

Situation Summary

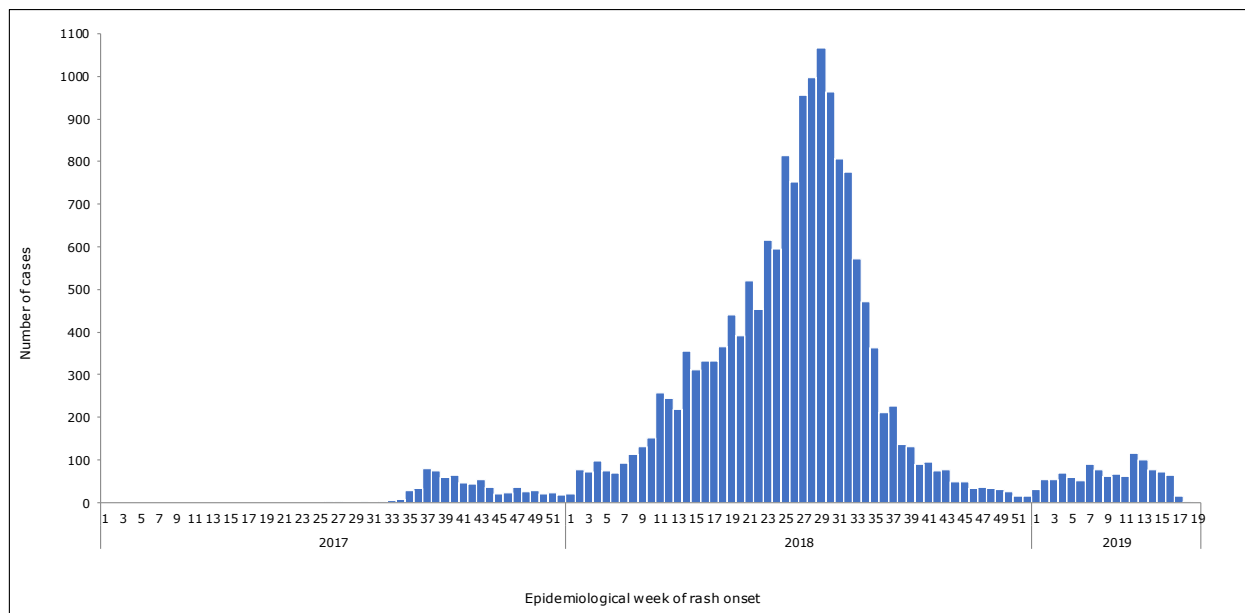
In 2019 to date, 12 countries in the Region have reported confirmed measles cases: Argentina, the Bahamas, Brazil, Canada, Chile, Colombia, Costa Rica, Mexico, Peru, the United States of America, Uruguay, and the Bolivarian Republic of Venezuela. No fatal cases have been reported in 2019 in the Region. There was one additional confirmed measles case reported in the Region onboard a cruise ship that sailed between Aruba and Curacao.

Since the prior PAHO/WHO Epidemiological Update on Measles published on 18 April 2019¹, 9 countries have reported additional cases of measles: Brazil (70 cases), Canada (12 cases), Chile (1 case), Colombia (27 cases), Costa Rica (1 case), Peru (1 case), the United States of America (284 cases), Uruguay (6 cases), and the Bolivarian Republic of Venezuela (63 cases). Argentina, the Bahamas, and Mexico did not report additional cases during this period.

The measles outbreak in the Americas, caused by genotype D8 lineage MVi/HuluLangat.MYS/26.11 and that began in Venezuela in 2017, subsequently spread to Brazil and Colombia in 2018 and later to Argentina, Chile, Ecuador, and Peru, where imported or import-related cases with the same genotype and lineage were reported. In 2019, Brazil, Colombia, and Venezuela continue to report cases associated with the same genotype and lineage, indicating the continued circulation of this virus. This situation, along with the occurrence of imported cases from outside this Region, has led to an increase in the weekly number of reported cases since the beginning of 2019, with a peak observed in epidemiological week (EW) 12 of 2019 and an average of 78 cases during the 4 following weeks (**Figure 1**).

¹ PAHO/WHO. Epidemiological Update: Measles. 18 April 2019, Washington, D.C.: PAHO/WHO; 2019. Available at: <https://bit.ly/2KOdu2t>

Figure 1. Distribution of confirmed measles cases* by epidemiological week of rash onset in countries in the Region of the Americas. 2017-2019 (up to EW 19).



*Information available on cases by EW of onset of rash (18,044 cases).

Source: Data provided by the International Health Regulations National Focal Points of Argentina, the Bahamas, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela and from information published by the Public Health Agency of Canada and the United States Centers for Disease Control and Prevention and reproduced by PAHO/WHO.

The following is the measles epidemiological situation for countries where new confirmed cases or an update has been reported since the prior PAHO/WHO Epidemiological Update on Measles published on 18 April 2019, as well as the case onboard a cruise ship.

Argentina has reported 4 confirmed measles cases, of which 3 were imported and one was import-related. The details of the 4 cases were published in the PAHO/WHO Epidemiological Update on Measles published on 18 April 2019.

