



## 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 reported confirmed yellow fever cases in 2021 is provided below.

A reemergence of the yellow fever virus has been reported in the extra-Amazonian region of **Brazil** 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 (**Figure 1**) – 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, Brazil changed their yellow fever vaccination recommended areas to include the entire country.

During the seasonal period (2020-2021) between July 2020 and April 2021, a total of 287 suspected human cases were reported, of which 8 (3.4%) were confirmed, 47 (16%) are under investigation and 235 (82%) were discarded. All confirmed cases, which included three fatal cases, were reported in the state of Santa Catarina. Of the total confirmed cases were age ranging between 34 to 61 years old and four cases with no vaccination history.

During the current monitoring period (1 July to 27 September 2021), a total of 17 suspected human cases of yellow fever were reported, of which one was confirmed in the state of Pará and 2 remain under investigation. The confirmed case was notified on 21 July, in a 21-year-old man resident of the municipality of Afua, Pará State.

The number of cases reported in the 2020-2021 seasonal period is significantly lower than the totals observed in the two previous periods when the number 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 toward Rio Grande do Sul (**Figure 2**), with the possibility of reaching bordering countries such as Argentina and Paraguay.

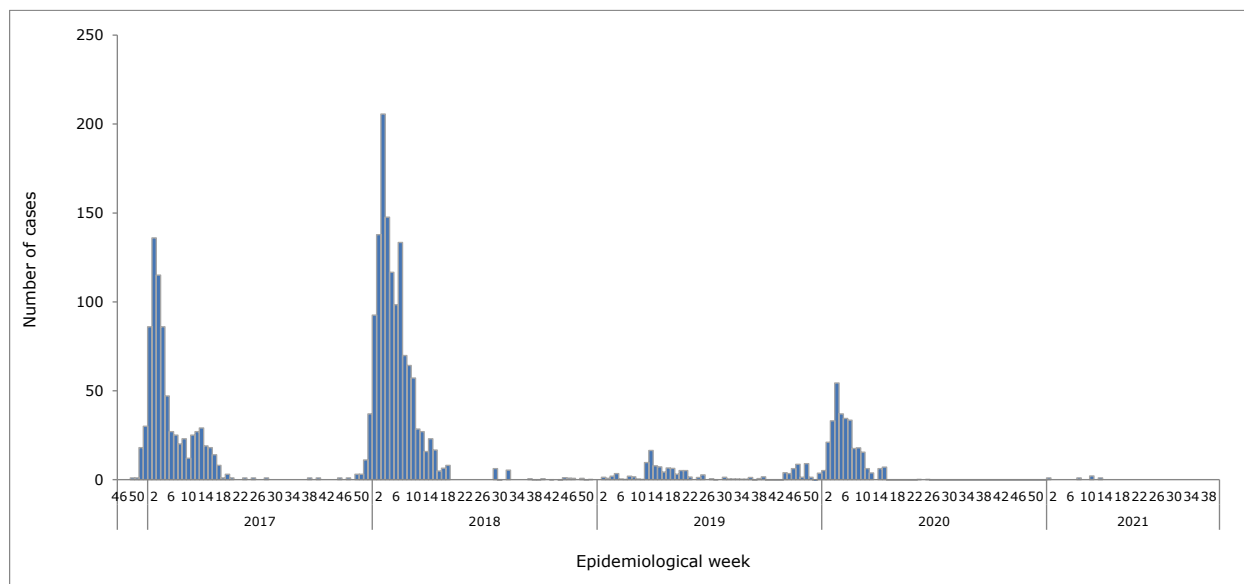
After an increased transmission of yellow fever in Santa Catarina in December 2020, the border state Rio Grande do Sul was affected in January 2021 and in February 2021, cases were reported in the mesoregions of Greater Florianópolis and the south of Santa Catarina. The ecological corridor model used during the 2016-2018 outbreak was updated, thus, new routes and new 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 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 for yellow fever among NHP was confirmed in the State of Acre.

