24 June 2026

Public Health Situation Analysis: El Niño in the Americas, 2026-2027

Type of Emergency

- Heavy rain
- Drought
- Tropical storms
- Epidemics

Main Health Threats

- ✓ **Malnutrition**
- ✓ **Water-borne diseases**
- ✓ **Vector-borne diseases**
- ✓ **Vaccine-preventable illnesses**
- ✓ **Maternal and Child Health**
- ✓ **Respiratory illnesses**
- ✓ **Heat Stress**
- ✓ **Gender Based Violence**
- ✓ **Mental Health and Psychosocial Support**
- ✓ **Envenoming from venomous animal bites**

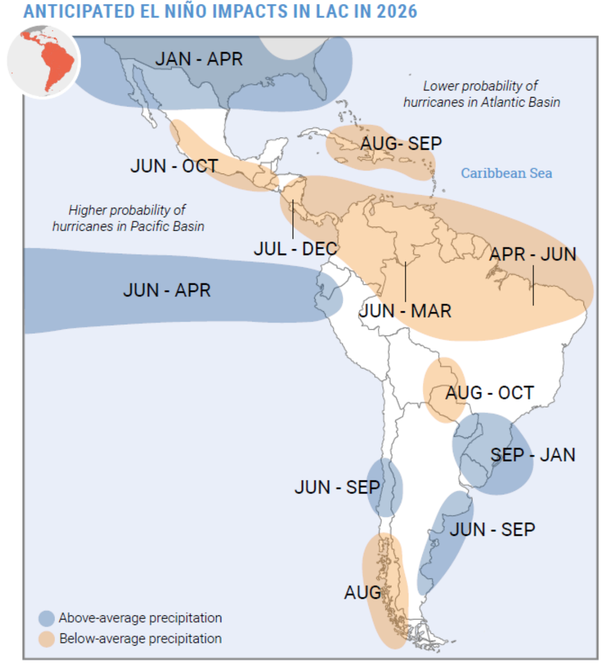
CONTEXT

As of June 2026, oceanic and atmospheric conditions indicate a transition toward El Niño conditions in the equatorial Pacific Ocean, with forecasts suggesting a high probability of development during 2026 and persistence into early 2027 (1–3).

Seasonal outlooks indicate an increased likelihood of above-normal temperatures across much of the Americas, accompanied by regionally variable rainfall anomalies, including heightened risks of drought in parts of Central America, the Caribbean, and northern South America, and increased rainfall in portions of the Pacific coast of South America and the Southern Cone (***Figure 1***) (4). Experience from previous El Niño events, including the 2023–2024 event, demonstrates the potential for significant impacts on food security, water availability, livelihoods, public health, and critical infrastructure (5,6).

El Niño-related climatic anomalies may contribute to increased risks of vector-borne, water-borne, and food-borne diseases, heat-related illness, wildfire-associated respiratory impacts, food insecurity, displacement, and disruptions to health services, particularly among populations already affected by poverty, migration, displacement, or limited access to essential services (***Table 1***) (6–10).

Figure 1. Anticipated El Niño impacts in Latin America and the Caribbean in 2026



Source: *Map excerpt adapted from United Nations Office for the Coordination of Humanitarian Affairs. Latin America & Caribbean: El Niño Humanitarian Snapshot (April 2026). Geneva: OCHA; 2026. Available from: https://reliefweb.int/report/guatemala/latin-america-caribbean-el-nino-humanitarian-snapshot-april-2026 (4).*

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Table 1. Summary of key public health risks in the context of El Niño, 2026–2027

Dry conditions		Wet conditions	
Public health risk	**Level of risk**	**Public health risk**	**Level of risk**
Malnutrition	Very High Risk	Malnutrition	Very High Risk
Cholera and other waterborne diseases	Very High Risk	Cholera and other waterborne diseases	Very High Risk
Heat stress	Very High Risk	Malaria	Very High Risk
Arboviral diseases like Dengue, Zika, Chikungunya, Oropouche and Yellow Fever	Very High Risk	Arboviral diseases like Dengue, Zika, Chikungunya, Oropouche and Yellow Fever	Very High Risk
Measles	Very High Risk	Measles	Very High Risk
Malaria	High Risk	Other vector-borne diseases	High Risk
Other vector-borne diseases	High Risk	Other vaccine-preventable diseases	High Risk
Other vaccine-preventable diseases	High Risk	Respiratory diseases	High Risk
Respiratory diseases	High risk	Maternal and child health	High Risk
Maternal and child health	High Risk	Direct injuries	High Risk
Direct injuries	High Risk	Gender-based violence	High Risk
Gender-based violence	High Risk	Conditions requiring mental health and psychosocial support (MHPSS)	High Risk
Conditions requiring mental health and psychosocial support (MHPSS)	High Risk	Accidents by venomous animals	High Risk
Accidents by venomous animals	High Risk	Rodent-borne diseases	Moderate Risk
Rodent-borne diseases	Moderate Risk	Human rabies	Moderate Risk
Human rabies	Moderate Risk	Biotoxins: fish and shellfish poisoning	Moderate Risk
Biotoxins: fish and shellfish poisoning	Moderate Risk	Myasis caused by New World screwworm (*Cochliomyia hominivorax*)	Moderate Risk
Myasis caused by New World screwworm (*Cochliomyia hominivorax*)	Moderate Risk	Heat stress	Moderate Risk

Overview of El Niño-Southern Oscillation (ENSO)

El Niño and La Niña are opposite phases of El Niño-Southern Oscillation (ENSO), a naturally occurring climate phenomenon originating in the equatorial Pacific Ocean that influences weather patterns worldwide. Under normal Pacific Ocean conditions, trade winds blow west along the Equator, moving warm surface waters from South America towards Asia. To replace that warm water, colder water rises from the depths through a process known as upwelling. During El Niño conditions, these trade winds weaken, resulting in warmer-than-average sea surface temperatures in the central and eastern Pacific Ocean and significant changes in atmospheric circulation patterns (11).

ENSO events can substantially influence temperature, precipitation, storm activity, drought conditions, and the frequency and intensity of extreme weather events across the Region of the Americas. El Niño conditions have historically been associated with drier conditions in several parts of Central America, the Caribbean, northern South America, northern Brazil, western Canada, and portions of Colombia and Peru, while wetter conditions have more commonly been observed in parts of the Pacific coast of South America, southern Brazil, Paraguay, Argentina, the Bahamas, and the southern United States. However, these impacts vary by season, subnational region, and event intensity, and some countries may experience both dry and wet anomalies depending on the affected area (***Figure 1*** and ***Table 2***) (5).

ENSO episodes typically develop between April and June, peak between November and February, and generally persist for 9 to 12 months, although some events may last longer. El Niño and La Niña events occur irregularly every two to seven years and vary considerably in intensity and geographic impact (11).

Table 2. Historical El Niño climatic impacts in selected countries of the Americas

Dry	Wet
Aruba	Argentina
Brazil (northern region)	Bahamas
Canada (western regions)[1]	Brazil (southern region)
Colombia[2]	Chile
Costa Rica	Ecuador (northwestern region)
Curaçao	Paraguay
El Salvador	Peru (northwestern region)
French Guiana	United States (southern region
Grenada	
Guatemala	
Guyana	
Honduras	
Nicaragua	

[1]*El Niño is more consistently associated with warmer-than-average winter temperatures across much of Canada than with clear wet or dry anomalies.*
[2]*Colombia typically experiences drier conditions in northern and Caribbean regions during El Niño events, while some Pacific coastal areas may experience above-average rainfall.*

Panama
Peru (northeastern region)
Suriname
Trinidad and Tobago
Venezuela (northern region)

Source: *Adapted from World Health Organization (WHO). Public Health Situation Analysis: El Niño, October–December 2023. Geneva: WHO; 2023. Available from: https://www.who.int/publications/m/item/public-health-situation-analysis--el-ni-o-(october-december-2023) (6).*

Current conditions

As of June 2026, ENSO-neutral conditions are currently present; however, oceanic and atmospheric observations indicate a rapid transition toward El Niño conditions in the equatorial Pacific Ocean. According to the National Oceanic and Atmospheric Administration (NOAA) Climate Prediction Center (CPC) ENSO Diagnostic Discussion (May 2026), there is an 82% probability that El Niño conditions will develop during May–July 2026 and a 96% probability that El Niño conditions will persist through the Northern Hemisphere winter of 2026–2027 (12).

Recent observations show above-average sea surface temperatures (SSTs) across the central and eastern equatorial Pacific Ocean, with increasing atmospheric coupling consistent with the early stages of El Niño development. The International Research Institute (IRI) ENSO Forecast indicates that weekly SST anomalies in the Niño 3.4 region have already exceeded El Niño thresholds during May 2026, supporting forecasts of continued strengthening in the coming months (2). Seasonal forecasts from the Copernicus Climate Change Service (C3S) further suggest the potential for a moderate-to-strong El Niño event, with more than 50% of ensemble members projecting Niño 3.4 anomalies exceeding 2.5°C by late 2026. Forecast precipitation patterns are also broadly consistent with typical El Niño teleconnections (3).

Forecast models suggest that El Niño conditions may intensify during the second half of 2026, with an increasing probability of moderate-to-strong El Niño conditions by late 2026 and early 2027 (1). However, the magnitude and geographic distribution of associated impacts remain uncertain and do not directly correspond to ENSO intensity indicators alone. El Niño is only one of several drivers influencing seasonal climate variability, and regional impacts are also shaped by locally relevant atmospheric and oceanic conditions, baseline vulnerabilities, exposure patterns, and preparedness capacities.

This evolving El Niño event is occurring in the context of exceptionally warm global ocean and atmospheric temperatures, which may amplify or modify expected climatic anomalies and associated public health impacts (13).

The temperature and precipitation forecasts for June-July-August 2026 can be found in the figure below and are generally in line with expectations for this time period (***Figure 2***).

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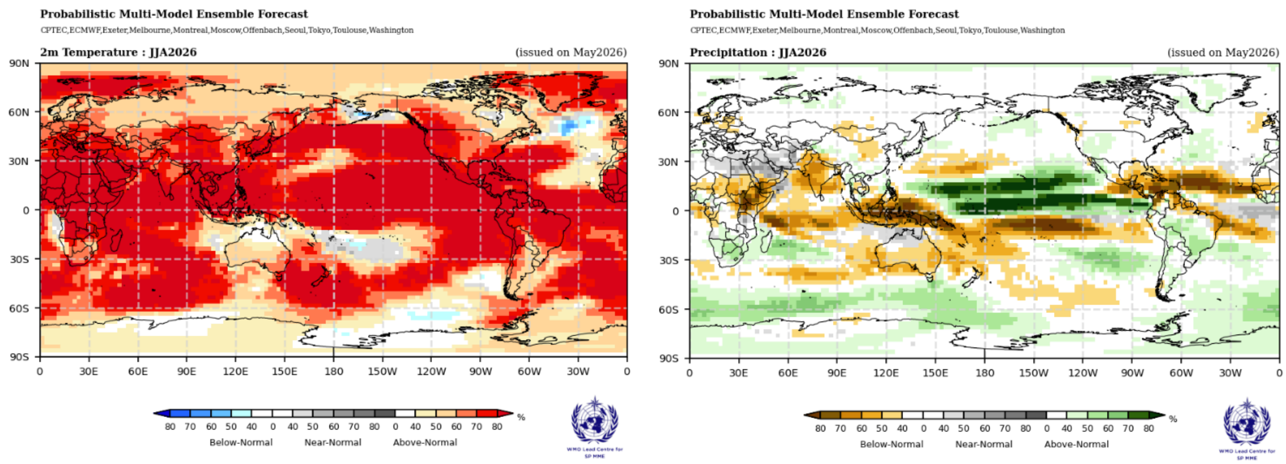
Figure 2. Probabilistic forecasts of surface air temperature and precipitation for the season June-July-August 2026



Source: *World Meteorological Organization. Global Seasonal Climate Update for June-July-August 2026. Geneva: WMO; 2026. Available from:* *https://wmo.int/media/update/global-seasonal-climate-update-june-july-august-2026* (14).

Temperature forecast summary – June-July-August 2026

According to the World Meteorological Organization (WMO) Global Seasonal Climate Update (GSCU) for June-July-August 2026, enhanced probabilities for above-normal temperatures are forecast across most of the Region of the Americas. The strongest signals are forecast across Central America, the Caribbean, and southern and western portions of North America, where model agreement is particularly high (14).

Across North America, enhanced probabilities for above-normal temperatures remain in the highest forecast category across much of the southern and western United States, northern Mexico, Central America, and the Caribbean. Increased probabilities for above-normal temperatures are also forecast across much of Canada and Alaska, although forecast confidence is generally lower in northern latitudes.

In South America, a strong enhancement in the probability of above-normal temperatures is forecast across regions north of 30°S, including much of tropical and subtropical South America. South of 30°S, probabilities for above-normal temperatures remain elevated but are generally weaker than those observed farther north.

These forecast patterns are consistent with the expected development of El Niño conditions and the broader trend of exceptionally warm global temperatures. Elevated temperatures may contribute to increased risks of heat-related illness, drought conditions, wildfire activity, reduced water availability, and additional pressure on health systems and critical infrastructure.

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Rainfall forecast summary – June-Jul-Aug 2026

Predicted rainfall patterns across the Americas are broadly consistent with historical El Niño impacts, although regional variability and uncertainty remain significant.

Enhanced probabilities for below-normal rainfall are forecast across much of Central America, the Caribbean, and northern South America. Drier-than-average conditions are particularly favored over the Central American Dry Corridor, the Greater Antilles and portions of northern South America, where reduced precipitation may contribute to drought conditions, water scarcity, agricultural losses, and increased wildfire risk.

Across tropical South America, forecasts indicate increased likelihood of below-normal rainfall in parts of northern Brazil, the Guianas, Venezuela, Colombia, and portions of the Amazon region. These conditions may contribute to reduced river levels, ecosystem stress, wildfire activity, and impacts on food security and livelihoods.

In contrast, enhanced probabilities for above-normal rainfall are forecast along portions of the Pacific coast of northwestern South America and in parts of southern South America. Increased precipitation in these areas may elevate the risk of flooding, landslides, infrastructure damage, population displacement, and outbreaks of water-borne diseases. The strongest wet signals are forecast along the equatorial Pacific coast and in portions of the Southern Cone, consistent with developing El Niño conditions.

Across North America, precipitation signals remain more variable than temperature forecasts, with no strong continent-wide anomaly pattern. Seasonal outlooks indicate greater uncertainty in precipitation forecasts across much of Canada and the United States, although localized areas may experience above- or below-normal rainfall conditions (14).

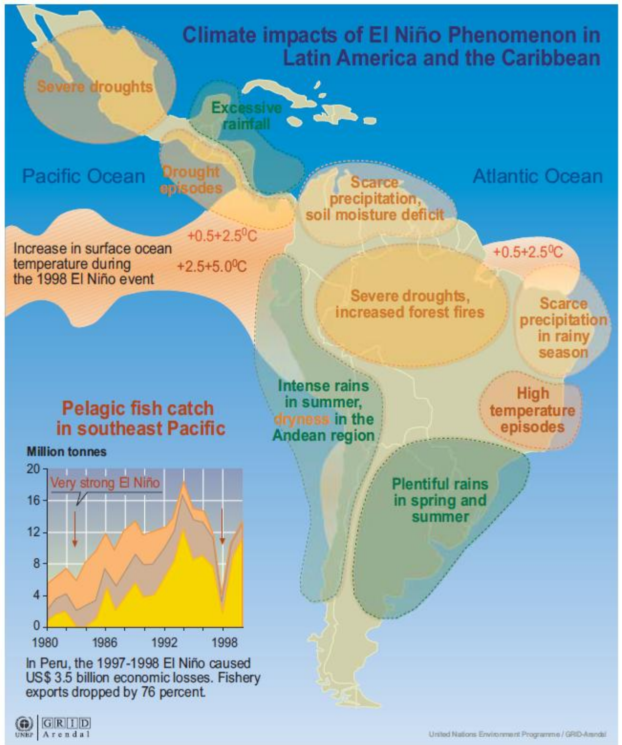
Risk overview by subregion

The following sub-regions have been identified as priority areas for potential public health and humanitarian impacts associated with El Niño conditions during 2026–2027. Impacts of El Niño events are felt over a period of 1-2 years, and health risks vary by region, by country, within countries, and between time periods, with the most significant health impacts historically observed during the year after the onset of an El Niño event (***Figure 3***).

Seasonal forecasts for June–August 2026 indicate an increased likelihood of above-normal temperatures across much of the Americas, with regionally variable rainfall anomalies. Close monitoring of regional and national level forecasts, and consideration of anticipatory or early action measures, remains essential given the evolving nature of El Niño conditions and associated uncertainties (14).

Note: countries are grouped in this section according to the IASC ENSO Analysis Cell groupings (6).

Figure 3. Historical climatic impacts associated with El Niño in Latin America and the Caribbean



Sources: IPCC 2001, FAO 2002,UNEP 2003

Source: *GRID-Arendal. Climate impacts of El Niño phenomenon in Latin America and the Caribbean. Arendal: GRID-Arendal; 2005. Available from: https://www.grida.no/resources/6517 (15).*

Central America and northern South America

- ***High-risk areas (warmer/drier conditions)***: parts of Central America, including areas of the Central American Dry Corridor; northern South America, including portions of Colombia, Venezuela, Guyana, Suriname, northern Brazil, and the Amazon basin
- ***High-risk areas (wetter conditions)***: Pacific coastal areas of Ecuador, northern Peru, and western Colombia

El Niño conditions are typically associated with below-normal rainfall across parts of Central America and northern South America, together with increased probabilities of above-normal temperatures that may intensify drought conditions. Current seasonal forecasts indicate an increased likelihood of drier-than-average conditions across portions of the Central American Dry Corridor, northern South America, and parts of the Amazon basin during the coming months. Dry conditions are expected to persist in parts of Guyana, Suriname, Colombia, Venezuela, northern Brazil, and eastern Peru, while above-average rainfall may occur along portions of the Pacific coast of Ecuador and western Colombia (14,16).

