

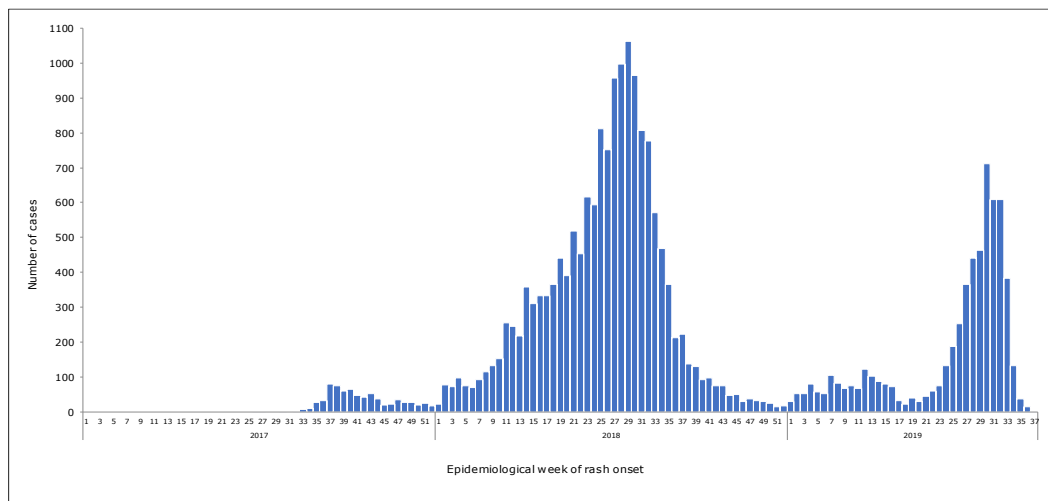
Situation Summary

Between 1 January and 25 September 2019, a total of 6,541 confirmed cases of measles, including 5 deaths, have been reported in 14 countries and territories of the Region of the Americas: Argentina (12 cases), the Bahamas (1 case), Brazil (4,476 cases), Canada (111 cases), Chile (8 cases), Colombia (203 cases), Costa Rica (10 cases), Cuba (1 case), Curaçao (1 case), Mexico (17 cases), Peru (2 cases), the United States of America (1,241 cases), Uruguay (9 cases), and the Bolivarian Republic of Venezuela (449 cases).

Since the PAHO/WHO Epidemiological Update on Measles published on 7 August¹, there has been a 123% increase in the total number of confirmed cases of measles reported, with 8 countries reporting additional confirmed cases: Argentina (7 cases), Brazil (3,431 cases), Canada (29 cases), Chile (4 cases), Colombia (28 cases), Mexico (14 cases), the United States (69 cases), and Venezuela (32 cases).

In 2018, the highest proportion of confirmed cases in the Region of the Americas were reported in Brazil and Venezuela, while in 2019, the majority of confirmed cases have been reported from Brazil (61%) and the United States (23%) (**Figure 1**).

Figure 1. Distribution of confirmed measles cases* by epidemiological week of rash onset in the Region of the Americas. 2017–EW 37 of 2019.



*Confirmed cases with information available. 2017–EW 37 of 2019 (23,112 cases).

Source: Data provided by the International Health Regulations National Focal Points or published on the websites of Ministries of Health or Health Agencies and reproduced by PAHO/WHO.

¹ PAHO/WHO. Epidemiological Update: Measles. 7 August 2019, Washington, D.C.: PAHO/WHO; 2019. Available at: <https://bit.ly/2KBYyB5>

Suggested citation: Pan American Health Organization / World Health Organization. Epidemiological Update: Measles. 25 September 2019, Washington, D.C.: PAHO/WHO; 2019

The following is a summary of the epidemiological situation of measles for countries/territories that have reported confirmed cases in the past 6 weeks (11 August to 21 September).

In **Argentina**, between epidemiological week (EW) 1 and EW 38 of 2019, a total of 12 confirmed cases of measles, of which 4 were imported, one is import-related, and 7 have a probable site of infection under investigation. Information regarding the first 5 cases was published in the PAHO/WHO Epidemiological Updates on Measles published on 18 April 2019 and 18 June 2019.

The 7 most recent confirmed cases are described below:

Cases 1 and 2: The first corresponds to a 44-year-old Argentinian male with no history of vaccination and with a travel history to the states of Ceará and São Paulo, Brazil, between 2-9 August 2019. This case had rash onset on 14 August 2019, and genotype D8, lineage MVs/Gir Somnath.IND/42.16 was identified. The second case corresponds to a 44-year-old female with no history of vaccination and with an epidemiological link to Case 1. This case was confirmed by serology; genotype and lineage could not be identified.

Cases 3, 4, and 5: These cases correspond to two 11-month-old females who had rash onset on 4 September and 10 September, respectively, and a 3-year-old female who had rash onset on 10 September. None of these cases had a history of vaccination (2 of whom were under the vaccination age). For all 3 cases, the probable site of infection is under investigation, and genotype D8, lineage MVs/Gir Somnath.IND/42.16 was identified.

Cases 6 and 7: These cases correspond to tourists aged 7 and 11 years, who had rash onset on 2 September and 4 September, respectively. The probable site of infection is under investigation, and genotype and lineage are pending.

