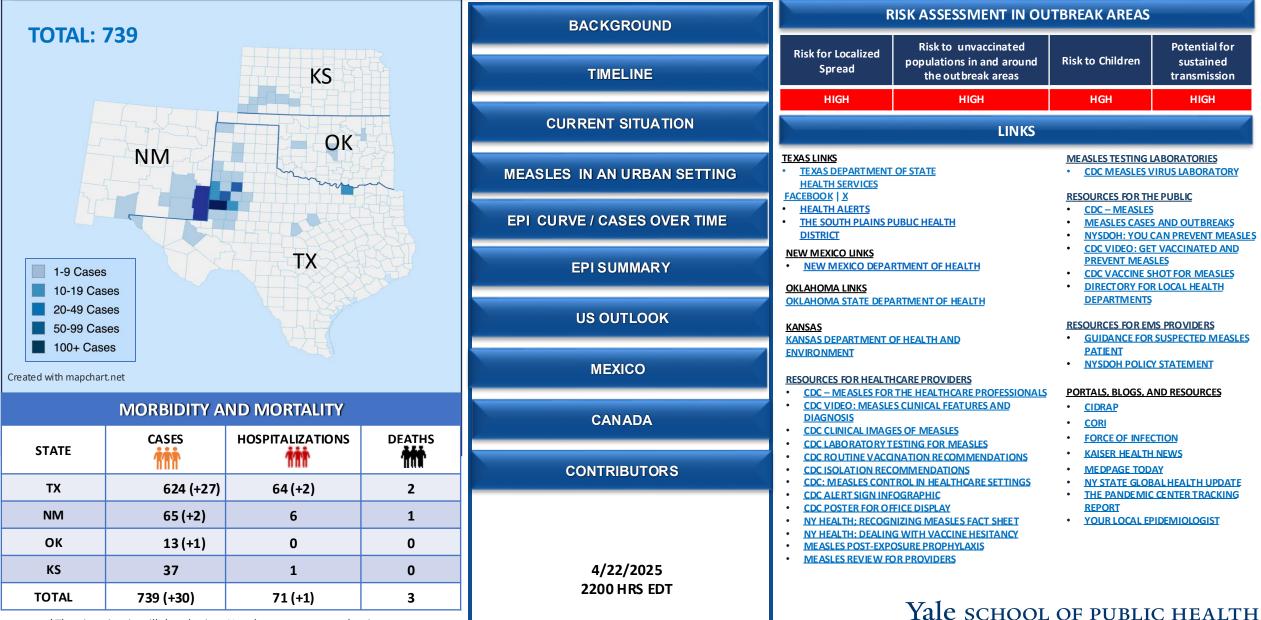
YALE SCHOOL OF PUBLIC HEALTH - ESF-8 VIRTUAL MEDICAL OPERATION CENTER SPECIAL REPORT

MEASLES OUTBREAK - SOUTHWEST U.S. - 2025



*The situation is still developing. Numbers are expected to increase.

BACKGROUND

TYPE OF PUBLIC HEALTH EMERGENCY: LARGE REGIONAL MEASLES OUTBREAK

OVERVIEW:

A measles outbreak originating in West Texas has spread in the US to New Mexico, Oklahoma, and Kansas, resulting in 71 hospitalizations and 3 confirmed deaths — including two previously healthy children in Texas and one adult in New Mexico. These are the first U.S. measles deaths since 2015, and the first pediatric deaths since 2003. Genetic and epidemiological evidence suggests this outbreak has also seeded the current outbreak in Chihuahua, Mexico, indicating clear cross-border transmission.

THE VIRUS:

<u>Measles</u> is a highly contagious viral disease transmitted primarily through **respiratory droplets** from coughing or sneezing. Symptoms include **high fever, cough, runny nose, conjunctivitis**, and a distinctive **red, blotchy rash**. The virus can remain **airborne or infectious on surfaces for up to two hours**, contributing to its rapid spread.

Despite being preventable through the <u>MMR</u> (measles, mumps, and rubella) vaccine, outbreaks continue to occur in under-vaccinated communities, leading to severe health outcomes and increased transmission risk (<u>CDC</u>).

FACTORS DRIVING THIS OUTBREAK:

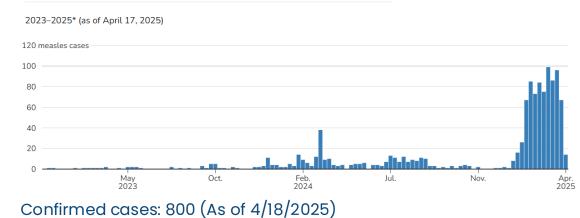
- Low vaccination rates
- High levels of vaccine hesitancy and misinformation
- Community mistrust in public health authorities, heightened by post-pandemic attitudes

PUBLIC HEALTH RESPONSE:

- Emergency vaccination campaigns and targeted outreach.
- Focused messaging to combat misinformation and rebuild community trust.
- Multi-sector coordination involving schools, healthcare providers, and local organizations.

