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

MEASLES CASES IN 2025 - CDC

OVERVIEW:

A measles outbreak originating in **West Texas** has spread in the US to **New Mexico**, **Oklahoma**, and **Kansas**, resulting in **72 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.

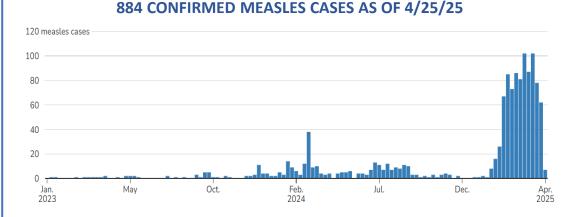
Despite being preventable through the <u>MMR</u> (measles, mumps, and rubella) vaccine, outbreaks continue to occur in under-vaccinated communities, leading to severe health outcomes and increased transmission risk (<u>CDC</u>).

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.



As of April 24, 2025, 30 jurisdictions reported **884 confirmed** measles cases: Alaska, Arkansas, California, Colorado, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Montana, New Jersey, New Mexico, New York City, New York State, Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Vermont, Virginia, and Washington.

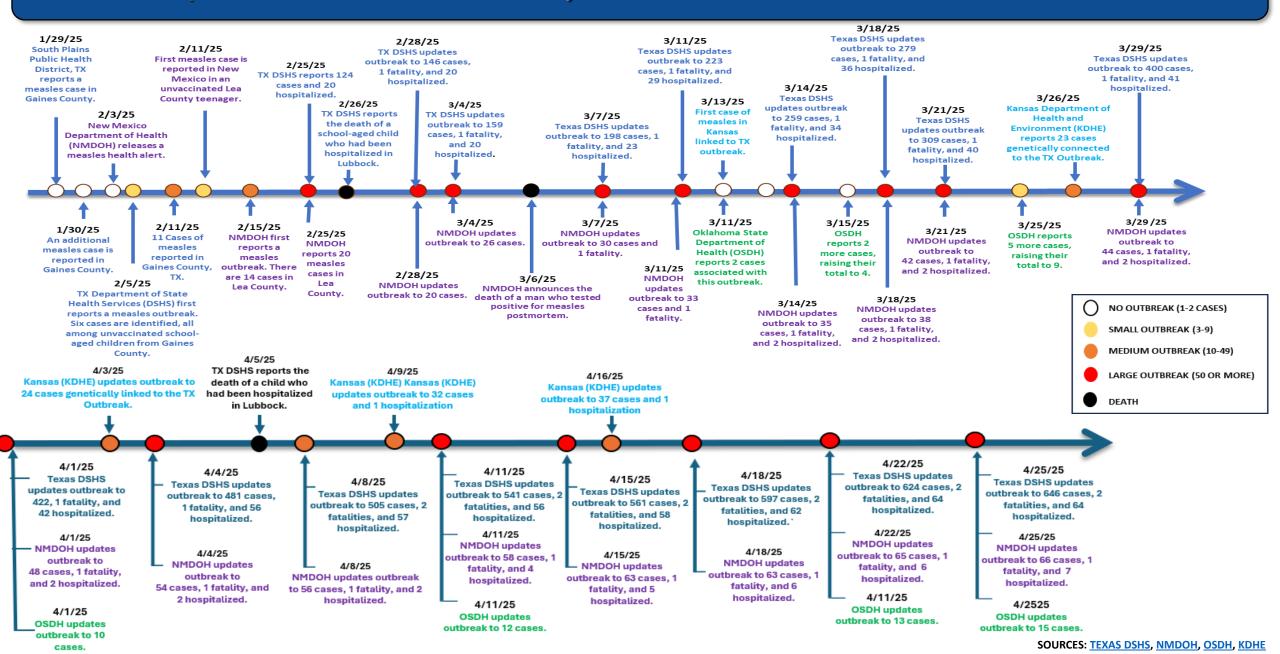
Age Under 5 years: 266 (30%) 5-19 years: 338 (38%) 20+ years: 261 (30%) Age unknown: 19 (2%)

Percent Hospitalized, by Age Group Under 5 years: **20% (53 of 266)** 5-19 years: **7% (22 of 338)** 20+ years: **7% (17 of 261)** Age unknown: **11% (2 of 19)** Vaccination Status Unvaccinated or Unknown: 97% One MMR dose: 1% Two MMR doses: 2%

Deaths: 3

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

TIMELINE (JANUARY – APRIL 2025)



CURRENT SITUATION

As of 4/26/25, the Southwestern outbreak has **771 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: 771 (As of 04/26/2025)

- Texas: 653 (+29) (62% of these cases are in Gaines County).
- New Mexico: 66 (+1)
- Oklahoma: 15 (+2)
- Kansas: 37

HOSPITALIZATIONS: 72 (+1)

- Texas: 64 This is 9.8% of all TX cases.
- New Mexico: 7 (+1) This is 10.7% of all NM cases.
- Kansas: 1 This is 2.7% of all KS cases.