For the first case, the genotype identified was B3. For the second case, genotype D8 lineage MVi/Delhi.IND/01.14 was identified, similar to that reported among cases associated with a cruise ship outbreak in Brazil. For the third and fourth cases (primary and secondary case, respectively), genotype D8 lineage MVs/Gir Somnath.IND/42.16 was identified; this strain has widespread distribution in Asia and Europe.

In **Brazil**, between EW 1 of 2018 and EW 16 of 2019, there were 19,036 suspected measles cases reported (18,428 in 2018 and 608 in 2019), of which 10,424 were confirmed (10,351 in 2018 and 73 in 2019) including 12 deaths (all in 2018).

The cumulative incidence rate at the national level is 5.09 per 100,000 population. Among confirmed cases with available information, 4,691 were male and 5,715 were female.

In 2018, 11 federal units reported confirmed cases of measles: Amazonas (9,803 cases, 6 deaths), Bahía (3 cases), the Federal District (1 case), Pará (104 cases, 2 deaths),

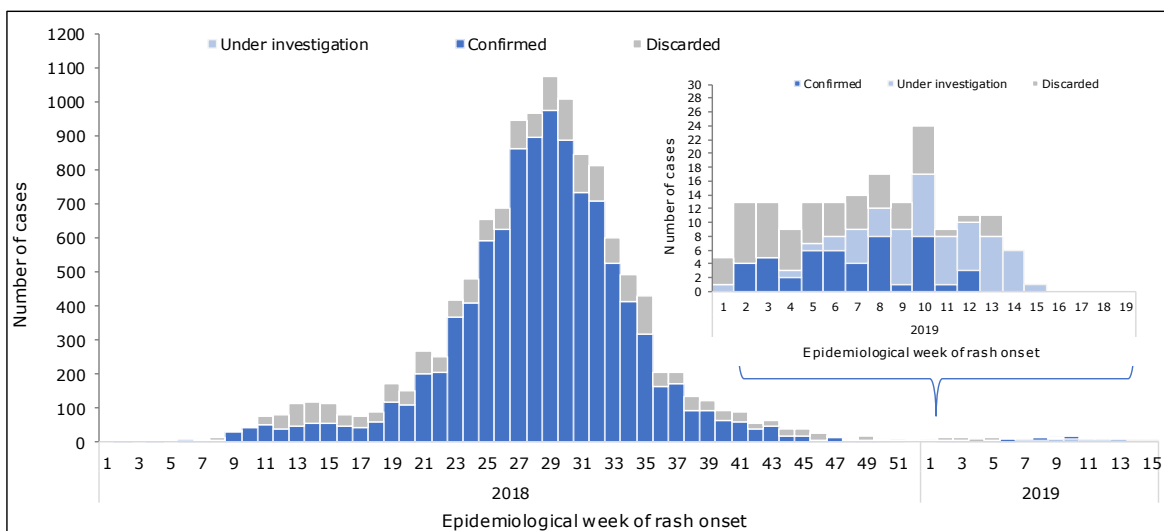
Pernambuco (4 cases), Rio Grande do Sul (46 cases), Rio de Janeiro (20 cases), Rondônia (2 cases), Roraima (361 cases, 4 deaths), São Paulo (3 cases), and Sergipe (4 cases). In 2019, 7 federal units have reported confirmed measles cases: Amazonas (4 cases), Pará (43 cases), São Paulo (20 cases), Santa Catarina (3 cases), Rio de Janeiro (1 case), Roraima (1 case), and Minas Gerais (1 case).

In the states of Pará, Roraima, and Amazonas, genotype D8 lineage MVi/HuluLangat.MYS/26.11 was identified, similar to that circulating in Venezuela and other countries in the Region. However, a different D8 genotype lineage was identified in the states of São Paulo, Santa Catarina, Rio de Janeiro, and for a recent outbreak reported on a cruise ship in Brazil, as described in the 18 April 2019 Epidemiological Update on Measles. In addition, 2 cases imported from Europe were reported in the states of São Paulo and Minas Gerais.

The most recent confirmed case in Brazil had rash onset on 20 March 2019 and was reported in Pará State.

The most recent confirmed cases imported from Venezuela had rash onset in EW 6 of 2019 and were reported in Roraima State.

Figure 2. Reported measles cases by EW of rash onset. Amazonas, Pará, and Roraima states, Brazil, EW 1 of 2018 to EW 16 of 2019.



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

The following is a brief summary of the epidemiological situation in the states of Amazonas, Pará, and Roraima.