MEASLES CASES IN 2025 - CDC

Weekly measles cases by rash onset date



Age Under 5 years: 249 (31%) 5-19 years: 304 (38%) 20+ years: 231 (29%) Age unknown: 16 (2%)

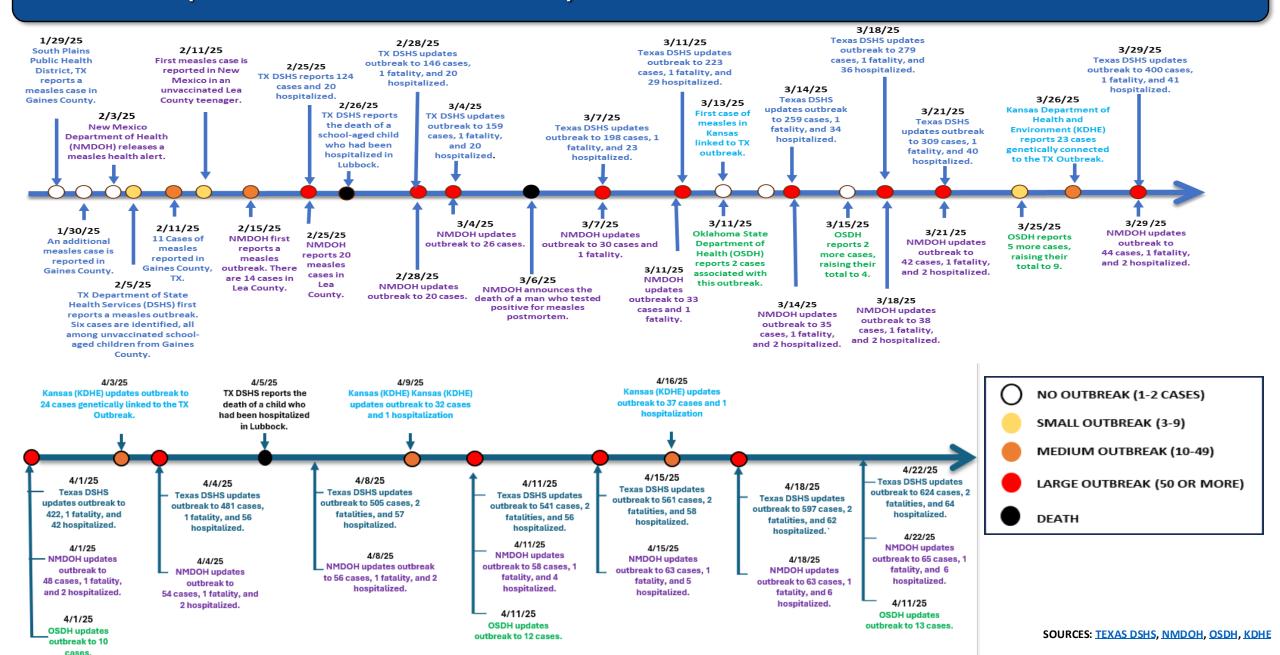
Percent of Age Group Hospitalized Under 5 years: **19% (47 of 249)** 5-19 years: **7% (21 of 304)** 20+ years: **6% (15 of 231)** Age unknown: **13% (2 of 16)** Vaccination Status

Unvaccinated or Unknown: **96%** One MMR dose: **1%** Two MMR doses: **2%**

Deaths: 3

here have been <u>2 confirmed</u> <u>deaths</u> from measles, and <u>1</u> <u>death under investigation</u>

TIMELINE (JANUARY – APRIL 2025)



CURRENT SITUATION

As of 4/22/25, the Southwestern outbreak has **739 cases**, including confirmed and pending cases across **Texas**, **New Mexico**, **Oklahoma**, and **Kansas**. Experts warn this is **likely a severe undercount**. The situation remains fluid, with case numbers expected to rise. Experts project the outbreak could last **up to a year**.

Texas: The Texas DSHS has identified "designated outbreak counties" with ongoing measles transmission: Cochran, Dallam, Dawson, Gaines, Garza, Lynn, Lamar, Lubbock, Terry, and Yoakum.

CURRENT CASE COUNT: 739 (As of 04/22/2025)

- Texas: 624 (+27)
- New Mexico: 65 (+2)
- Oklahoma: 13 (+1)
- Kansas: 37

HOSPITALIZATIONS: 71 (+2)

- Texas: 64 (+2) This is 10.4% of all TX cases.
- New Mexico: 6 This is 9.5% of all NM cases.
- Kansas: 1 This is 2.7% of all KS cases.