DEATHS: 3

- Texas: 2 This is 0.31% of all cases
- New Mexico: 1 This is 1.54% of all cases

US NATIONAL CASE COUNT: 923 (Confirmed and suspected):

INTERNATIONAL SPREAD (As of 4/26/2025)

- Mexico 624 (+91)
 - Chihuahua, Mexico: 605 (+91) cases, 5 hospitalizations, 1 fatality
- Canada: 1108 (This reflects Ontario's Outbreak, which began 11/24)
 - Ontario, Canada 925 (+109) cases, 69 hospitalizations.

and acuption" with anaping

0-4 Years	5-17 Years	18+ Years	Pending	Total		
195 (9) (30%)	243 (7) (37%)	190 (+12) (29%)	25 (+1) (4%)	653 (+29)		
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 (30%)	19 (51%)	7 (19%)	0	37		
OKLAHOMA OUTBREAK						
0-4 Years	5-17 Years	18+ Years	Pending	Total		
12 Cases C	onfirmed, 3 Probable – no	ages provided	3	13 (+2)		

DNA SEQUENCING:

AGES OF CASES:

WEST TEXAS OUTBREAK

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: <u>El Diario de Chihuahua</u>, <u>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

EL PASO, TX

	CONF	IRMED CASES BY AG	BE	VACCINATIO	ON STATUS
AGE	CASES	HOSPITALIZATIONS	DEATHS	STATUS	NUMBER
0-4	10	0	0	UNVACCIANTED	13
5-17	1	0	0	UNKNOWN	13
18+	18	0	0	1 DOSE	2
TOTAL	29	0	0	2 DOSES	1
				TOTAL	29



- With a population of 679,000, El Paso's **first 2 confirmed cases** were reported on 4/4/2025. As of April 26, 2025, **El Paso has reported 29 confirmed measles cases.**
- 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, or congregate settings such as the county jail, 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, KFOX, KVIA, KTSM, KFOX, BBC, AP NEWS, VAX BEFORE TRAVEL, KISS.FM, YISD, PBS, EL PASO MEASLES OUTBREAK DASHBOARD

CURRENT SITUATION: VACCINATION STATUS

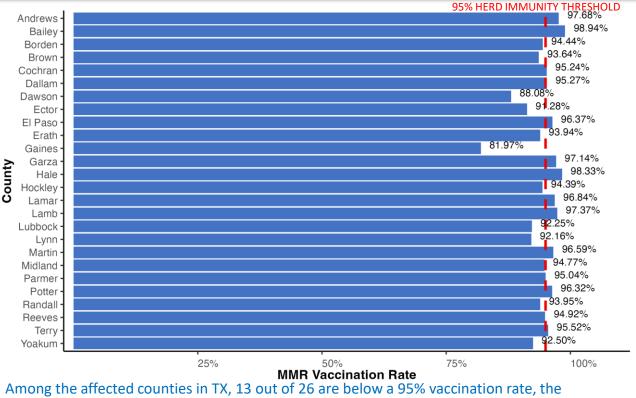
STATE	VACCINATED	VACCINATED	UNVACCINATED/	TOTAL
	WITH 1 DOSE	WITH 2 DOSES	UNKNOWN	CASES
тх	12	16	625*	653

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	7	47	12	66

STATE	VACCINATED WITH	VACCINATED WITH	UNVACCINATED /	TOTAL
	ONE DOSE	TWO DOSES	UNKNOWN	CASES
ОК	0	1	14	15

STATE	AGE APPROPRIATELY VACCINATED	NOT AGE APPROPRIATELY VACCINED	NOT VACCINATED	Pending Verification/ Unable to Verify	TOTAL CASES
KS	3	1	31	2	37