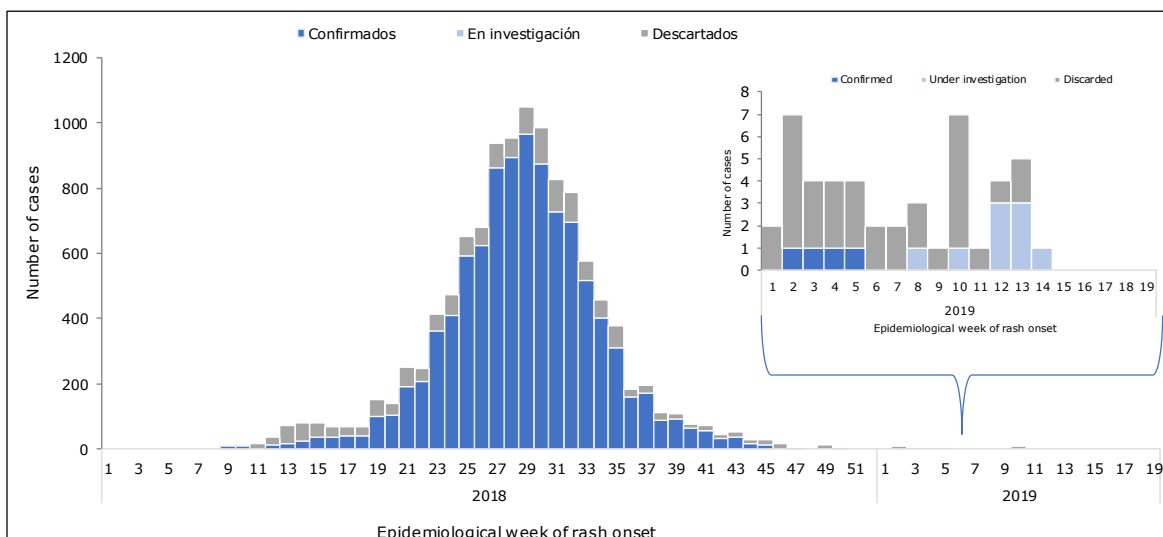
In the state of Amazonas, between 6 February 2018 and 15 April 2019, there were 11,542 suspected cases reported, including 6 deaths. Of the total suspected cases, 9,807 were confirmed (9,803 with dates of rash onset in 2018 and 4 in 2019), 1,643 were discarded, and 9 remain under investigation (**Figure 3**). The 6 deaths are among 3 infants under 1-year-old, one child in the age group of 5 to 9-years-old, one adult in the age group of 40 to 49-year-olds, and another adult over the age of 50 years.

Of the confirmed cases, 45.07% (4,691) are male. The most recent confirmed case in this

state had rash onset in EW 5 of 2019 and the most recent cases under investigation had rash onset in EW 13 of 2019.

Of the 62 municipalities in the state of Amazonas, 46 have reported confirmed cases. The municipality of Manaus accounts for 79% (11,470) of the suspected cases and 86% (9,807) of the confirmed cases reported in the state. The cumulative incidence rate of confirmed cases in the state is 273.1 cases per 100,000 population, and the municipalities with the highest cumulative incidence rates are: Manacapuru (994.2 cases per 100,000 population) followed by Juruá (458.6 cases per 100,000 population) and Manaus (378.2 cases per 100,000 population).

Figure 3. Reported measles cases by EW of rash onset. Amazonas State, Brazil, EW 1 of 2018 to EW 16 of 2019.



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

The highest cumulative incidence rate for confirmed cases by age group is among children under 1-year-old (1,997.1 cases per 100,000 population), followed by 15 to 19-year-olds (502.6 cases per 100,000 population), 20 to 29-year-olds (326.6 cases per 100,000 population), 1 to 4-year-olds (322.9 cases per 100,000 population), 30 to 39-year-olds (172.0 cases per 100,000 population), and 40 to 49-year-olds (106.9 cases per 100,000 population).

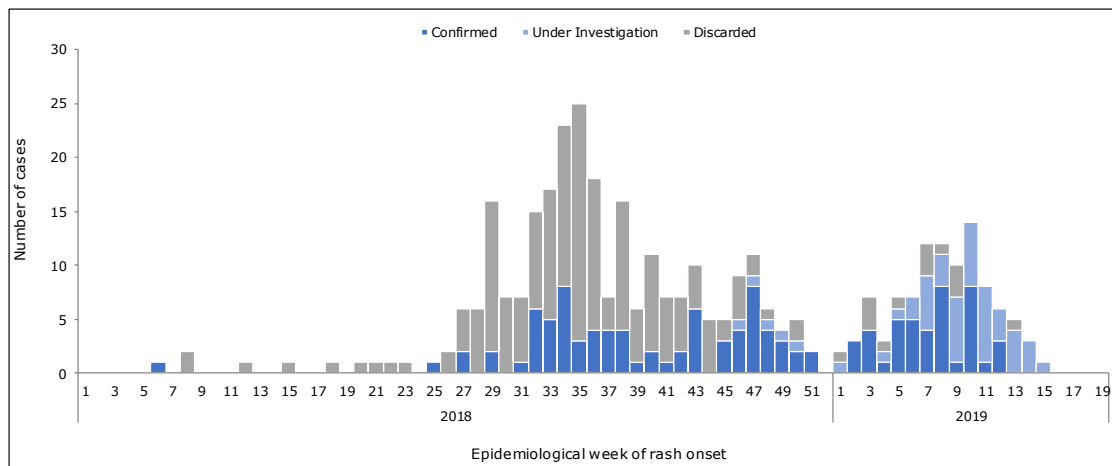
In the state of Pará, between 4 February 2018 and 15 April 2019, there were 378 suspected cases reported. Of these, 147 were confirmed (104 with dates of rash onset in 2018 and 43 in 2019), 222 were discarded, and 9 remain under investigation (**Figure 4**). Two deaths were reported among the confirmed cases, both among indigenous Venezuelan infants under 1-year-old.

The most recent confirmed case had rash onset on 20 March 2019 (EW 12) and the most recent case under investigation had rash onset in EW 12 of 2019 as well.

Among confirmed cases with available information, 50% (52) are male. The municipality of Santarém reported 36% (116) of the suspected cases and 40.4% (42) of the confirmed cases. The cumulative incidence rate in the state is 1.3 cases per 100,000 population.