DEATHS: 3

- Texas: 2 This is 0.34% of all cases
- New Mexico: 1 This is 1.59% of all cases

US NATIONAL CASE COUNT (CONFIRMED AND SUSPECTED): 871

INTERNATIONAL SPREAD (AS OF 4/22/2025)

- Mexico 533
 - Chihuahua, Mexico: 514 (+81) cases, 5 hospitalizations, 1 fatality
- Canada: 1108 (This reflects Ontario's Outbreak which began 11/24)
 - Ontario, Canada 925 (+109) cases, 69 hospitalizations.

AGES OF CASES:

WEST TEXAS OUTBREAK							
0-4 Years	5-17 Years	18+ Years	Pending	Total			
186 (+4) (30%)	236 (+17) (38%)	178 (+6) (28%)	24 (4%)	624 (+27)			
NEW MEXICO OUTB	NEW MEXICO OUTBREAK						
0-4 Years	5-17 Years	18+ Years	Pending	Total			
18 (+1)(28%)	19 (29%)	28 (+1)(43%)	0	65(+2)			
KANSAS OUTBREAK							
0-4 Years	5-17 Years	18+ Years	Pending	Total			
11 (29.7%)	19 (51.4%)	7 (18.9%)	0	37			
OKLAHOMA OUTBR	OKLAHOMA OUTBREAK						
0-4 Years	5-17 Years	18+ Years	Pending	Total			
10 Cases C	confirmed, 3 Probable – no	ages provided	3	13 (+1)			

DNA SEQUENCING:

CANADA: The D8 genotype, specifically lineage MVs/Ontario.CAN/47.24, was first detected in Ontario in late 2024. By early 2025, it had been identified in 57 confirmed cases, primarily in Ontario, with additional cases in Quebec, Manitoba, and British Columbia. The majority of cases occurred among unvaccinated individuals. Source: <u>PAHO</u>)

MEXICO: In February 2025, a measles case in Chihuahua was confirmed to be of the D8 genotype, lineage MVs/Ontario.CAN/47.24. Contact tracing and active surveillance identified 17 additional related cases, confirming local transmission of this lineage. (Source: E<u>I Diario de Chihuahua, PAHO</u>)

UNITED STATES: While specific lineages are not always reported, genotype D8 has been predominant in recent outbreaks in Texas, New Mexico, Oklahoma, and Kansas. Genetic sequencing has linked the virus in the U.S. to the same D8 genotype circulating in Canada and Mexico, indicating a clear cross-border transmission pattern. However, the initial introduction of measles associated with these outbreaks remains unknown. (Source: <u>WHO</u>)

CURRENT SITUATION: - MEASLES IN AN URBAN SETTING

LUBBOCK, TX:

- Located about 80 miles from the outbreak's epicenter, Lubbock—a city of 257,000—has become a regional hotspot. As a medical hub, the city has facilitated viral spread, with rural residents traveling in for care and inadvertently introducing and amplifying transmission chains.
- As of April 22, 2025, Lubbock County has reported 47 confirmed measles cases, with a significant concentration within city limits. Due to increasing local transmission, the Texas Department of State Health Services has officially designated Lubbock as an outbreak area.
- The city's public health response has been constrained by stagnant immunization funding just \$254,000 annually, unchanged for over 15 years. These limitations have hindered outreach, education, and vaccination efforts, especially in close-knit, vaccine-hesitant communities.
- Clusters of vaccine hesitancy, particularly among **faith-based and libertarian-leaning groups**, continue to depress community immunity.
- As of April 2025, the measles, mumps, and rubella (MMR) vaccination rate among kindergartners in Lubbock County, Texas, stands at approximately 92%. This rate falls below what is needed to achieve herd immunity. While the overall county rate is relatively high, certain private schools and daycare centers in Lubbock report MMR coverage rates significantly below this threshold, contributing to the risk of localized outbreaks.