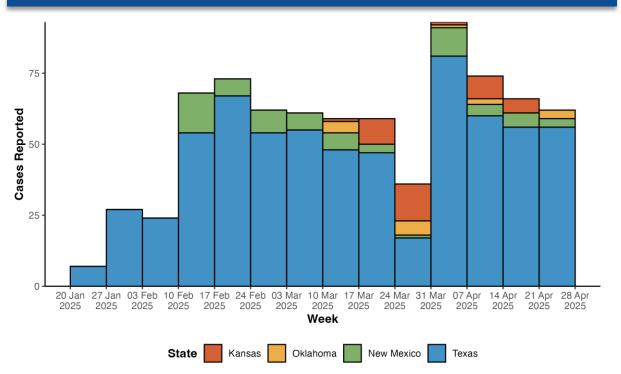
recommended rate for herd immunity (SOURCE: <u>Annual Report on Immunization Status</u> and <u>CORI</u>).

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

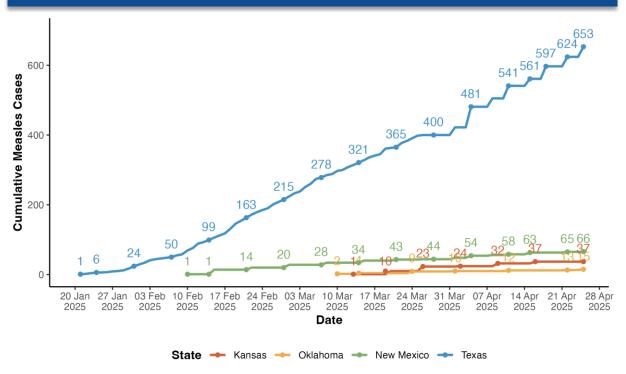
SOUTHWEST MEASLES OUTBREAK - EPI CURVE



The number of new cases per week remains high.

- **TX:** Reported first case the week of 1/25/25. 56 new cases this week.
- NM: Reported first cases the week of 2/10/25. 3 new cases this week.
- **OK:** Reported first cases the week of 3/10/25. 3 new cases this week.
- KS: Reported first case on 3/13/25. No new cases this week.

SOUTHWEST MEASLES OUTBREAK – CUMULATIVE CASES OVER TIME



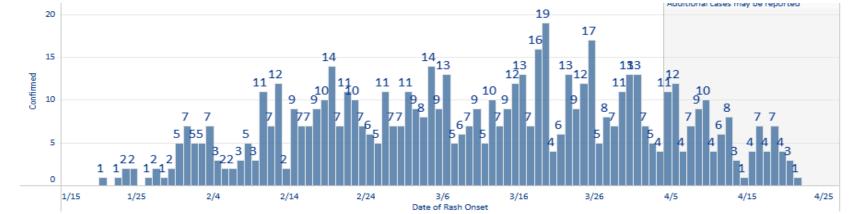
Cases are rising, and the outbreak is not slowing down.

- **TX:** The number of cases has increased consistently over time, to a total of 771 cases across 26 counties. 9.4% increase in cases in the last week.
- **NM:** A total of 66 cases have been reported in 4 counties. 4.8% increase in cases in the last week.
- **OK:** A total of 15 cases have been reported by the OSDH. 25% increase in cases in the last week.
- KS: A total of 37 cases across 8 counties have been reported by the KDHE.

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

EPI SUMMARY - TEXAS (n=653) AS OF 4/26

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	3 (+1)	0.32 %	97.70%	0	Lamar	14 (+3)	1.8%	96.84%	0
Bailey	2	0.32 %	98.94%	0	Lamb	1	0.2%	97.37%	1
Borden	1	0.2%	94.44%	1					
Brown	1	0.2%	93.64%	5	Lubbock	47	7.5%	92.25%	8
Cochran	14 (+2)	1.9%	95.20%	1	Lynn	2	0.3%	92.16%	2
Dallam	7	1.1%	95.30%	2	Martin	3	0.5%	96.59%	1
Dawson	25 (+2)	3.7%	88.10%	4	Midland	3	0.5%	94.77%	4
Ector	10	1.6%	91.30%	5	Parmer	4	0.6%	95.04%	1
El Paso	29 (+9)	3.2%	96.37%	8	Potter	1	0.2%	96.32%	3
Erath	1	0.2%	93.94%	5	Randall	1	0.2%	02.05%	1
Gaines	393 (+7)	61.9%	82.00%	3				93.95%	
Garza	2	0.3%	97.10%	0	Reeves	1	0.2%	94.92%	1
Hale	5	0.8%	98.30%	2	Terry	59 (+5)	8.7%	95.52%	2
Hockley	5	0.8%	94.40%	3	Yoakum	19	3.0%	92.50%	1



