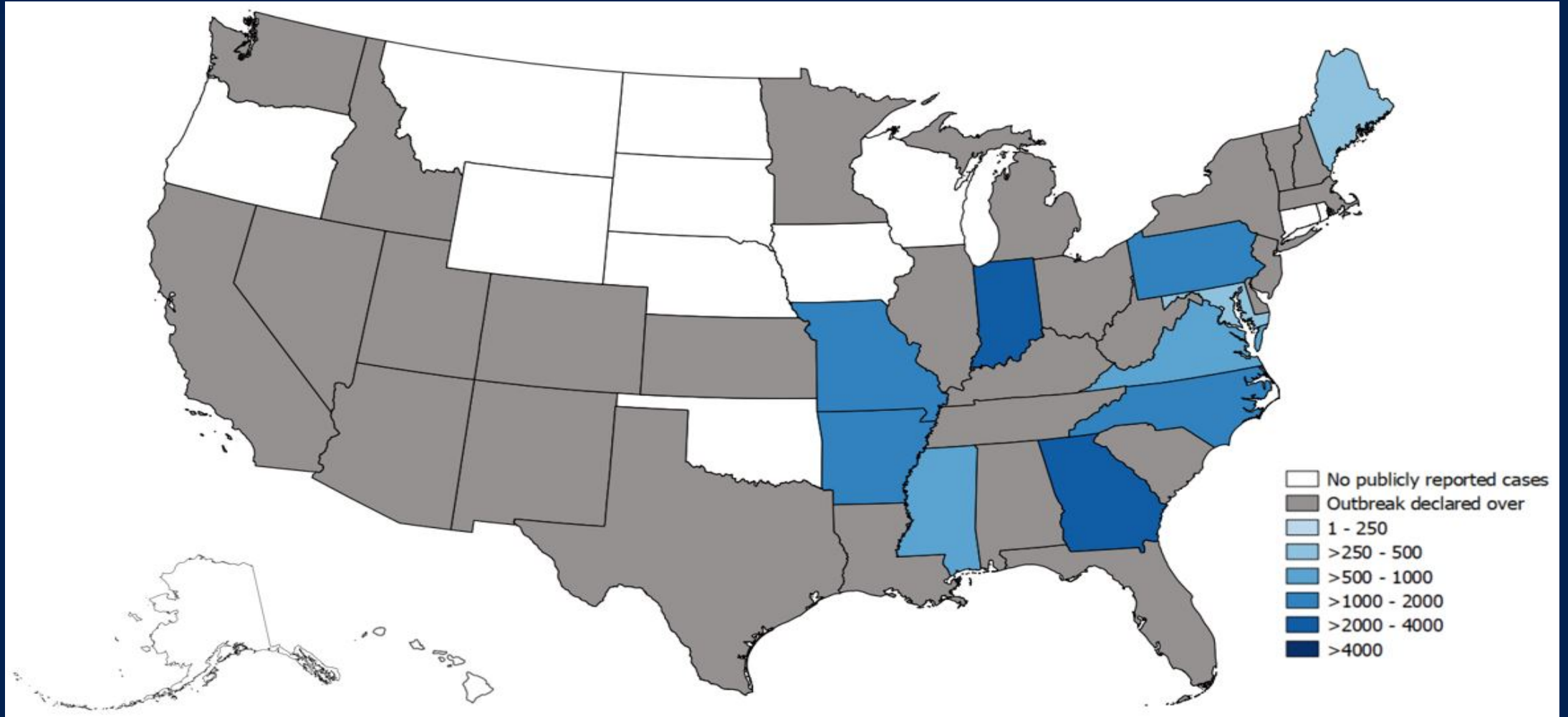
Hepatitis A Outbreak Map, US



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Multistate Outbreak Linked to Fresh Organic Strawberries

- Illness onset dates ranged from November 24, 2022, to May 27, 2023.
- Four states (California, Hawaii, Oregon, and Washington) involved.
- 10 cases, four hospitalizations, zero deaths.
- Linked to contaminated fresh organic strawberries imported from Baja California, Mexico.
- Age range: 38 to 64 years, with a median age of 56.5 years; 30% females.



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Outbreaks – Texas

Measles

- **3 Measles cases reported in 2023**
 - **2 Cases**
 - Indigenous, no history of travel or known source.
 - Females, 21 and 22 months of age at illness onset.
 - Vaccinated for age.
 - Tested positive for measles PCR at DSHS, but unable to be genotyped at CDC Reference Laboratory.
 - **1 Case**
 - History of international travel to India, stayed in India for 4 months.
 - Female, 26 month of age at illness onset.
 - Vaccinated for age.
 - Tested positive for measles PCR at DSHS, genotyped as wild type measles virus at CDC Reference Laboratory.