Other parts of Central America and the Caribbean may also experience below-average rainfall and above-normal temperatures, potentially affecting water availability, agriculture, and livelihoods. Conversely, areas exposed to heavier rainfall may face increased risks of flooding, landslides, infrastructure damage, and water-borne diseases.

El Niño conditions are generally associated with suppressed Atlantic tropical cyclone activity due to increased vertical wind shear over the tropical Atlantic. Current forecasts from NOAA suggest a higher likelihood of a below-normal Atlantic hurricane season during 2026. However, even during below-average seasons, severe tropical cyclones and extreme rainfall events may still occur and produce significant humanitarian and public health impacts (17).

Central American countries, together with parts of Colombia and Venezuela, are also likely to face increased public health needs associated with drought, heat, and reduced agricultural production. These may include increased food insecurity and malnutrition; a higher risk of dengue and other arboviral diseases such as chikungunya and Zika; acute water shortages; and increased pressure on health services and livelihoods. Drought conditions and household water storage practices may increase Aedes mosquito breeding sites, while elevated temperatures may accelerate viral transmission dynamics (18).

El Niño-related warming may also increase the likelihood of heatwaves across Central America and northern South America. Older adults, children, outdoor workers, displaced populations, and people living with chronic diseases may face elevated risks of heat-related illness and complications during periods of prolonged extreme heat. Wildfire activity and smoke exposure may further contribute to respiratory health risks in affected areas.

In some countries, ongoing drought conditions have already affected water supply systems, agriculture, hydropower generation, and food production, particularly in areas of the Mesoamerican Dry Corridor. Continued rainfall deficits could further deepen existing vulnerabilities and humanitarian needs in affected communities. Similar impacts were observed during the 2023–2024 El Niño event, which contributed to prolonged droughts and water shortages in the Central American Dry Corridor, Colombia, and Bolivia, as well as flooding along the Pacific coasts of Ecuador and Peru, resulting in agricultural losses and increased food insecurity across affected areas (5,19).

North America

- **High-risk areas (warmer/drier conditions):** western and central United States, northern Mexico, and parts of western Canada.
- **High-risk areas (wetter conditions):** southern portions of the United States, particularly along the Gulf Coast and parts of the southeastern United States during the later phases of the El Niño event.

El Niño conditions can influence winter weather patterns across North America through changes in the position and intensity of the jet stream. During El Niño events, the polar jet stream is typically displaced further north, contributing to warmer-than-average temperatures across parts of Canada and the northern United States, while the southern United States may experience cooler and wetter conditions, including increased storm activity and precipitation during the winter season. However, the interaction between El Niño and other atmospheric drivers may influence the magnitude and distribution of these impacts, contributing to uncertainty in seasonal forecasts.

Current seasonal outlooks indicate an increased likelihood of above-normal temperatures across much of North America during the coming months, particularly over western and central portions of the United States and parts of Canada. Precipitation forecasts remain more variable across the continent, although some southern areas of the United States may experience increased rainfall during the later phases of the El Niño event (14).

Potential public health impacts include heat-related illness during periods of prolonged above-normal temperatures, wildfire activity and smoke exposure affecting air quality, and localized flooding associated with heavy rainfall events. Elevated temperatures and wildfire smoke may contribute to respiratory health impacts, particularly among people with asthma, chronic respiratory diseases, cardiovascular conditions, older adults, children, and outdoor workers. In areas affected by severe storms or flooding, disruptions to health services, infrastructure, and essential services may also occur.

El Niño conditions may also influence vector ecology and seasonal transmission patterns for some vector-borne diseases in parts of North America, although impacts are expected to vary geographically and remain influenced by local environmental and climatic conditions.

Cross-cutting impacts of El Niño in the Americas

Regional food security and economic impacts

El Niño-related climatic anomalies may affect agricultural production, water availability, energy generation, and livelihoods across parts of the Americas. Drought conditions in the Central American Dry Corridor, northern South America, and portions of the Amazon basin may reduce crop yields and livestock productivity, while excessive rainfall in other areas may damage crops, transportation networks, and critical infrastructure.

The 2023–2024 El Niño event contributed to drought-related agricultural losses, reduced water availability, and increased food insecurity in several countries of the Region. Similar impacts could affect vulnerable populations during the current event, particularly where communities rely on rain-fed agriculture and where food insecurity, poverty, or economic vulnerability already exist. Rising food prices and reduced agricultural production may further affect household purchasing power and access to adequate nutrition, particularly among low-income populations (19,20).

Exacerbation of existing vulnerabilities and humanitarian needs

The impacts of El Niño are expected to compound existing vulnerabilities in several countries and territories of the Americas. Climatic shocks associated with drought, flooding, extreme heat, and wildfires may place additional pressure on populations already affected by poverty, food insecurity, displacement, migration, violence, or limited access to health services.

The Region continues to face multiple concurrent challenges, including large-scale population movements, recurrent natural hazards, arboviral disease outbreaks, and health-system constraints in some settings (21). El Niño-related impacts may further increase public health and humanitarian needs by affecting access to safe water, food production, livelihoods, health services, and critical infrastructure (4).

Preparedness measures, climate-informed surveillance, risk communication, and coordinated multi-sectoral response efforts will be essential to mitigate the impacts of El Niño on vulnerable populations, particularly children, older adults, Indigenous communities, migrants, displaced populations, and people living in areas highly exposed to climatic hazards.

HEALTH RISKS

El Niño conditions increase the probability of a range of extreme weather events, including droughts, floods, tropical cyclones, and heatwaves, all of which are detrimental to human health (it should be noted, however, that in some settings, increased rainfall associated with El Niño may actually be beneficial) (***Figure 4***).

Figure 4. Heightened El Niño-related health risks

Source: *World Health Organization. El Niño and Health. Geneva: WHO; 2016. Available from:* *https://cdn.who.int/media/docs/default-source/climate-change/who_el_nino_and_health_global_report_21jan2016.pdf* *(22).*

The magnitude of health impacts associated with El Niño will vary depending on how intensely El Niño influences the local climate of an area as well as local health vulnerabilities, and preparedness and response capacities. Health consequences associated with extreme weather conditions are interrelated, and can occur as a result of a range of factors (6):

- Both droughts and flooding may trigger food insecurity, increase malnutrition and thus enhance vulnerability to infectious diseases;
- Droughts, flooding and intense rainfall (including cyclones) may cause loss of life, significant population displacement, damage and associated economic loss, also impacting mental health. Damage or closure of health care facilities reduces access to healthcare during the emergency and well beyond the event;

- Droughts, flooding and intense rainfall can increase water- and vector-borne diseases;
- El Niño-related increases in temperature may result in vector-borne disease epidemics in high-altitude areas that would otherwise have unfavorable temperatures for vector development and disease transmission;
- Damaged or flooded drinking-water and/or sanitation infrastructure may lead to waterborne diseases, including through compromised hygiene practices in the absence of sufficient water supply;
- Extremely hot and dry conditions may lead to heat waves, wildfires, increased smoke and deteriorated air quality, causing or exacerbating respiratory diseases and heat stress;
- Populations already affected by a humanitarian crisis (e.g., those in internally displaced persons and refugee camps) face heightened risk of the health consequences of both wet and dry conditions.

The primary health risks related to El Niño for the 2026-2027 period are summarized in ***Table 3a*** and ***Table 3b***. These tables should be taken as broadly indicative, with considerable local variation in risks according to local effects and vulnerabilities. Further explanation about each health risk follows in the Health Status and Threats section.

Table 3a. Key health risks associated with dry conditions in the context of El Niño, 2026-2027

Dry conditions				
Public health risk	**Likelihood**	**Public health consequences**	**Level of risk***	**Rationale**
Malnutrition	Highly likely	Major	Very High Risk	Food insecurity may worsen in a context where baseline vulnerability remains high across Latin America and the Caribbean, with more than 33 million people facing hunger, 167 million experiencing food insecurity, and 181.9 million unable to afford a healthy diet (20). Drought may further affect crops, livestock, fisheries, livelihoods, and food prices, reduce dietary diversity and increase the risk of acute and chronic malnutrition, especially among children under five, pregnant and lactating women, Indigenous and rural communities, displaced and migrant populations, and households already facing food insecurity (19,23).
Cholera and other waterborne diseases	Highly likely	Severe	Very High Risk	Droughts and water scarcity in dry conditions can necessitate storage of water, along with deterioration in sanitation and hygiene measures. These conditions can facilitate the spread of cholera and other water-borne diseases (24–30).
Heat stress	Almost certain	Major	Very High Risk	Heat stress is the leading cause of weather-related death and can exacerbate underlying NCDs. Excessive heat can cause dehydration, heat exhaustion, heatstroke, and premature mortality (31,32). Vulnerable groups include older adults, infants, pregnant women, outdoor workers, chronically ill people, Indigenous and remote communities, and those in poorly ventilated housing.
Arboviral diseases like Dengue, Zika, Chikungunya, Oropouche and Yellow Fever	Highly likely	Major	Very High Risk	Increased temperatures can impact mosquito vector dynamics and capacity, and virus replication, while at the same time decreasing mosquito breeding habitats. Increased vector breeding and distribution in higher altitude areas which are usually cooler are observed. Changes in water storage practices during dry seasons also facilitate vector breeding. A rise in incidence and geographical extent of arboviral diseases and extension of broadcast seasons, specifically dengue, chikungunya, yellow fever, and zika have been

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				observed in the last few years following the previous El Niño event, which could be exacerbated by the upcoming event. Changes in migration patterns of usual animal hosts of arboviral encephalitis can lead to an increase in human cases of the coming seasons as well (8,33–45).
Measles	Highly likely	Major	Very High Risk	The ongoing measles outbreak in the Region of the Americas highlights the potential for rapid spread where susceptible populations are brought together in crowded settings, underscoring the risk posed by persistent immunity gaps, particularly for the second dose of measles-containing vaccine (46). Drought-related disruptions to health services, outreach vaccination, cold chain, and access to routine care may further reduce timely immunization and delay case detection, especially in remote, migrant, displaced, or underserved communities.
Malaria	Likely	Moderate	High Risk	A temporal relationship between the ENSO phenomenon and malaria incidence has been documented. Usual cycles of malaria are associated with prevalent climatic conditions, namely, mean temperature, precipitation, dew point, and river discharges. A statistically significant relationship was found between El Niño and malaria incidence, with droughts leading to epidemics in Colombia, Guyana, and Venezuela. While there was no significant change in the time period of detection of malaria cases, the incidence saw a sharp rise in years coinciding with El Niño events. The 2023-2024 El Niño event, in particular, was characterized by a severe drought in the Amazon region in Brazil that disrupted seasonal agriculture and fishing, healthcare access, and caused multiple other negative impacts. These dynamics may exacerbate the malaria burden over and above that caused by environmental pressures (47–53).
Other vector-borne diseases	Likely	Moderate	High Risk	Accelerated vector development, exposure of animal hosts to vectors, and movement of animals, leading to an increase in the animal-human interface increases the risk of spillover of vector-borne diseases like plague, leptospirosis, tick-borne encephalitis, Lyme disease in the wake of an El Niño event (54–59).
Other vaccine-preventable diseases	Likely	Moderate	High Risk	Other vaccine-preventable diseases may increase where drought disrupts routine immunization, outreach activities, cold chain, and access to care. This is especially relevant given existing regional immunity gaps: in 2024, coverage remained below the 95% threshold for BCG (88%), Polio 3 (86%), DTPCV1 (89%), and DTPCV3 (87%) (60). Population movement, food insecurity, and reduced service access may further heighten vulnerability, particularly among remote, rural, Indigenous, migrant, or displaced populations.
Respiratory diseases	Highly likely	Moderate	High risk	Respiratory health may worsen during drought and high-temperature periods due to increased dust, wildfire smoke, and air pollution. Smoke exposure can travel long distances and contribute to respiratory and cardiovascular problems, including exacerbations of asthma, and other chronic conditions (7,9,61). This is particularly relevant in the Americas, where recent El Niño-related drought contributed to severe wildfire activity in the Amazon and Pantanal (62).
Maternal and child health	Likely	Moderate	High Risk	Maternal and child health may worsen during drought and heat due to reduced access to safe water, food insecurity, malnutrition, diarrheal disease, malaria, heat exposure, and disruption of essential health services (63–66). Indigenous, displaced, or underserved communities are especially vulnerable where access to prenatal care, emergency obstetric care, neonatal services, and nutrition support may be limited.
Direct injuries	Likely	Moderate	High Risk	Direct injuries during dry El Niño conditions may occur mainly from wildfires, burns, smoke exposure, heat-related occupational

				incidents, evacuation, and emergency response activities. Although impacts are often localized, severe events can cause injuries and deaths.
Gender-based violence	Highly Likely	Moderate	High Risk	Gender-based violence risks may increase when drought contributes to food insecurity, water scarcity, livelihood losses, displacement, household stress, and reduced access to health, social, and protection services. Women and girls may face greater exposure while seeking water, food, fuel, or assistance, and economic pressure may increase harmful coping mechanisms, including transactional or survival sex (67).
Conditions requiring mental health and psychosocial support (MHPSS)	Highly Likely	Moderate	High Risk	Mental health and psychosocial needs may increase when drought leads to livelihood losses, food insecurity, water scarcity, displacement, heat stress, and reduced access to services. Prolonged uncertainty and economic pressure can contribute to anxiety, distress, sleep problems, harmful substance use, and worsening of pre-existing mental health conditions, especially among vulnerable and already underserved populations (68).
Accidents by venomous animals	Likely	Moderate	High Risk	Dry conditions during El Niño may increase the risk of envenomings as habitat degradation, reduced humidity, and water scarcity drive venomous animals to seek shelter and resources in human settlements. These environmental stresses, combined with increased human exposure in domestic and peri-domestic settings, can elevate the frequency of human-animal interactions and associated accidents, particularly in vulnerable populations (69).
Rodent-borne diseases	Likely	Minor	Moderate Risk	Drought can reduce food availability, which may drive rodent population movement and increase contact with humans. The effects of El Niño on rodent-borne disease transmission may occur in the later months of the upcoming event (59).
Human rabies	Unlikely	Moderate	Moderate Risk	Increasing temperatures, prolonged droughts, and wildfires may alter wildlife distribution and degrade natural habitats, bringing wild animals into closer contact with humans and domestic animals and increasing opportunities for rabies transmission (68). Water scarcity and drought-related changes in bat behavior may further increase interactions among wildlife, livestock, and people. In addition, disruptions to health and veterinary services, dog vaccination campaigns, and access to post-exposure prophylaxis may increase the risk of delayed care and localized re-emergence of rabies in vulnerable areas (68).
Biotoxins: fish and shellfish poisoning	Likely	Minor	Moderate Risk	Higher temperatures, drought, reduced river flow, and nutrient concentration may favor harmful algal and cyanobacterial blooms, contaminating fish, shellfish, and freshwater sources. This can increase the risk of ciguatera, shellfish poisoning, and cyanotoxin exposure, particularly among coastal, riverine, Indigenous, and fishing-dependent communities (70–72).
Myasis caused by New World screwworm (*Cochliomyia hominivorax*)	Highly Likely	Minor	Moderate Risk	Warmer temperatures could favor the survival, reproduction, and geographic expansion of the adult fly into previously unaffected areas (73,74).

Red: Very high risk. Could result in high levels of excess mortality/morbidity.
Orange: High risk. Could result in considerable levels of excess mortality/morbidity.
Yellow: Moderate risk. Could make a minor contribution to excess mortality/morbidity.
Green: Low risk. Unlikely to make a contribution to excess mortality/morbidity.
Grey: No plausible assessment can be made at this time.