OUTBREAK CASES BY DATE OF RASH ONSET

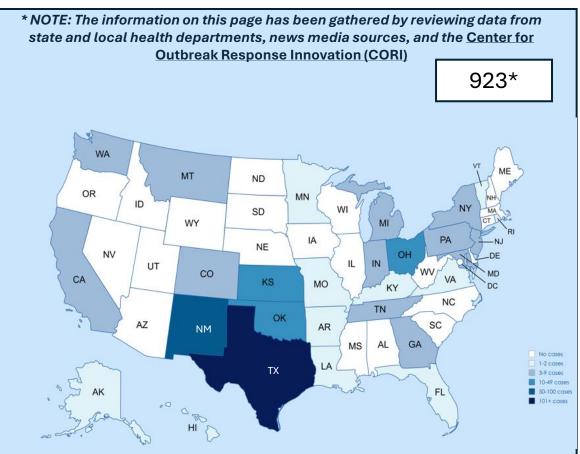
EPI SUMMARY (KS, NM, OK)

COUNTY	MEASLES CASES (NUMBER OF NEW CASES)	% of TOTAL CASES	% KINDERGARTENERS VACCINATED (2023-2024)
KANSAS (n=37) AS OF 4/23/2025			
<u>Finney</u>	Between 1-5		98%
Ford	Between 1-5		87%
Grant	Between 1-5		99%
Gray	6	16.2%	66%
<u>Haskell</u>	8	21.6%	58%
<u>Kiowa</u>	6	16.2%	92%
Morton	Between 1-5		82%
<u>Stevens</u>	7	18.9%	83%
NEW MEXICO (n=66) AS OF 4/22/2025			
Chaves	1	1.5%	98%
Doña Ana	1	1.5%	
Eddy	3 (+1)	3.%	93%
Lea	61	94%	94%
Note: Those 18 years or younger have a 95	5% vaccination rate. 63% of adults have received on	e shot of MMR, and only 55% have received both shots, according to	local health officials, though they noted that there

may be vaccinated adults whose records have not been added to the system. Adults make up more than half of reported cases in New Mexico.

OKLAHOMA (n=13) AS OF 4/22/2025			
Tulsa and Cherokee Nation	15	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
TEXAS **	682
NEW MEXICO	66
<u>KANSAS</u>	37
<u>OHIO</u>	32
<u>OKLAHOMA</u>	15
<u>PENNSYLVANIA</u>	13
CALIFORNIA	9
MICHIGAN	9
INDIANA	8
<u>TENNESSEE</u>	6
MONTANA	5
<u>WASHINGTON</u>	5
COLORADO	4
NEW YORK	4
ARKANSAS	3
<u>GEORGIA</u>	3
MARYLAND	3
NEW JERSEY	3
<u>ALASKA</u>	2
<u>FLORIDA</u>	2
HAWAII	2
<u>LOUISIANA</u>	2
<u>MINNESOTA</u>	2
<u>ILLINOIS</u>	1
<u>KENTUCKY</u>	1
MISSOURI	1
RHODE ISLAND	1
VERMONT	1
VIRGINIA	1
TOTAL	923

OUTBREAKS

SMALL OUTBREAK (3-9)

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 4/26/2025, 2300 hrs. EDT, there are approximately **923** measles cases (including confirmed and suspected cases) across 21 states.

Currently, there are *eight measles outbreaks*:

- 1. West Texas, involving <u>26 counties</u> in **Texas**, <u>4 counties</u> in **New Mexico**, <u>2 counties</u> in **Oklahoma**, and the <u>Cherokee Nation</u> in Oklahoma
 - <u>8 counties</u> in **Kansas**

2.

З.

8.

