

# Report on the Situation of Malaria in the Americas, 2000-2015<sup>1</sup>



**Pan American  
Health  
Organization**



**World Health  
Organization**

REGIONAL OFFICE FOR THE **Americas**

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<sup>1</sup> Document prepared by the Regional Malaria Program, Pan American Health Organization with data from Annual Country Reports- 2016

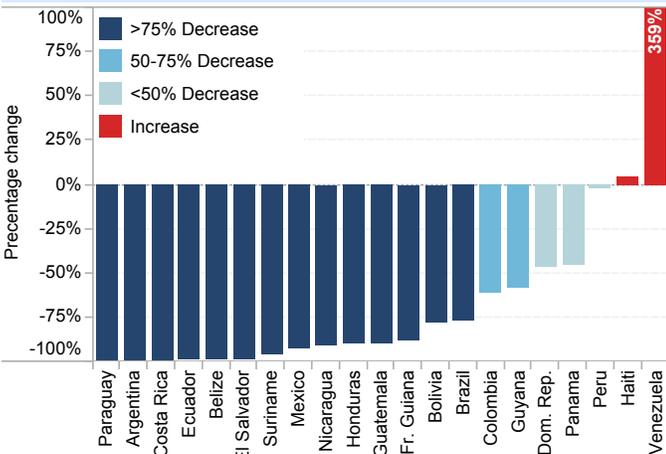
### General situation in endemic countries

The number of malaria cases in the Region of the Americas declined by 62% (1,181,095 to 451,242 cases) between 2000 and 2015 (figure 1). In the same period malaria-related deaths has declined by 61.2% (410 in 2000 to 159 deaths in 2015). An estimated 7.2 million cases and 3,200 deaths were averted between 2000 and 2015, assuming that the rates from 2000 remained constant. Despite many achievements, there are still an estimated 102 million people living in areas at risk of malaria in the Americas of which, at least 28 million were living in areas considered to be at high risk (>10 cases/1,000 inhabitants).

With the exception of Haiti and Venezuela, most of the 21 endemic countries in the Americas have had a reduction of malaria cases till 2015 compared to 2000 (figure 2). Notable changes in cases during the 2010-2015 period include a decrease in Haiti and increases in Panama, Peru, Nicaragua, and Venezuela. Panama has had a 34% increase in cases during 2010-2015 with the majority of cases in the indigenous populations living in conditions of vulnerability. In Peru and Venezuela, cases have doubled and tripled, respectively during 2010-2015. The areas of concern in both these countries are within the Amazon forest that spans across many countries in South America.

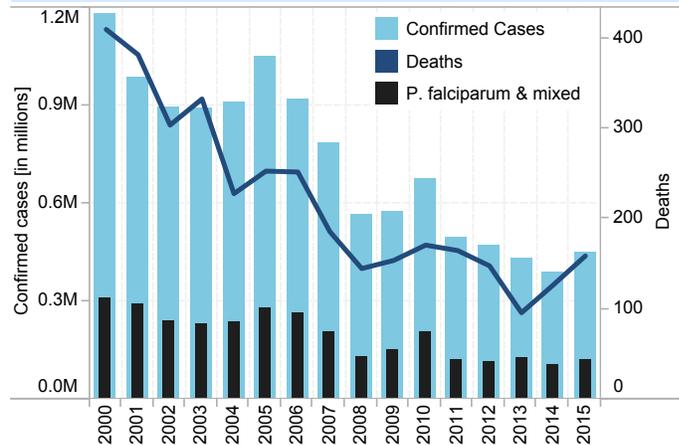
In 2015, cases of malaria increased in Colombia, Dominican Republic, Ecuador, Guatemala, Honduras, Nicaragua, Peru, and Venezuela as compared to 2014. In Colombia, malaria transmission continues to be high in the department of Choco. Cases increased during 2014 and 2015 and accounted for 53% of all cases in the country. The Global Fund grant came to an end in 2014 and thereafter there has been a decline in interventions in the state, including decreased diagnostic posts and vector control interventions. The Dominican Republic had a 33% increase in cases between 2014 and 2015, mostly due to a local outbreak in the Santo Domingo. The increase in cases in Ecuador may be related to the reorganization of the national malaria program leading to decline in attention to case management and preventive interventions while functions were being transferred. Furthermore, case increases in localities of the Ecuadorian Pacific coast may also be affected by the El Niño Southern Oscillation phenomenon associated with malaria epidemics occurring every few years (figure 4). In Guatemala, 67% of cases in 2015 were reported in the department of Escuintla where many people work in farms. People migrate to this area for work seasonally which causes reintroduction of cases in other areas within the country or neighbouring countries as workers return home following the harvest season. The Escuintla department reported the highest amount of cases in the entire Mesoamerican sub-region. Honduras also had a small increase of cases in 2015 due to a focal outbreak related to economic activity (harvesting of jellyfish) on the Atlantic coast in the Moskitia area. In 2015, the number of cases doubled in Nicaragua compared to 2014 (from 1,163 to 2,307 cases). Cases continue to be high in the Moskitia area due to changes in economic activity increasing occupational risk, especially in those working on recently developed palm and cocoa plantations in the area. Social disturbance due to land ownership has been another reason for the increase. In Peru, 96% of cases in the country were reported from the state (region) of Loreto. Located in the Amazon basin, Loreto is the largest and the least populated state of