Table 3b. Key health risks associated with wet conditions in the context of El Niño, 2026-2027

Wet conditions				
Public health risk	**Likelihood**	**Public health consequences**	**Level of risk***	**Rationale**
Malnutrition	Highly likely	Major	Very High Risk	Food insecurity may worsen in a context where baseline vulnerability remains high across Latin America and the Caribbean, with more than 33 million people facing hunger, 167 million experiencing food insecurity, and 181.9 million unable to afford a healthy diet (20). Floods, landslides, and intense rainfall may damage crops, livestock, fisheries, roads, markets, and livelihoods, reducing food access and dietary quality. Increased diarrheal disease and disruptions to health and nutrition services may further heighten risks, particularly among children under five, pregnant and lactating women, displaced populations, and vulnerable rural or Indigenous communities (23).
Cholera and other waterborne diseases	Highly likely	Severe	Very High Risk	Increase in humidity and decrease in temperature associated with increased rainfall, floods, and wet conditions can lead to environments suitable for the growth of the Vibrio bacteria. Water contamination due to flooding, and deteriorations in hygiene and sanitation are some of the other conditions that facilitate propagation of water borne diseases (24–30)
Malaria	Highly likely	Major	Very High Risk	The temporal relationship between the ENSO phenomenon and malaria incidence has been documented. Usual cycles of malaria are associated with prevalent climatic conditions, namely, mean temperature, precipitation, dew point, and river discharges. A statistically significant relationship was found between El Niño and malaria incidence, with flooding in dry coastal regions preceding malaria epidemics in Peru. While there was no significant change in the time period of detection of malaria cases, the incidence saw a sharp rise in years coinciding with El Niño events (47–53).
Arboviral diseases like Dengue, Zika, Chikungunya, Oropouche and Yellow Fever	Highly Likely	Major	Very High Risk	Increased rainfall and humidity are some of the most commonly associated factors with increased vector density and transmission potential. Increases in case incidence of arboviral diseases, specifically dengue, chikungunya, oropouche virus disease, yellow fever, zika and arboviral encephalitis have been noted following previous El Niño events and case incidence can be expected to rise in the upcoming event as well (8,33–45).
Measles	Highly likely	Major	Very High Risk	The ongoing measles outbreak in the Region of the Americas highlights the potential for rapid spread where susceptible populations are brought together in crowded settings, underscoring the risk posed by persistent immunity gaps, particularly for the second dose of measles-containing vaccine (46,75). Damage to health facilities, cold-chain interruptions, and reduced access to routine vaccination may delay immunization and case detection, while concurrent febrile rash illnesses such as dengue may complicate early diagnosis.
Other vector-borne diseases	Likely	Moderate	High Risk	Increased vector breeding, exposure of animal hosts to vectors, and movement of animals, leading to an increase in the animal-human interface increases the risk of spillover of vector-borne diseases like plague, leptospirosis, tick-borne encephalitis, Lyme disease in the wake of an El Niño event (54–59).
Other vaccine-preventable diseases	Likely	Moderate	High Risk	Flooding and intense rainfall may disrupt vaccination services, damage health facilities, interrupt cold chains, and limit access to surveillance and care. These disruptions may widen existing immunity gaps, as regional coverage in 2024 remained below the 95% threshold for BCG (88%), Polio 3 (86%), DTPCV1 (89%), and

				DTPCV3 (87%) (60). Overcrowded shelters and temporary accommodation can facilitate transmission of respiratory and close-contact diseases such as diphtheria, pertussis, meningitis, and rubella, while flood-related injuries and delayed wound care may increase tetanus risk.
Respiratory diseases	Likely	Moderate	High Risk	Respiratory disease risk may increase when flooding, storms, and displacement lead to overcrowding in shelters or temporary accommodation, where respiratory viruses can spread more easily. Damp environments, poor ventilation, reduced hygiene, and disrupted access to care can increase acute respiratory infections and worsen chronic respiratory diseases.
Maternal and child health	Likely	Moderate	High Risk	Flooding, storms, and displacement may reduce access to maternal, neonatal, and child health services by damaging health facilities, roads, referral systems, and water, sanitation and hygiene (WASH) infrastructure (63–66). These conditions can increase risks of diarrheal disease, malaria, malnutrition, unsafe deliveries, delayed emergency obstetric care, and neonatal complications.
Direct injuries	Highly Likely	Moderate	High Risk	Flooding, flash floods, landslides, storms, drowning, electrocution, trauma, evacuation, rescue, clean-up, and reconstruction activities can cause direct injuries and deaths (76,77).
Gender-based violence	Highly Likely	Moderate	High Risk	Flooding, storms, and displacement may increase gender-based violence risks through overcrowded shelters, reduced privacy, poor lighting, limited protection services, loss of livelihoods, and household stress. Women and girls may face increased exposure during evacuation, sheltering, food distribution, water collection, or recovery activities (67).
Conditions requiring mental health and psychosocial support (MHPSS)	Highly Likely	Moderate	High Risk	Flooding, storms, landslides, displacement, loss of homes or livelihoods, bereavement, and disruption of social networks can increase acute distress and worsen pre-existing mental health conditions. Anxiety, grief, sleep disturbance, post-traumatic stress symptoms, and harmful substance use may occur, with impacts potentially persisting beyond the immediate emergency period (68,78).
Accidents by venomous animals	Likely	Moderate	High Risk	Wet conditions during El Niño, including heavy rainfall and flooding, can increase the risk of envenomings by displacing venomous animals from their natural habitats and shelters, forcing them into closer contact with human populations. Flooded environments may also reduce refuge availability and drive animals into homes and peri-domestic areas, increasing the frequency of human-animal interactions and related accidents, particularly in vulnerable communities (79,80)
Heat stress	Likely	Minor	Moderate Risk	Heat stress may also occur during wet El Niño conditions when high temperatures combine with humidity, power outages, poor ventilation, displacement, or limited access to safe water and cooling. Humid heat can increase dehydration and heat exhaustion and worsen chronic conditions, particularly among older adults, infants, pregnant women, outdoor workers, people with chronic diseases, and populations in shelters or poorly ventilated housing (31,32).
Rodent-borne diseases	Highly Likely	Minor	Moderate Risk	Increased rainfall and wet conditions in general increase the available food sources, increasing rodent populations, their territorial expansion, and the likelihood of contact with humans. The effects of El Niño on rodent-borne disease transmission may occur in the later months of the upcoming event (59,81).
Human rabies	Unlikely	Moderate	Moderate Risk	Flooding and population displacement may increase human–animal interactions by displacing wildlife and domestic animals, including during evacuation and rescue activities (68). At the same time, flood-related disruptions to healthcare, veterinary services, surveillance,

				laboratory diagnostics, and dog vaccination campaigns may delay access to post-exposure prophylaxis and reduce disease control capacity. Animal abandonment and interruptions to animal control programs may also increase free-roaming dog and cat populations, creating additional opportunities for rabies transmission (68).
Biotoxins: fish and shellfish poisoning	Likely	Minor	Moderate Risk	Heavy rainfall, flooding, runoff, and warmer waters may increase nutrient loads and contribute to harmful algal blooms in coastal, marine, and freshwater ecosystems. These conditions can lead to toxin accumulation in fish and shellfish and affect drinking-water safety, fisheries, food security, and livelihoods (70,72).
Myasis caused by New World screwworm (*Cochliomyia hominivorax*)	Highly Likely	Minor	Moderate Risk	Increased rainfall and flooding may result in more wounds in domestic and wild animals, disruptions to veterinary services, and greater exposure of animals and humans to infestation (73,74).

Red: Very high risk. Could result in high levels of excess mortality/morbidity.
Orange: High risk. Could result in considerable levels of excess mortality/morbidity.
Yellow: Moderate risk. Could make a minor contribution to excess mortality/morbidity.
Green: Low risk. Unlikely to make a contribution to excess mortality/morbidity.
Grey: No plausible assessment can be made at this time.

DISEASE SUMMARIES

Malnutrition

Malnutrition related to El Niño in the Region of the Americas may result from the combined effects of food insecurity, unsafe water, poor sanitation, increased diarrheal disease, and disruptions to health and nutrition services. These pathways may affect dietary quantity and quality, reduce nutrient absorption, and increase nutritional requirements during illness, particularly among young children, pregnant and lactating women, and populations already experiencing food insecurity or limited access to essential services (19,23).

Evidence from northern Peru after the 1997–1998 El Niño also suggests that nutritional impacts may be long-lasting. A study in Tumbes found that children born during and after the event were, on average, shorter and had less lean mass for their age and sex than expected in the absence of El Niño. These effects likely reflected a combination of food shortages, crops and livelihood losses, and increased infectious disease, including diarrheal disease (82). More broadly, recent research has found that warmer El Niño conditions are associated with worse child undernutrition in much of the developing world. The same study estimated that nearly six million additional children were underweight during the 2015 El Niño compared with a scenario without El Niño, an increase up to three times higher than that attributed to the COVID-19 pandemic (83).

Although the prevalence of stunting among children under five in Latin America and the Caribbean remains below the global average, nutritional vulnerability persists and is unevenly distributed across countries and population groups. According to the Latin America and the Caribbean Regional Overview of Food Security and Nutrition 2025: Statistics and Trends, stunting among children under five in the Region was estimated at 12.4% in 2024, while overweight in children under five remains above the global estimate, reflecting the coexistence of multiple forms of malnutrition (20). In the context of El

Niño, areas with pre-existing acute food insecurity, child undernutrition, recurrent diarrheal disease, limited access to safe water and sanitation, or disrupted health and nutrition services may be particularly vulnerable to further deterioration.

In the Americas, surveillance should prioritize children under five, pregnant and lactating women, rural and Indigenous communities, migrant and displaced populations, and households in areas already experiencing acute food insecurity, especially where El Niño-related drought or flooding may further reduce food access and increase disease transmission.

Cholera and other waterborne diseases

Outbreaks of cholera and other waterborne diseases (such as typhoid fever, shigellosis, and hepatitis A and E) can occur after flooding, for example through human contact with floodwater contaminated with human or animal waste (e.g., from sanitation systems), or due to contaminated drinking-water supply. Drought conditions may reduce the water available for hygiene and sanitation purposes, and thus also increase the risk of disease. Drought also leads to increased concentration of pathogens in surface water. Higher temperatures are also associated with an increase in gastro-intestinal infections. Food preparation practices may be similarly impacted.

Cholera

Rising water temperatures can boost the proliferation of *Vibrio cholerae* in environmental reservoirs where the bacteria is known to be present (estuaries, seacoasts) (26,27). In existing reservoirs such as the Black Sea, increased temperature can have two effects: increasing the proliferation of algae, mollusks and other substrates where *Vibrio cholerae* is found; and extending the season during which *Vibrio cholerae* is a risk. In environments not previously favorable for the presence of *Vibrio cholerae*, increased water temperatures can make them favorable for its proliferation, if introduced anthropogenically (26,27).

It has been suggested that the El Niño in 1991 - 1992 may have contributed to the spread of cholera to South America. The first outbreaks of Cholera in South America have been reported in Peru, Colombia and Ecuador during El Niño periods. Investigations indicated that the initial source of infection was contaminated food products imported across international borders. These events usually pose minimal risk to consumers as the pH, humidity, and temperature conditions of most food products are unfavorable for the growth and survival of *Vibrio cholerae* (28,30). Changes in ambient environmental conditions during the El Niño period at the time may have been conducive to the growth of the Vibrio bacteria and the start of an outbreak. The first identification of the cholera outbreak was in Peru in January 1991, which then spread to Ecuador and Colombia. A similar related event occurred in 1997, with the detection of *Vibrio parahaemolyticus* in Chile, which also corresponds to an El Niño period.

The most recent Cholera outbreak in the Americas started in Haiti in 2022, with a sustained transmission in Haiti, and periodic detections in the neighboring Dominican Republic in the last 3 years (29). The risk of anthropogenic introduction of the bacterium in new countries/regions conducive to its propagation due to El Niño conditions increases with the presence of active disease circulation within the region.

Leptospirosis

Leptospirosis is a rodent-borne disease associated with flooding. There is a temporal relationship between the El Niño and La Niña phenomena and the incidence of leptospirosis cases. Increases in the trend of case incidence are observed in the La Niña cycles, where heavy rainfall increases food sources for rodents and increases rodent-human contact during flooding. However, some areas that see increased rainfall during El Niño periods like certain parts of Colombia and Ecuador may also expect increased leptospirosis case incidence. There is also some indication that increased temperatures during El Niño events are favorable for reproduction of some rodent species as well as the Leptospira bacterium (24).

Malaria

Malaria impacts associated with El Niño will differ depending on local health vulnerability and health system capacities, as well as how El Niño and other climate drivers influence the local climate. The effects of ENSO on malaria are most pronounced in epidemic-prone areas where climate conditions are generally not suitable for year-round vector reproduction. Small changes in climate conditions in these areas have the potential to change normally unsuitable habitats into viable habitats for mosquitoes that transmit malaria, or to temporarily extend the period of malaria susceptibility. Decreased immunity acquired over time by inhabitants of these new malaria-prone areas can further increase the risk of outbreaks.

Malaria is a complex disease. Its transmission, via *Anopheles* mosquitoes, can be highly climate sensitive with temperature being a significant driver of the development rates of both the mosquito vector and the *Plasmodium* parasite. In addition, rainfall and humidity provide essential environmental characteristics for juvenile mosquito development and adult survivorship. The relationship between El Niño events, malaria, and other vector borne diseases has been well documented in Africa and parts of Latin America and Asia (47).

In the epidemiology of malaria, there are desert and highland fringes, where rainfall and temperature, respectively, are critical parameters for disease transmission. In such highland fringe areas, higher temperatures associated with El Niño particularly during the autumn and winter months, may increase transmission of malaria in the high altitude/latitude areas.

In most countries of South America where malaria is endemic, a temporal relationship between the ENSO phenomenon and malaria incidence has been documented. Usual cycles of malaria are associated with prevalent climatic conditions, namely, mean temperature, precipitation, dew point, and river discharges. A statistically significant relationship was found between El Niño and malaria incidence in Colombia, Guyana, Peru, and Venezuela, with flooding in dry coastal regions preceding malaria epidemics in Peru, and droughts leading to similar epidemics in Colombia, Guyana, and Venezuela. While there was no significant change in the time period of detection of malaria cases, the incidence saw a sharp rise in years coinciding with El Niño events (***Figure 5***) (48–51).

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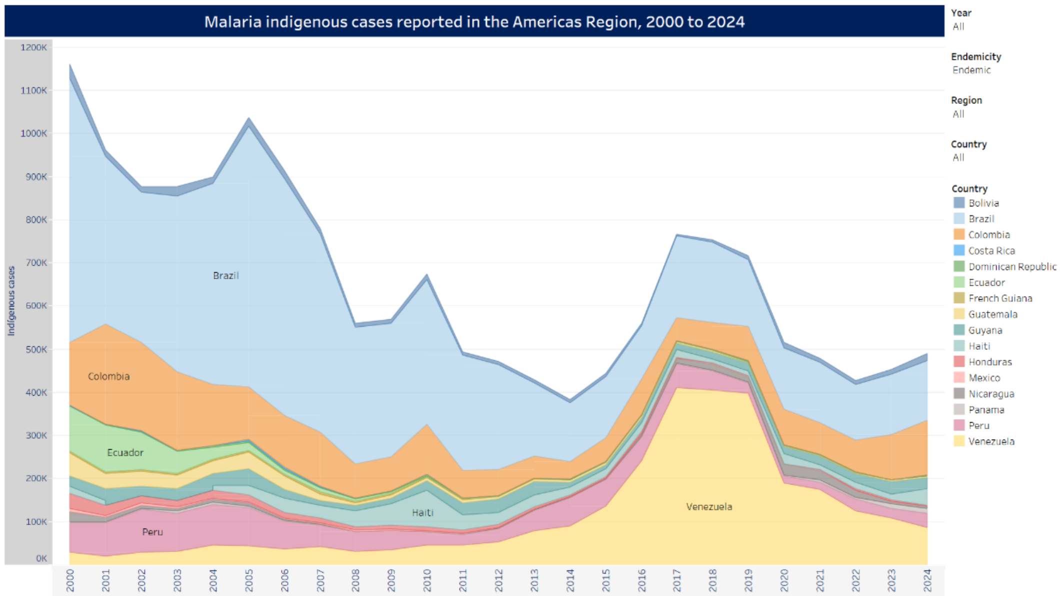
Figure 5. Indigenous cases of Malaria reported in the Region of the Americas, 2000 to 2024



Source: Pan American Health Organization. Malaria Situation in the Americas. Washington D.C.: PAHO; 2026. [cited on 5 June 2026]. Available from: https://www.paho.org/en/topics/malaria/malaria-indicators (53).

Analysis of the patterns of the ENSO phenomenon and its relationship to malaria cases in the Amazon region in Brazil reveals drier conditions in the north-central areas, while the western areas experience wetter conditions. Higher maximum temperatures and extreme rainfall conditions led to a lower risk of malaria infection in the Amazon as a whole, while also showing high spatio-temporal heterogeneity, meaning that some states like Rondonia experienced a wetter dry season and drier rainy season, subsequently leading to marked increases in malaria incidence during El Niño events. The inverse, with lower malaria incidence, was observed in states like Acre. The 2023-2024 El Niño event, in particular, was characterized by a severe drought in the Amazon region in Brazil that disrupted seasonal agriculture and fishing, healthcare access, and caused multiple other negative impacts (6). These dynamics may exacerbate the malaria burden over and above that caused by environmental pressures.

Effective malaria control programs in many higher-latitude regions have reduced transmission, meaning that the geographic limits of malaria are not determined solely by temperature. Malaria transmission is influenced by a combination of environmental, socioeconomic, political, and human behavioral factors. Malaria epidemics may occur at control fringes when public health infrastructure deteriorates (52).

Arboviral diseases

El Niño is also expected to shift the dynamics of several arboviral diseases including dengue, chikungunya, Zika, and yellow fever, among other mosquito borne viral diseases. Unusual increases in temperature or rainfall can also increase mosquito densities and viral transmission which will facilitate potential epidemics. It is also important for non-endemic areas such as Europe and North America to be aware of the risk, given the recent and increasing presence of Aedes mosquitoes which can generate local outbreaks of these diseases during the summer months. El Niño-related warmer temperatures may result in vector-borne disease epidemics in highland areas, which are usually too cold for vector survival and disease transmission at other times.

Dengue

Dengue is the most important and frequent arboviral disease in humans. In recent decades, the disease has undergone a dramatic resurgence worldwide and it currently affects over 129 countries. Dengue incidence is seasonal and is usually associated with warmer, more humid weather. There is some evidence to suggest that increased rainfall in many locations can affect the vector density and transmission potential. ENSO may also act indirectly by causing changes in water storage practices brought about by disruption of regular supplies. There is some evidence of the association between El Niño and dengue in South America, Mexico, and some areas of Asia (33). ENSO events have a complex relationship with mosquito vector dynamics and, subsequently, dengue transmission. ENSO conditions can cause extreme warming and drought in tropical environments, where warming can promote viral replication and vector development, and drought conditions can reduce mosquito habitats. However, increased water storage practices during drought periods may create breeding sites, potentially increasing mosquito abundance and the risk of transmission. Studies have shown an increase in dengue case incidence following El Niño events, with some indicating a peak 3-6 months following the event, and others showing that this effect can persist up to 2 years after the event (34,35).

However, whether or not an epidemic occurs depends not only on mosquito abundance but also on the history of dengue in that region. Although weather conditions may be favorable for dengue transmission in one area, increased transmission may not be apparent if the local population is already immune to the prevalent serotype. In addition, areas at higher altitudes may be at higher risk of encroaching dengue transmission due to ENSO than malaria. Regional studies are needed to determine whether El Niño is associated with a change in dengue activity. Changes in serotypes are also associated with outbreaks, and weather changes can further worsen the situation. The simultaneous circulation of multiple dengue serotypes is also associated with the occurrence of outbreaks and severe forms of dengue, while weather-related changes may further worsen transmission dynamics.