EL PASO, TX

- With a population of 679,000, El Paso's first 2 confirmed cases were reported on 4/8/2025. As of April 22, 2025, El Paso has reported 20 confirmed measles case and 3 hospitalizations. Two inmates at El Paso County prison are showing symptoms. Test are pending.
- As of April 2025, the vaccination rate in El Paso County stands at 96%. However, there is reason for concern about unvaccinated pockets within the community. Based on population, this would put 27,000 individuals at risk.
- In El Paso, cross-border dynamics with Juárez, Mexico, add unique challenges. High levels of daily binational travel have contributed to the spread of measles. Through contact tracing and sequencing data, a large outbreak in the Mexican state of Chihuahua has been directly linked to the ongoing outbreak in Gaines, Texas. The genotype D8 is now confirmed on both sides of the U.S.–Mexico border.
- Public health outreach faces obstacles such as language barriers, pervasive misinformation, and concerns among undocumented populations who may avoid seeking care for fear of deportation.
- Earlier cases in El Paso involved exposures at **high-traffic locations** such as malls, retail stores, and restaurants, underscoring the risk of transmission in urban public spaces.
- Measles cases have been reported in three Ysleta Independent School District (YISD) high schools (Eastwood, Bel Air, and Hanks), <u>triggering schoolwide alerts</u> and reinforcing the need for improved vaccination record reviews and contact tracing in school settings.

THE BOTTOM LINE:

Due to their unique community vulnerabilities, the rates of measles transmission have been steadily increasing in urban areas such as Lubbock, TX, and El Paso, TX. Cases linked to public venues like schools, retail settings, and other public spaces reveal how urban density accelerates the risk of measles exposure. Trusted community messengers who can spread awareness about the safety and necessity of the MMR vaccine are critical at this time.

SOURCES: DSHS, THE TEXAS TRIBUNE, NY1, ST. ALBERT GAZETTE, KEOX, KVIA, KTSM, KEOX, BBC, AP NEWS, VAX BEFORE TRAVEL, CHILDREN'S DEFENSE, KISS.FM, YISD, PBS

CURRENT SITUATION: VACCINATION STATUS

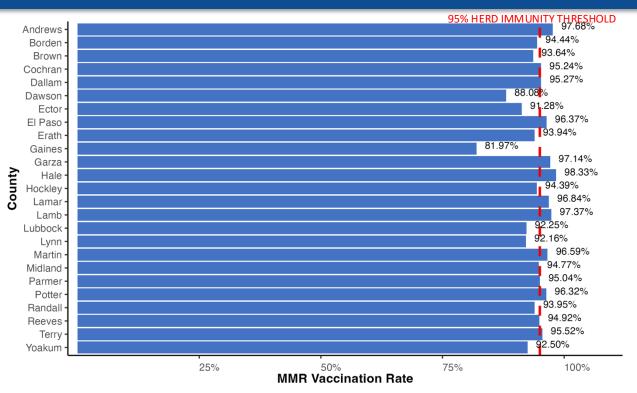
STATE	VACCINATED	VACCINATED	UNVACCINATED/	TOTAL
	WITH 1DOSE	WITH 2 DOSES	UNKNOWN	CASES
тх	10	12	602*	624

NOTE: The TX unvaccinated/unknown category includes people with no documented doses of measles vaccine more than 14 days before symptom onset.

STATE	VACCINATED WITH AT LEAST ONE DOSE	NOT VACCINATED	UNKNOWN	TOTAL CASES
NM	6	47	12	65

STATE	VACCINATED WITH AT LEAST ONE DOSE	UNVACCINATED / UNKNOWN	TOTAL CASES
ОК	0	13	13

STATE	AGE APPROPRIATELY VACCINATED	NOT AGE APPROPRIATELY VACCINED	NOT VACCINATED	Pending Verification/ Unable to Verify	TOTAL CASES
KS	4	1	30	2	37



Among the affected counties in TX, 13 out of 26 are below a 95% vaccination rate, the recommended rate for herd immunity (SOURCE: <u>Annual Report on Immunization Status</u> and <u>CORI</u>).

BECAUSE MEASLES IS HIGHLY CONTAGIOUS, 95% OF THE POPULATION MUST BE VACCINATED TO ACHIEVE HERD IMMUNITY AND PREVENT ONGOING TRANSMISSION OF THE VIRUS.

- **TX:** Vaccination rates are low in most affected areas. In Gaines County, TX, vaccination rates are significantly below the threshold required for herd immunity, contributing to the virus's rapid spread.
- NM: NM reports that <u>94%</u> of individuals aged 18 and under in Lea County have received at least one dose of the MMR vaccine. This is slightly below the state's overall rate of 95% for the same age group.
- **OK:** For the 2023–24 school year, CDC reported Oklahoma kindergartners' vaccine exemption rate rose to 5.7%. <u>88.3%</u> of kindergarteners received the MMR vaccine.
- **KS**: Vaccination rates are low in the most affected counties in KS. The statewide vaccination rate is <u>90%</u>. In the counties reporting cases, vaccination rates are far below herd immunity, except for Finney and Grant Counties (98% and 99%, respectively).