**Figure 2. Decrease in malaria morbidity by countries of the Americas, 2000 - 2015**



\* Fr. Guiana - French Guiana, \*\* Dom. Rep. - Dominican Republic

**Figure 1. Malaria morbidity and mortality in the Americas, 2000 - 2015**

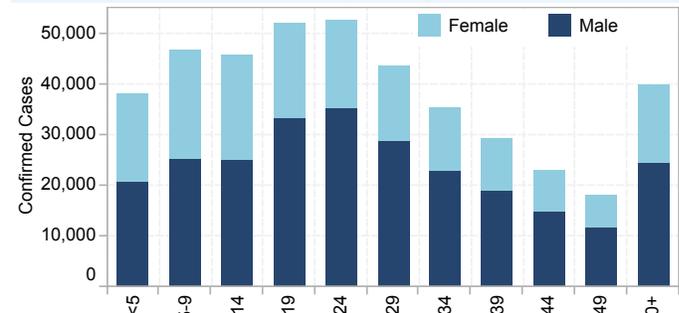


Peru that has had high rates of malaria in the past few years largely due to decline in access to diagnosis and treatment, and diminished vector control interventions. In Venezuela, cases have increased annually since 2008. Between 2014 and 2015, cases increased by 50% from 90,708 to 136,402. If this trend continues, Venezuela could report the most cases in the Americas by 2016. The country has reported more cases in 2015 than in any of the previous 50 years. The situation is worsening mainly due to social and economic conditions, increased mining activities, and decreased vector control interventions, especially in Sifontes municipality of the Bolívar state.

On the other hand, zero cases were reported in Argentina, Paraguay, and Costa Rica in 2015 (table 2). Argentina has officially requested WHO to initiate the process of certification of elimination. Seven other countries in the Americas (Belize, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay and Suriname) have the potential to eliminate malaria by 2020 according to a WHO analysis presented in the report "Eliminating malaria" released in 2016 (E2020). Belize reported 13 confirmed cases, of which 4 were imported from Guatemala, Mexico and Nicaragua and had 10 active foci. Six of the nine cases in El Salvador were reported imported from Guatemala in 2015. Malaria transmission continues to be limited a few foci in the north of the country bordering Guatemala. Transmission in Mexico is limited to a few foci in two areas of the country - southern states bordering Belize and Guatemala and in the north in Sinaloa and adjoining states. More than half of the cases in Suriname have been reported imported since 2013. Although French Guiana, France reportedly has declined malaria cases, the number of cases reported imported in neighbouring countries of Suriname (273) and Brazil (29) from that territory are higher than the number of indigenous cases reported in French Guiana itself.

*Plasmodium vivax* is the main malaria-causing species in the Americas (72% of cases in 2015). Belize, El Salvador, Mexico, and Panama report cases almost exclusively caused by *P. vivax* while cases in Haiti and the Dominican Republic are almost exclusively caused by *P. falciparum*. *Plasmodium malariae* is also prevalent in the Americas, though accounts for less than 0.1% of all cases. Under-diagnosis of this species is common and the prevalence could be higher.

**Figure 3. Malaria by age group and sex, 2015**



\* Data not available for Haiti and Venezuela. Information for Guatemala and Nicaragua available according to age groups different from those used here.