The highest cumulative incidence rate for confirmed cases by age group is among children under 1-year-old (15 cases per 100,000 population) followed by 1 to 4-year-olds (3.1 cases per 100,000 population), 5 to 9-year-olds (1.4 cases per 100,000 population), 10 to 14-year-olds (1.3 cases per 100,000 population), and 15 to 19-year-olds (1.2 cases per 100,000 population).

Figure 4. Reported measles cases by EW of rash onset. Pará State, Brazil. EW 1 of 2018 to EW 16 of 2019.



Source: Data published by the Pará State Secretariat of Health and reproduced by PAHO/WHO.

In the state of Roraima, between 4 February 2018 and 19 March 2019, there were 602 suspected cases reported, including 4 deaths. Of the total suspected cases, 362 were confirmed (361 with rash onset in 2018 and one in 2019), 224 were discarded, and 16 remain under investigation (**Figure 5**).

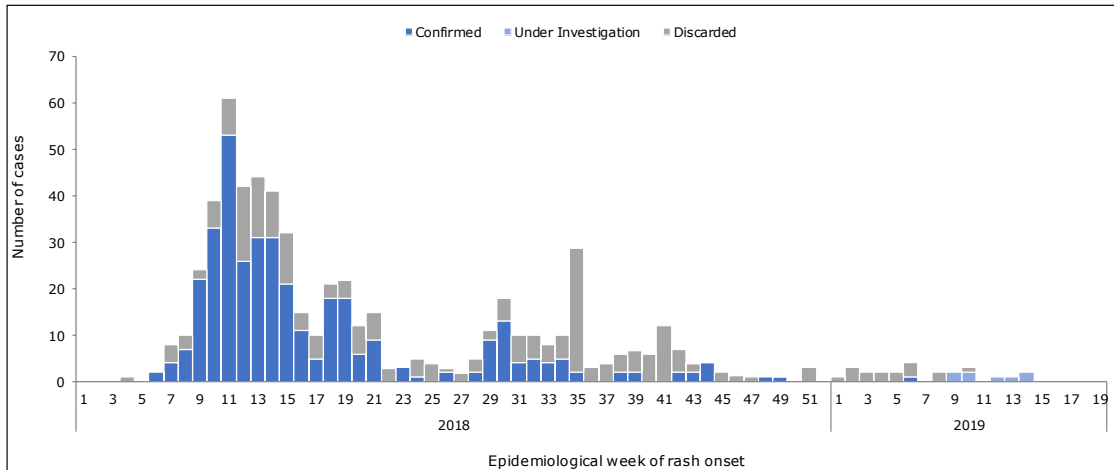
The most recent confirmed case in the state had rash onset on 6 February 2019 (EW 6) and the most recent case under investigation had rash onset in EW 14 of 2019.

Of the confirmed cases, 54.0% (195) are male, 60.7% (219) are Venezuelan, 38.5% (139) are Brazilian, and 1% (3) correspond to persons from other countries. Of the confirmed cases, 40.4% are indigenous (128 from Venezuela and 18 from Brazil).

Of the 15 municipalities in the state of Roraima, 13 have reported confirmed cases. The municipalities of Amajari, Boa Vista, and Pacaraima account for 89.8% (542) of the suspected cases and 89% (323) of the confirmed cases reported in Roraima. The cumulative incidence rate in Roraima is 62.6 cases per 100,000 population, and the municipalities with the highest cumulative incidence rates are: Pacaraima (314.5 cases per 100,000 population), Amajari (72.6 cases per 100,000 population), Cantá (61.6 cases per 100,000 population), Rorainópolis (50.8 cases per 100,000 population), and Boa Vista (48.5 cases per 100,000 population).

The highest cumulative incidence rate for confirmed cases by age group is among children under 1-year-old (841.8 cases per 100,000 population) followed by 1 to 4-year-olds (255.8 cases per 100,000 population), 5 to 9-year-olds (106.9 cases per 100,000 population), 10 to 14-year-olds (66.6 cases per 100,000 population), and 15 to 19-year-olds (51.0 cases per 100,000 population).

Figure 5. Reported measles cases by EW of rash onset. Roraima State, Brazil. EW 1 of 2018 to EW 16 of 2019.

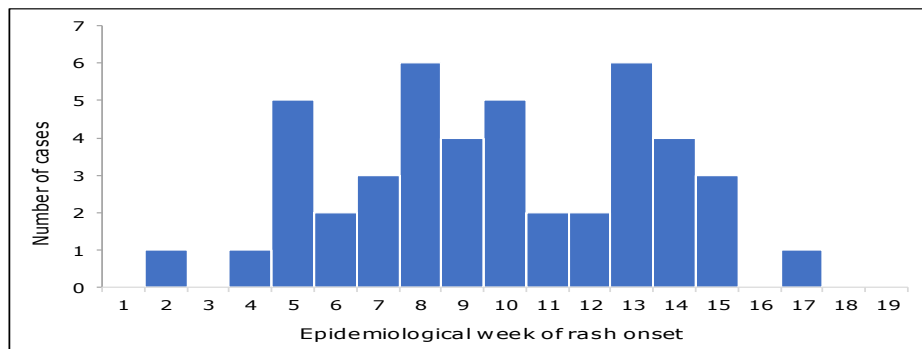


Source: Data published by the Roraima State Secretariat of Health and reproduced by PAHO/WHO.