In the Region of the Americas, dengue incidence in 2026 has seen a 64% decrease compared to the same period in 2025, and a 68% decrease compared to the same period in the last 5 years (***Figure 6***). While this decreasing trend has been noted in the last 2 years, there have been large increases in incidence across all endemic countries in the region in 2023-2024, following the last El Niño event. A similar increase can be observed in the period following the El Niño event in 2018-2019 (36).

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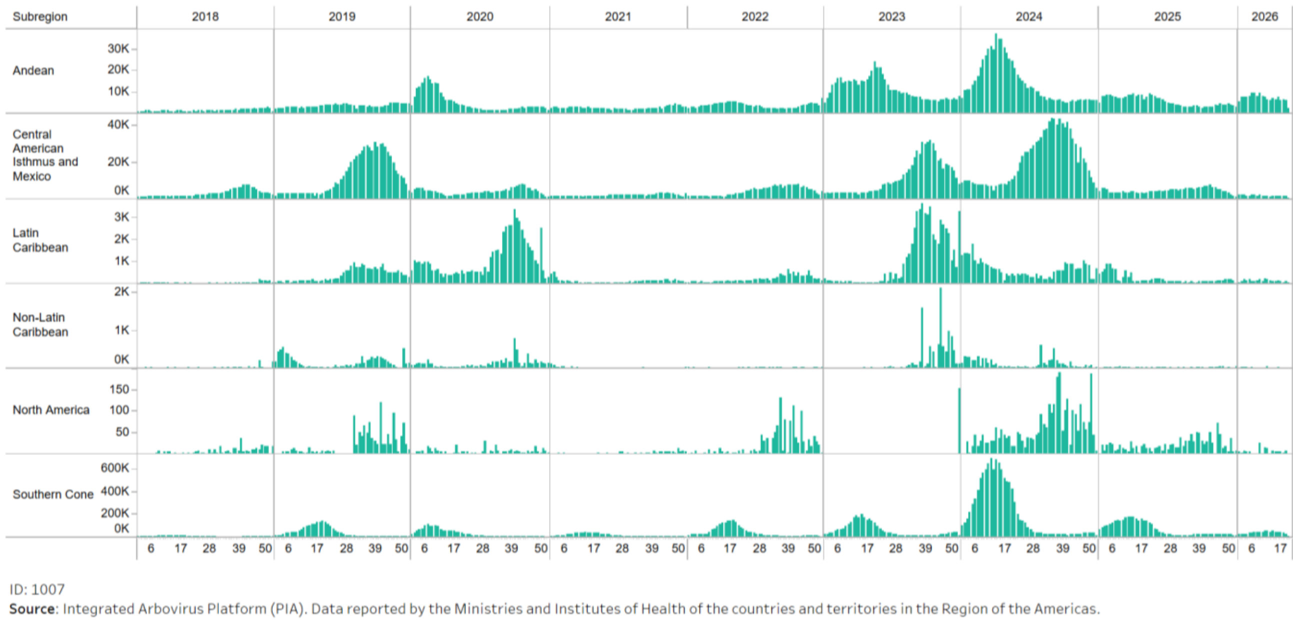
Figure 6. Confirmed cases of dengue in the Region of the Americas, 2018 to 2026 (EW 17)



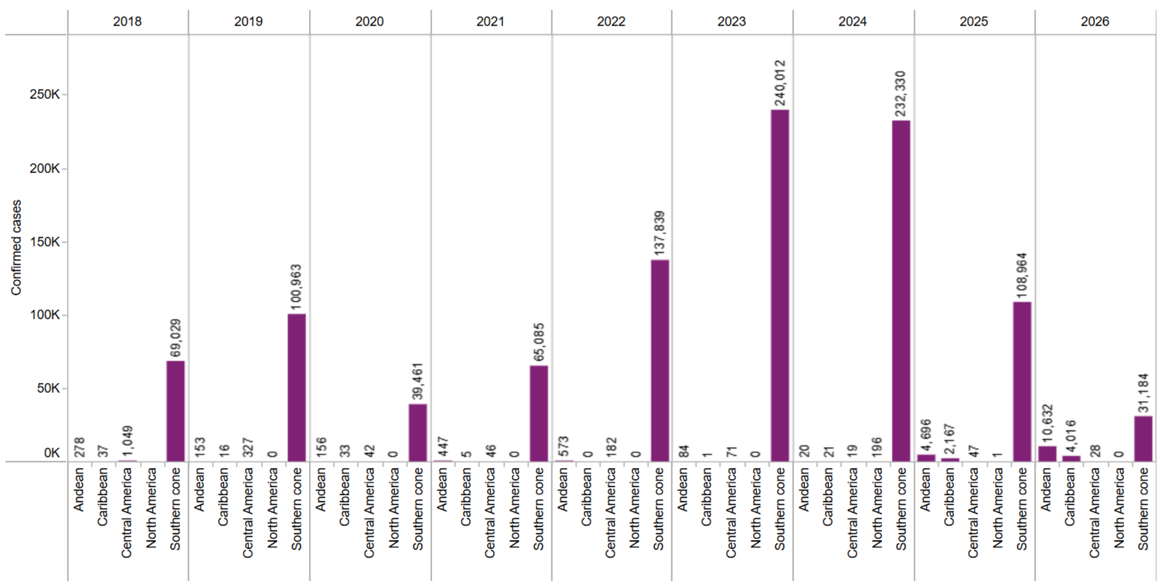
Source: *Pan American Health Organization. ARBO Portal – Dengue. Washington D.C.: PAHO; 2026. [cited on 5 June 2026]. Available from:* [*https://www.paho.org/en/arbo-portal/dengue-data-and-analysis/dengue-analysis-subregions*](https://www.paho.org/en/arbo-portal/dengue-data-and-analysis/dengue-analysis-subregions) *(85).*

Chikungunya

Chikungunya is a viral disease transmitted by the bite of the Aedes mosquito, such as *Aedes aegypti* and *Aedes albopictus*, causing high fever, joint pain, muscle pain, and headache. It is rarely fatal, but the associated joint pain can persist for months or years. Chikungunya transmission is well established to be linked to El Niño events (8). Changes in transmission are expected to be similarly affected as with dengue, after consideration of current patterns of endemicity and the high densities of Aedes mosquitoes in the countries affected by El Niño.

There has been a sustained increase in Chikungunya cases in countries and territories in the Region of the Americas since late 2025 and early 2026, as well as a resumption of autochthonous transmission in areas that have not reported virus circulation for several years. Significant circulation has been reported in the central-western and southeastern regions of Brazil, Cuba and southern Bolivia, along with the reappearance of cases in the Guianese Shield. Before the current increase in cases and geographic spread, a pattern of increased case incidence can also be observed between 2018-2019 and 2022-2025, corresponding to the last strong El Niño events in the Region (***Figure 7***) (37).

Figure 7. Confirmed Chikungunya cases in the Region of the Americas, 2018-2026 (EW 17)



ID:1012
Source: Integrated Arbovirus Platform (PIA). Data reported by the Ministries and Institutes of Health of the countries and territories in the Region of the Americas.

Source: *Pan American Health Organization. ARBO Portal – Chikungunya. Washington D.C.: PAHO; 2026. [cited on 5 June 2026]. Available from: https://www.paho.org/en/arbo-portal/chikungunya-data-and-analysis/chikungunya-analysis-subregions (38).*

Yellow fever

The association between El Niño and yellow fever has not been well-established, although there is some evidence of an increased number of epidemic foci in an El Niño year or the following year (8). In the Region of the Americas, there has been a resurgence in yellow fever cases in the last few years, with a spike in incidence starting in late 2024-early 2025, and a continued moderately high incidence up to early 2026. There has also been a broadening of the geographic extent of circulation, reemerging in areas that have not reported cases in the decade, since the last epidemic in South America, particularly in Colombia, Venezuela, and Ecuador (***Figure 8***) (39). This could be exacerbated by temperature, and precipitation changes we expect to see in the upcoming El Niño event, along with the migration of people and displacement of primates that could occur in the case of severe dry conditions and droughts.

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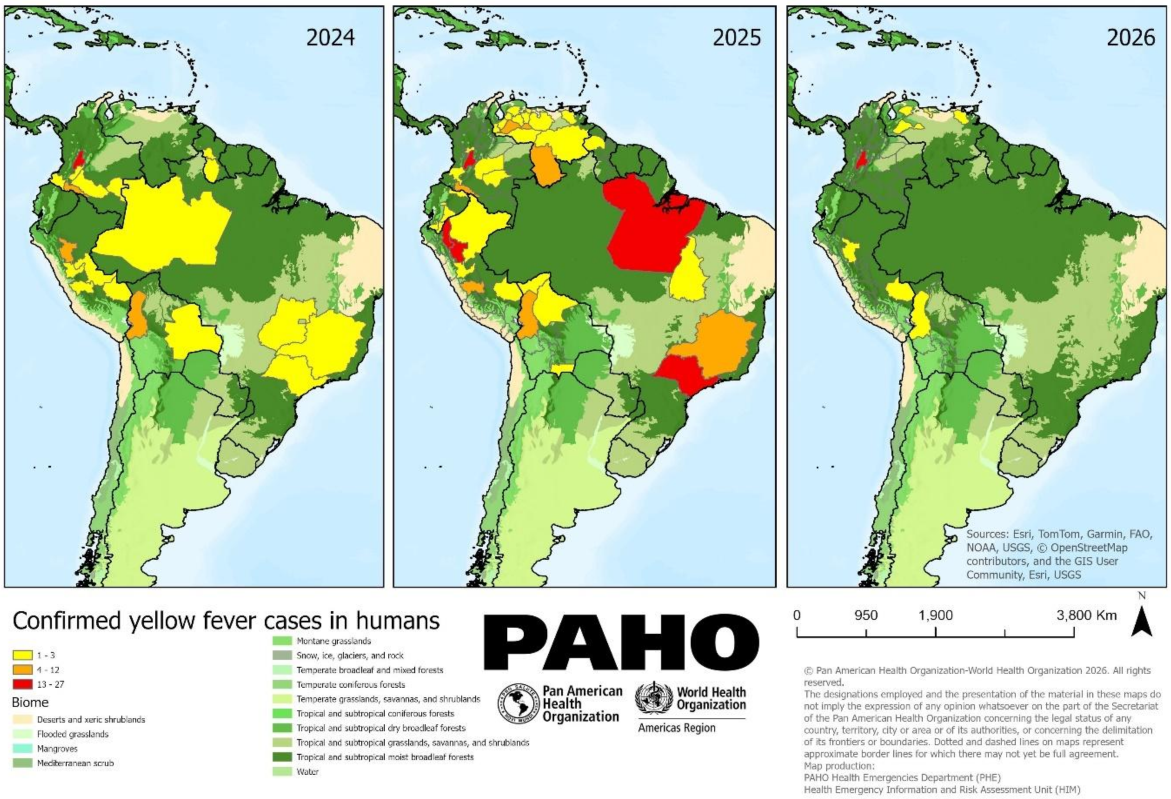
Figure 8. Confirmed Yellow Fever cases in the Region of the Americas, 2024-2026 (as of EW 7 2026)

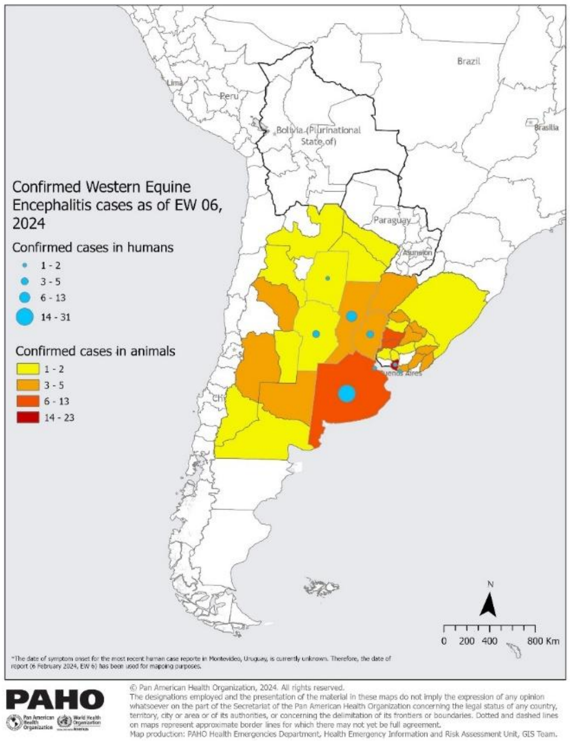


Source: *Pan American Health Organization/World Health Organization. Epidemiological Alert: Yellow fever in the Americas Region, 13 March 2026. Washington D.C.: PAHO; 2026. Available from: https://www.paho.org/en/documents/epidemiological-alert-yellow-fever-americas-region-13-march-2026 (39).*

Arboviral encephalitis

Arboviral encephalitis comprises a group of mosquito-borne diseases caused by viruses from several families. In the Americas, the principal viruses belong to the Flavivirus group, including West Nile virus and St. Louis encephalitis virus, and the Alphavirus group, including Western, Eastern, and Venezuelan equine encephalitis viruses. Transmission of these viruses is commonly through the *Aedes* and *Culex* mosquito species, with rabbits, birds, rodents and livestock being the animal hosts, and humans being incidental or opportunistic dead-end hosts. Temperature and rainfall changes during major El Niño events may lead to changes in habitats or migration patterns of the usual animal hosts, leading to increased vector-animal interactions and the possibility of transmission of viruses from animals to humans. While human-to-human transmission is still limited, there is a chance of establishing new endemic foci when competent vectors and susceptible vertebrate hosts intersect (40). Concurrent to the previous El Niño event, there have been new cases of Western Equine Encephalitis in humans reported in Argentina and Uruguay, while previously all reported cases in Brazil, Argentina, and Uruguay have been among equines (***Figure 9***) (41).

Figure 9. Confirmed case of Western Equine Encephalitis in the Region of the Americas, 2024



Source: *Pan American Health Organization/World Health Organization. Epidemiological update Western Equine Encephalitis in the Region of the Americas, 8 February 2024. Washington D.C.: PAHO/WHO; 2024. Available from:* *https://www.paho.org/en/documents/epidemiological-update-western-equine-encephalitis-region-americas-8-february-2024* *(41).*

Zika virus disease

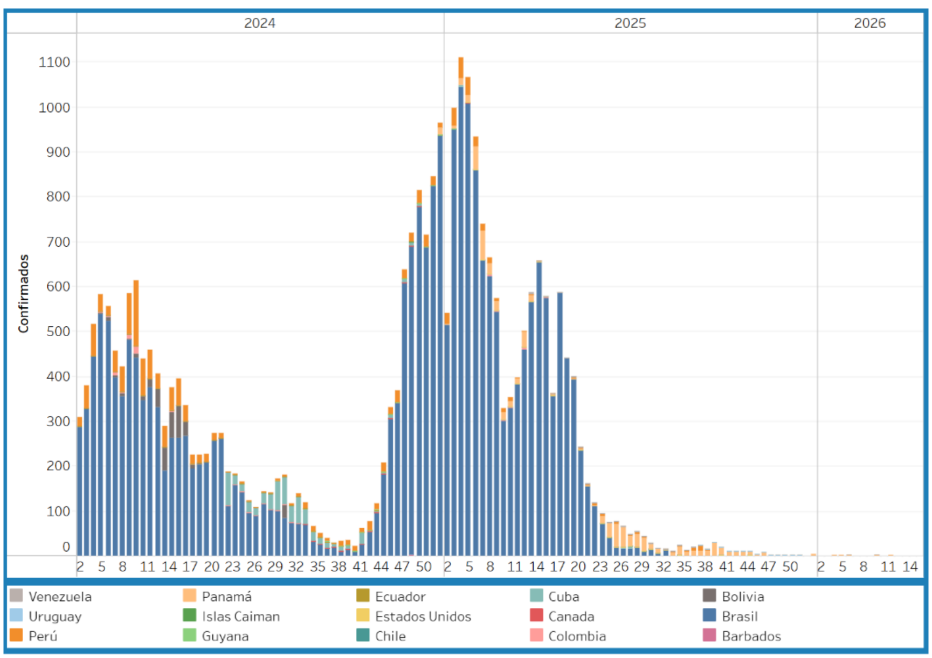
Zika virus disease is a mosquito-borne arboviral infection primarily transmitted by Aedes mosquitoes. After emerging in the Pacific and spreading rapidly across the Americas in 2015, Zika virus caused widespread outbreaks throughout the Region, leading the World Health Organization to declare a Public Health Emergency of International Concern (PHEIC) in February 2016 due to its association with congenital malformations and neurological complications. Evidence suggests a link between Zika virus transmission and El Niño events, with the concurrent El Niño in 2014-2015 possibly contributing to Zika virus transmission by impacting the breeding and spread of the Aedes vector. Analysis of subsequent Zika virus spread in conjunction with the El Niño and La Niña effects since the initial PHEIC show a positive correlation between increased surface temperatures and droughts during extreme El Niño events and an increase in Zika case incidence, primarily due to facilitating vectorial capacity (86–88). This has been observed as a pattern in the Region of the Americas, of an increasing trend of cases in the months and years following the onset of an El Niño event and a concurrent decline during La Niña events and neutral phases (89). While there is currently a declining trend in incidence since the previous El Niño event in 2023-2024, the upcoming ENSO event is expected to show an increase in cases in the months following rising temperatures.

Oropouche Virus Disease

Oropouche virus disease (OROV), caused by the Oropouche virus, is transmitted in humans by the Culicoides midge. Sylvatic transmission among animal reservoirs (sloths, marmosets, New World monkeys, rodents, and birds) is incompletely understood but has been reported to be facilitated by Aedes and Culex mosquitoes. OROV cases have historically been endemic to certain parts of the Caribbean Islands and Central America, and the Amazon region in South America (42,43).