**Table 1. Malaria in countries in the Region of the Americas, 2013 - 2015**

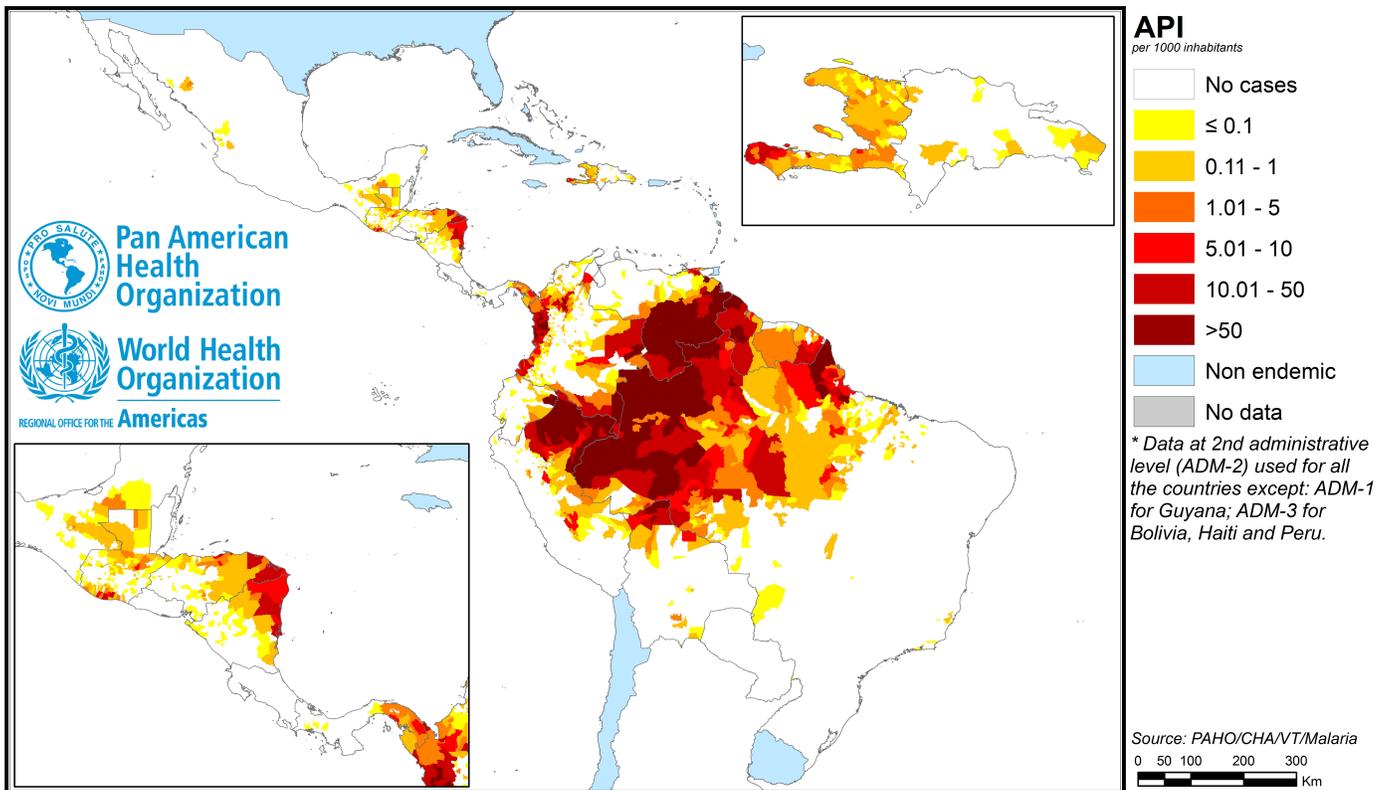
Country	Year	Total population at risk	Blood samples examined	Confirmed Cases	P. falciparum & mixed infections	Slide positivity rate (x100)	Annual Parasite Index (x1000)
Bolivia	2013	4,549,215	133,260	7,342	996	5.51	1.61
	2014	4,549,215	124,900	7,401	341	5.93	1.63
	2015	4,549,215	159,167	6,907	96	4.34	1.52
Brazil	2013	41,992,553	1,873,518	178,546	31,482	9.43	4.25
	2014	35,965,912	1,658,976	143,415	23,409	8.59	3.99
	2015	25,933,921	1,488,072	143,162	16,791	9.53	5.52
Colombia	2013	9,691,401	284,332	51,722	18,174	15.81	5.34
	2014	10,596,997	325,713	40,768	20,504	10.10	3.85
	2015	10,176,936	316,451	55,866	30,870	17.65	5.49
Dominican Republic	2013	6,577,495	431,683	579	576	0.12	0.09
	2014	4,761,804	362,304	496	491	0.14	0.10
	2015	6,319,676	316,947	661	651	0.21	0.10
French Guiana	2013	199,199	22,327	877	307	3.93	4.40
	2014	125,004	14,651	448	148	3.06	3.58
	2015	136,831	11,558	434	205	3.75	3.17
Guatemala	2013	6,541,912	153,731	6,214	152	4.04	0.95
	2014	12,270,000	264,269	4,931	92	1.87	0.40
	2015	12,600,000	295,246	5,540	51	1.88	0.44
Guyana	2013	732,557	205,903	31,479	17,425	15.29	42.97
	2014	747,884	142,843	12,353	5,139	8.65	16.52
	2015	767,000	132,941	9,984	3,950	7.51	13.02
Haiti	2013	10,388,424	172,624	20,957	20,378	12.14	2.02
	2014	10,466,500	134,766	17,696	17,696	6.77	1.69
	2015	10,243,693	69,659	17,583	17,583	5.81	1.72
Honduras	2013	5,270,455	144,436	5,428	1,159	3.75	1.03
	2014	5,598,244	151,420	3,380	567	2.23	0.60
	2015	5,717,174	150,854	3,575	933	2.37	0.63
Nicaragua	2013	3,134,267	519,993	1,194	220	0.23	0.38
	2014	3,373,499	605,357	1,163	163	0.19	0.34
	2015	3,523,063	604,418	2,307	345	0.38	0.65
Panama	2013	3,724,171	93,624	705	6	0.75	0.19
	2014	183,428	80,701	874	8	1.08	4.76
	2015	717,489	64,511	562	6	0.87	0.78
Peru	2013	646,192	863,790	43,139	6,843	4.99	66.76
	2014	11,778,357	864,413	64,676	6,988	7.48	5.49
	2015	4,453,082	865,980	66,609	13,682	7.69	14.96
Venezuela	2013	5,837,393	476,764	78,643	27,659	16.50	13.47
	2014	5,916,153	522,617	90,708	27,843	17.36	15.33
	2015	6,165,291	625,174	136,402	35,509	21.82	22.12

**Table 2. Malaria in countries of E2020 in the Region of the Americas, 2013 - 2015**

Country	Year	Confirmed Cases	Cases Investigated	Imported	Indigenous P. falciparum	Imported P. falciparum	Imported P. vivax	Active Foci
Argentina	2013	4	4	4	0	0	4	0
	2014	4	4	4	0	0	4	0
	2015	1	1	1	0	0	1	0
Belize	2013	26	26	4	0	0	4	4
	2014	19	19	0	0	0	0	8
	2015	13	13	4	0	0	4	11
Costa Rica	2013	6	6	4	0	1	3	0
	2014	6	6	5	0	3	2	0
	2015	8	8	8	0	4	4	0
Ecuador	2013	378	100	10	160	1	9	3
	2014	241						
	2015	686	686	68	184	43	23	20
El Salvador	2013	7	7	1	0	0	1	2
	2014	8	8	2	0	0	2	2
	2015	9	9	6	0	0	6	4
Mexico	2013	499	499	4	0	4	0	61
	2014	666	666	10	0	8	2	56
	2015	551	551	34	0	6	27	50
Paraguay	2013	11	11	11	0	7	3	0
	2014	8	8	8	0	7	1	0
	2015	8	8	8	0	6	2	0
Suriname	2013	729		491	98	224	203	
	2014	401		247				
	2015	376		295	17	91	61	

... No data available

Figure 4. Malaria by Annual Parasite Index (API) at the second administrative level (ADM-2) in the Americas - 2015



Throughout the Americas, approximately 58% of all cases occurred in men in 2015 (figure 3). This trend has been consistent throughout the years and malaria mostly affects males between the ages of 15-24 years. Yet, around 9% of all cases in 2015 occurred in children under 5 years of age; Brazil, Colombia, Haiti, Panama, and Peru had particularly high number of malaria cases (>10% of total cases) in children less than 5 years old suggesting that a significant proportion of malaria transmission occurs within households in these countries.