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Hepatitis A & Other Outbreaks

- **Hepatitis A**
 - **PHR 2/3**
 - January 2020-May 2022
 - Confirmed cases: 321
 - Hospitalizations: 279, Deaths: two
 - Homelessness and drug use were major risk factors
 - **PHR 4/5N**
 - January 2021-September 2022
 - Confirmed cases: 29
 - Hospitalizations: 16, Deaths: zero
 - Drug use was the major risk factor
- **Other sporadic outbreaks with less than 10 cases**
 - Pertussis
 - Varicella



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VPD Issues of Concern in Texas

VPD Issues of Concern in Texas

- Increase in VPDs reported this MMWR year compared to the previous year.
- Three reports of measles cases in 2023, two cases with no history of travel and one case with history of international travel; all cases were up to date on measles vaccinations.
- This data underscores the significance of maintaining good immunization rates for vaccines provided under the childhood vaccination schedule, maintaining robust surveillance systems and implementing prompt post exposure prophylaxis.



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Respiratory Syncytial Virus (RSV) Trends

RSV Data and Trends in Texas

- Respiratory Syncytial Virus (RSV) is a common respiratory virus that presents with flu-like symptoms. Most persons recover in one to two weeks; however, infants and older adults are at increased risk for severe outcomes that require hospitalization.
- Texas receives limited RSV data from participating providers through the National Enteric and Respiratory Virus Surveillance System (NERVSS) as participation in the surveillance system is voluntary.
- New prevention measures implemented in 2023 include both newborn and maternal vaccinations.

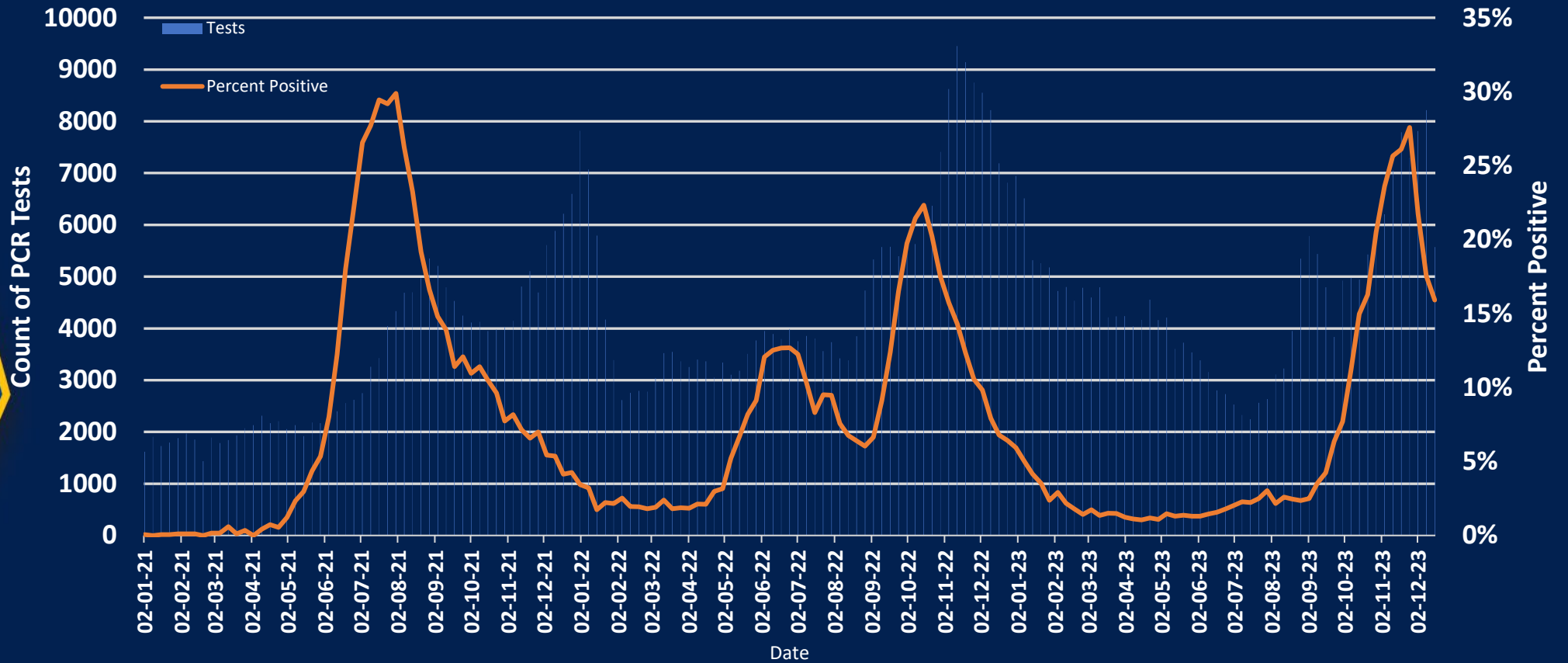


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RSV Data and Trends in Texas