In **Canada**, between EW 1 and EW 17 of 2019, there were 45 confirmed measles cases reported in the provinces of Québec, British Columbia, Ontario, and Alberta, New Brunswick, and the Northwest Territories. For 37 of the 45 confirmed cases, the genotype was identified, corresponding to B3 (12 cases) and D8 (25 cases).

The highest proportion of cases have been reported by British Columbia Province, with 29 confirmed measles cases reported between 1 January and 3 May 2019. Cases were import-related or imported from the Japan, the Philippines, the United States, or Vietnam. For some cases, the origin of infection could not be established. In British Columbia Province, 59% (17) of cases are male, and 34% (10) had zero doses of vaccination. By age group, 38% (11) were reported among 10 to 19-year-olds, 28% (8) among 20 to 29-year-olds, 17% (5) among persons aged 40 years or older, 10% (3) among children under 9 years old, and 7% (2) among 30 to 39-year-olds.

Figure 6. Confirmed measles cases by EW of rash onset, Canada. EW 1 to EW 17 of 2019.



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

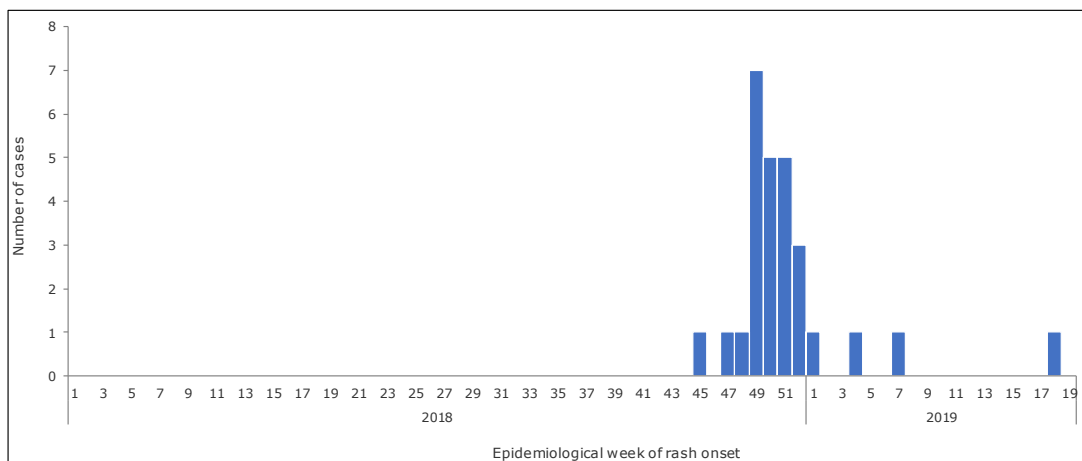
Information is updated periodically by the Public Health Agency of Canada, available at: <https://bit.ly/2J3Za4t>.

In **Chile**, 27 confirmed cases of measles have been reported (23 in 2018 and 4 in 2019, as of EW 8), of which 9 were imported and 18 were import-related. Fourteen cases required hospitalization, and no deaths have been reported. Of the total confirmed cases, 54% (14) are male and 57% (15) are children under 1-year-old. The reported cases are residents of the Metropolitan (24) and Biobío (2) regions in Chile and one traveler from Europe.

Among 18 of the cases, genotype D8 lineage MVi/HuluLangat.MYS/26.11 was identified, which is circulating in other countries in the Region.

The most recent confirmed imported case had onset of rash on 4 May 2019, in a 28-year-old female from Europe who arrived in the country on 28 April. Genotype D8 was identified, with a different lineage than the previous cases.

Figure 7. Confirmed measles cases reported by EW of rash onset. Chile, EW 45 of 2018 to EW 19 of 2019.



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

In **Colombia**, between EW 10 of 2018 and EW 19 of 2019, there were 8,752 suspected measles cases reported (6,701 in 2018 and 2,051 in 2019), of which 318 were confirmed (209 with dates of rash onset in 2018 and 109 in 2019). No deaths were reported. Genotyping performed on samples for 87 cases indicated genotype D8 lineage MVi/HuluLangat.MYS/26.11, similar to that circulating in other countries in the Region.