**Amazonas**

The top 25 municipalities by burden of disease in the Americas reported almost 50% of the total cases in the Region in 2015 (figure 5). The majority (19) of these top 25 municipalities had an increase in malaria compared to the previous year with 13 of them reporting an increase of over 30% in 2015. The municipality of Sifontes in Bolivar State of Venezuela alone reported approximately 16% of the total cases of the Region. Malaria in this municipality continues to increase due to mining and social disturbances and has spread to other neighbouring municipalities like El Callo. Shortage of medicines and declining coverage by vector control interventions has led to increase in other municipalities of the country, especially in the state of Amazonas.

The same situation abounds in Loreto state of Peru which has led to increases or very high transmission of malaria in municipalities of that state, especially in Andoas and Tigre. Disperse populations living on the edges of rivers traversing the state are particularly hard to reach. There is an urgent need to sort logistical problems, increase access to diagnosis and treatment through community health workers in each locality and distribution of bednets to these vulnerable populations. On the other hand, malaria has been declining in many municipalities of Brazil due to the improvement in access to diagnosis and treatment. Noteworthy are Cruzeiro do Sul in Acre and Manaus in Amazonas. Municipalities of Choco have also reported an increase in malaria.

In **Mesoamerican** sub-region the 25 municipalities with the highest malaria burden reported more than 63% of the total malaria cases in the sub-region (figure 6). Sixteen of these reported an increase in malaria cases. Malaria in La Gomera municipality of Escuintla state in Guatemala continues to increase; access to diagnosis and treatment is particularly deficient here. Puerto Lempira in the Gracias

Figure 5. Municipalities (ADM-2) with high malaria burden in countries of the Amazonas sub-region, 2013 - 2015

Municipality	State	Country	2013	2014	2015
Sifontes	Bolivar	Venezuela	46,610	52,509	71,934
Cruzeiro do Sul	Acre	Brazil	20,043	17,210	14,979
Atures	Amazonas	Venezuela	4,377	5,897	9,812
Manaus	Amazonas	Brazil	7,295	7,443	9,748
Gran Sabana	Bolivar	Venezuela	5,195	5,224	8,354
San Juan Bautista	Loreto	Peru	7,414	10,616	8,006
Andoas	Loreto	Peru	1,029	6,842	7,898
Raul Leoni	Bolivar	Venezuela	2,844	5,130	7,777
Quibdo	Choco	Colombia	4,232	5,008	7,120
Cedeno	Bolivar	Venezuela	5,057	5,289	6,898
Ipixuna	Amazonas	Brazil	5,455	2,983	6,731
Eirunepe	Amazonas	Brazil	8,483	5,288	6,240
Tado	Choco	Colombia	1,814	3,472	5,716
Mancio Lima	Acre	Brazil	7,281	6,207	5,552
Labrea	Amazonas	Brazil	4,651	7,412	5,161
Sao Gabriel**	Amazonas	Brazil	5,524	4,533	5,071
Tigre	Loreto	Peru	2,511	5,194	4,764
El Callao	Bolivar	Venezuela	340	574	4,462
Rodrigues Alves	Acre	Brazil	3,524	4,774	4,380
Napo	Loreto	Peru	859	3,207	4,344
Ramon Castilla	Loreto	Peru	3,911	1,851	4,341
Barcelos	Amazonas	Brazil	2,423	3,863	4,207
Atalaia do Norte	Amazonas	Brazil	4,291	3,619	3,991
Sucre	Bolivar	Venezuela	2,691	3,490	3,820
Trompeteros	Loreto	Peru	1,226	2,744	3,761

\* São Gabriel da Cachoeira District-level data (ADM-3) used for Peru, which were partially available during 2013-2015.

**Change from previous year**

Decrease Increase No Data

a Dios department of Honduras is the municipality with the highest number of malaria cases in that country. It also reported the highest burden of *P. falciparum* in the Mesoamerican sub-region representing 33.5% (434 out of 1297) of the total *P. falciparum* cases of the Mesoamerica. An outbreak of malaria was reported in that municipality associated with harvesting of jellyfish. El Progreso in the same country reported a 6 fold increase in malaria.

Guna Yala in Panama, an archipelago, showed an increase in cases as surveillance increased with more number of health promotion assistants in each community. Malaria has more than doubled in Puerto Cabezas and other municipalities of RACCN in Nicaragua between 2014 and 2015 due to varied reasons.

### Hispaniola

Malaria transmission was concentrated in the mostly in Grand'Anse and Ouest department which together reported approximately 72% of all malaria cases in Haiti. Malaria doubled in the state of Grand'Anse (figure 7). The communes Jeremie, Dame Marie and Roseaux together reported 66% of the cases in the entire department. Ouest is the second department with highest number of cases although malaria is concentrated in 2 to of the 7 communes of the department: Croix des Bouquets and Delmas that reported almost half of all the cases in this department in 2014 and 2015. Malaria cases were diagnosed almost exclusively by passive detection in Haiti. Although surveillance in Haiti has improved over the last few years, it still needs to be adapted to the process of elimination. Santo Domingo reported 39% and 53% of the malaria cases in 2014 and 2015 respectively of the total cases in Dominican Republic. The increase is related to unplanned and rapidly expanding settlements in sub-urban areas of the capital.