In **Brazil**, between EW 1 of 2018 and EW 37 of 2019, a total of 40,727 suspected cases of measles have been reported, of which 14,806 have been confirmed (10,330 in 2018 and 4,476 in 2019), including 12 deaths in 2018 and 4 deaths in 2019 (**Figure 2**).

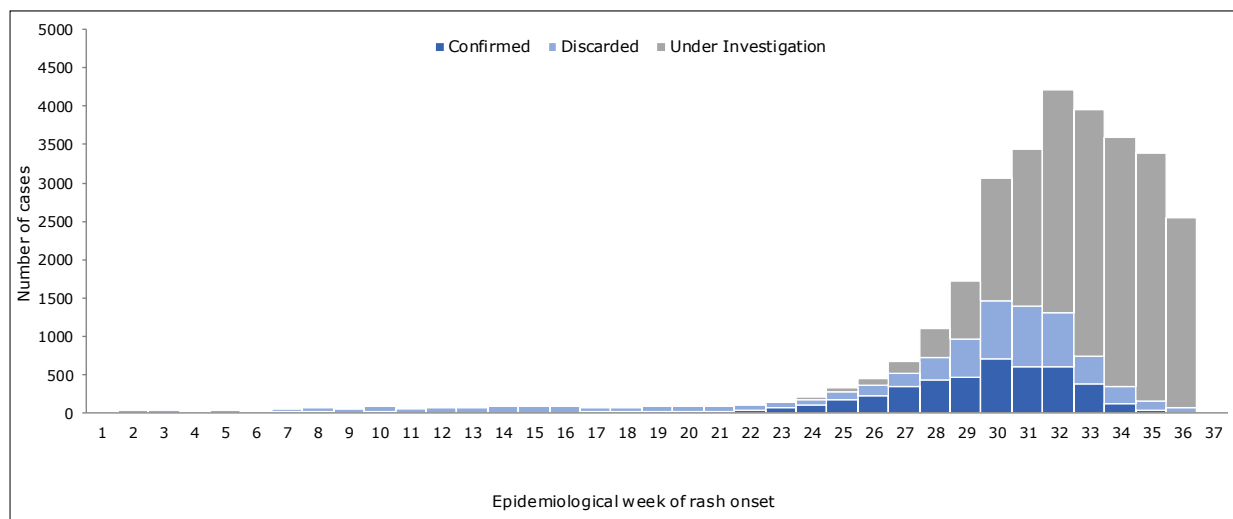
Between 2018 and EW 37 of 2019, the cumulative national incidence rate is 7.6 cases per 100,000 population (5.3 cases per 100,000 population in 2018 and 2.3 cases per 100,000 population in 2019).

In 2019, 19² federal units have reported confirmed cases: Amazonas (4 cases), Bahía (1 case), the Federal District (3 cases), Espírito Santo (1 case), Goiás (4 cases), Maranhão (4 cases), Mato Grosso do Sul (2 cases), Minas Gerais (19 cases), Pará (55 cases), Paraná (7 cases), Pernambuco (15 cases, 1 death), Piauí (2 cases), Rio de Janeiro (30 cases), Rio Grande do Norte (4 cases), Rio Grande do Sul (7 cases), Roraima (1 case), Santa Catarina (15 cases), São Paulo (4,300 cases, 3 deaths), and Sergipe (2 cases).

As of this Update, the most recent confirmed case in Brazil had rash onset on 9 September 2019 (EW 37 of 2019) and was reported in São Paulo State.

² 10 additional federal units compared to the 7 August 2019 PAHO/WHO Epidemiological Update on Measles, available at: <https://bit.ly/2KBYyB5>

Figure 2. Reported cases of measles by epidemiological week of rash onset. Brazil. EW 1 to EW 37 of 2019.



Source: Data published by the Brazilian Ministry of Health and reproduced by PAHO/WHO

Table 1. Distribution of confirmed measles cases. Minas Gerais, Pernambuco, Rio de Janeiro, Santa Catarina, and São Paulo states, Brazil. EW 1 to EW 37 of 2019.

Federal Units	Number of confirmed cases in 2018	Number of confirmed cases in 2019	Rash onset of most recent confirmed case (EW)	Cumulative incidence rate* in 2019	% Routine vaccine coverage (MMR second dose)**
Minas Gerais	0	19	34	0.1	75.69
Pernambuco	4	15	33	0.2	65.47
Rio de Janeiro	20	30	35	0.3	42.75
Santa Catarina	0	15	32	0.2	83.08
São Paulo	3	4,300	37	10.2	74.72