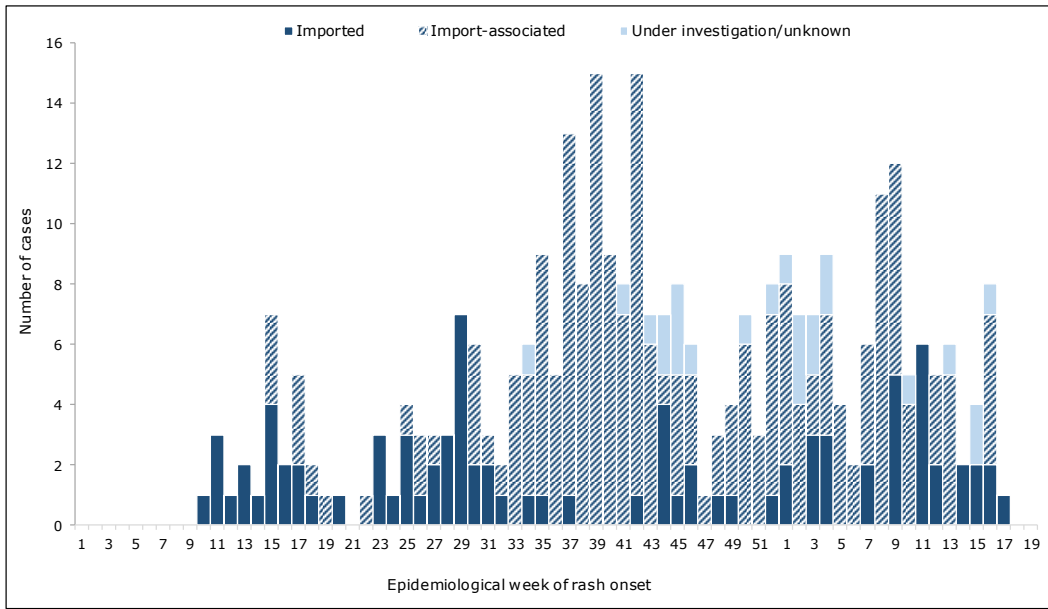
In 2019, confirmed cases have been reported in the departments of Atlántico, Cesar, Córdoba, Cundinamarca, La Guajira, and Norte de Santander and in the districts of Barranquilla and Bogotá. Of the 109 cases confirmed in 2019, 32.1% (35) were imported from Venezuela, while 55.9% (61) were import-related cases (13 in persons from Venezuela and 48 in persons from Colombia). The source of infection for the other 13% (13) cases remains under investigation.

During the previous four weeks (EW 16 to EW 19), 18 cases were confirmed in the departments of La Guajira and Norte de Santander; of these, 7 were imported from Casigua, Mara, and Ureña in the state of Zulia, Venezuela and the other 11 were import-related.

The most recent confirmed imported case had rash onset on 28 April 2019 and the most recent suspected case under investigation had rash onset on 12 May 2019.

The cumulative incidence rate in the country is 0.22 cases per 100,000 population, and the highest cumulative incidence rates have been reported from the following territorial entities: Cartagena (5.5 cases per 100,000 population), Barranquilla (3.2 cases per 100,000 population), and Bolívar (1.1 cases per 100,000 population).

Figure 8. Confirmed measles cases by EW of rash onset. Colombia, EW 10 of 2018 to EW 17 of 2019.



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

Costa Rica reported 10 confirmed measles cases between EW 1 and EW 17 of 2019, of which 3 were imported and 7 were import-related. The 3 imported cases include a 5-year-old French male with no history of vaccination and his parents, who arrived in Costa Rica on 18 February from Paris, France. The other 7 cases correspond to the same transmission chain related to an imported case, 6 of whom are children from the same family without a history of vaccination, and the remaining case is a 29-year-old Costa Rican male who resides in Turrialba Canton, Carthage Province, and was identified as contact of the primary case² during the investigation. There is no epidemiological link between the 3 imported cases confirmed in February and the 7 cases identified afterwards.

The genotype identified for the 3 imported cases was D8 lineage MVs/Gir Somnath.IND/42.16.

Peru has reported 2 confirmed measles cases in 2019; one imported and the other import-related. The imported case is a 40-year-old Peruvian female from Spain who arrived in Peru on 21 March. Rash onset was 1 April, and the case was hospitalized for pneumonia. The second case is a child aged 5-months-old who was in contact with the first case during the transmissibility period in the waiting room of a private healthcare facility and who had rash onset on 21 April.

² Confirmed measles case in a U.S. citizen from the state of Oregon who was in contact with the 7 cases in Costa Rica during the period of transmissibility.

The genotype for both of the cases is D8, related to the one circulating in Europe.

In 2018, 42 confirmed cases of measles (import or import-related) were confirmed. No deaths were reported. Of the total cases, 26% (11) were aged less than 1-year-old, and cases were from Amazonas, Callao, Cusco, Ica, La Libertad, Lima, Piura, and Puno.

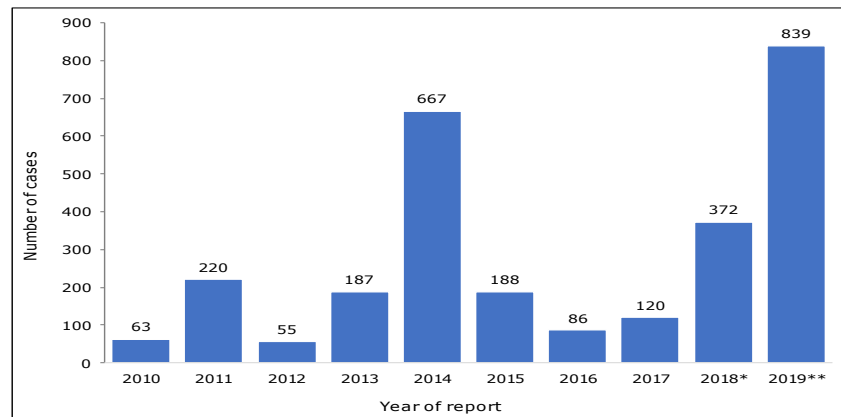
In the **United States**, between 1 January and 10 May 2019, there have been 839 confirmed measles cases³ reported in 23 states: Arizona, California, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Missouri, Nevada, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, Tennessee, Texas, and Washington.