Number and Percent Positivity of PCR Tests for RSV,
January 2, 2021– December 16, 2023



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Acknowledgments

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References

1. WHO: Global measles threat continues to grow as another year passes with millions of children unvaccinated <https://www.who.int/news/item/16-11-2023-global-measles-threat-continues-to-grow-as-another-year-passes-with-millions-of-children-unvaccinated>
2. CDC: Global Measles Outbreaks <https://www.cdc.gov/globalhealth/measles/data/global-measles-outbreaks.html>
3. CDC MMWR: Progress Toward Measles Elimination — Worldwide, 2000–2022, Weekly / November 17, 2023 / 72(46);1262–1268 <https://www.cdc.gov/mmwr/volumes/72/wr/mm7246a3.htm>
4. Measles & Rubella Initiative: More than 117 million children at risk of missing out on measles vaccines, as COVID-19 surges <https://measlesrubellainitiative.org/measles-news/more-than-117-million-children-at-risk-of-missing-out-on-measles-vaccines-as-covid-19-surges/>
5. CDC: Vaccination Coverage among Young Children (0 – 35 Months): <https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/interactive-reports/index.html>
6. CDC: Vaccination Coverage among Adolescents (13 – 17 Years): <https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/index.html>
7. Polio Global Eradication Initiative: Polio Now: <https://polioeradication.org/polio-today/polio-now/>
8. Progress towards global Maternal and Neonatal Tetanus Elimination <https://www.who.int/initiatives/maternal-and-neonatal-tetanus-elimination-%28mnte%29/progress-towards-global-mnt-elimination>
9. CDC: Active Bacterial Core surveillance reports: <https://www.cdc.gov/abcs/reports-findings/surv-reports.html>
10. CDC: Annual Statistics from National Notifiable Diseases Surveillance https://wonder.cdc.gov/nndss/nndss_annual_tables_menu.asp



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References

11. CDC: Weekly Statistics from National Notifiable Diseases Surveillance https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp
12. CDC: 2020 Reported Hepatitis A Cases and Estimated Infections: <https://www.cdc.gov/hepatitis/statistics/2020surveillance/hepatitis-a/figure-1.1.htm>
13. CDC: 2020 Reported Hepatitis B Cases and Estimated Infections <https://www.cdc.gov/hepatitis/statistics/2020surveillance/hepatitis-b/figure-2.1.htm>
14. CDC: Measles Cases and Outbreaks <https://www.cdc.gov/measles/cases-outbreaks.html>
15. CDC: Measles Cases and Outbreaks <https://www.cdc.gov/mumps/outbreaks.html>
16. CDC: Meningococcal Disease Surveillance <https://www.cdc.gov/meningococcal/surveillance/index.html>
17. CDC: Pertussis Surveillance Trend Reporting and Case Definition <https://www.cdc.gov/pertussis/surv-reporting.html>
18. CDC MMWR: Public Health Response to a Case of Paralytic Poliomyelitis in an Unvaccinated Person and Detection of Poliovirus in Wastewater — New York, June–August 2022 Weekly / August 19, 2022 / 71(33);1065-1068 <https://www.cdc.gov/mmwr/volumes/71/wr/mm7133e2.htm>
19. CDC MMWR: Notes from the Field: Measles Outbreak — Central Ohio, 2022–2023, Weekly / August 4, 2023 / 72(31);847–849 <https://www.cdc.gov/mmwr/volumes/72/wr/mm7231a3.htm>
20. CDC: Widespread person-to-person outbreaks of hepatitis A across the United States <https://www.cdc.gov/hepatitis/outbreaks/2017March-HepatitisA.htm>
21. CDC: Multistate Outbreak of Hepatitis A Virus Infections Linked to Frozen Organic Strawberries <https://www.cdc.gov/hepatitis/outbreaks/2023/hav-contaminated-food/index.htm>



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Thank you!