*Cases per 100,000 population

**pni.datasus.gov.br; Partial data updated on 24 September 2019; data subject to change.

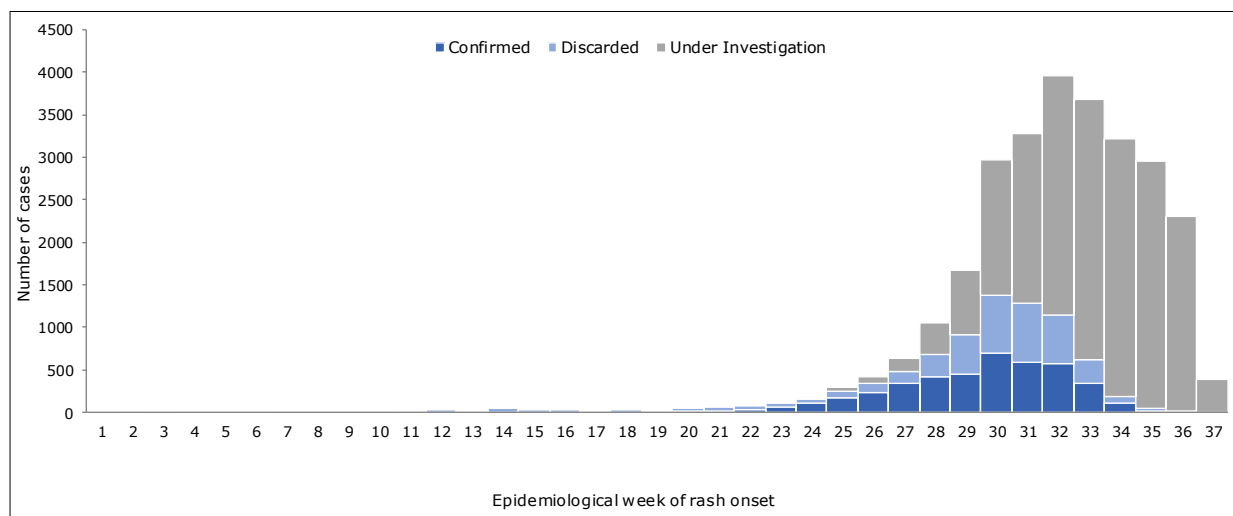
Source: Data published by the Brazil Ministry of Health and reproduced by PAHO/WHO.

The epidemiological situation in the state of São Paulo is described below.

In the *state of São Paulo*, between 1 January and 14 September 2019, a total of 27,738 suspected cases were reported, of which 4,300 were confirmed, accounting for 96% of the confirmed cases reported nationally. Furthermore, 25% (155 of 625) of the municipalities in the state of São Paulo have reported at least one confirmed case, with São Paulo Municipality reporting 58% of the confirmed cases within the state.

The most recent confirmed case and the most recent cases under investigation had rash onset in EW 37 of 2019. Viral genotype D8 has been identified.

Figure 3. Reported cases of measles by epidemiological week of rash onset. São Paulo State, Brazil. EW 1 to EW 37 of 2019.



Source: Data provided by the Brazil International Health Regulations National Focal Point and reproduced by PAHO/WHO.

In São Paulo, the four age groups with the highest cumulative incidence rates among confirmed cases are: children under 1 year (92.0 cases per 100,000 population), followed by 1 to 4-year-olds (28.2 cases per 100,000 population), 20 to 29-year-olds (18.7 cases per 100,000 population), and 15 to 19-year-olds (16.6 cases per 100,000 population) (**Table 2**).

Table 2. Distribution of confirmed cases and age-specific incidence rates by age group. São Paulo State, Brazil. EW 1 to EW 37 of 2019*.

Age group	Number of cases	%	Incidence rate**
< 1 year	563	13.1	92.0
1 to 4 years	625	14.5	28.2
5 to 9 years	123	2.9	4.2
10 to 14 years	89	2.1	2.6
15 to 19 years	558	13.0	16.6
20 to 29 years	1,413	32.9	18.7
30 to 39 years	629	14.6	9.2
40 to 49 years	184	4.3	3.2
> 50 years	116	2.7	1.2
Total	4,300	100.0	10.2

*Available data as of 24 September 2019.

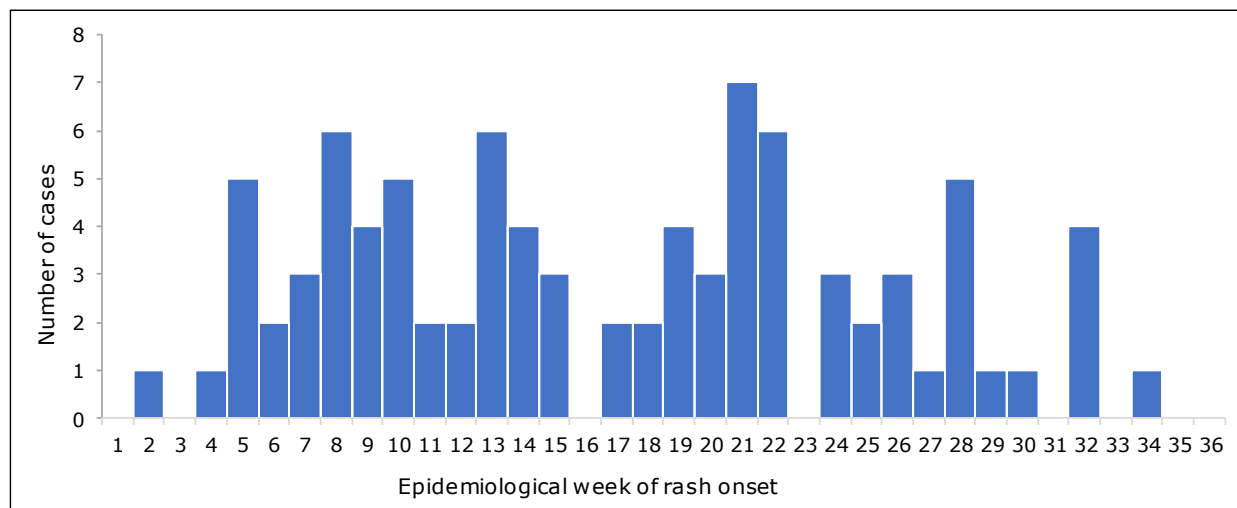
**Cases per 100,000 population

Source: Data published by the Brazilian Ministry of Health and reproduced by PAHO/WHO.