Currently, measles outbreaks⁴ are ongoing in the following jurisdictions: California (Butte, Los Angeles, and Sacramento counties), Georgia, Maryland, Michigan, New Jersey, New York (New York City and Rockland County), and Pennsylvania. These outbreaks are associated to travelers with a travel history to other countries, such as Israel, Ukraine, and the Philippines.

The majority of the cases were unvaccinated.

In 2018, 17 outbreaks were reported in the United States; the outbreaks in New York State, New York City, and New Jersey reported the highest number of cases. Cases occurred mainly among unvaccinated persons in Orthodox Jewish communities. These outbreaks were associated with travelers from Israel, where a large outbreak is occurring. In 2018, 82 cases were imported from other countries, which is the highest number of imported cases since measles was eliminated in the United States in 2000.

Figure 9. Measles cases by year of report. United States, 2010-2019 (until 10 May).



*Cases as of 29 December 2018. Case count is preliminary and subject to change.

**Cases as of 10 May 2019. Case count is preliminary and subject to change.

Data are updated every Monday.

Source: Data published by the US CDC and reproduced by PAHO/WHO

Information is updated periodically on the U.S. Centers for Disease Control and Prevention (CDC) website, available at: <https://bit.ly/2iMFK71>.

³ Cases as of 10 May 2019. Case count is preliminary and subject to change.

⁴ Defined as 3 or more cases.

Uruguay has reported 9 confirmed measles cases, of which 7 are adults and 2 are infants. One is an imported case with a travel history to Asia, 7 are import-related, and the source of infection remains under investigation for one case. As of 8 May, three chains of transmission have been identified, two of which were associated with care centers and the third within the same home.

Identification of the genotype and lineage for the cases is ongoing.

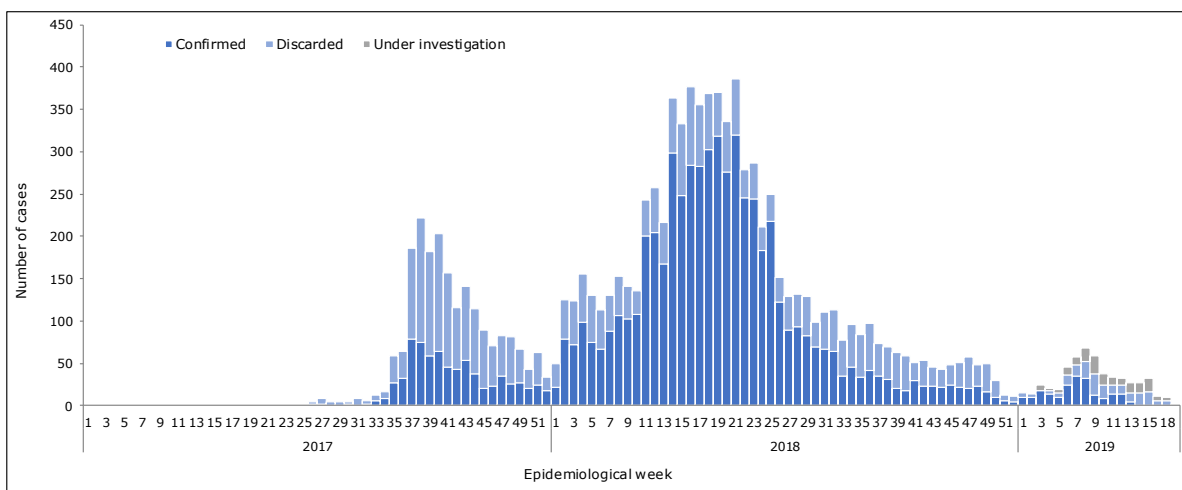
In **Venezuela**, the outbreak that began in 2017 remains ongoing. Between EW 26 of 2017 and EW 18 of 2019, a total of 9,655 suspected cases (1,307 in 2017, 7,790 in 2018, and 558 in 2019), including 6,600 confirmed measles cases (727 in 2017, 5,670 in 2018, and 203 in 2019), have been reported. Cases in 2018 were confirmed by laboratory (2,201), clinical diagnosis (2,662), and epidemiological link (807). In 2019, cases were confirmed by laboratory (96), clinical diagnosis (50), and epidemiological link (57), and 149 cases remain under investigation. There have been 78 deaths reported: 2 in 2017 (in Bolívar) and 76 in 2018 (37 in Delta Amacuro, 27 in Amazonas, 8 in Miranda, 3 in the Capital District, and 1 in Bolívar).⁵

The most recent laboratory-confirmed case had rash onset on 25 February 2019, from El Valle Parish, Libertador Municipality, Capital District.

The average incidence rate in the country during 2017-2019 is 21 cases per 100,000 population. The highest cumulative incidence rates have been reported in: Delta Amacuro (214 cases per 100,000 population), the Capital District (127 cases per 100,000 population), Amazonas (78 cases per 100,000 population), Bolívar (55 cases per 100,000 population), Vargas (46 cases per 100,000 population), and Miranda (38 cases per 100,000 population).

Confirmed cases with dates of onset of rash between EW 1 and EW 18 of 2019 were reported from Anzoátegui (87), Zulia (84), Carabobo (9), Monagas (8), the Capital District (7), Miranda (3), Cojedes (2), Amazonas (1), Aragua (1), and Bolívar (1).