- Ashtabula and Knox Counties, Ohio
- 4. Erie County, Pennsylvania
- 5. Allen County, Indiana
- 6. Bergen County, New Jersey
- 7. metro Atlanta, Georgia
 - Gallatin County, **Montana**
- 9. Montcalm County, Michigan (linked to Ontario Outbreak)
- 10. Upper Cumberland region Tennessee

** TEXAS CASES NOT ASSOCIATED WITH OUTBREAK: 29

- 4 cases Harris County
- 1 case Travis County
- 2 cases Adults, Rockwall County (travel-related)
- 1 case Adult, Fort Bend (travel-related)
- 1 case Brazoria County
- 1 case Collin County
- 18 cases Upshur County
- 1 case Atascosa County

TEXAS CASES ASSOCIATED WITH THE OUTBREAK: 653

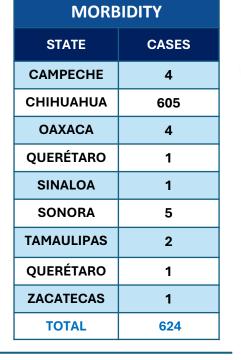
MEXICO OUTLOOK

THE MEASLES OUTBREAK IN MEXICO: OVERVIEW

- Measles Outbreak in Mexico: 624 Cases First Death Reported: Mexico is currently grappling with a measles outbreak. The state of Chihuahua has been hit hardest, reporting 605 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-year-olds are the most affected age group, with 34.4% of cases, followed by 5 to 9-year-olds, with 13.5% of cases.
- Approximately 86% of confirmed cases had no history of measles vaccination.
- On 4/25/2025, the Mexican Health Ministry issued a medium-level travel alert for the United States and Canada due to a significant increase in measles cases in both countries.

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	

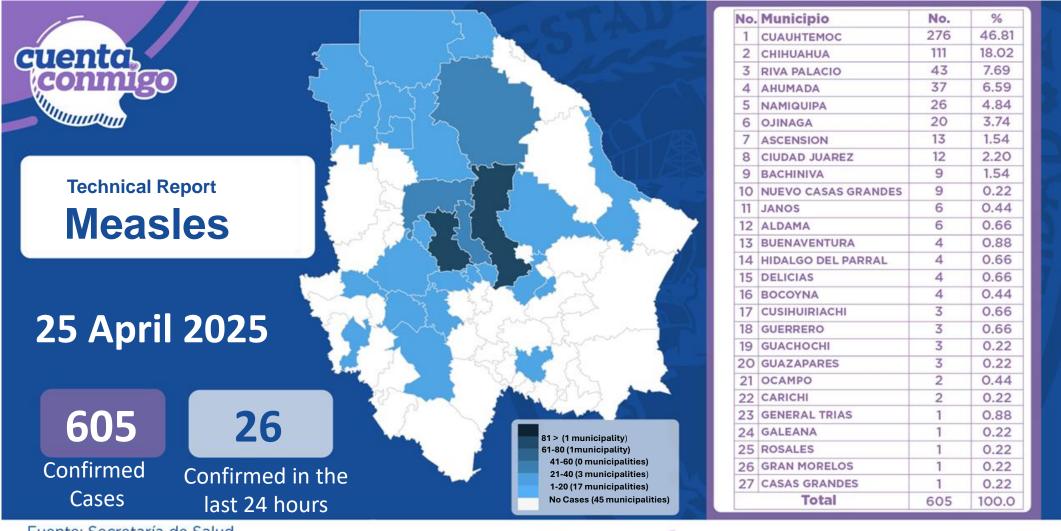
Vaccination Campaign Underway: Between January and March, over 715,000 people were vaccinated as part of the national response. Authorities have implemented "vaccine cordons," targeting healthcare workers and close contacts of confirmed cases to curb the spread. On April 15, the Secretary of Health urged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





*Data as of Tuesday, April 25 April 2025

MEXICO OUTLOOK: CHIHUAHUA



Fuente: Secretaría de Salud

SOURCE OF GRAPHIC: MediChihuahua



THE AMERICAS: CANADA

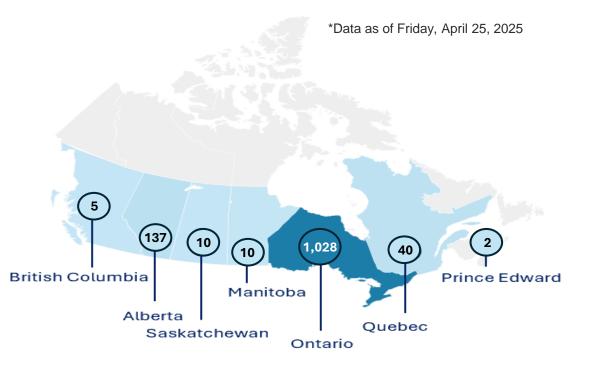




MORBIDITY IN 2025 PROVINCE CASES **ONTARIO** 1,020 (+97) ALBERTA 137 (+19) MANITOBA 10 **BRITISH COLUMBIA** 5 SASKATCHEWAN 10 (+2) QUEBEC 40 **PRINCE EDWARD ISLAND** 2 1220 (+116) TOTAL