In **Canada**, between EW 1 and EW 36 of 2019, a total of 111 confirmed cases of measles have been reported in the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Ontario, Quebec, Saskatchewan, and the Northwest Territories. Of the total confirmed cases, 71 were genotyped, for which genotype B3 (18 cases) and genotype D8 (53 cases) were identified, similar to those circulating globally.

The Public Health Agency of Canada (PHAC) periodically updates this information, available at: <https://bit.ly/2J7BDAt>.

Figure 4. Confirmed cases of measles by epidemiological week of rash onset. Canada. EW 1 to EW 36 of 2019.



Source: Data published by the Public Health Agency of Canada and reproduced by PAHO/WHO.

In **Chile**, between EW 45 of 2018 and EW 37 of 2019, a total of 31 confirmed cases of measles were reported (23 in 2018 and 8 in 2019 as of EW 37); of these, 11 were imported and 20 were import-related.

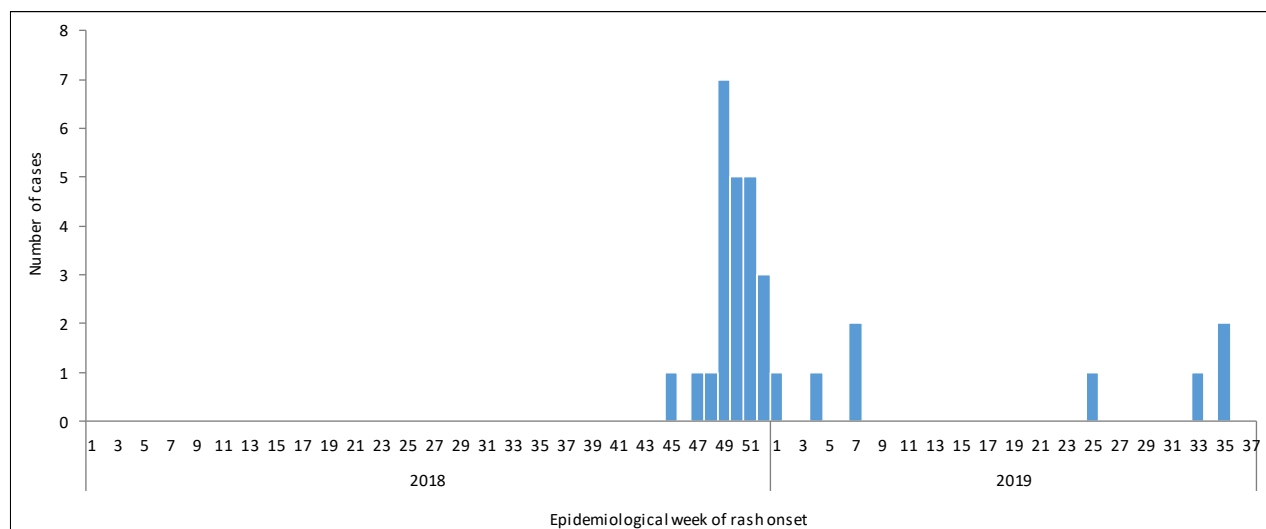
Overall, 45% of cases required hospitalization, no deaths were reported, 45% (14 cases) are male, and 48% (15 cases) are under 1-year-old. The cases reside in the Metropolitan (27 cases), Biobío (2 cases), and O'Higgins (1 case) regions in Chile, in addition to one European traveler.

Among the 4 most recent cases, one corresponds to a 44-year-old Chilean female with no history of vaccination and with a travel history to cities in Spain and Italy between 26 May and 9 June 2019; on 10 June, the case returned to Chile and had rash onset on 16 June.

The remaining 3 most recent cases correspond to the same transmission chain linked to an imported case. Among these, the primary case was classified as imported, corresponding to a 27-year-old female resident of the city of Santiago, with a travel history to Rio Grande do Norte State, Brazil. On 10 August 2019, the case returned to Chile and had rash onset on 16 August. This case had been investigated as a contact of the index case, corresponding to the 26-year-old sister of the primary case and who had rash onset on 29 August 2019. The third case, a 27-year-old female, was identified as a friend of both of the sisters, who had rash onset on 30 August 2019. The index case and the third case were both classified as import-related. All 3 cases had a history of vaccination.

Genotype D8 has been identified for 74% (23) of the total confirmed cases.

Figure 5. Confirmed cases of measles by epidemiological week of rash onset. Chile. EW 45 of 2018 to EW 37 of 2019.



Source: Data provided by the Chile International Health Regulations National Focal Point and reproduced by PAHO/WHO.

In **Colombia**³, between EW 10 of 2018 and EW 37 of 2019, a total of 10,729 suspected cases of measles were reported (7,186 in 2018 and 3,543 in 2019), of which 411 were confirmed (208⁴ with rash onset in 2018 and 203 in 2019), including one death⁵.

Genotyping performed on samples for 112 cases identified genotype D8, similar to that circulating in Venezuela and other countries in the Region.