**Table 3. First line of treatment for malaria by species type in the Región of the Américas**

Country	<i>P. falciparum</i>	<i>P. vivax</i>
Argentina	AS+MQ; AL	CQ+PQ(7)
Belize	CQ+PQ(1d)	CQ+PQ(14)
Bolivia	AS+MQ+PQ	CQ+PQ(7)
Brazil	AL+PQ; AS+MQ+PQ	CQ+PQ(7); CQ+PQ(14)
Colombia	AL	CQ+PQ(14)
Costa Rica	CQ+PQ(1d)	CQ+PQ(7); CQ+PQ(14)
Dominican Republic	CQ+PQ(1d)	CQ+PQ(14)
Ecuador	AL+PQ	CQ+PQ(7)
El Salvador	AL	CQ+PQ(14)
French Guiana	AL; AQ+PG	CQ+PQ
Guatemala	CQ+PQ(3d)	CQ+PQ(14)
Guyana	AL+PQ(1d)	CQ+PQ(14)
Haiti	CQ+PQ(1d)	CQ+PQ(14)
Honduras	CQ+PQ(1d)	CQ+PQ(14)
Mexico	CQ+PQ	CQ+PQ
Nicaragua	CQ+PQ(1d)	CQ+PQ(7)
Panama	AL+PQ	CQ+PQ(7); CQ+PQ(14)
Paraguay	AL+PQ	CQ+PQ(14)
Peru	AS+MQ+PQ(1d)	CQ+PQ(7)
Suriname	AL+PQ(1d)	CQ+PQ(14)
Venezuela	AS+MQ+PQ(1d)	CQ+PQ(14)

CQ- Chloroquine PQ- Primaquine MQ- Mefloquine AS- Artesunate  
AL- Artemether & Lumefantrine PG- Proguanil AQ- Atovaquone  
For *P. falciparum*- (3d): 15 mg of Primaquine per day for 3 days (adults)  
(1d): 45 mg of Primaquine in one dose on 1st day (adults)

For *P. vivax*- (14): 15 mg of Primaquine per day for 14 days (adults)  
(7): 30 mg of Primaquine per day for 3 days (adults)

\* Artemisinin-based combination therapy (ACT) is used for imported cases of *P. falciparum* in countries using CQ as first-line treatment for this species.

**Figure 6. Municipalities (ADM-2) with high malaria burden in countries of the Mesoamerican sub-region, 2013 - 2015**

Municipality	State	Country	2013	2014	2015
La Gomera	Escuintla	Guatemala	1,739	1,700	1,935
Puerto Lempira	Gracias A Dios	Honduras	1,769	742	954
Masagua	Escuintla	Guatemala	580	666	807
Puerto Cabezas	RACCN	Nicaragua	171	179	557
Panzos	Alta Verapaz	Guatemala	409	383	453
Tiquisate	Escuintla	Guatemala	273	223	424
Tocoa	Colon	Honduras	332	460	402
Waspan	RACCN	Nicaragua	398	305	321
Rosita	RACCN	Nicaragua	238	263	311
El Estor	Izabal	Guatemala	47	39	301
Prinzapolka	RACCN	Nicaragua	35	114	277
Santa Lucia*	Escuintla	Guatemala	459	284	246
Trujillo	Colon	Honduras	466	290	244
Brus Laguna	Gracias A Dios	Honduras	234	182	217
Guna Yala	Guna Yala	Panama	156	153	200
El Progreso	Yoro	Honduras	9	34	191
La Democracia	Escuintla	Guatemala	299	206	178
Candelaria	Campeche	Mexico	0	216	174
Sonaguera	Colon	Honduras	442	217	167
Saba	Colon	Honduras	126	179	153
Laguna de Perlas	RACCS	Nicaragua	1	15	150
Villeda Morales	Gracias A Dios	Honduras	390	238	149
Chepo	Panama	Panama	332	432	136
Olanchito	Yoro	Honduras	147	86	130
Chisec	Alta Verapaz	Guatemala	230	101	128

\* Santa Lucia Cotzumalguapa, \*\*RACCN- North Caribbean Coast Autonomous Region, \*\*\*RACCS- South Caribbean Coast Autonomous Region

### Change from previous year

Decrease Increase

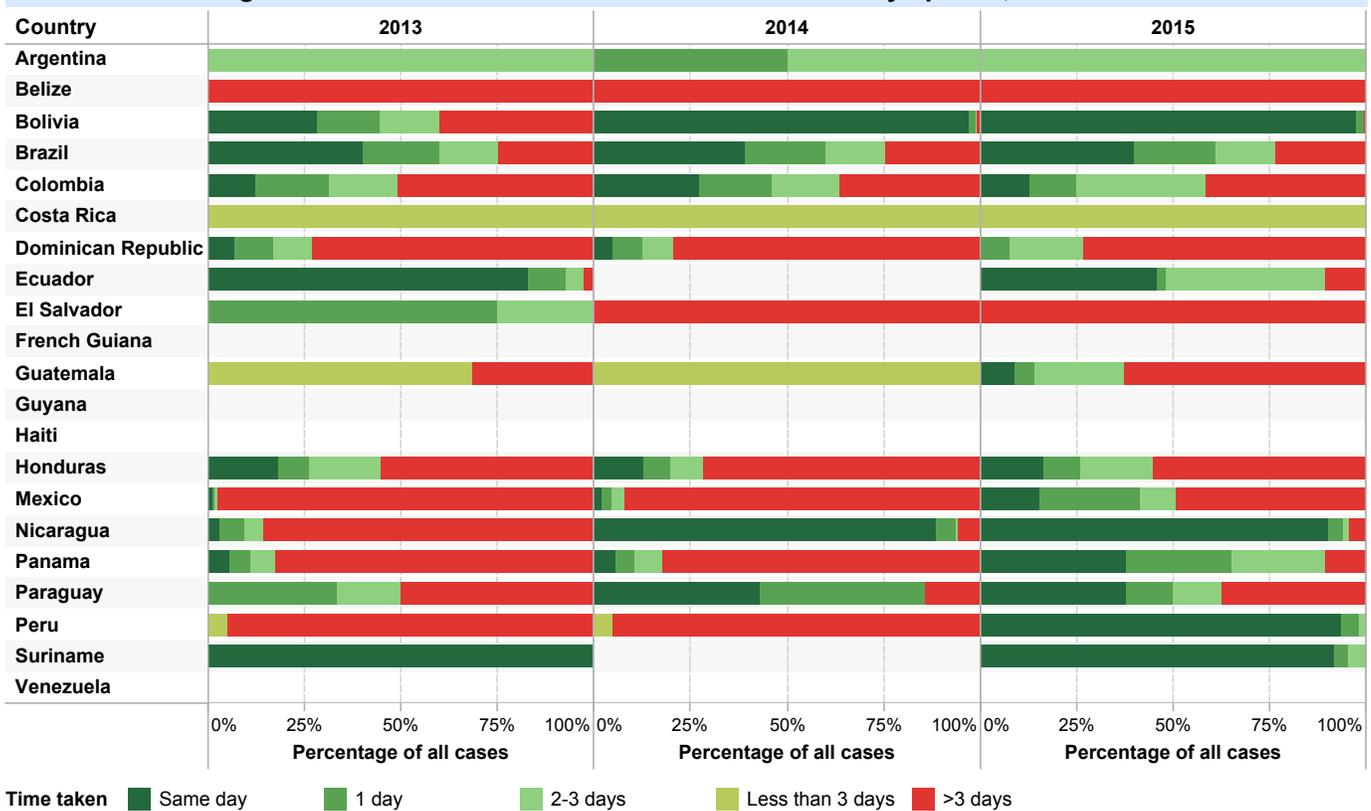
**Figure 7. Municipalities (ADM-2) with high malaria burden in countries of the Island of Hispaniola, 2013 - 2015**