EPI CURVE AND CASES OVER TIME

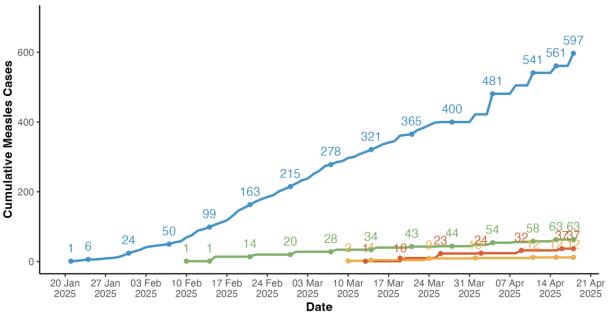
75 Reported Cases 25 17 Feb 24 Feb 03 Mar 10 Mar 17 Mar 24 Mar 31 Mar 20 Jan 27 Jan 03 Feb 10 Feb 07 Apr 14 Apr 21 Apr 2025 2025 2025 2025 2025 2025 2025 2025 2025 2025 2025 2025 2025 2025 Week New Mexico State Kansas Oklahoma Texas

The number of new cases per week remains high.

SOUTHWEST MEASLES OUTBREAK – EPI CURVE

- **TX:** Reported first case the week of 1/25/25. Most cases in the current outbreak are in Gaines County.
- **NM:** Reported first cases the week of 2/10/25. First case in Doña Ana County reported 4/16/25.
- **OK:** Reported first cases the week of 3/10/25.
- **KS:** Reported first case on 3/13/25. First hospitalization reported 4/9/25. No new counties in the last week.

SOUTHWEST MEASLES OUTBREAK – CUMULATIVE CASES OVER TIME



State 🔶 Kansas 🔶 Oklahoma 🔶 New Mexico 🔶 Texas

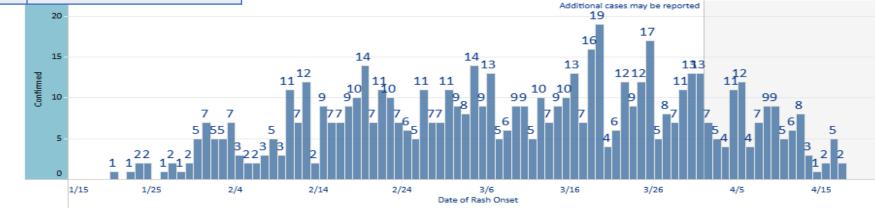
Cases are rising, and the outbreak is not slowing down.

- **TX:** The number of cases has increased consistently over time, to a total of 597 cases across 25 counties.
- **NM:** A total of 63 cases have been reported in 4 counties.
- **OK:** A total of 12 cases have been reported by the OSDH. No new cases reported since 4/11/25.
- **KS**: A total of 37 cases across 8 counties have been reported by the KDHE. Cases increased by 50% from 4/2/25 to 4/9/25.

SOURCES: TX DSHS, NMDOH, OSDH, KDHE, CENTER FOR OUTBREAK RESPONSE (CORI)

EPI SUMMARY - TEXAS (n=624) AS OF 4/22

COUNTY	MEASLES CASES (NUMBER OF NEW CASES)	% of TOTAL CASES	% KINDERGARTENERS VACCINATED (2023-2024)	# OF SCHOOL DISTRICTS IN EACH COUNTY WITH MMR BELOW 95%	COUNTY	MEASLES CASES (NUMBER OF NEW CASES)	% of TOTAL CASES	% KINDERGARTENERS VACCINATED (2023-2024)	# OF SCHOOL DISTRICTS IN EACH COUNTY WITH MMR RATES BELOW 95%
Andrews	2	0.32 %	97.70%	0	Lamar	11	1.760%	96.84%	0
Bailey	2 NEW	0.32 %	98.94%	0	Lamb	1	0.2%	97.37%	1
Borden	1	0.2%	94.44%	1	Lubbock	47 (+5)	7.53%	92.25%	8
Brown	1	0.2%	93.64%	5	Lynn	2	0.32%	92.16%	2
Cochran	12	1.92%	95.20%	1	Martin	3	0.5%	96.59%	1
Dallam	7	1.12%	95.30%	2				90.59%	
Dawson	23	3.7%	88.10%	4	Midland	3 (+1)	0.5%	94.77%	4
Ector	10	1.6%	91.30%	5	Parmer	4	0.64%	95.04%	1
El Paso	20 (+2)	3.2%	96.37%	8	Potter	1	0.2%	96.32%	3
Erath	1	0.2%	93.94%	5	Randall	1	0.2%	93.95%	1
Gaines	386 (+15)	62%	82.00%	3	Reeves	1	0.2%	94.92%	1
Garza	2	0.32 %	97.10%	0	Terry	54 (+2)	8.65%	95.52%	2
Hale	5	0.8%	98.30%	2	Yoakum	19 (+1)	3.05%	92.50%	1
Hockley	5	0.8%	94.40%	3		- ()		Additional cases may be	