In 2019, confirmed cases have been reported in the departments of Atlántico, César, Córdoba, Cundinamarca, La Guajira, Norte de Santander, and Sucre, and in the districts of Barranquilla, Bogotá, and Cartagena.

In the past five weeks (EW 33 – EW 37), a total of 21 confirmed cases were reported, in La Guajira (1 case), Norte de Santander (15 cases), and Sucre (4 cases) departments and Bogotá District (1 case).

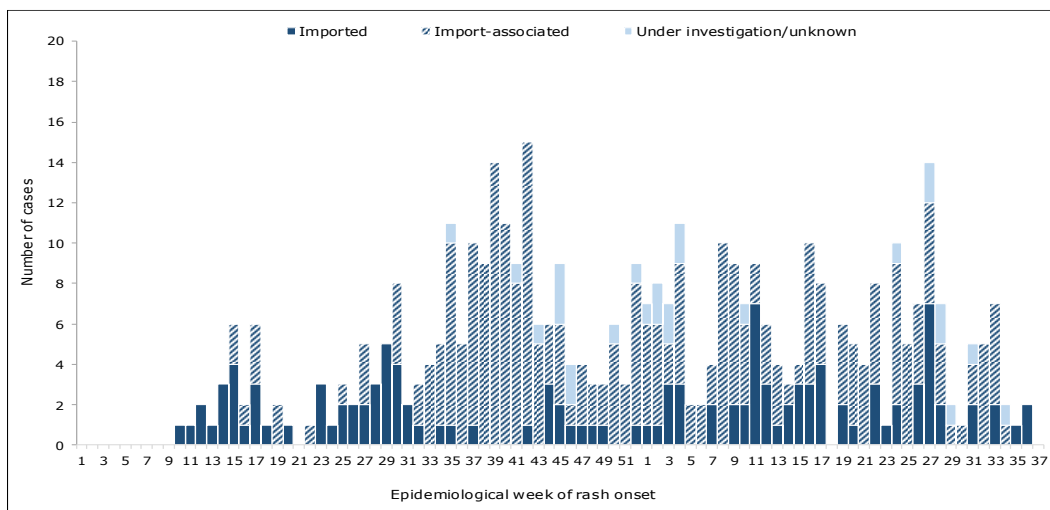
The most recent confirmed case (imported) had rash onset on 6 September 2019, and the most recent suspected case under investigation had rash onset on 21 September 2019.

³ The data provided in this PAHO/WHO Epidemiological Update may differ from previous PAHO/WHO Epidemiological Updates, due to adjustments made by the national authorities of the Colombia Ministry of Health.

⁴ According to previous data provided by the national authorities of the Colombia Ministry of Health, the PAHO/WHO Epidemiological Update published on 17 May 2019 reported 209 cases with rash onset in 2018; however, one case was reclassified.

⁵ Information pertaining to the reported death was published in the 7 August 2019 PAHO/WHO Epidemiological Update on Measles, available at: <https://bit.ly/2KBYyB5>

Figure 6. Confirmed cases of measles by epidemiological week of rash onset. Colombia, EW 10 of 2018 to EW 37 of 2019.

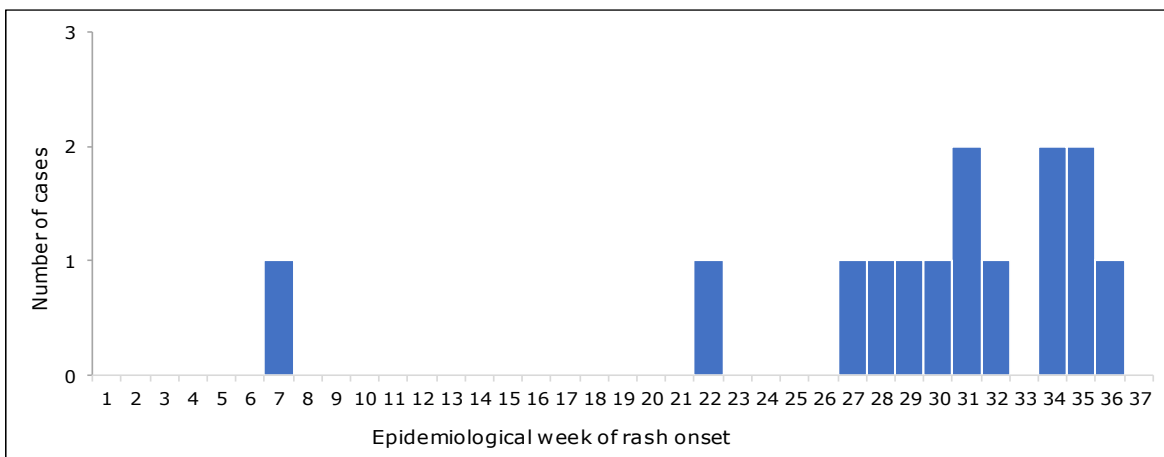


Source: Data provided by the Colombia International Health Regulations National Focal Point and reproduced by PAHO/WHO.