Municipality	State	Country	2013	2014	2015
Jeremie	Grand-Anse	Haiti	587	465	1,801
Delmas	Ouest	Haiti	1,919	1,822	1,628
Dame-Marie	Grand-Anse	Haiti	160	642	1,332
Roseaux	Grand-Anse	Haiti	36	323	1,183
Croix-Des-Bouquets	Ouest	Haiti	1,842	1,989	1,077
Anse d'Hainault	Grand-Anse	Haiti	33	334	777
Port-au-Prince	Ouest	Haiti	856	767	659
Arnaud	Nippes	Haiti		11	564
Carrefour	Ouest	Haiti	1,059	1,036	542
Corail	Grand-Anse	Haiti	91	113	433
Jacmel	Sud-Est	Haiti	133	249	401
Les Anglais	Sud	Haiti	110	200	371
Les Irois	Grand-Anse	Haiti	4	65	365
Pestel	Grand-Anse	Haiti	17	67	336
Leogane	Ouest	Haiti	67	370	335
Arcahaie	Ouest	Haiti	46	90	320
Abricots	Grand-Anse	Haiti	115	130	282
Gressier	Ouest	Haiti	548	359	260
Saint-Marc	Artibonite	Haiti	490	320	255
Ganthier	Ouest	Haiti	753	502	247
Beaumont	Grand-Anse	Haiti	3	7	234
Petion-Ville	Ouest	Haiti	326	404	223
Santo Domingo Este	Santo Domingo	DOM	20	75	210
Cavillon	Sud	Haiti	485	250	171
Petit Goave	Ouest	Haiti	1,336	1,164	145

Data at commune level used for Haiti, DOM- Dominican Republic



**Figure 8. Time taken for treatment since the onset of symptoms, 2013 - 2015**



**Access to diagnosis and treatment**

Access to prompt diagnosis and treatment is one of the principal strategies for malaria control and elimination. This includes two components, one dependent upon the patient her/himself to seek care when sick and the other being the availability of health posts with diagnosis and treatment within easy access to the patient - each of which requires a different intervention.

Advances have been seen in improving access to diagnosis (decreasing the time it takes to treat from the start of symptoms) over the last three years in Brazil, Colombia Dominican Republic, Mexico and Honduras (figure 8). Data from Bolivia, Nicaragua and Peru show very significant improvement and needs a more detailed analysis. In some cases this is likely due to incorrect understanding of the indicator (time from taking a test instead of time from start of symptoms) as was the case in Guatemala where 2015 data reflects time taken from start of symptom but not so in 2013 and 2014.

Given the low number of cases in some countries very close to elimination like Argentina, Paraguay, El Salvador, Belize and Costa Rica, proportions of cases diagnosed beyond 3 days seems high. This is due to a statistical anomaly and median number of days would be a better indicator to counter over dispersion.

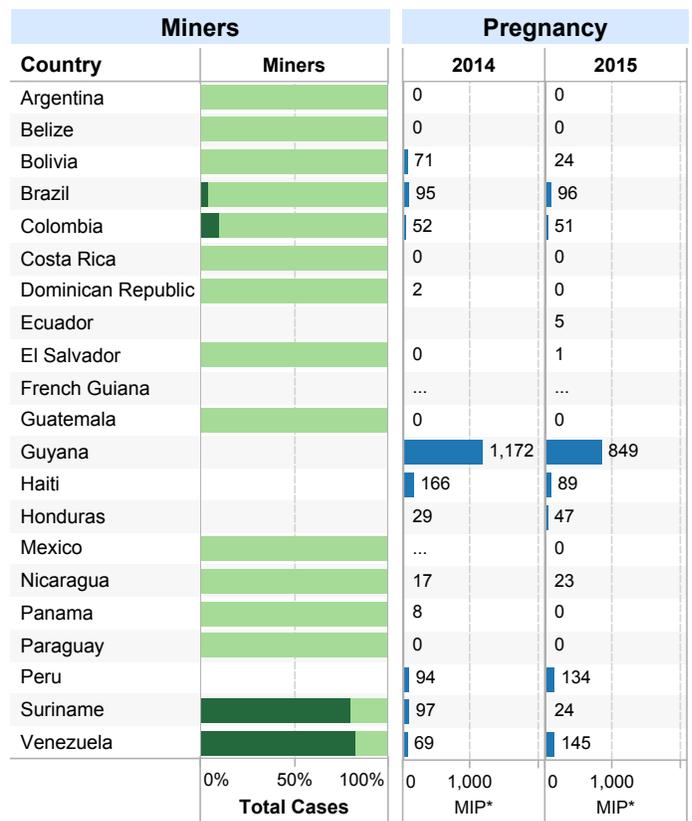
Information systems in Haiti and Guyana are not adept to capture this information. In Guyana it requires updating of the health information system and its adoption while in Haiti there's a need to initiate an individual case based surveillance system.