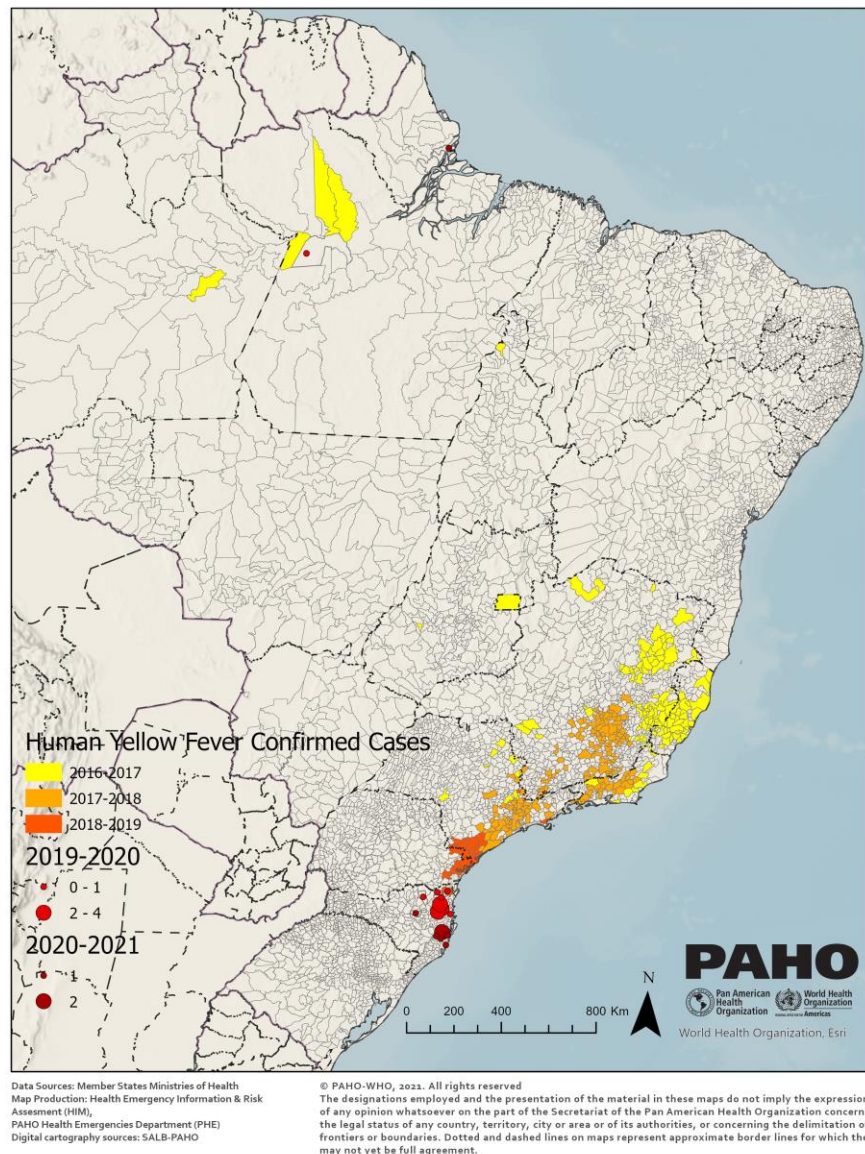
During the current monitoring period (1 July to 27 September 2021), a total of 198 epizootics were reported among NHP, of which 10 were confirmed for yellow fever and 28 are still under investigation. Confirmed epizootics were reported in the states of Minas Gerais, Rio Grande do Sul and Santa Catarina.

**Figure 1.** Distribution of confirmed human yellow fever cases by epidemiological week (EW). Brazil, EW 46 of 2016 – EW 39 of 2021.



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

**Figure 2.** Distribution of confirmed human cases. Brazil, 2016 to 2021 (as of EW 39 of 2021).



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

In **Peru**, between EW 1 and EW 37 of 2021, a total of 14 cases of yellow fever were reported, of which 10 were confirmed and 4 probable cases remain under investigation.