In **Mexico**, between EW 1 and EW 37 of 2019, a total of 17 confirmed measles cases have been reported, of which 4 were imported, 9 are import-related, and 4 for which the source remains under investigation. Cases have been reported from the states of Chihuahua (3 cases), México (4 cases), Guanajuato (1 case), Guerrero (1 case), Nuevo León (1 case), Quintana Roo (5 cases), San Luis San Luis Potosí (1 case), and Veracruz (1 case). Of the total confirmed cases, 59% are female and 47% are aged 1 to 4-years-old. Dates of rash onset were between 10 February and 2 September, with the 2 most recent confirmed cases having rash onset on 27 August and 2 September 2019 in the states of México and Veracruz, respectively. Overall, 35% of the cases had a history of vaccination.

In total, 82% of the cases were confirmed by PCR. Genotype D8, lineage MVi/Manchester.GBR/30.94 (97.81% identity), was identified for 7 cases, while genotype B3, lineage MVi/Ibadan.NGA/0.97 (96.27% identity), was identified for 2 cases. Genotype and lineage are pending for 5 cases, and no sample was available for genotype and lineage identification for 3 cases.

Figure 7. Confirmed cases of measles by epidemiological week of rash onset. Mexico, EW 7 to EW 37 of 2019.

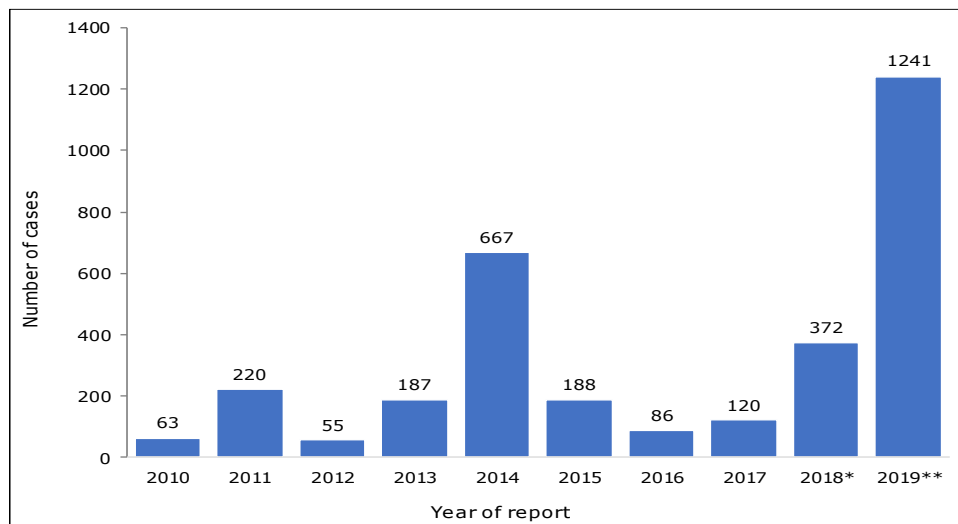


Source: Data provided by the Mexico International Health Regulations National Focal Point and reproduced by PAHO/WHO.

In the **United States**, between 1 January and 19 September 2019, a total of 1,241⁶ confirmed cases of measles were reported in 31 states: Alaska, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, New Mexico, Nevada, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Virginia, and Washington.

Currently, the measles outbreak in New York (Rockland County) was declared over⁷. Recent outbreaks have been linked to travelers that visited other countries, such as Israel, Ukraine, and the Philippines. The majority of cases have been unvaccinated.

Figure 8. Confirmed cases of measles by year of report. United States, 2010-2019 (as of 19 September).



*Cases until 29 December 2018. The case count is preliminary and subject to change.

**Cases as of 19 September 2019. The case count is preliminary and subject to change. Data are updated weekly.

Source: Data published by the United States Centers for Disease Control and Prevention and reproduced by PAHO/WHO.

This information is regularly updated on the United States Centers for Disease Control and Prevention (CDC) website, available at: <https://bit.ly/2iMFk71>.

In **Venezuela**, the outbreak that began in 2017 remains ongoing. Between EW 26 of 2017 and EW 36 of 2019, a total of 10,495 suspected cases (1,307 in 2017, 8,005 in 2018⁸, and 1,183 in 2019) were reported, of which 6,955 were confirmed (727 in 2017, 5,779 in 2018, and 449 in 2019). In 2019, no deaths have been reported, whereas during 2017-2018, 81 deaths were reported: 2 in 2017 (in

⁶ Preliminary number of cases as of 19 September 2019; data subject to change.

⁷ According to the information published in the Rockland County web site, the outbreak was declared over as of 25 September 2019. Available at: <https://bit.ly/2i73RQo>

⁸ According to the previous data provided by the authorities of the Ministry of People's Power for Health of Venezuela, in the Epidemiological Update published by PAHO / WHO on 18 June 2019, 7,790 suspected cases had rash onset in 2018 and 5,670 cases were confirmed for the same year; in addition, 79 deaths were reported (2 in 2017 and 77 in 2018). The current figures for 2018 (8,005 suspected cases, 5,779 confirmed cases, and 79 deaths) were updated by the health authorities of the Ministry of People's Power for Health of Venezuela, according to information recently received with new records found in the federal units.