**Malaria in Vulnerable Populations**

In 2015, approximately 1% of the total cases reported in the Americas occurred amongst pregnant women. In Haiti, pregnant women were at significantly higher risk (RR=1.58, 95% C.I. 1.49-1.68) of having malaria than non-pregnant women in 2011-2012 (figure 9). Increase in malaria incidence in Nicaragua and Honduras demonstrates an improvement in quality of surveillance system while in Venezuela and Peru this implies an increase in malaria transmission and the risk.

Quality of surveillance system in other countries like Guatemala still needs improvement.

**Figure 9. Malaria in Vulnerable Populations**



\* Malaria cases per 1000 pregnant women



## Vector Control

There were approximately 4 million people protected by Indoor Residual Spraying (IRS) in the Americas in 2015 which was a decrease of 25% from 2014 (figure 10). People protected by insecticide treated bednets (ITNs) also decreased in 2015 by 47%. There was a particularly notable decline in ITN coverage for 9 of 21 endemic countries. As many as 11 countries have reported information on insecticide resistance surveillance for *Anopheles* mosquitoes during 2012-2015. Almost all of these countries have reported resistance to pyrethroids in some areas except for Nicaragua, Haiti, and in Suriname.

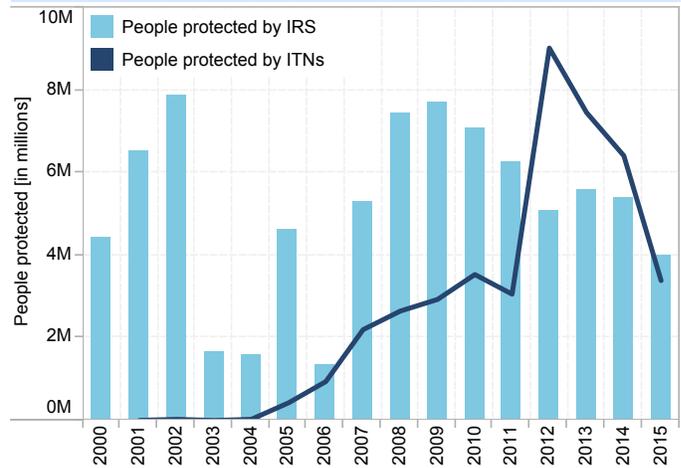
The majority of funding for malaria in the Americas comes from governmental sources (90% in 2015, figure 11). At least \$16 million came from external funding sources in 2015. The Global Fund (GFATM) alone provided \$13.5 million and has supported the Americas since 2003. Total domestic funding in countries of the Americas increased between 2014 and 2015 by 19% (134.4 to 159.5 million) despite having decreased between 2013 and 2014 (180.1 to 134.4 million).

## Non-endemic countries

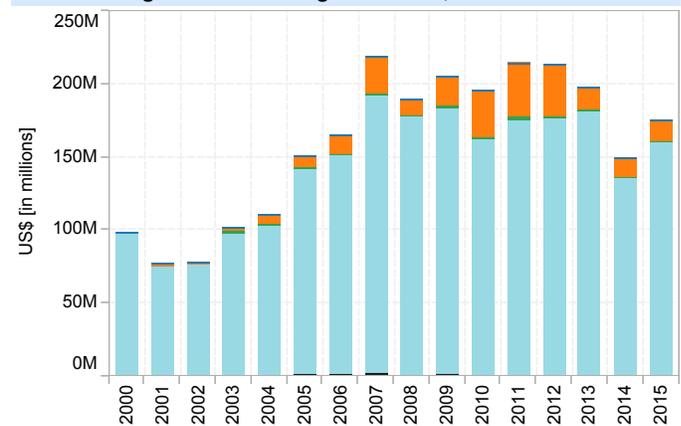
In the non-endemic countries of the Americas, a total of 1642 cases have so far been reported to PAHO for 2015 though this information is still preliminary for some countries (table 4). Approximately 2,300 cases are usually reported by non-endemic countries every year. During 2013-2015, 70% of all imported cases in non-endemic countries were reported to have been infected from Africa, 8% were from Asia, 5% were from the Americas, <1% from Europe and Oceania, and the rest were of unknown origin.

In the Americas, most cases were reported imported from Guyana and Haiti (table 5). Some area wise trends can be seen. Most cases in Chile are imported from Peru and Brazil due to its geographical position. In Cayman Islands most cases are imported from Honduras, the Caribbean Island of the later is still endemic. Similarly imported cases in Cuba were mostly from Venezuela and in Trinidad and Tobago they were from Guyana. Of note is that some imported cases have been reported from other non-endemic countries. Quality of investigation in these cases needs a revision and sharing of information is vital to ascertain if there is indeed local transmission in one or the other.