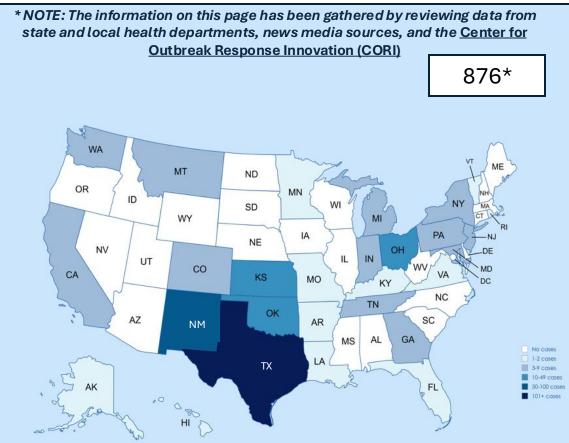
OUTBREAK CASES BY DATE OF RASH ONSET

EPI SUMMARY (KS, NM, OK)

COUNTY	MEASLES CASES (NUMBER OF NEW CASES)	% of TOTAL CASES	% KINDERGARTENERS VACCINATED (2023-2024)			
KANSAS (n=37) AS OF 4/16/2025						
Finney	Between 1-5		98%			
Ford	Between 1-5		87%			
Grant	Between 1-5		99%			
<u>Gray</u>	Between 1-5		66%			
Haskell	8	21.6%	58%			
<u>Kiowa</u>	6	16.2%	92%			
Morton	Between 1-5		82%			
Stevens	7	18.9%	83%			
NEW MEXICO (n=65) AS OF 4/22/2025	NEW MEXICO (n=65) AS OF 4/22/2025					
Chaves	1	1.5%	98%			
Doña Ana	1	1.5%				
Eddy	2	3.%	93%			
Lea	61 (+2)	94%	94%			
		ot of MMR, and only 55% have received both shots, according to local he to the system. Adults make up more than half of reported cases in New				

OKLAHOMA (n=13) AS OF 4/22/2025			
Tulsa and Cherokee Nation	13	Insufficient Information	89.5%

US OUTLOOK



The increase in measles cases can be attributed to falling vaccination rates and increased importation of travel-related cases, which occur when unvaccinated people acquire measles abroad and bring it back to the U.S.

STATE	CASES
<u>TEXAS **</u>	649
NEW MEXICO	65
<u>KANSAS</u>	37
<u>OHIO</u>	30
OKLAHOMA	13
CALIFORNIA	9
PENNSYLVANIA	9
MICHIGAN	8
INDIANA	8
<u>TENNESSEE</u>	6
MONTANA	5
<u>NEW YORK</u>	4
WASHINGTON	4
COLORADO	3
ARKANSAS	3
<u>GEORGIA</u>	3
MARYLAND	3
NEW JERSEY	3
ALASKA	2
HAWAII	2
<u>FLORIDA</u>	1
MINNESOTA	2
LOUISIANA	2
KENTUCKY	1
MISSOURI	1
<u>RHODE ISLAND</u>	1
VERMONT	1
VIRGINIA	1
TOTAL	876

OUTBREAKS



MEDIUM OUTBREAK (10 - 49)



An outbreak of measles is defined as three or more laboratoryconfirmed cases that are temporally related and epidemiologically or virologically linked.

As of 4/19/2025, 2300 hrs. EDT, there are approximately **844** measles cases (including confirmed and suspected cases) across 21 states.

Currently, there are six or seven measles outbreaks:

- 1. West Texas, involving <u>23 counties</u> in **Texas**, <u>4 counties</u> in **New Mexico**, <u>2 counties</u> in **Oklahoma**, and the <u>Cherokee</u> <u>Nation</u> in Oklahoma
- 2. <u>8 counties</u> in **Kansas** are connected to West, TX.
- 3. Ashtabula and Knox Counties, Ohio
- 4. Erie County, Pennsylvania
- 5. Allen County, Indiana
- 6. Bergen County, **New Jersey**
- 7. metro Atlanta, **Georgia**
- 8. Gallatin County, Montana

** TEXAS CASES NOT ASSOCIATED WITH OUTBREAK: 25

- 2 cases Adults, Harris County (travel-related)
- 1 case Infant, Harris County required hospitalization (travelrelated)
- 1 case Harris County
- 1 case Infant, Travis County (travel-related)
- 2 case Adult, Rockwall County (travel-related)
- 2 case Adult, Fort Bend (travel-related)
- 1 Case Brazoria
- 15 Cases Upshur