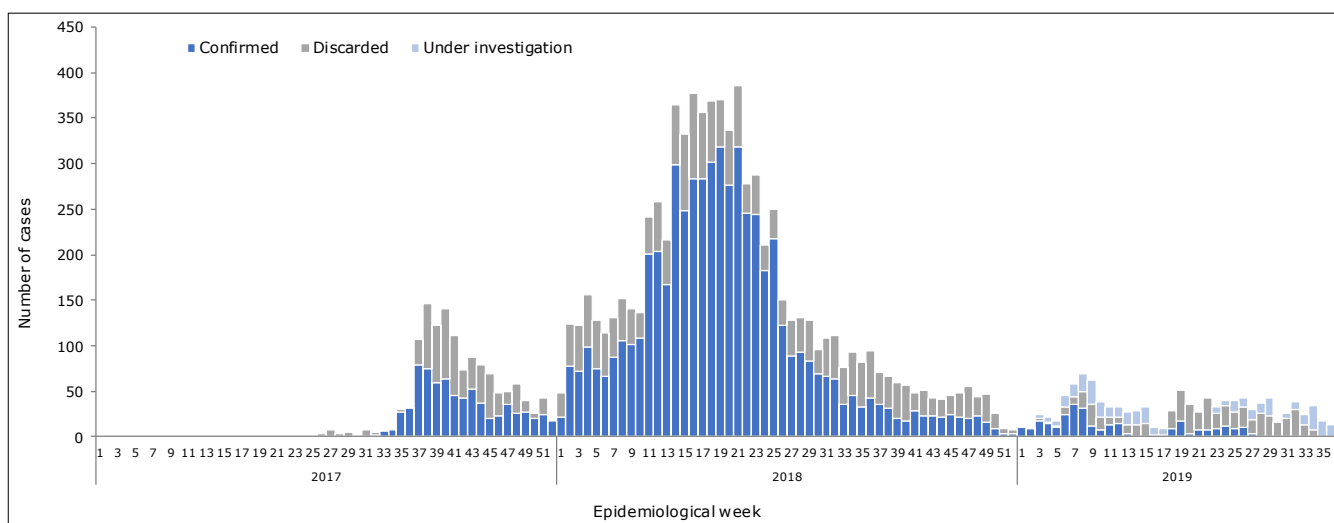
Bolívar) and 79 in 2018 (37 in Delta Amacuro, 27 in Amazonas, 9 in Miranda, 4 in the Capital District, 1 in Bolívar and 1 in Vargas)⁹.

The most recent laboratory-confirmed case had rash onset on 11 August 2019, from Jesús María Semprun Municipality, Jesús María Semprun Parish, Zulia State.

The average national incidence rate during 2017-2019 is 22 cases per 100,000 population. The highest incidence rates have been reported in Delta Amacuro (215 cases per 100,000 population), the Capital District (127 cases per 100,000 population), Amazonas (85 cases per 100,000 population), Bolívar (56 cases per 100,000 population), Vargas (48 cases per 100,000 population), and Miranda (39 cases per 100,000 population).

Confirmed cases with dates of rash onset between EW 1 and EW 36 of 2019 were reported from Zulia (261 cases), Anzoátegui (145 cases), Carabobo (17 cases), the Capital District (7 cases), Miranda (4 cases), Monagas (4 cases), Nueva Esparta (3 cases), Cojedes (2 cases), Yaracuy (2 cases), Aragua (1 case), Sucre (1 case), Amazonas (1), and Bolívar (1).

Figure 9. Reported cases of measles by epidemiological week of rash onset. Venezuela. 2017-2019 (until EW 36).



Source: Data from the Venezuela Ministry of People's Power for Health and reproduced by PAHO/WHO.

Measles in indigenous communities

In **Brazil**, a total of 183 suspected cases have been reported among indigenous populations, of which 145 were confirmed in Roraima State and 2 (both fatal) in Pará State. The majority of confirmed cases in Roraima State are from the Auaris Indigenous Health District, which borders Venezuela.

In 2019, there have been no suspected cases of measles reported in indigenous communities.

⁹ The data in this analysis reflects the current case numbers; however, there may be delays in the reporting and completeness of the information. The data are subject to change as the information for each case is updated and validated.

In **Colombia**, between EW 10 of 2018 and EW 35 of 2019, a total of 92 confirmed cases of measles were reported among indigenous populations (4 in 2018 and 88 in 2019), all among the Wayuu ethnic group in La Guajira Department.

In **Venezuela**, between EW 1 and EW 52 of 2018, there were 541 confirmed cases of measles reported among indigenous populations in the states of Amazonas¹⁰ (162 cases, of which 135 were in the Sanema, 24 in the Yanomami¹¹, 2 in the Yekuana and 1 in the Baniva ethnic groups); Bolivar (9 in the Kariña and 5 in the Pemón ethnic groups); the Capital District (1 case in the Wayú ethnic group); Delta Amacuro (332 cases, all in the Warao ethnic group); Monagas (22 cases, of which 20 were in the Warao, 1 in the Shaima, and 1 in the Eñepa ethnic groups); and Zulia (9 cases in the Wayú ethnic group). Additionally, 62 deaths were reported, of which 35 were in Delta Amacuro (all in the Warao ethnic group) and 27 were in Amazonas (26 in the Sanema and 1 in the Yanomami ethnic groups).

In 2019, between EW 1 and EW 37, a total of 86 cases of measles have been reported among indigenous communities, all in Zulia State, in the following ethnic groups: Añu (24 cases), Putumayo (2 cases), Wayu (58 cases), and Yukpa (2 cases).

