

Situation summary in the Americas

In 2021, four countries in the Region of the Americas (Bolivia, Brazil, Peru, and Venezuela) have reported confirmed yellow fever cases. In 2020, two countries in the Region of the Americas reported confirmed cases of yellow fever: Brazil and Peru.

A situation summary of the countries that have reported confirmed yellow fever cases in 2021 is provided below.

In **Brazil**, a re-emergence of the yellow fever virus has been reported in the extra-Amazonian region since 2014. The expansion of the historical area of yellow fever transmission to areas previously considered not at-risk led to two waves of transmission, one during the 2016-2017 seasonal period, with 778 confirmed human cases including 262 deaths, and another during the 2017-2018 seasonal period, with 1,376 confirmed human cases including 483 deaths. As a result, since 2020, Brazil has changed their recommended areas for yellow fever vaccination to include the entire country.

During the 2020-2021 seasonal period, between July 2020 and June 2021, a total of 527 suspected human cases of yellow fever were reported, of which 9 (1.7%) were confirmed, 13 (2.5%) remain under investigation, and 500 (94.9%) were discarded. All of the confirmed cases, including 3 fatal cases, were reported in the state of Santa Catarina. Among the total confirmed cases, ages ranged from 18 to 67-years-old, and 8 of the confirmed cases had no yellow fever vaccination history or an unknown vaccination history.

Between 1 July and 23 December 2021, a total of 103 suspected human cases of yellow fever were reported, of which one was confirmed in the state of Pará, and 35 remain under investigation. The confirmed case was reported on 21 July in a 21-year-old male resident of Afua Municipality, Pará State.

The number of cases reported in the 2020-2021 seasonal period is significantly lower than the total number of cases observed in each of the two previous periods, when the numbers of cases exceeded the seasonal records set several decades prior. In November 2020, a new transmission corridor was reported in the *Southern Region*, with epizootics reported among non-human primates (NHP) in the state of Paraná and Santa Catarina, following a route towards Rio Grande do Sul State and with the possibility of reaching bordering countries such as Argentina and Paraguay.

After an increased transmission of yellow fever in Santa Catarina in December 2020, the border state of Rio Grande do Sul was affected since January 2021. The ecological corridor model used during the 2016-2018 outbreak was updated, and thus, new routes and municipalities were defined as priorities for surveillance and immunization activities.

Confirmed yellow fever epizootics in the *Central-West Region* as of September 2020 alerted authorities to the risk of spread to new areas. Genomic studies indicated a different lineage of the virus from the one that re-emerged in the extra-Amazon Region as of 2014 and which caused the outbreaks in the *Southeast* and *South* regions in recent years. This finding indicated a new introduction of the virus from the Amazon Region (endemic).

In the 2020-2021 seasonal period, most of the confirmed epizootics (88%) were reported in the *South Region* of the country (191/218), followed by the *Central-West Region* (24/218), the *Southeast Region* (2/218), and the *North Region* (1/218). In March 2021, an epizootic of yellow fever among NHP was confirmed in the state of Acre.

Between 1 July and 28 December 2021, a total of 276 epizootics were reported among NHP, of which 13 were confirmed for yellow fever and 10 remain under investigation. Confirmed epizootics were reported in the states of Minas Gerais and Santa Catarina.

In **Peru**, between epidemiological week (EW) 1 and EW 49 of 2021, a total of 18 cases of yellow fever were reported, of which 10 were confirmed and 8 probable cases remain under investigation. The number of probable cases reported in 2021 as of EW 49 is greater than the number of probable cases reported annually during the past four years (2017-2020).

Of the 18 cases reported as of EW 49 of 2021, 77% (14/18) are male, 42% are young adults between 18 and 57 years old, and none had a history of yellow fever vaccination. The cases were reported from the departments of Loreto (6 cases), Puno (5 cases), Ucayali (4 cases), and San Martín (3 cases).