Figure 10. Reported measles cases by EW of rash onset. Venezuela. 2017-2019 (until EW 18).



Source: Venezuela Ministry of Popular Power for Health data and reproduced by PAHO/WHO.

⁵ Note: The data in this analysis reflects the current case numbers; however, there may be some delays in the reporting and completeness of the information. The data is also subject to change as the information for each case is updated and validated.

Measles in a cruise ship

On 1 May 2019, PAHO/WHO received information on an imported measles case aboard a cruise ship. The case is a 40-year-old female with rash onset on 26 April. On 17 April, the case arrived in Aruba from Europe and boarded the cruise ship that day as a member of the crew. While on the cruise ship, symptoms developed on 22 April and the patient was isolated accordingly that same day. After a rash developed on 26 April, on 27 April laboratory samples were taken and she was subsequently laboratory-confirmed, first in Aruba and later in the reference laboratories of RIVM in the Netherlands (IgM and PCR) and the Caribbean Public Health Agency (CARPHA). On 4 May, the cruise ship arrived in Curaçao, where local authorities decided to quarantine⁶ the vessel after consultation with PAHO and the Dutch NFP and carried out the epidemiological investigation, including collecting samples from all passengers and crew members aboard the ship. No secondary cases were identified.

Results of laboratory samples collected in Curaçao from crew members and passengers indicate that 93% of the persons were protected against measles. Vaccination was carried out for the majority of the passengers and crewmembers that did not have seroprotection. Quarantine was lifted for those showing seroprotection on 11 May and for the remaining people on 14 May.

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 **Venezuela**, between EW 1 and EW 52 of 2018, there were 513 confirmed measles cases among indigenous populations in Amazonas⁷ (149 cases, of which 132 were in the Sanema, 16 in Yanomami⁸, and 1 in Baniva ethnic groups); Bolivar (1 case in the Pemón ethnic group), the Capital District (1 case in the Wayú ethnic group), Delta Amacuro (331 cases, all in the Warao ethnic group); Monagas (22 cases, of which 20 were in Warao, 1 in Shaima, and 1 in 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 Sanema and 1 in Yanomami ethnic groups).

Advice to national authorities

Given the continued imported cases of measles from other regions and the ongoing outbreaks in the Americas, the Pan American Health Organization/World Health

⁶ Defined per Article 1 of the International Health Regulations as, "the restriction of activities and/or separation from others of suspect persons who are not ill or of suspect baggage, containers, conveyances or goods in such a manner as to prevent the possible spread of infection or contamination"

⁷ The difference with respect to the number of cases reported previously is due to reclassification of cases by ethnic group.

⁸ 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.

Organization (PAHO/WHO) reinforces the recommendations made since February 2015 to all Member States to:

- Vaccinate to **maintain homogeneous coverage of 95%** with the first and second doses of the measles, mumps, rubella (MMR) vaccine in all municipalities.
- **Vaccinate at-risk populations** (without proof of vaccination or immunity against measles and rubella), such as healthcare personnel, persons working in tourism and transportation (hotels, airports, taxi drivers, and others), and international travelers.
- **Maintain a stock** of MR and/or MMR **vaccines and syringes** for control of imported cases in each country of the Region.
- **Identify** migratory flows (arrival of foreigners) and internal flows (displaced populations) in each country, including indigenous 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** and strengthen epidemiological surveillance in border areas in order to increase population immunity and rapidly detect/respond to suspected measles cases.
- **Strengthen epidemiological surveillance** of measles to achieve timely detection of all suspected cases of measles in public and private healthcare facilities and ensure that samples are received by laboratories within 5 days of collection and that laboratory results are available in a timely manner.
- 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 months⁹ and older who cannot show proof of vaccination or immunity **receive the measles and rubella vaccine**, preferably the triple viral vaccine (MMR), **at least two weeks prior to traveling to areas where measles transmission has been documented**. The

⁹ The MMR or MR dose administered to children between 6 and 11 months old does not replace the first dose of the recommended schedule at 12 months of age.

recommendations of PAHO/WHO in relation to advice for travelers are available in the 27 October 2017 PAHO/WHO Epidemiological Update on Measles¹⁰.

¹⁰ PAHO/WHO. Epidemiological Update: Measles. 27 October 2017, Washington, D.C.: PAHO/WHO; 2017. Available at: <https://bit.ly/2l3gCSi>

Sources of Information

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2. **Brazil** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
3. **Canada.** Public Health Agency of Canada. Measles & Rubella Weekly Monitoring Report – Week 17, 2019 (21 to 27 April 2019). Available at: <https://www.canada.ca/en/public-health/services/diseases/measles/surveillance-measles/measles-rubella-weekly-monitoring-reports.html>
4. British Columbia Centre for Disease Control. News: Measles information for British Columbians. Measles Epidemiological Summary, British Columbia, 2019 year to date – May 3rd. Available at: <http://www.bccdc.ca/resource-gallery/Documents/Measles%20BC%20epi%20summary%202019%20YTD.pdf>
5. **Chile** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
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7. **Costa Rica** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
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11. **Venezuela** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.

Related links:

- PAHO/WHO. Vaccine-Preventable Diseases. Available at: <http://bit.ly/2G8pQwi>