Advice to national authorities

Given the continued imported cases of measles from other regions and the ongoing outbreaks in countries and territories of the Region of the Americas, the Pan American Health Organization / World Health Organization (PAHO/WHO) reinforces the recommendations made since February 2015 to all Member States, to:

- Vaccinate to **maintain homogenous coverage of 95%** with the first and second doses of the measles, mumps and rubella (MMR) vaccine in all municipalities.
- **Vaccinate at-risk populations** (without proof of vaccination or immunity against measles and rubella), such as healthcare workers, persons working in tourism and transportation (hotels, airports, border crossings, mass urban transportation, and others), and international travelers.
- **Maintain a vaccine stock** of the measles-rubella (MR) and/or MMR vaccine **and syringes/supplies** for prevention and control actions of imported cases.
- **Identify migratory flows**, both external (arrival of foreigners or persons from the same country who visit countries with ongoing outbreaks) and internal (displaced populations) within each country, including indigenous populations and other vulnerable populations, in order to facilitate access to vaccination services according to the national scheme.
- Implement a **plan to immunize migrant populations** in high-traffic border areas, prioritizing those considered at-risk, including both migrants and local residents, in these municipalities.
- **Increase vaccination coverage** in order to increase population immunity.
- **Strengthen epidemiological surveillance** for measles to achieve timely detection of all suspected cases in public, private, and social security healthcare facilities in order to contain the risk through timely public health actions and ensure that samples are received by

¹⁰ The difference with respect to that reported in previous Epidemiological Updates is due to the retrospective adjustments made by the national authorities based on the review, consolidation, and investigation of cases in indigenous populations.

¹¹ According to previous data provided by national authorities, between EW 11 and EW 27 of 2018, there were 126 confirmed cases, including 53 deaths, in the Yanomami Municipality of Alto Orinoco, Amazonas State in Venezuela.

laboratories within 5 days of collection and that laboratory results are available in a timely manner.

- **During an outbreak** and when it is not possible to confirm the suspected cases by laboratory, **classifications of a confirmed case may be based on clinical criteria (fever, rash, cough, coryza and conjunctivitis) and epidemiological link**, in order to not delay the response actions.
- Strengthen **epidemiological surveillance in border areas** to rapidly detect and respond to highly suspected cases of measles.
- Provide a **rapid response** to imported measles cases to avoid the re-establishment of endemic transmission, through the activation of rapid response teams trained for this purpose, and by implementing national rapid response protocols when there are imported cases. Once a rapid response team has been activated, continued coordination between the national and local levels must be ensured, with permanent and fluid communication channels between all levels (national, sub-national, and local).
- During outbreaks, **establish adequate hospital case management to avoid nosocomial transmission**, with appropriate referral of patients to isolation rooms (for any level of care) and avoiding contact with other patients in waiting rooms and/or other hospital rooms.

Additionally, PAHO/WHO recommends that Member States advise all travelers aged 6 months¹² and older who cannot show proof of vaccination or immunity to **receive the measles and rubella vaccine**, preferably the triple viral vaccine (MMR), **at least two weeks prior traveling to areas where measles transmission has been documented**. PAHO/WHO recommendations regarding advice for travelers are available in the 27 October 2017 PAHO/WHO Epidemiological Update on Measles¹³.

Sources of information

1. **Argentina** International Health Regulations (IHR) National Focal Point (NFP) report received by PAHO/WHO via email.
2. **Brazil** International Health Regulations (IHR) National Focal Point (NFP) report received by PAHO/WHO via email.
3. **Brazil** Ministry of Health. Measles. Situation Monitoring in Brazil – 2019. Report No. 25, September 2019. Available at: <https://bit.ly/2kLzkaT>
4. **Brazil** Ministry of Health. Measles. Situation Monitoring in Brazil – 2019. Report No. 23, September 2019. Available at: <https://bit.ly/2kk8uGp>
5. **Canada** Public Health Agency of Canada (PHAC). Measles and Rubella Weekly Monitoring Reports. Week 36 of 2019 (1-7 September 2019). Available at: <https://bit.ly/2lj4r5f>
6. **Chile** International Health Regulations (IHR) National Focal Point (NFP) report received by PAHO/WHO via email.

¹² The dose of the MMR or MR vaccine given to children aged 6 to 11 months does not replace the first dose of the recommended schedule at 12 months of age.

¹³ Information available in the Epidemiological Update on Measles of 27 October 2017, Washington, D.C. PAHO/WHO. 2017. Available at: <https://bit.ly/2l3gCSi>

7. **Colombia** International Health Regulations (IHR) National Focal Point (NFP) report received by PAHO/WHO via email.
8. **Mexico** International Health Regulations (IHR) National Focal Point (NFP) report received by PAHO/WHO via email.
9. **Mexico** Ministry of Health. Measles in Mexico, as of epidemiological week 37 of 2019. Available at: <https://bit.ly/2kADFFx>
10. **United States** Centers for Disease Control and Prevention. Measles cases and outbreaks. Available at: <https://bit.ly/2iMFK71>
11. **Venezuela** International Health Regulations (IHR) National Focal Point (NFP) report received by PAHO/WHO via email.

Related link:

- PAHO/WHO – Vaccine-Preventable Diseases. Available at: <https://bit.ly/2Ksx97m>