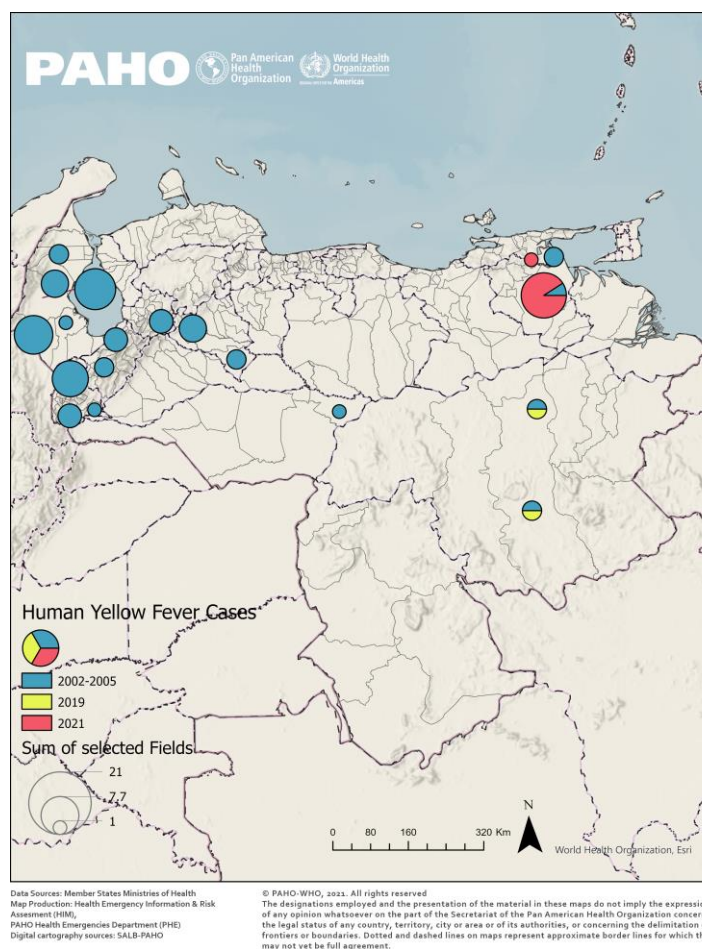
Additionally, 7 deaths were reported among the cases in the departments of Puno (4 deaths), San Martín (2 deaths), and Loreto (1 death).

In the last six years (2016 until EW 49 of 2021), a cumulative total of 113 yellow fever cases, including 42 deaths, were reported in Peru. Of the total cases, 41 were confirmed and one was classified as probable.

In **Venezuela**, between EW 39 and EW 49 of 2021, a total of 11 confirmed human cases of yellow fever were reported in the state of Monagas, all laboratory confirmed. Of the total, 5 were asymptomatic and 6 developed signs and symptoms. The probable site of infection for 10 of the confirmed cases was Maturín Municipality, and Punceres Municipality for one confirmed case. Of the confirmed cases, 9 are male with ages ranging from 24 to 82 years old, and 9 had no history of yellow fever vaccination. To date, no deaths have been reported among the confirmed cases (**Figure 1**).

Additionally, between EW 32 and EW 49 of 2021, a total of 13 epizootics of yellow fever among NHP were reported in Venezuela – 10 in Monagas State and 3 in Anzoátegui State. Two of the epizootics reported in Monagas State were laboratory-confirmed for yellow fever at the national reference laboratory and 11 were confirmed for yellow fever by epidemiological link. Confirmed yellow fever epizootics were reported in the municipalities of Maturín (7), Aguasay (2), Punceres (1) in Monagas State and the municipality of Freites (3) in Anzoátegui State.

Figure 1. Distribution of confirmed human cases of yellow fever. Venezuela, 2002 to 2021 (as of epidemiological week (EW) 49 of 2021).



Source: Data provided by the International Health Regulations (IHR) National Focal Point of Venezuela and reproduced by PAHO/WHO.

Advice for national authorities

The Pan American Health Organization / World Health Organization (PAHO/WHO) encourages Member States with areas at-risk for yellow fever to continue their efforts to immunize the at-risk populations and to take the necessary actions to keep travelers informed and vaccinated prior to traveling to areas where yellow fever vaccination is recommended.

Recommendations for international travelers regarding yellow fever vaccination are available at: <http://www.who.int/ith/en/>

The guidelines pertaining to laboratory diagnosis and vaccinations are the same as those published in the 7 December 2018 PAHO/WHO Epidemiological Update on Yellow Fever¹.

¹ PAHO/WHO. Epidemiological Update: Yellow Fever. 7 December 2018, Washington, D.C.: PAHO/WHO; 2018. Available at: <https://bit.ly/2Qhwucf>

Sources of information

- **Brazil** International Health Regulations (IHR) National Focal Point (NFP) report provided by email to PAHO/WHO.
- Ministry of Health, **Brazil**. Yellow Fever Epidemiological Bulletins. Available in Portuguese at: <https://bit.ly/3izoTBU>
- **Peru** International Health Regulations (IHR) National Focal Point (NFP) report provided by email to PAHO/WHO.
- **Peru** Ministry of Health. Situation room for the Health Situation Analysis: Yellow fever. Available at: <https://bit.ly/2LbENzV>
- **Venezuela** International Health Regulations (IHR) National Focal Point (NFP) report provided by email to PAHO/WHO.

Related Links

- PAHO/WHO. Yellow Fever. Available at: <https://bit.ly/2sHAfcl>
- PAHO/WHO. Laboratory Diagnosis of Yellow Fever Virus Infection. Available at: <https://bit.ly/3lr89hX>
- PAHO/WHO. Requirements for the International Certificate of Vaccination or Prophylaxis (ICVP) with proof of vaccination against yellow fever. Available at: <https://bit.ly/2sGvnnV>