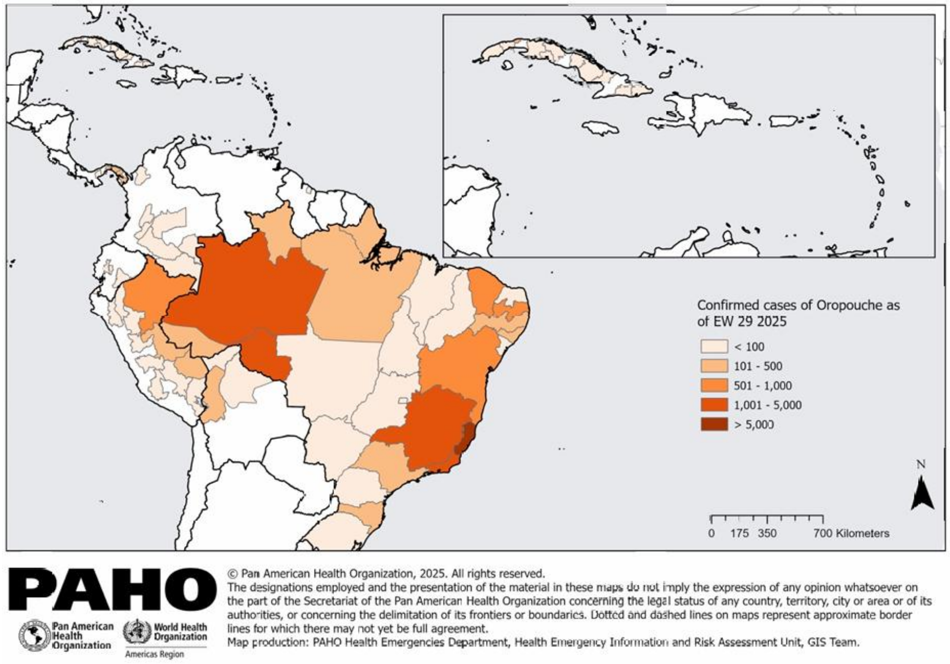
The most recent epidemic in the Region of the Americas began in late 2023, with a large peak in late 2024 and early 2025 and declined in the middle of 2025 (***Figure 10***) (45). This is significant in that the geographic spread of the disease exceeded the usual territories, along with multiple countries outside of the Americas region reporting imported cases due to international travel (***Figure 11***) (44). Evidence suggests that the rapid increase in case incidence, as well as geographic spread, is potentially related to extreme weather events in 2024 (43). This time period coincides with the previous ENSO phenomenon and could indicate similar events occurring during the expected El Niño event later this year.

Figure 10. Confirmed Oropouche Virus Disease cases in the Americas, 2024-2026



Source: *Pan American Health Organization. ARBO Portal – Oropouche. Washington D.C.: PAHO; 2026. [cited on 5 June 2026]. Available from: https://www.paho.org/es/arbo-portal/arbo-portal-oropouche (44).*

Figure 11. Geographic distribution of cumulative confirmed autochthonous Oropouche transmission in the Americas, 2025



Source: *Pan American Health Organization / World Health Organization. Oropouche Epidemiological Update in the Americas Region, 13 August 2025. Washington D.C.: PAHO/WHO; 2025. Available from: https://www.paho.org/en/documents/epidemiological-update-oropouche-region-americas-13-august-2025 (45).*

Other vector-borne diseases

Plague

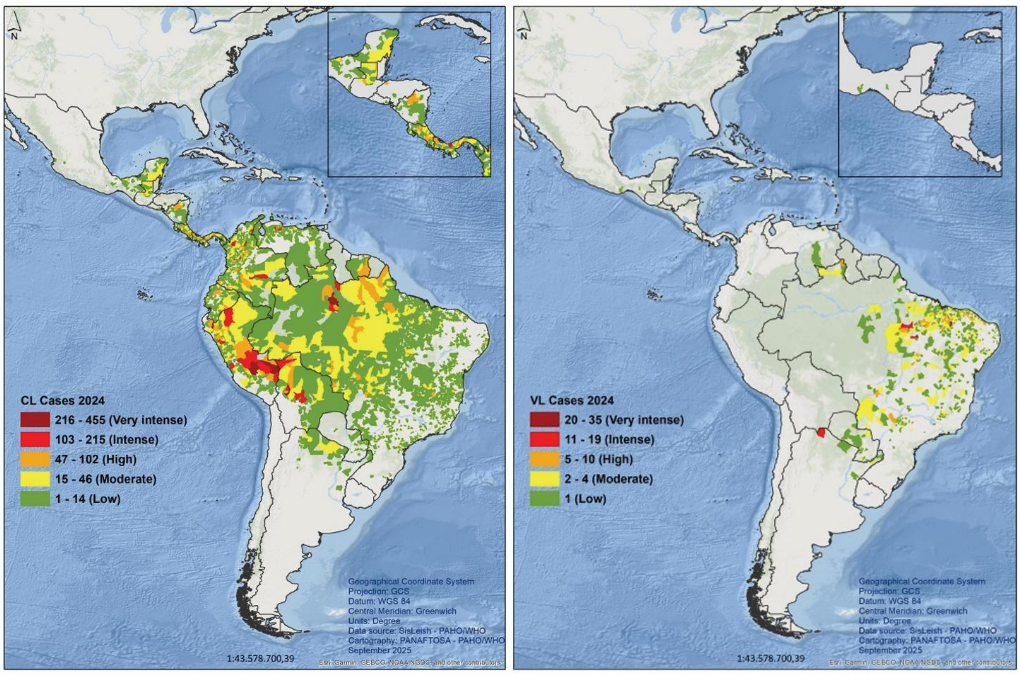
Periods of strong ENSO activity may contribute to increased plague incidence through their effects on temperature and precipitation patterns. These environmental changes can increase food availability and improve conditions for rodent survival and reproduction, leading to larger reservoir populations. Changes in temperature and precipitation may also affect the survival, reproduction, and distribution of flea vectors, potentially increasing opportunities for plague transmission. Significant association between large scale climate variability such as during El Niño events, and plague incidence has been reported in the United States (54,59).

Leishmaniasis

There is some evidence that the incidence of leishmaniasis, transmitted by the phlebotomine sand flies, is affected by El Niño events. The effects of El Niño events on environmental variables like precipitation, temperature, and humidity also affect the dynamics of leishmaniasis incidence. It is documented that transmission in some areas is decreased in El Niño years and increased in subsequent La Niña years (57). However, this does not appear to be universally true – the geospatial dynamics of transmission are likely complex and dependent on local environments (55).

In the Region of the Americas, the incidence of cutaneous and visceral leishmaniasis has been on a decreasing trend since 2005, with the lowest number of yearly cases reported in 2024 (***Figure 12***). The territories that are endemic for leishmaniasis in the region, are the same territories that are expected to be affected by dry conditions in the coming El Niño event, leading to a possible fall in incidence (56).

Figure 12. Cutaneous and Visceral leishmaniasis cases in the Region of the Americas, 2024



Source: *Pan American Health Organization. Leishmaniasis Epidemiological Report on the Region of the Americas, No 14, December 2025. Washington D.C.: PAHO; 2025. Available from: https://www.who.int/publications/i/item/PAHO-CDE-AFT-25-0029 (56,59).*

Tick borne diseases

There is some evidence for association between tick borne illnesses and El Niño events, primarily due to the effects on vector survival and transmission capacity. Factors like precipitation have been seen to have a non-linear relationship with tick breeding. Moderate increases in rainfall have seen significant increases in the number of ticks, while longer periods of precipitation tend to wash out tick eggs, larvae, and adults, reducing the population. Longer term effects of climate change have seen increased suitability of tick vectors in high altitude and high latitude regions, increasing the risk of spillover of tick-borne diseases to humans. Climate events like the ENSO have been seen associated with an increase in the number of cases of tick-borne encephalitis and Lyme disease being reported during the summer and spring seasons (58,59).

Rodent-borne diseases

Hantavirus

Hantaviruses are transmitted via a range of rodents; transmission can occur due to rodent bites, or contact with urine, saliva, or feces. As with plague, increased rainfall could provide rich food sources and favorable conditions for rodent breeding. Large scale climate change events, like ENSO, result in the increased suitability of rodents in high altitude regions, and the risk of associated disease transmission in high altitude and high latitude regions. The increase in the rodent-human interactions can lead to spill-over of diseases onto humans (59,81).

Human rabies

Human rabies transmitted by dogs has declined substantially in Latin America and the Caribbean over recent decades. In the past five years, human rabies transmitted by dogs has been reported in six countries: Venezuela, Bolivia, Haiti, the Dominican Republic, Peru and Cuba (68). Although canine rabies transmission is increasingly geographically focalized, wildlife rabies remains widely distributed throughout the Americas, with bats representing important reservoirs of the virus (***Figure 13***). Climate anomalies associated with El Niño may create conditions that favor the localized re-emergence of canine rabies in vulnerable areas and increase the risk of rabies transmission from wildlife. In regions experiencing increasing temperatures, prolonged droughts, and wildfires, degradation of natural habitats may alter wildlife distribution, forcing wild animals to move closer to human settlements and livestock production areas. Water scarcity may further concentrate wildlife, domestic animals, and humans around limited resources, increasing contact rates and opportunities for rabies transmission. Drought-related changes in bat foraging behavior may also increase interactions with livestock and people.

Conversely, in areas experiencing wetter conditions, flooding may displace wildlife and domestic animals, increase human–animal interactions during evacuation and rescue activities, and contribute to the abandonment and displacement of pets, potentially increasing free-roaming dog and cat populations. Across both dry and wet climate extremes, population displacement, reduced access to health and veterinary services, disruptions to surveillance systems, laboratory diagnostics, dog vaccination campaigns, and limited availability of post-exposure prophylaxis may delay care following animal bites and weaken rabies prevention and control efforts. These conditions may increase opportunities for rabies transmission and persistence, particularly in areas where canine rabies remains endemic or surveillance systems are weak.

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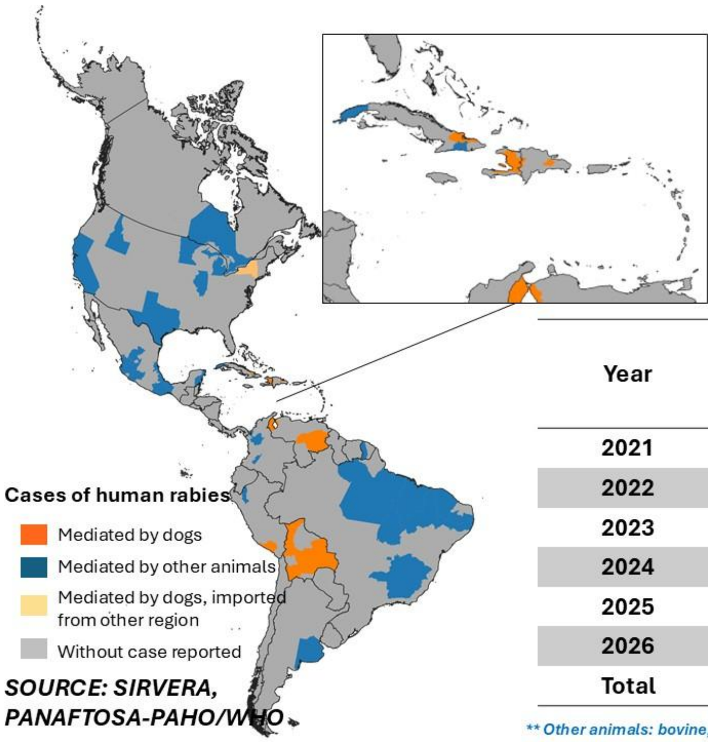
Figure 4. Occurrence of human cases of rabies in the Americas (2021-2026)



PAHO Pan American Health Organization | World Health Organization Americas | PANAFTOSA Pan American Center for Foot-and-Mouth Disease and Veterinary Public Health

Occurrence of human cases of rabies in the Americas in the recent past years (2021 – 2026*)

** Until May, 2026*

Year	Amount of human rabies cases		Total by year
	Mediated by dogs	Mediated by other animals**	
2021	9	7	16
2022	15	10	25
2023	7	3	10
2024	9	16	25
2025	9	9	18
2026	4	2	6
Total	53	47	100

*** Other animals: bovine, cat, bats and other wildlife animals.*

Source: *Pan American Center for Foot-and-Mouth Disease and Veterinary Public Health PAHO. Regional Information System for the Epidemiological Surveillance of Rabies (SIRVERA). Duque de Caxias, RJ, Brazil: PAHO; 2024. [cited 5 June 2026]. Available from:* https://sirvera.panaftosa.org.br/Site/Inicio/Index?idl=3 *(90).*

Myiasis caused by New World screwworm (*Cochliomyia hominivorax*)

Since its re-emergence in Central America in 2023, the New World screwworm has spread across several countries of the Americas, affecting livestock, companion animals, wildlife, and humans. An increasing number of human myiasis cases have been reported, particularly among vulnerable populations in rural areas and those with limited access to healthcare. The continued expansion of the parasite highlights the need for integrated One Health surveillance and response systems (73). El Niño conditions during 2026–2027 could influence the epidemiology of screwworm infestation through changes in temperature, rainfall patterns, humidity, and animal management practices. Increased rainfall and flooding may result in more wounds in domestic and wild animals, disruptions to veterinary services, and greater exposure of animals and humans to infestation. In addition, warmer temperatures could favor the survival, reproduction, and geographic expansion of the adult fly into previously unaffected areas. Strengthened surveillance, early case detection, monitoring of fly populations, and coordinated animal and public health interventions will be essential to mitigate potential increases in both animal and human cases during the El Niño period (74).

Accidents by venomous animals

In recent years, growing scientific evidence has shown that climate change and environmental variability, including phenomena such as ENSO, are influencing the distribution, abundance, and interactions between humans and various medically important species, including venomous animals (91). This is partly explained by the fact that many of these species are ectothermic, with their behavior, activity, and reproduction strongly influenced by environmental conditions such as temperature and humidity. In addition, climate change interacts with anthropogenic factors, such as land-use change, urbanization, and socioeconomic conditions, further shaping the dynamics of human-animal encounters and associated health risks (92).

Climate projections indicate that changes in temperature, precipitation, and land use can lead to shifts in the geographic distribution of species, with expansion into new areas or concentration in previously occupied regions. These changes may result in increased risk of envenoming in populations not previously exposed, as well as new challenges for health systems, particularly in contexts where access to antivenoms or clinical experience is limited (91).

In the case of *Tityus* scorpions, widely distributed across the region, their adaptability to urban environments has increased human-scorpion encounters. However, climate change is a key driver of their expansion, as shifts in temperature and precipitation determine areas of climatic suitability. Projections indicate that several medically important species may expand into new regions, including temperate areas where scorpionism has not been historically reported. This process is further facilitated by traits such as synanthropy and parthenogenesis, as well as human-mediated dispersal, potentially increasing the incidence of envenomings, particularly in vulnerable populations (69,93).

Furthermore, extreme climate events associated with El Niño, such as droughts, floods, and heatwaves, can alter natural habitats and drive venomous animals toward human settlements, increasing the likelihood of human contact. These processes may intensify the human-animal interface and modify ecological dynamics, creating conditions conducive to a higher risk of envenoming, particularly in socially vulnerable populations or in settings affected by displacement and limited access to basic services.

In addition, these environmental changes may influence not only the frequency of envenoming events but also their spatial and temporal distribution, underscoring the need to strengthen epidemiological surveillance systems with a forward-looking and climate-sensitive approach. In this context, integrating climatic, environmental, and epidemiological data is essential to anticipate risk scenarios, guide antivenom distribution planning, and adapt prevention and control strategies.

Overall, the available evidence highlights the importance of addressing envenomings within a broader environmental and climate change framework, incorporating comprehensive public health approaches that integrate surveillance, preparedness for extreme events, risk management, and community-based education, particularly in the most vulnerable territories.

Respiratory diseases

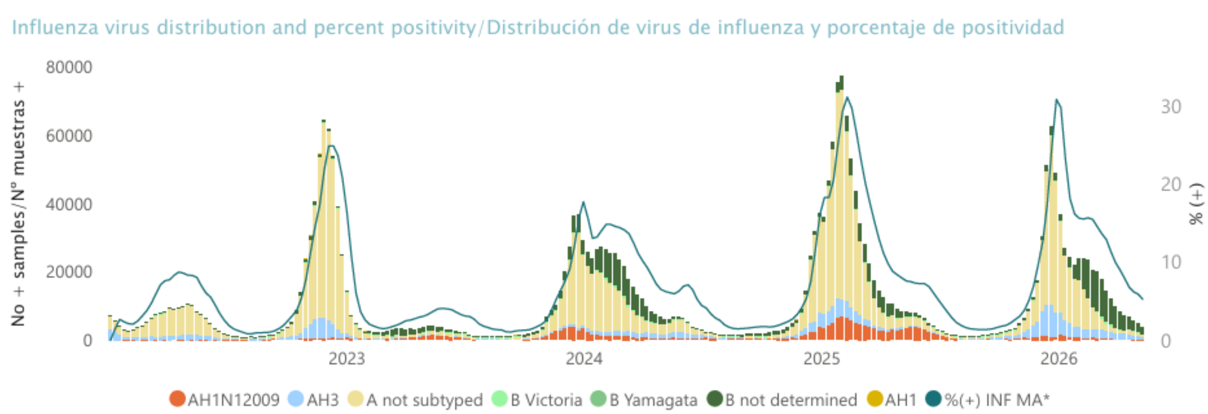
Respiratory health can be an important concern during El Niño-related events, particularly when extreme weather conditions contribute to population displacement, overcrowding, reduced access to care, and worsening air quality.