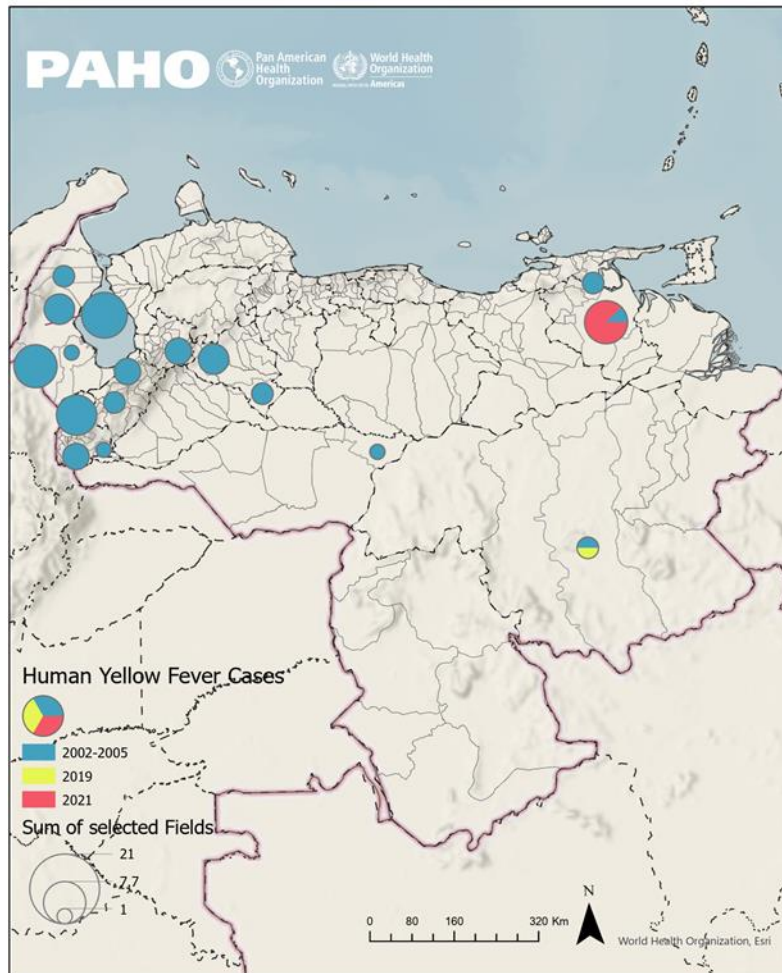
Of the 14 cases reported as of EW 37 of 2021, 85% (12/14) are male, 43% are young adults between 18 and 57 years old, and none had a history of vaccination. Additionally, seven deaths occurred among the reported cases in the departments of Puno (4), San Martín (2) and Loreto (1).

In the last six years (2016-2021), a total of 111 yellow fever cases including 41 deaths were reported in Peru. Of the total, 103 cases were confirmed and 8 were classified as probable.

In **Venezuela**, during EW 39 of 2021, a total of 7 cases of yellow fever were reported, all laboratory confirmed by Polymerase Chain Reaction (PCR) technique at the “Rafael Rangel” National Hygiene Institute. Of the total, three were asymptomatic and four developed signs and symptoms during EW 38 of 2021. The probable site of infection for confirmed cases was the Carapal Locality, a rural parish located at south of the Maturín Municipality. The first reported case is a 16-year-old pregnant women with vaccination history, who suffered an abortion at the time of the detection. Of the remaining six cases, five are male with age ranging between 24 and 82 years old, all without a history of vaccination. To date, no death has been reported among the confirmed cases (**Figure 3**).

Additionally, between EW 32 and EW 39 of 2021, a total of 10 epizootics among non-human primates (NHP) were reported in Venezuela – seven in Monagas state and three in Anzoátegui state. Two of the epizootics reported in Monagas State were laboratory confirmed at the National Reference Laboratory (LNR) and eight were confirmed by epidemiological link. Confirmed epizootics were identified at 35 km and 150 km from the urban area of Maturín.

**Figure 3.** Distribution confirmed human cases. Venezuela, 2002 to 2021 (as of EW 39 of 2021).



**Source:** Data provided by the International Health Regulations National Focal Points 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 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<sup>1</sup>.

## 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>
- Santa Catarina State Secretariat of Health, **Brazil**. Yellow Fever Epidemiological Bulletin. Available at: <https://bit.ly/2YrcWY2>
- Amapá State Secretariat of Health, **Brazil**. Yellow Fever Epidemiological Bulletin. Available at: <https://bit.ly/3De4mdX>
- **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>

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