TEXAS CASES ASSOCIATED WITH THE OUTBREAK: 624

MEXICO OUTLOOK

THE MEASLES OUTBREAK IN MEXICO: OVERVIEW

- Measles Outbreak in Mexico: 533 Cases First Death Reported: Mexico is currently grappling with a measles outbreak. The state of Chihuahua has been hit hardest, reporting 514 cases and the country's first measles-related death a 31-year-old unvaccinated man with diabetes and kidney complications.
- Low Immunization & Cross-Border Spread: The outbreak traces back to Texas, where rising anti-vaccine sentiment has contributed to increased infections. In Mexico, declining childhood vaccination rates particularly in Chihuahua, where coverage in some age groups is as low as 21.2% have heightened vulnerability.
- The Most Affected Age Group: 25 to 44 years old, with 34.4 percent of cases, followed by 5 to 9 years old, with 13.5 percent
- Approximately 86% of confirmed cases had no history of measles vaccination.
- Mexico's National Surveillance System (SINAVE) has intensified monitoring, especially in border regions and tourist destinations, to promptly identify and investigate suspected cases

VACCINES ADMINISTERED (JAN-MAR 2025)			
TYPE OF VACCINES	VACCINATIONS GIVEN		
Measles, Mumps and Rubella (MMR)	669,209		
Measles and Rubella	46,068		
Total	715,277		

Vaccination Campaign Underway: Between January and March, over 715,000 people were vaccinated as part of the national response. Authorities have implemented "vaccine cordons," targeting healthcare workers and close contacts of confirmed cases to curb the spread. On April 15, the Secretary of Health urged the need for measles vaccination, and the triple viral vaccine against measles, rubella, and mumps will be administered during the First National Vaccination Week of 2025 that starts on April 26th 2025 and ends on May 3rd 2025.

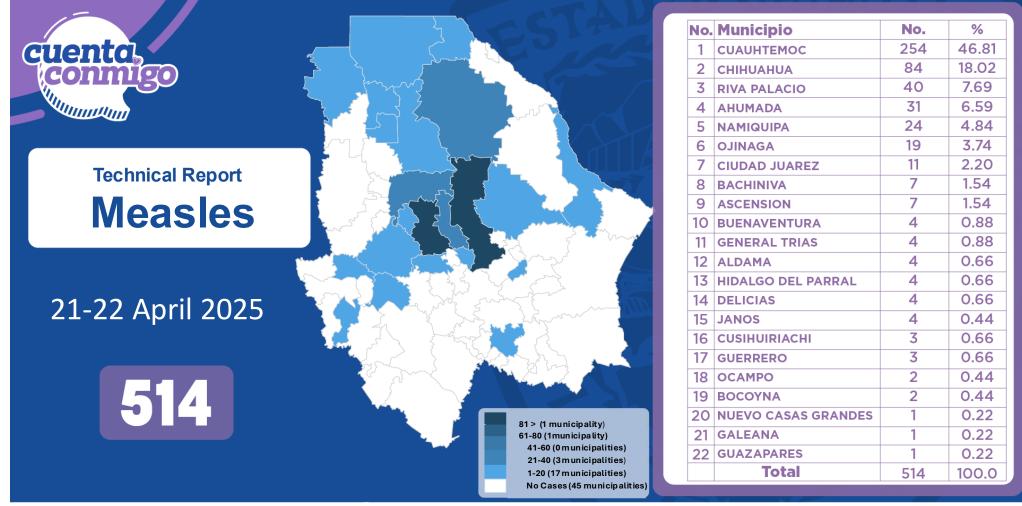


Chihuahua 5 5 5 5 5 4 5 4 Tamaulipas Campeche 0 axaca Sinaloa Zacatecas

Querétaro

*Data as of Tuesday, April 22 April 2025

MEXICO OUTLOOK: CHIHUAHUA



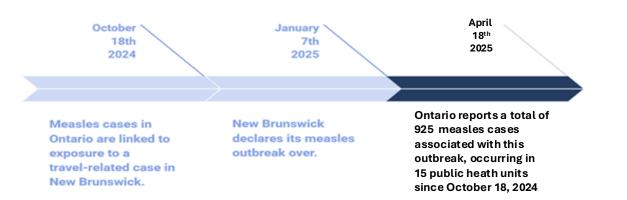
Fuente: Secretaría de Salud SOURCE OF GRAPHIC: <u>MediChihuahua</u>