Periods of drought and high temperatures can increase the likelihood of wildfires and smoke exposure; while flooding and storms may lead to temporary shelters where respiratory viruses can spread more easily. These conditions can increase the burden of acute respiratory infections and exacerbate chronic respiratory diseases, especially among children, older adults, pregnant women, people with asthma, chronic obstructive pulmonary disease or other chronic conditions, and populations with limited access to timely health services (7,9,61).

Wildfire smoke and related air pollution are an important respiratory risk during prolonged dry periods. Smoke can travel long distances and increase exposure to fine particulate matter, contributing to respiratory and cardiovascular problems even in areas far from active fires (62). This is particularly relevant for the Americas, where El Niño-related drought conditions contributed to severe wildfire activity in South America in 2024, especially in the Amazon and Pantanal regions (62). Recent studies from Brazil have also associated prolonged wildfire seasons and higher pollutant concentrations with increased hospitalizations among vulnerable groups, including children and older adults, as well as higher risks of respiratory and cardiovascular admissions following wildfire exposure in the Pantanal (94).

As of epidemiological week (EW) 19 of 2026, respiratory virus activity in the Region of the Americas reflected the seasonal transition between hemispheres, with an increasingly marked divergence between subregions. In North America, the Caribbean, and Central America, influenza positivity continued to decline from the 2025–2026 seasonal wave, reaching low levels close to the interseasonal baseline. In contrast, Brazil and the Southern Cone showed increasing activity consistent with the start of the austral winter season, led by Argentina. The Andean Subregion presented a mixed pattern, with an aggregate decline in influenza but variable trends between countries, while respiratory syncytial virus (RSV) cases continued to rise. Influenza B remained predominant at the end of the Northern Hemisphere season, whereas influenza A, mainly A(H3N2), predominated in Southern Hemisphere subregions (***Figure 14***). RSV showed opposite patterns by hemisphere, declining in North America but increasing in the Andean Region, Brazil, and the Southern Cone. SARS-CoV-2 activity remained low or declining across all subregions, with no evidence of resurgence. Overall, severe acute respiratory infection (SARI) and influenza-like illness (ILI) indicators decreased in the Northern Hemisphere, while early increases were observed in the Southern Cone (95).

Figure 5. Influenza virus distribution and percent positivity



Source: *Pan American Health Organization / World Health Organization. Regional Update, Influenza and Other Respiratory Viruses. Epidemiological Week 19 (22 May 2026). Washington D.C.: PAHO/WHO; 2026. Available from:*

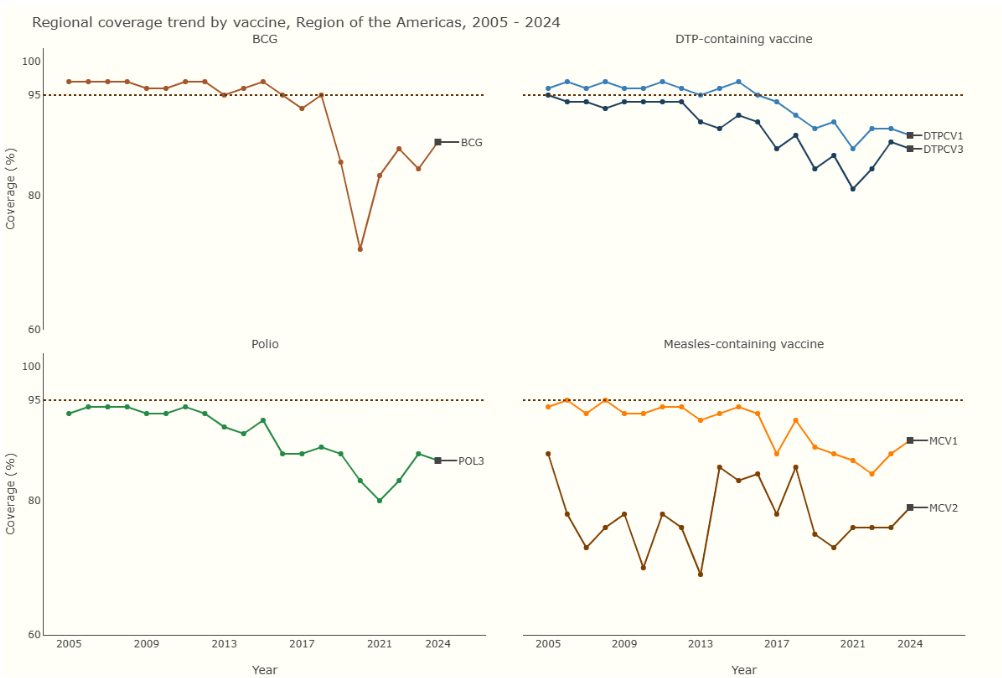
https://www.paho.org/en/documents/regional-update-influenza-and-other-respiratory-viruses-epidemiological-week-19-22-may *(95).*

Vaccine-preventable diseases

El Niño-related hazards may indirectly increase the risk of vaccine-preventable diseases in the Region of the Americas where drought, flooding, displacement, overcrowding, disruption of health services, or reduced access to routine vaccination affect population immunity and outbreak detection.

Regional coverage for several vaccines remains below the 95% target needed to sustain high levels of population protection, particularly for highly transmissible diseases. After relatively high and stable coverage in the mid-2000s and early 2010s, most indicators declined over the last decade, with a marked drop around 2020–2021 and only partial recovery by 2024 (***Figure 15***). In 2024, coverage remained below the 95% threshold for BCG (88%), Polio 3 (86%), DTPCV1 (89%), DTPCV3 (87%), MCV1 (89%), and especially MCV2 (79%) (***Figure 15***) (60).

Figure 6. Regional coverage trend by vaccine, Region of the Americas, 2005-2024



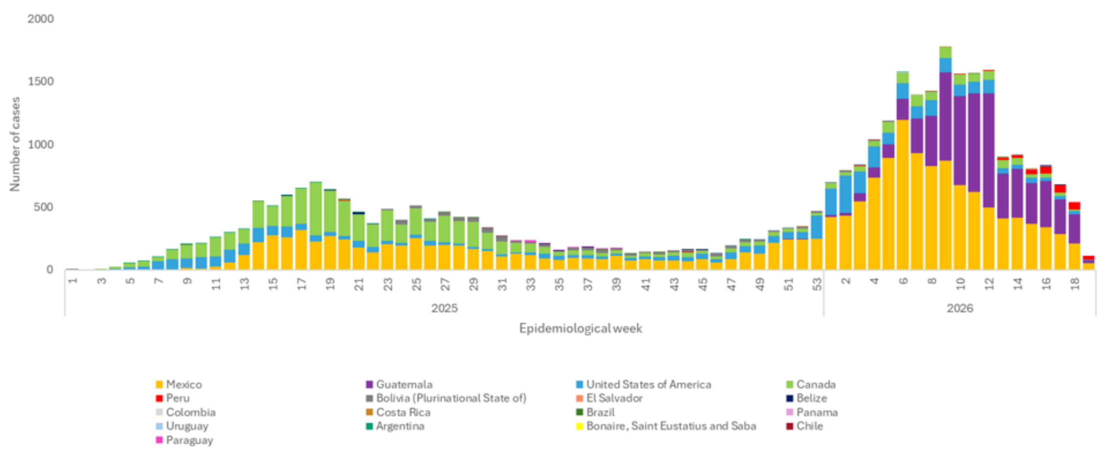
Source: *Pan American Health Organization / World Health Organization. Routine Immunization Dashboard. Immunization coverage throughout the life course in the Americas. Washington D.C.: PAHO/WHO; 2026. [cited on 5 June 2026] Available from:* https://paho-cim.shinyapps.io/immunization-dashboard/ *(60).*

Measles

The Region of the Americas is currently experiencing a regional increase in measles cases, underscoring the risk posed by persistent immunity gaps and suboptimal vaccination coverage (***Figure 16***) (46). Measles is a priority vaccine-preventable disease for monitoring in the context of El Niño-related vulnerabilities because of its high transmissibility and potential for rapid spread where vaccination coverage is below recommended levels. Between EW 1 and EW 19 of 2026, the Region reported 20,332 confirmed measles cases from 16 countries and territories, including 25 deaths, representing a marked increase compared with the same period in 2025 (75).

Concurrent dengue or other arboviral transmission may complicate early detection of measles or rubella because of overlapping clinical manifestations such as fever and rash. The Panamerican Health Organization (PAHO) recommends strengthening measles and rubella surveillance, including active case finding in health facilities, communities, and laboratories, and testing dengue-negative cases with fever and rash for measles and rubella in silent areas (46). Delays in the notification of suspected measles and rubella cases can trigger delays in the implementation of a rapid response, enabling expansion of virus transmission.

Figure 16. Measles cases in the Region of the Americas, by Epidemiological week 2025-2026



Source: *Pan American Health Organization / World Health Organization. Situation Report #3: Measles in the Americas Region. 21 May 2026. Washington D.C.: PAHO/WHO; 2026. Available from: https://www.paho.org/en/documents/situation-report-3-measles-americas-region-21-may-2026 (75).*

Biotoxins: fish and shellfish poisoning

Higher temperatures, changes in rainfall patterns, drought, and nutrient concentration in water bodies may increase the risk of harmful algal and cyanobacterial blooms in marine, coastal, and freshwater ecosystems. These blooms are caused by rapid proliferation of dinoflagellates, diatoms, and blue-green algae, some of which produce potent toxins. In the marine settings, planktonic biotoxins can accumulate in shellfish and fish, causing paralytic, diarrheal, and amnesic shellfish poisoning, as well as ciguatera fish poisoning (70). Ciguatera is the most frequent cause of human illness caused by ingestion of marine toxins and is an important health problem in the parts of the Caribbean and Pacific Islands, where reef fish are an important food source. The risk of ciguatera fish poisoning has been found to increase during El Niño in some Pacific Islands (72,96).

There is evidence that the occurrence and distribution of harmful coastal algal blooms may be influenced by El Niño-related oceanographic conditions. Species such as *Prorocentrum lima* and *Prorocentrum hoffmannianum* (associated with diarrheal shellfish poisoning), *Ostreopsis spp*. (associated with irritant aerosols) and *Gambierdiscus spp*. (associated with ciguatera) may increase under warmer conditions (97,98). However, bloom occurrence is multifactorial, and environmental pollution is a major factor in the observed increase in the occurrence of blooms in recent years.

In freshwater systems, drought and reduced river flow can concentrate nutrients and toxins, while higher water temperatures may favor cyanobacterial proliferation, particularly in isolated riverbeds, lakes, and slow-moving waters. Recent evidence from the Brazilian Legal Amazon has documented cyanobacterial blooms and cyanotoxins in Amazonian aquatic environments, reinforcing the need for monitoring during drought and heat events (71). Indigenous, riverine, and fishing-dependent populations in the Amazon are particularly vulnerable, given their reliance on rivers for drinking water, food, transport, and livelihoods. Impacts on fish and other aquatic species may also affect food security, fisheries, and local economies.

Heat stress

Heat stress and deteriorated air quality are important health risks associated with El Niño in the Region of the Americas. El Niño conditions can increase the likelihood of heatwaves, drought, and wildfires, particularly in Central America and northern South America, with direct and indirect effects on health (99). These risks are amplified by long-term climate change: 2024 was confirmed as the warmest year on record globally, and Latin America and the Caribbean experienced severe heat, drought, and wildfire impacts during the 2023–2024 El Niño period (5,100).

Exposure to excessive heat can cause dehydration, heat exhaustion, heatstroke, and premature mortality, and can worsen underlying conditions such as cardiovascular disease, chronic kidney disease, diabetes, respiratory disease, asthma, and mental health conditions. Older people, infants, pregnant women, people who work outdoors and those who are chronically ill, people living in informal or poorly ventilated housing, and Indigenous and remote communities are particularly vulnerable (31). In Central American countries, high temperatures and extreme drought can aggravate the health conditions of agricultural workers, especially due to their effects on chronic kidney disease from non-traditional causes (32).

Maternal and child health

Pregnant women, newborns, and young children are among the groups most vulnerable to climate-related emergencies in the Region of the Americas. Reduced access to safe water, sanitation and hygiene (WASH), disruption of essential health services, food insecurity, population displacement, and increased exposure to heat can worsen maternal, neonatal, and child health outcomes. These risks are compounded by several health threats, including diarrheal diseases, malaria, malnutrition, and heat-related illness, which can have disproportionately severe effects on pregnant women and young children.

In emergency contexts, damage to health infrastructure, interruptions in referral systems, and reduced availability of prenatal, obstetric, neonatal, and child health services can increase the risk of inadequate follow-up during pregnancy, delays in emergency obstetric and neonatal care, and preventable maternal and perinatal complications (63). Regional maternal mortality remains a concern in the Americas, with important disparities between countries and populations, underscoring the need to preserve access to quality maternal, neonatal, and reproductive health services during climate-related emergencies (101).

Recent multi-country evidence also suggests that maternal exposure to El Niño–like conditions during the preconception and prenatal periods may increase the risk of child mortality. A retrospective cohort study in 38 low- and middle-income countries found that high ENSO levels accumulated during the 0–12 months before delivery were associated with increased risks of under-five mortality, with stronger effects observed among rural populations, households using unsafe drinking water sources, and children of mothers with lower levels of education (64). Additionally, researchers have shown that El Niño can result in suboptimal complementary feeding practices, by reducing access to food, and reducing the time mothers can spend with children (65). High levels of heat can have adverse effects on rates of preterm birth, stillbirths, and low birth weight (66).

Direct injuries

Direct injuries due to El Niño may occur due to flooding, flash floods, landslides, storms, and wildfires, including drowning, trauma, burns, and injuries during evacuation or rescue activities. In the Region of the Americas, these risks are generally expected to be localized and event-driven; therefore, the overall public health impact is expected to be low compared with other El Niño-related health threats. However, severe events can generate substantial mortality and injuries where exposure is high, infrastructure is vulnerable, drainage systems are overwhelmed, or communities are located in flood- or landslide-prone areas.

Historically, the 1997-1998 El Niño caused extreme rainfall in coastal Ecuador and Peru, with severe flooding, extensive erosion and mudslides. In northern Peru, Tumbes received up to 16 times its annual average rainfall, disrupting transport, access to health services, housing, livelihoods, and food security (76). More recently, the 2023–2024 El Niño contributed to hydro-meteorological extremes in parts of South America. In Rio Grande do Sul, Brazil, torrential rains and floods in April–May 2024 caused deaths, injuries, displacement, landslides, and major disruption of essential services; official data reported 173 deaths, 38 missing persons, more than 423,000 displaced persons, and 806 injured as of 10 June 2024 (77).

Gender-based violence (GBV)

Gender-based violence (GBV) is a persistent public health and protection concern in the Region of the Americas. Recent Panamerican Health Organization/World Health Organization (PAHO/WHO) estimates indicate that nearly 123 million women and girls aged 15 years and older (approximately one in three) have experienced physical or sexual violence in their lifetime in the Region, with intimate partner violence remaining the most common form of abuse (102).

In the context of El Niño, GBV risks may increase through several indirect pathways, including displacement, overcrowded or poorly protected shelters, reduced access to health and social services, disruption of community protection networks,

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loss of livelihoods, food insecurity, and increased household stress. These risks may be particularly relevant in areas affected by drought, floods, landslides, storms, wildfires, or migration associated with climate-related livelihood losses. Evidence from the broader literature shows that climate shocks and food insecurity can reinforce economic dependence, social stress, and harmful coping mechanisms, including transactional or survival sex, which may increase exposure to sexual exploitation and violence (67).

Recent evidence from Mexico also suggests a measurable relationship between drought and intimate partner violence: local precipitation deficits were associated with increases in related to intimate partner violence (IPV) injuries recorded in the public health system, police reports, and 911 calls (103). In the Caribbean, recent hurricane response experiences have also highlighted the importance of integrating GBV risk mitigation into shelter management, WASH, health, and protection responses, particularly where privacy, lighting, secure spaces, and trained personnel may be limited (104).

Mental health and psychosocial support (MHPSS)

Climate-related shocks associated with El Niño can affect mental health and psychosocial well-being through loss of livelihoods, food insecurity, displacement, flooding, disruption of social networks, uncertainties experienced, and reduced access to health services. These stressors may lead to acute distress, anxiety, grief, sleep problems, harmful substance use, and worsening of pre-existing mental health conditions. Evidence from Piura, Peru, following the 2017 Coastal El Niño flooding documented links between post-traumatic stress symptoms, food insecurity, and reduced social capital among affected mothers, highlighting the potential for sustained psychosocial impacts in vulnerable groups (68).

Extreme heat, which may intensify during El Niño events, is also relevant for mental health risk. During heatwaves, increases have been reported in suicide risk, psychiatric hospitalizations, and mental health-related emergency visits, particularly among people with pre-existing mental health conditions (78).