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. The Ontario outbreak continues to escalate.
- Alberta has seen large number of cases since Easter.
- Manitoba has also reported measles cases related to this outbreak.
- New Brunswick declared their outbreak over on 1/7/2025.
- Quebec declared its outbreak over on 4/22/2025 after no new cases in 32 days.



SOURCES: MANITOBA HEALTH , ALBERTA DASHBOARD, CBC, QUEBEC, PUBLIC HEALTH ONTARIO, CBC NEWS, THE GLOBE AND MAIL, SASKATCHEWAN, CBC

ONTARIO, CANADA OUTBREAK

MORBIDITY AND MORTALITY				
PROVINCE	CASES	HOSPITALIZATIONS	DEATHS	
ONTARIO	1,020 (+97)	76 (+7)	0	

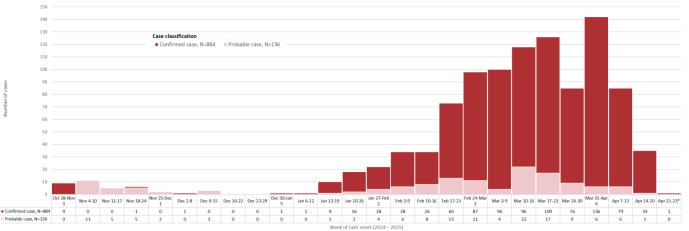
ONTARIO:

- Among all outbreak cases 74.6% (n=761) were in infants, children and adolescents, while 24.9% (n=254) were in adults, and 0.5% (n=5) had unknown age.
- 2.2% (n=22) of outbreak cases were pregnant.
- 98.4% (n=1,004) of outbreak cases were born in or after 1970.
- Among infants, children and adolescents, 95.3% (n=725) were unimmunized, while among adults, 61.0% (n=155) were unimmunized.
- 76 outbreak cases have required hospitalization. Among all hospitalizations, 72 were unimmunized, including 57 children.

IMMUNIZATION STATUS OF MEASLES OUTBREAK CASES BY AGE GROUP: OCTOBER 28, 2024 - APRIL 23, 2025 100% 90% 80% 70% 60% of cases 50% 28 40% 30% 20% 10% 0% <1 1-4 5-9 10-19 20-39 40+ Unknown 0.0% 5.1% 1.9% 2.8% 14.7% 31.7% 2 or more doses 0.0% 0.0% 0.8% 2.4% 20.4% 9.5% 1 dose 0.0% 1.5% 0.8% 0.4% 2.1% 3.2% Unimmunized 100.0% 93.4% 96.6% 94.4% 62.8% 55.6%

Age (years)

NUMBER OF MEASLES CASES BY WEEK OF RASH ONSET, 10/28/2024 - 04/23/25



*partial week up to April 23, 2025

SOURCES: PUBLIC HEALTH ONTARIO, CBC

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.

Yale MPH Student Contributors: Members of EHS 581 - Public Health Emergencies: Disaster Planning and Response (Spring 2025)

Pargoal Arab Alyssa Chetrick Dr. Vanessa Evardone, MD Dr. Jay Cliffe, MD Liv Delgado Lucy Gilchrist Monica Gomes Anne Habeck Nayeli Gonzalez-Vazquez Tianmei Han Nathan Lai Rachel Kane Kei Kohmoto Elly Maldur Phoebe Merrick Shoa Moosavi (Editor) Alexandra Nechaev Dr. Barbara Odac, MD Megan Pillar Kiswa Rahman

Emily Locke (Teaching Fellow EHS 581)

Bryn Redal Sara Rodrigue Katelyn Rudisill Christina Tong Sebastian Salzar Ling Xiao Eliot Zhang

LTC (R) Joanne McGovern – <u>Joanne.McGovern@yale.edu</u> Lecturer, Department of Environmental Health Sciences, Yale School of Public Health

This is an educational product.