**Figure 10. People protected by Indoor Residual Spraying (IRS) and Insecticide-Treated Nets (ITNs), 2000 - 2015**



**Figure 11. Financing for malaria, 2000 - 2015**

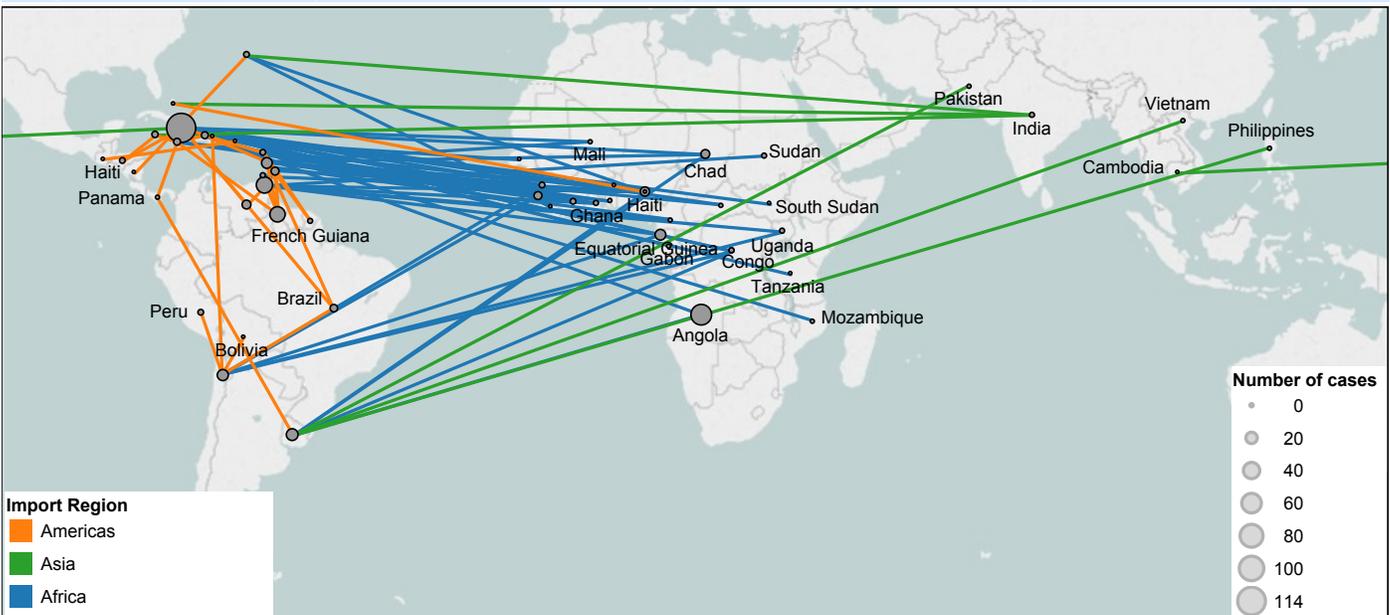


\* Data not available for the years 2000-12 for Haiti, from 2005-11 for Suriname and 2006-08 for Venezuela. Data available only for the year 2006 for French Guiana.

- Bilaterals
- USAID
- UN Agencies
- GFATM
- Government
- World Bank



**Figure 12. Malaria by country from which cases were imported by non-endemic countries in the Region of the Americas, 2013 - 2015**



\* Does not include cases reported imported by Canada & United States of America.

**Table 4. Number of malaria cases in non-endemic countries of the the Region of the Americas, 2000 - 2015**

Country	Year															
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Anguilla	0	0	0	0	0	0			0	0		0	0	0		
Antigua & Barbuda	0	2	0	0	0	2			1	0	1	1	0	0		
Aruba	0		0		0											
Bahamas	2	4	1	3	2	1	49	6	14		1	6	2	2		
Barbados	3	5	6	0	3	3				2	2	10	9	5	2	2
Bermuda	0	0	0	0	0	1									2	2
British Virgin Islands	0	0	0	0	0	0	0		0		0			0	0	0
Canada	438	430	347	365	375	365	333	384	372	364	514	517	477	488	447	90
Cayman Islands	3	0	3	1	1	2	1				1	1	3		0	5
Chile	7	0	5	7	7	5	3	5		4	3	5	10	6	4	8
Cuba	53	0	29	30	26	9	33	35	19			28	32	48	37	29
Dominica	0	0	0	0	0	0		0		0	1	1	0			
Grenada	0	0	0	0	0	1	0	0	0	1	0	0	1	2	0	1
Guadeloupe	7	7	12		7		6		12	0	8	1	2	2	1	1
Jamaica	7	6	7	9	141	88	194	199	22	22	12	9	5	6		
Martinique	7	11	12	16	10		10		14	11	7	13	2	9	5	4
Monteserrat	0	0	0	0	0	0			0	0	0	0	0	0		
Puerto Rico	1	0	1	1	0	1	2	3	2	3	5	2	1	1		
Saba														0	0	0
Saint Barthelemy										0			1			
Saint Kitts & Nevis	0	0	0	0	1	1			0	1	1	1	0	0		
Saint Lucia	3	0	2	1	0	1		0		1		1	2	1	1	1
Saint Martin										2	1	7	1			
Saint Vincent & the G*	0	0	0	0	0	0	0	0	1		2	0	0			
Trinidad & Tobago	17	0	8	10	15	8	8	16	22	24	23	10	19	13	12	8
Turks & Caicos Islands	0	0	1	3	1	1										
United States of America	1,402	1,383	1,337	1,278	1,324	1,528	1,564	1,505	1,298	1,484	1,691	1,925	1,687	1,742	1,724	1,484
Uruguay	2	0	24	90	54	27	15		12	5		2	7	13	2	7
US Virgin Islands	1	2		0		0		0	0	0	0	0	0	0		
<b>Grand Total</b>	<b>1,953</b>	<b>1,850</b>	<b>1,795</b>	<b>1,814</b>	<b>1,967</b>	<b>2,044</b>	<b>2,218</b>	<b>2,153</b>	<b>1,789</b>	<b>1,924</b>	<b>2,273</b>	<b>2,540</b>	<b>2,261</b>	<b>2,338</b>	<b>2,237</b>	<b>1,642</b>

\*Saint Vincent & the Grenadines \*\*Blank spaces imply no data available \*\*\*Preliminary data from Canada for 2015

**Table 5. Imported cases in non-endemic countries of the Americas by country / Region of origin, 2013 - 2015**