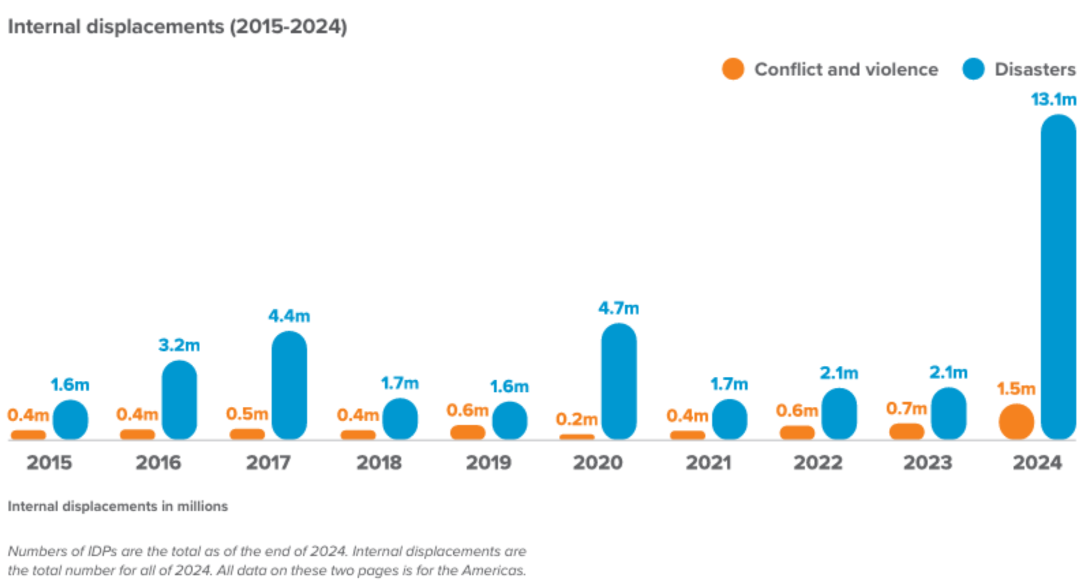
Mental health and psychosocial support (MHPSS) should be prioritized in both the immediate response and longer-term recovery. Preparedness and response plans should distinguish between community-based psychosocial support (focused on safety, connectedness, coping capacities, and access to information) and mental health care for moderate and severe conditions, which requires trained providers, referral pathways, and continuity within national health systems (105,106). A community model of mental health—one that respects local traditions and cultural diversity, while meeting the needs of the most vulnerable groups—should be the platform for all such interventions in emergencies. The objective is to promote and protect the mental health of the population and first-line workers, as well as contribute to recovery of everyday life.

One of the most frequent problems encountered in disaster situations is a health system weak and ill-prepared to face a traumatic event; resources are very limited, primary care has little response capacity, and no mental health component is integrated into the health services network, among other issues. In these conditions, it is indispensable that the response be mobilized from the community itself, strengthening the first line of contact of the health services with the population affected by the disaster and decentralizing the delivery of specialized resources. An appropriate intervention entails improving the mental health component within the framework of comprehensive health services, without medicalizing human suffering, “institutionalizing”, or necessarily depending on specialist intervention. Disasters can become opportunities to strengthen health systems.

Displacement

Droughts, flooding, landslides, wildfires and intense rainfall (including cyclones) associated with El Niño can trigger temporary or longer-term population displacement. Food insecurity, loss of livelihoods, damage to housing and disruption of basic services may also increase mobility, particularly among populations already experiencing humanitarian vulnerability. Recent displacement data highlights the relevance of this risk: in 2024, internal displacements in the Americas reached a record 14.5 million, more than the previous five years combined, and were largely driven by disaster-related movements (***Figure 17***). The United States accounted for the highest number in the Region, with 11 million disaster-related movements (nearly a quarter of the global total) while severe flooding in Rio Grande do Sul, Brazil, was highlighted as a major displacement event in the Region (10).

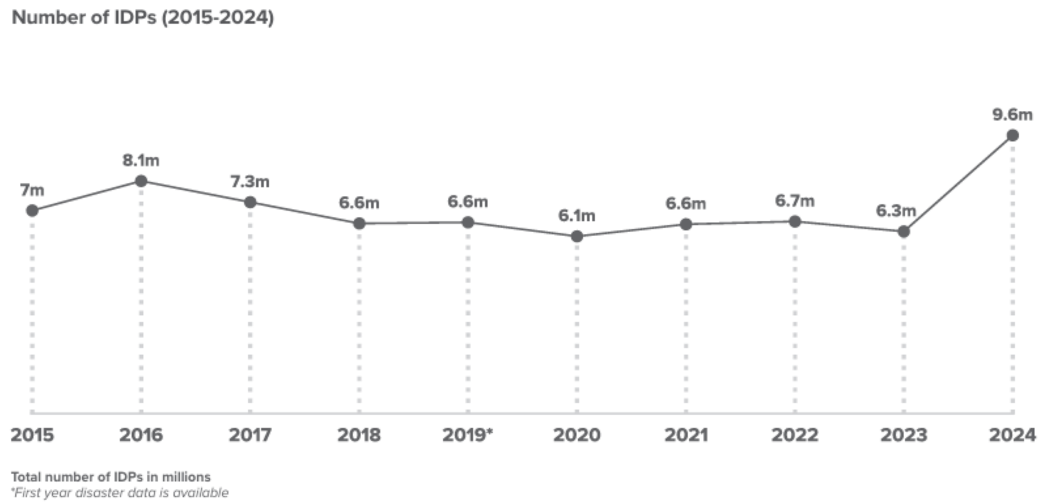
Figure 17. Internal displacements, Region of the Americas (2015-2024)



Source: *Internal Displacement Monitoring Centre. 2025 Global Report on Internal Displacement. Geneva: IDMC; 2025. Available from: https://www.internal-displacement.org/global-report/grid2025/ (10).*

At the end of 2024, the Region also had 9.7 million internally displaced people (IDPs), representing 12% of the global total; most were displaced by conflict and violence, although 103,000 people remained displaced due to disasters (***Figure 18***). Colombia had by far the largest number of IDPs in the Region, followed by Haiti, Guatemala, Mexico and Honduras (10).

Figure 18. Number of Internally Displaced People (IDPs) by year, Region of the Americas



Source: *Internal Displacement Monitoring Centre. 2025 Global Report on Internal Displacement. Geneva: IDMC; 2025. Available from: https://www.internal-displacement.org/global-report/grid2025/ (10).*

Displaced populations, refugees and migrants may face increased health risks before, during and after movement due to overcrowding, unsafe shelter, limited access to safe water, sanitation and hygiene, interrupted health care, food insecurity and protection risks. These conditions can increase the risk of communicable diseases, including measles and food- and waterborne diseases, as well as vector-borne diseases when displaced populations move into areas with suitable vector ecology or when non-immune populations are exposed to endemic transmission areas. In the context of El Niño, these risks may be amplified in flood-prone areas, drought-affected communities, informal settlements, shelters and transit routes.

Health needs among refugees, migrants and internally displaced populations are often broader than acute care. They may include poorly controlled noncommunicable diseases, maternal and neonatal care, sexual and reproductive health services, mental health and psychosocial support, vaccination, nutrition, and services for people with disabilities. PAHO's 2024 Health and Migration situation reporting for the Americas documented migrant health needs related to maternal care, mental health, communicable diseases, chronic diseases, food insecurity and access to health services, underscoring the need for inclusive continuity of care during emergencies (107).

Displacement may also increase protection risks, particularly for women, girls, children, unaccompanied minors, older persons, people with disabilities, Indigenous populations and people in an irregular migration situation. Barriers such as lack of documentation, language, stigma, discrimination, user fees, limited health literacy and exclusion from national health and social protection programs may delay care-seeking and reduce access to prevention and treatment. Recent evidence on climate change, migration and health in Latin America and the Caribbean emphasizes that climate-related mobility can worsen poverty, food and water insecurity, physical and mental health outcomes, and inequities among already vulnerable populations (108).

Assessment of the risk of vaccine-preventable diseases in internally displaced and refugee contexts must take into account vaccination coverage in both the displaced population and the host population, as well as mixing patterns. For example, even if measles vaccination coverage in the receiving host population is above 95% (the threshold required to avoid sustained transmission), suboptimal coverage in the migrant population can dilute the overall population immunity level to below the threshold and allow for an outbreak. If mixing between the migrant and host population is incomplete (which is usually the case), an outbreak can be sustained between members of the migrant population even if the overall population coverage is sufficiently high.

Conflict

Evidence suggests that climate variability, including El Niño, may influence the risk of conflict in some settings, particularly in tropical and climate-sensitive areas; however, this relationship is indirect and strongly shaped by social, economic, political, and security conditions. Historical analyses have found higher probabilities of civil conflict during El Niño years compared with La Niña years, but these findings should be interpreted as indicating a potential risk amplifier rather than a direct causal pathway (109).

El Niño-related weather anomalies, such as prolonged droughts or flooding, can exacerbate existing tensions over resources like water or agricultural land. Although resource-related conflicts can be influenced by climate conditions, they are driven by a combination of social, economic, and political factors.

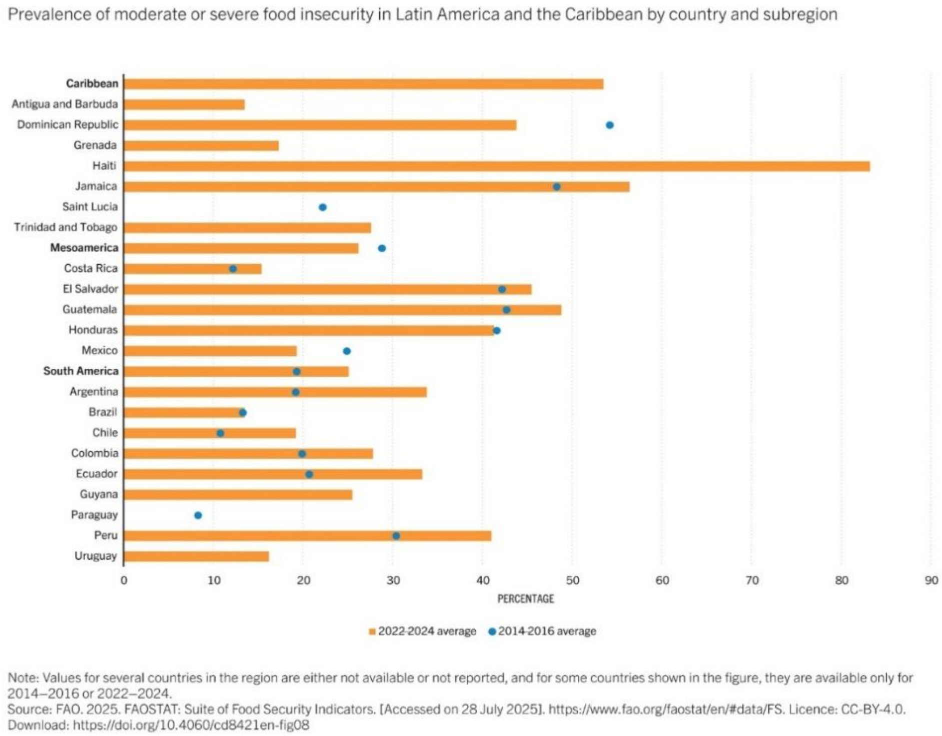
Conflict-affected settings are likely to further exacerbate the negative impact of El Niño on the affected populations, with internally displaced people (IDPs) and refugee populations especially vulnerable to consequences such as malnutrition, infectious diseases, and limited access to health services further exacerbating health impacts of non- communicable diseases. In countries such as Haiti and Colombia, where insecurity, armed violence, displacement, access constraints, and humanitarian needs already affect large populations, climate-related shocks may further disrupt health services, surveillance, vaccination, WASH, food systems, and humanitarian access (110,111).

Food insecurity

Food insecurity in the Region of the Americas is shaped by structural vulnerabilities such as poverty, reliance on climate-sensitive livelihoods, food import dependence, recurrent climate shocks, and rising living costs. El Niño-related drought and flooding can further reduce agricultural production, disrupt livelihoods and markets, increase food prices, limit water availability, and contribute to displacement. These impacts vary across the Region: drought and water shortages are particularly relevant for the Central American Dry Corridor and parts of South America, while heavy rainfall and flooding may affect coastal and low-lying areas, including parts of Ecuador and Peru. During the 2023–2024 El Niño, these conditions contributed to crop-loss risk, food insecurity, and economic hardship, especially among agriculture-dependent communities (19).

Baseline vulnerability remains substantial across Latin America and the Caribbean. Recent United Nations (UN) report indicates that, despite regional improvements, more than 33 million people in the region still face hunger, 167 million experience food insecurity, and 181.9 million cannot afford a healthy diet. The Caribbean recorded the highest level of moderate or severe food insecurity among the subregions in 2024, estimated at 53.5%, compared with 26.2% in Mesoamerica and 25.1% in South America, according to 2025 regional statistics and trends. At the country level, the latest available data show particularly high levels in Haiti, Jamaica, Guatemala, and El Salvador among others (***Figure 19***) (20).

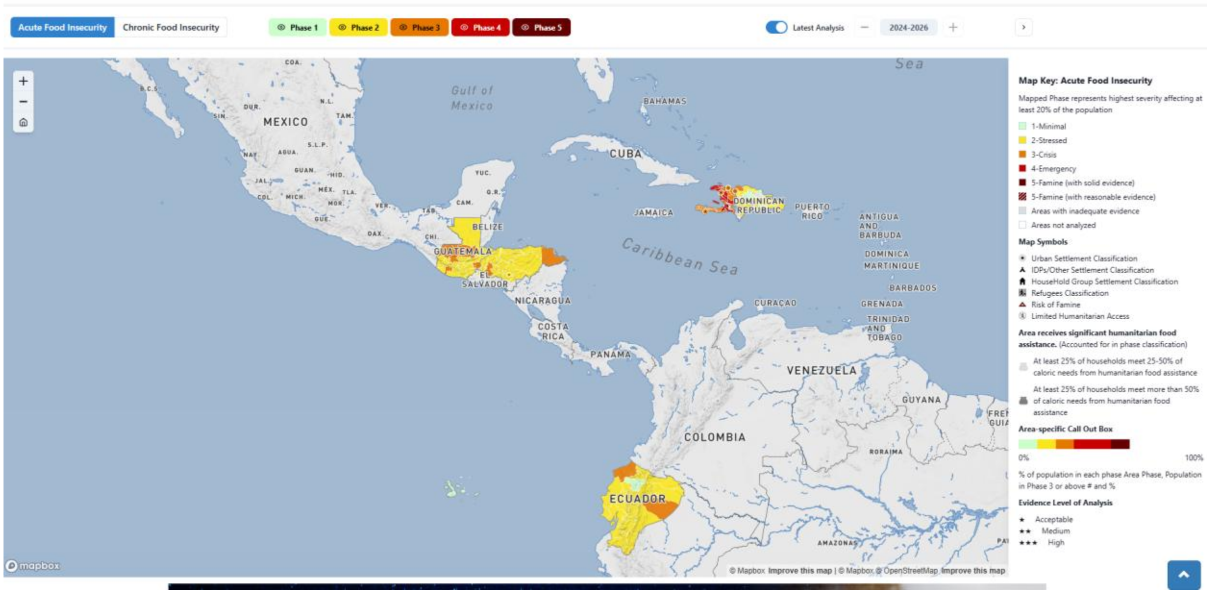
Figure 19. Prevalence of moderate or severe food insecurity in Latin America and the Caribbean by country and subregion



Source: *Food and Agriculture Organization of the United Nations. Latin America and The Caribbean Regional Overview of Food Security and Nutrition. Rome: FAO; 2026. Available from: https://openknowledge.fao.org/server/api/core/bitstreams/bbb03b9c-c34c-48cb-b993-1db491e92a69/content/cd8421en.html (20).*

The map below highlights areas of acute food insecurity in the Americas according to the Integrated Food Security Phase Classification (IPC) scale. In the latest available analyses, areas classified as Crisis or worse acute food insecurity are visible in parts of Central America, Ecuador, and Haiti, among others (***Figure 20***). However, interpretation should consider that IPC coverage is not uniform across all countries and territories; some areas have not been analyzed or may have insufficient evidence. Therefore, the map should be interpreted as an indication of currently analyzed food insecurity hotspots, rather than as a complete regional assessment (112).

Figure 20. Acute Food Insecurity, Central America, The Caribbean, and Northern South America



Source: *Integrated Food Security Phase Classification. IPC Mapping Tool. Rome: IPC; 2026. [cited 5 June 2026]. Available from: https://www.ipcinfo.org/ (112).*

Water, sanitation, and hygiene (WASH)

Droughts, flooding and intense rainfall may significantly contaminate water resources, restrict access to safe water, sanitation and hygiene (WASH) services, and disrupt infrastructure. Damaged or flooded water supply and sanitation systems may increase the risk of waterborne diseases, including through compromised hygiene practices when sufficient water is not available. Some of these threats can be anticipated and mitigated through emergency preparedness and contingency measures, such as reservoir management, emergency water treatment, water-quality monitoring, safe water distribution, and vector-control measures to reduce water-related diseases and arbovirus transmission risks. Dry conditions may also reduce water availability and have similar effects, particularly in areas that depend on rivers, wells, or intermittent water supply systems. In the Americas, this is especially relevant for drought-prone areas such as the Amazon Basin, the Central American Dry Corridor, and parts of Bolivia, Colombia, the Caribbean, Ecuador and Peru as well as flood-prone areas, including coastal and low-lying zones of Ecuador and Peru, parts of Central America and the Caribbean, and riverine communities in the Amazon Basin and other major watersheds, where climate-related shocks may further strain already vulnerable WASH systems (19).

In the Region of the Americas, overall access to at least basic drinking water is relatively high, but important gaps remain in safely managed services, continuity, quality, and access on premises. The most recent Joint Monitoring Programme (JMP) of the WHO/UNICEF estimates highlight persistent inequalities by geography, income, rural/urban residence, and population group, with Indigenous, remote, displaced and informal urban populations often facing greater barriers to reliable and safe WASH services (113,114).

The Amazon Basin is a priority area for WASH monitoring during El Niño-related drought. During the 2023 drought in Brazil's Amazonas state, reduced river and well levels affected water availability, water pumps stopped functioning in some areas, water quality deteriorated due to high turbidity, and several Indigenous communities became isolated. UNICEF reported that at least 25 water systems in Indigenous lands had stopped functioning and that communities were forced to travel long distances to find alternative water sources; increases in acute diarrheal disease were also reported in affected areas (115).

Lack of access to safe water, public drinking-water supply as a result of water scarcity or shortages, is likely to increase the consumption of single-use bottled water. The restriction of access to fresh food due to drought increases the consumption of packaged food, which leads to an increase in the consumption of packaging that increases the generation of waste.