THE AMERICAS: CANADA

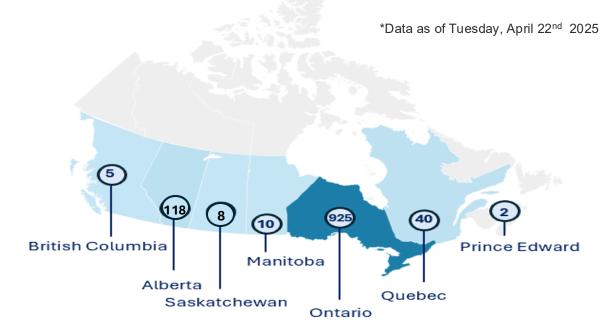




MORBIDITY IN 2025				
PROVINCE	CASES			
ONTARIO	925 (THIS REFLECTS THE TOTAL OUTBREAK NUMBERS SINCE 11/24)			
ALBERTA	118			
ΜΑΝΙΤΟΒΑ	10			
BRITISH COLUMBIA	5			
SASKATCHEWAN	8			
QUEBEC	40			
PRINCE EDWARD ISLAND	2			
TOTAL	1108			

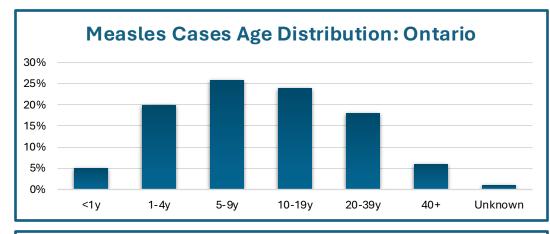
CANADA OUTBREAK:

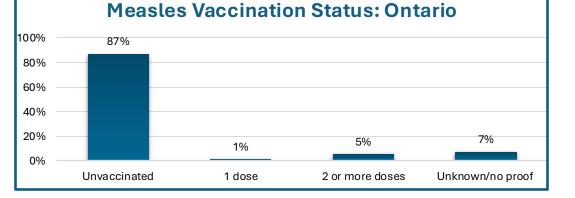
- An ongoing outbreak of measles in Ontario has been traced back to a large gathering in New Brunswick last fall that was attended by guests from Mennonite communities. On October 18, 2024, exposure to a travel-related case in New Brunswick led to measles cases in Ontario.
- Manitoba has also reported measles cases related to this outbreak.
- New Brunswick declared their outbreak over on January 7, 2025, Ontario and
- Quebec declared its outbreak over on 4/22/2025 after no new cases in 32 days.
- Alberta is seeing a large number of cases since Easter.



ONTARIO, CANADA OUTBREAK

MORBIDITY AND MORTALITY				
PROVINCE	CASES	HOSPITALIZATIONS	DEATHS	
ONTARIO	925 (+109)	69 (+8)	0	



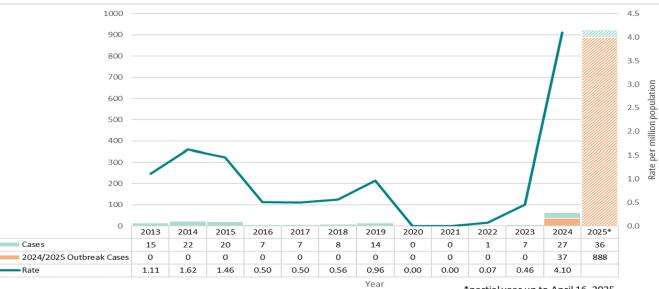


ONTARIO:

Number of cases

- Among all outbreak cases, 75.0% (n=694) were in infants, children and adolescents, while 24.4% (n=226) were in adults, and 0.5% (n=5) had unknown age.
 - 2.1% (n=19) of outbreak cases were pregnant.
 - 98.6% (n=912) of outbreak cases were born in or after 1970.
- Among infants, children and adolescents, 94.8% (n=658) were unimmunized, while among adults, 63.7% (n=144) were unimmunized.

NUMBER OF MEASLES CASES AND INCIDENT RATED PER MILLION POPULATION 1/1/2013 – 4/16/25



*partial year up to April 16, 2025

CONTRIBUTORS

The Virtual Medical Operations Center Briefs (VMOC) were created as a service-learning project by the Yale School of Public Health faculty and graduate students in response to the 2010 Haiti Earthquake. Each year, students enrolled in Environmental Health Science Course 581—Public Health Emergencies: Disaster Planning and Response, produce the VMOC Briefs. These briefs compile diverse information sources—including status reports, maps, curated news articles, and web content— into a single, easily digestible document that can be widely shared and used interactively.

Key features of this report include:

- **Comprehensive Overview:** Provides situation updates, maps, relevant news, and web resources.
- Accessibility: Designed for easy reading, wide distribution, and interactive use.
- Collaboration: The "unlocked" format enables seamless sharing, copying, and adaptation by other responders.

The students learn by doing, quickly discovering how and where to find critical information and presenting it in an easily understood manner.

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