Multidimensional poverty and vulnerability

Pre-existing poverty and socioeconomic inequalities make vulnerable communities more susceptible to the impacts of El Niño. Limited access to resources, education, healthcare, and social safety nets can deepen the humanitarian crisis and prolong recovery efforts (6).

In the Americas, this is especially relevant given the overlap between climate exposure and persistent structural inequalities. Recent Economic Commission for Latin America and the Caribbean (ECLAC) data estimate that multidimensional poverty affects 27.4% of the population in Latin America and the Caribbean, with substantial differences between countries (116). Climate-related events may further exacerbate these vulnerabilities: recent World Bank analyses show that natural hazards such as droughts, floods, landslides and cyclones can increase the risk of poverty or deepen poverty among already vulnerable households in the region (117).

Where available, multidimensional poverty indices can be used to prioritize planning for the impact of El Niño at a sub-national level and to feed into the development of risk communication and communications strategies and plans (118).

HEALTH SYSTEM STATUS AND DISRUPTIONS

Droughts, flooding, and intense rainfall may damage or disrupt health facilities, reducing the availability of essential health services and restricting access to healthcare during and after climate-related emergencies. During the 1997-98 El Niño event, central Ecuador and Peru experienced exceptionally heavy rainfall, flooding, erosion, and landslides, contributing to significant damage to health infrastructure. Similar impacts may occur in vulnerable coastal, flood-prone, and drought-affected areas during future El Niño events. Drought conditions may also affect the availability of water required for the operation of health facilities, while flooding and storm-related damage can impair access to healthcare through disruptions to roads, bridges, and other critical infrastructure.

Climate-related hazards may also affect transportation networks, water and sanitation systems, electricity supply, supply chains, and communications infrastructure, with cascading impacts on healthcare delivery and emergency response capacity. For people living with noncommunicable diseases (NCDs), disruptions to health services and supply chains can be particularly serious, as continuous access to routine care, essential medicines, and treatment supplies is often life-saving. This includes, for example, people with diabetes who require uninterrupted access to insulin, as well as individuals receiving chemotherapy or other prescription medicines, for whom prolonged interruptions in care may result in severe health consequences. Maintaining continuity of care through alternative service delivery mechanisms, such as telehealth, mobile outreach, prescription refills, and decentralized distribution of essential medicines, is therefore critical during climate-related emergencies.

Displacement of affected populations may further increase demand for health services while simultaneously reducing access to care. Remote, rural, coastal, and island communities may face particular challenges in maintaining access to healthcare during climate-related emergencies.

The ultimate impact of El Niño on health can be characterized according to the intersection of the likelihood of its severe effects (as per the risk tables above) versus the consequences in the underlying context, meaning the vulnerabilities and capacities of local populations and health services. The affected countries can be grouped into four broad categories of vulnerability, using the INFORM Risk Index to characterize the context (***Table 4***) (119,120). The INFORM Risk index provides an indication of generalized risk of crisis occurring in a country based on structural conditions, and is informed by a collaboration between UN agencies, donors, NGOs, and research institutions. Countries are encouraged to conduct further sub-national assessments for operational planning purposes.

Table 4. Countries grouped by INFORM Risk Class 2026

Very High INFORM	Haiti
High INFORM	Guatemala, Honduras, Ecuador, Venezuela (Bolivarian Republic of)
Medium INFORM	Argentina, Belize, Bolivia (Plurinational State of), Brazil, Colombia, Costa Rica, Dominican Republic, El Salvador, Guyana, Jamaica, Mexico, Nicaragua, Panama, Peru
Low or Very Low INFORM	Antigua and Barbuda, Bahamas, Barbados, Canada, Cuba, Dominica, Paraguay, Chile, Grenada, Trinidad and Tobago, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, United States of America, Uruguay

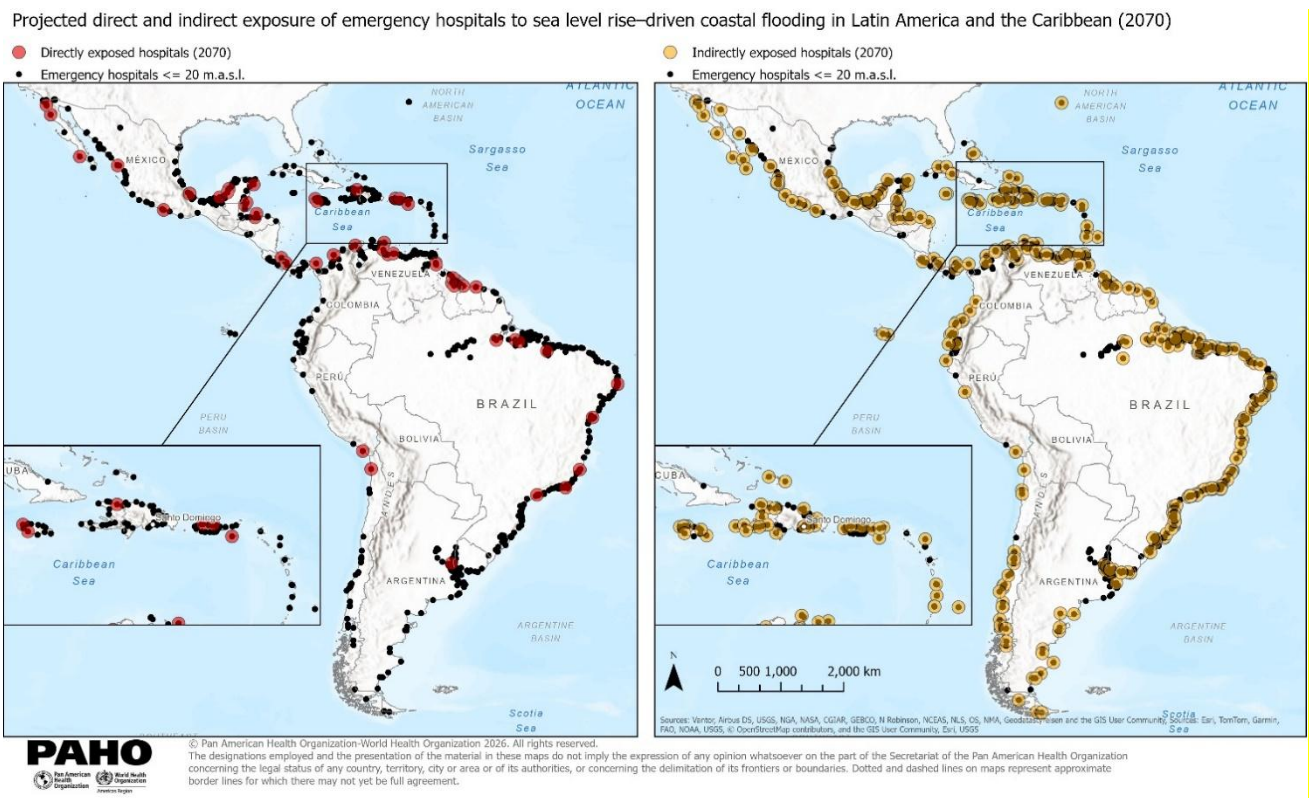
Source: *The European Commission Disaster Risk Management Knowledge Centre. INFORM. Risk Facts & Figures. Brussels: European Commission; 2026. [cited 8 June 2026]. Available from: https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk/Risk-Facts-Figures (119).*

Exposure of emergency hospitals to sea level rise–driven coastal flooding in the Americas

Health facilities located in low-lying coastal areas face increasing risks from coastal flooding associated with sea level rise. During El Niño events, elevated sea levels, extreme rainfall, and storm-related impacts may further increase flooding risks in vulnerable coastal areas.

To better understand these risks, PAHO conducted a preliminary spatial analysis of emergency hospitals exposed to projected sea level rise–driven coastal flooding in the Americas using Climate Central sea level rise projections. Preliminary results indicate that approximately 756 emergency hospitals may be exposed to direct or indirect coastal flooding under at least one future sea level rise scenario between 2020 and 2070 (***Figure 21***) (121). Exposure is concentrated in coastal and island settings, particularly in the Caribbean and Atlantic Ocean Islands, where health facilities may face increasing challenges related to flooding, access disruptions, and continuity of care. While sea level rise is a long-term climate hazard rather than a direct consequence of El Niño, these findings highlight the importance of strengthening climate-resilient health systems and integrating coastal flood risk into health emergency preparedness and continuity planning.

Figure 7. Projected direct and indirect exposure of emergency hospitals to sea level rise-driven coastal flooding in Latin America and the Caribbean (2070) *Exposure type determined by proximity to sea level rise extent*



Source: *Pan American Health Organization. Preliminary analysis of projected exposure of emergency hospitals to sea level rise–driven coastal flooding in the Americas, 2026. Washington D.C.: PAHO; 2026. Unpublished. (121)*
Note: Results are preliminary and subject to revision as the analysis undergoes validation and review.

HEALTH RESPONSE

Health response actions for El Niño should be guided by the expected local impacts, including drought, flooding, heatwaves, wildfires, storms, displacement, disruption of services and increased demand for care. Preparedness and response measures should prioritize early detection of health risks, continuity of essential services, protection of vulnerable populations, and coordination across health and non-health sectors.

Priority health response areas

The key response areas for mitigating the health effects of El Niño are:

- Disease surveillance and control
- Safe water and sanitation services
- Risk communication and community engagement, preparedness communications, health and hygiene promotion focused on the behaviours to adapt during flooding, drought, etc.
- Emergency health supplies
- Vaccination
- Prevention of sexual exploitation and abuse
- Continued access to health care, including measures to ensure continuity of care for people living with NCDs, access to essential medicines and treatment supplies, and alternative service delivery mechanisms during disruptions, such as telehealth, mobile outreach, prescription refills, and decentralized distribution of medicines
- Training of health providers on continuity of NCD care
- Response to GBV
- Maintaining essential health services during climate-related emergencies

Health facility preparedness and continuity of operations during natural disasters

Health facilities should review their preparedness and operational continuity arrangements, particularly in areas exposed to floods, heavy rainfall, storms, heat, drought or other hydrometeorological hazards. PAHO's document *Recomendaciones para fortalecer la seguridad no estructural de los establecimientos de salud ante los fenómenos hidrometeorológicos extremos* provides practical recommendations to reduce non-structural risks in health facilities, protect equipment and critical supplies, maintain lifelines such as water, electricity and communications, and support safe and continuous operation during extreme weather events. Further recommendations for strengthening health facility preparedness and non-structural safety can be found in this document: https://iris.paho.org/items/0e8f1e53-fd0c-441c-adaf-dd5d249339cd (122).

Preparedness for heatwaves and heat-related illness

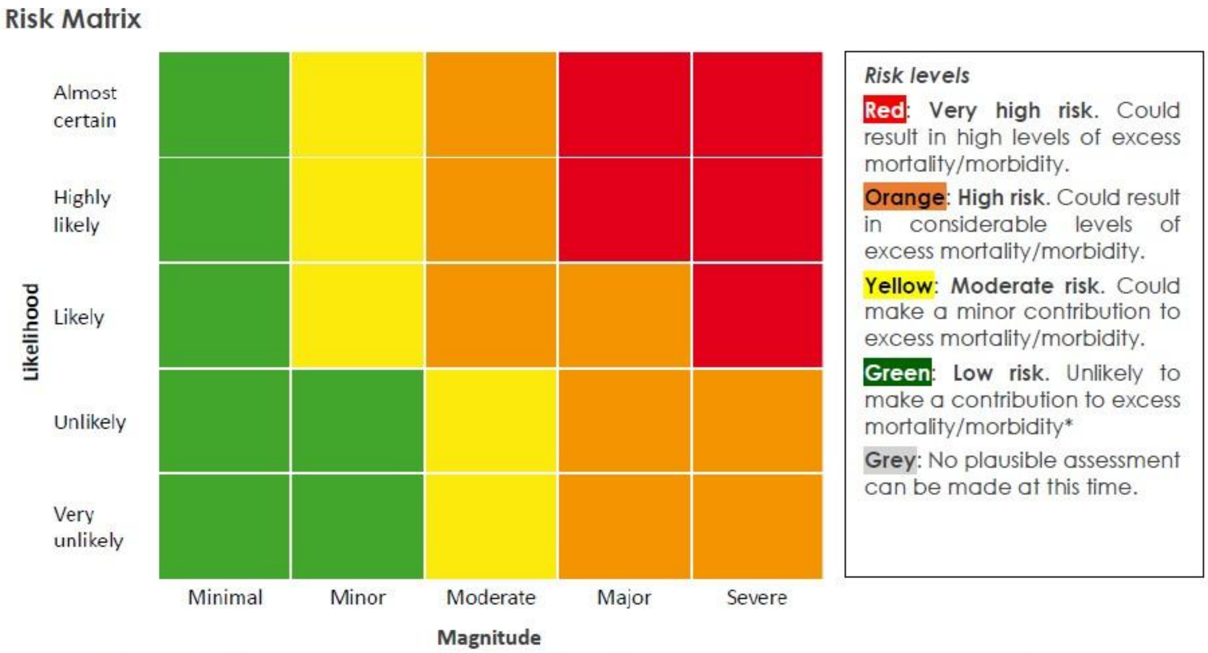
In areas where El Niño may increase temperatures or contribute to heatwaves, health response actions should also include preparedness for heat-related illness, particularly in urban settings. This includes strengthening early warning and coordination mechanisms, identifying vulnerable populations, adapting health services for increased demand during heat events, ensuring risk communication on heat protection behaviors, and promoting measures to reduce exposure in homes, workplaces, schools, health facilities and public spaces. PAHO's document *Gestión del riesgo de emergencias de salud y desastres originados por olas de calor. Orientaciones para contextos urbanos* provides practical guidance for managing health emergencies and disaster risks associated with heatwaves, covering risk assessment, risk reduction, preparedness, response and recovery actions in urban contexts. Further recommendations for heatwave preparedness and response can be found in this document: https://iris.paho.org/items/7af1f040-a293-440c-8521-f1696a64811a (123).

Preparedness for wildfires and smoke exposure

In areas where El Niño may increase the risk of drought, heat and wildfires, health authorities should strengthen operational readiness for wildfire-related health impacts. This includes preparedness for smoke exposure and respiratory illness, burn injuries, disruption of health services, displacement, protection of vulnerable populations, emergency referral pathways, occupational safety for responders, and risk communication on reducing exposure to smoke and heat. PAHO's *Lista de verificación de alistamiento operativo del sector salud para responder a incendios forestales* provides a practical checklist to assess and strengthen health sector preparedness and response capacities before, during and after wildfire events. Further recommendations for health sector wildfire readiness can be found in this document: https://iris.paho.org/items/f3acbf37-a904-4a38-b6c1-188c2871bc32 (124).

Appendix 1. Risk Assessment Methodology

Figure 22. Risk matrix for assessing the likelihood and potential magnitude of health impact

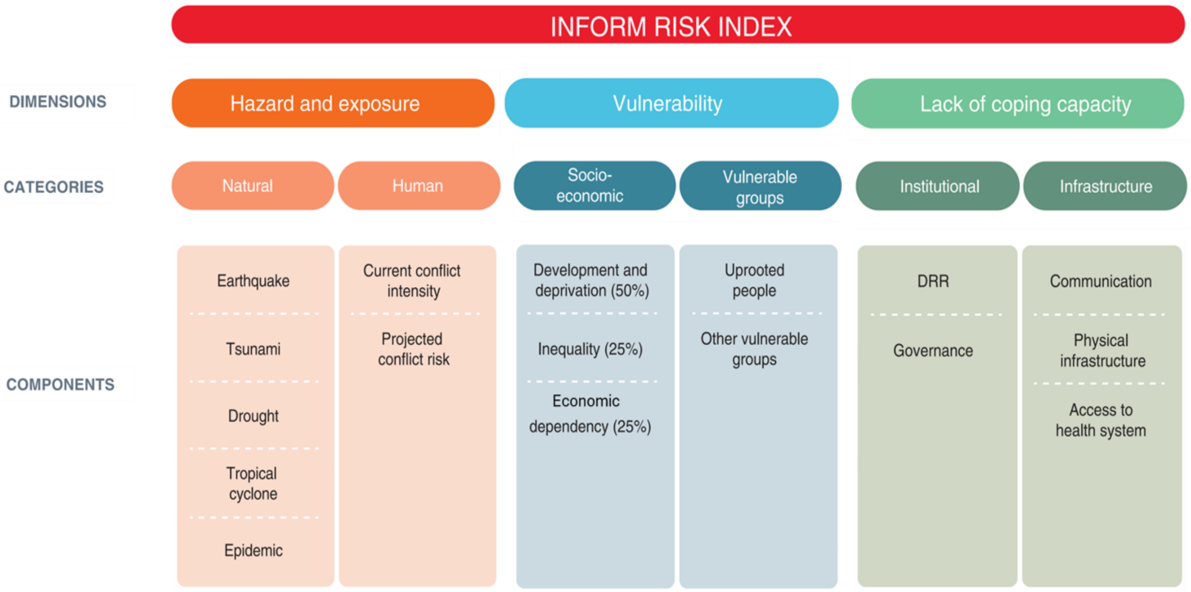


Likelihood**	Magnitude	Risk
What is the likelihood that there will be an outbreak or substantial increase in the number of cases/issues*** in the coming three months?	What is the potential magnitude of the impact of an outbreak or substantial increase in the number of cases/issues on the population?	Considering the likelihood and magnitude of the impact, what is the risk in terms of excess morbidity/mortality to the population over the next three months?

Source: *World Health Organization. Public Health Information Services. Geneva: WHO; 2018. [cited 8 June 2026]. Available from: https://healthcluster.who.int/publications/m/item/public-health-situation-analysis-standard-operating-procedures (125).*

Appendix 2. INFORM Index methodology

Figure 23. Inform Risk Index matrix



Source: *The European Commission Disaster Risk Management Knowledge Centre. INFORM. Methodology. Brussels: European Commission; 2026. [cited 8 June 2026]. Available from: https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk/Methodology (126).*

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