13 Honduras

Overview of the situation

Figures 1-5

Honduras has a total area of 112,492 km2, of which 97,516 km2 (87%) are endemic for malaria. The country has 4,988,600 inhabitants at risk of acquiring malaria, which amounts to 63% of the total population. Among Central American countries and Mexico, Honduras has the highest burden of malaria. However, malaria transmission has fallen significantly over the last decade.

A total of 8,225 cases were reported in 2008; of those, 610 or 7.4 % were *Plasmodium falciparum* malaria. Although malaria transmission was reported across 15 departments in the last three years, 88.6% of reported cases in 2008 were concentrated in six departments in the country's northern and northeastern regions. These included: Gracias a Dios, 34%; Olancho, 24%; Colon, 11%; Yoro, 8%; Atlantida, 6%; and Bay Islands, 5%. Together, these departments reported 100% of the country's cases by *P. vivax* .

The Department of Gracias a Dios has six municipalities with malaria transmission. This is a hard to reach, economically impoverished and ethnically diverse area. Internal population migration has increased in recent decades, adding to the risk of malaria transmission being carried to other parts of the country where the vector species is present. The Department of Gracias a Dios borders Nicaragua in the shared territory of La Moskitia.

The principal vector species responsible for malaria transmission in Honduras are *Anopheles albimanus*, *A. darling,* and A. pseudopunctipennis.

Morbidity and mortality trends

Figures 4 – 9

Since 2000, the number of malaria cases in Honduras has dropped significantly. The number of cases by *P. vivax* decreased 77%. The proportion of cases by *P. falciparum* malaria, however, increased from 4.2% in 2000 to 7.4% in 2008. This is noteworthy given the fact that the latter form of malaria tends to respond better to control measures.

No deaths from malaria were reported in the country between 2005 and 2007, but in 2008, two deaths were reported in the Department of Gracias a Dios. One of the cases corresponded to a pregnant woman and, the other, to a preschool age girl.

Geographic Distribution

Figures 1, 12-19

An analysis of the malaria situation at the municipal level reveals an important concentration of the burden of disease in the munici-

palities of Catacamas (Olancho Department), Puerto Lempira and Wampusirpi (Department of Gracias a Dios). Together, these three municipalities reported 38.7% of the country's cases in 2008. In comparison with other Central American countries, however, where the burden of disease is more concentrated, Honduras still has a large number of municipalities where transmission of malaria occurs. It had 29 municipalities with over 50 cases each in 2008. Malaria by *P. falciparum* was more focalized; only three municipalities, all of them in Gracias a Dios Department, reported over 50 cases each in 2008.

In 2008, the Municipality of Wampusirpi had the country's highest annual parasite index, followed by Juan Francisco Bulnes, Ahuas and Puerto Lempira. All are located in the Department of Gracias a Dios.

Malaria in specific populations

Figures 25–28

The ratio of male to female malaria cases was 1:1. Thus far, only the Department of Olancho has reported cases of malaria among pregnant women; in 2008, 3,985 blood samples from pregnant women were tested, of which 18 had positive results (0.45%). Regarding age distribution, the 15 to 49 year age group had the highest number of cases, followed by 5 to 14 year olds. Malaria in Honduras is mostly rural; however, it can also be found in periurban areas in the 10 municipalities where the disease is endemic.

Diagnosis and treatment

Figures 20-24, 29–30

In 2008, 119,378 blood slide examinations were conducted in Honduras among suspected febrile cases. The slide positivity rate (SPR) for the country has dropped consistently from a high of 20% in 2000, to 7% in 2008. However, the SPR was higher in the Departments of Gracias a Dios and the Bay Islands.

It is not possible, given the present information system, to determine the lapse of time between the onset of symptoms, confirmatory diagnosis and the beginning of treatment. A study conducted in March 2008 to obtain benchmark data found that, out of a 2,072 positive samples, 2% were diagnosed within 24 hours of the onset of fever, and 22% of febrile patients began receiving antimalarial treatment within 48 hours of the onset of symptoms.

Honduras has a network of approximately 7,500 volunteers who conduct blood slide examinations and provide immediate five-day clinical treatments while the diagnosis is being confirmed by microscopy. There are 157 diagnostic units, 74% of them located in health centers that include a physician (CESAMO). The rest are in departmental hospitals, national hospitals and the National Surveillance Laboratory. Treatment consists of chloroquine and primaquine, with a 14-day primaquine regimen in cases of *P. vivax* malaria. In 2008, 2,463,470 250 mg chloroquine phosphate tablets (150 mg base), 1,224,500 15 mg base primaquine tablets and 1,301,000 primaquine 5 mg base tablets were distributed

among the departmental region. These amounts are sufficient for about 200,000 treatment regimens.

Prevention and vector control

Figures 31-33

In 2008, larvicides were used in Honduras as a vector control strategy; other, environmentally friendly physical control actions were also carried out. Neither residual insecticides, nor aerosols were used. Interventions were accompanied by educational and health promotion activities using face-to-face strategies for school age children and the community at large. Social leaders and voluntary collaborators were also trained. In addition, inter-sectoral forums on the implementation of an ecosystemic approach, and coordination with local governments, were promoted. In 2008, the use of mosquito nets was promoted; these were implemented in one region of the country, Colon, through the distribution of 866 LLINs. The strategy prioritized households with pregnant women and children under the age of 5 years.

Financing of malaria control

Figure 34

Control program financing comes from national funds for the payment of institutional human resources and procurement of inputs. By 2008, program activities related to the Global Fund financed project "Strengthening the National Response Against Malaria" were provided by the project. In addition, PAHO and USAID cooperated in an evaluation study of chloroquine effectiveness in the treatment of *P. falciparum* malaria (RAVREDA – AMI Project).

Figure 1. Number of cases by ADM 2 level (municipality, district), 2008

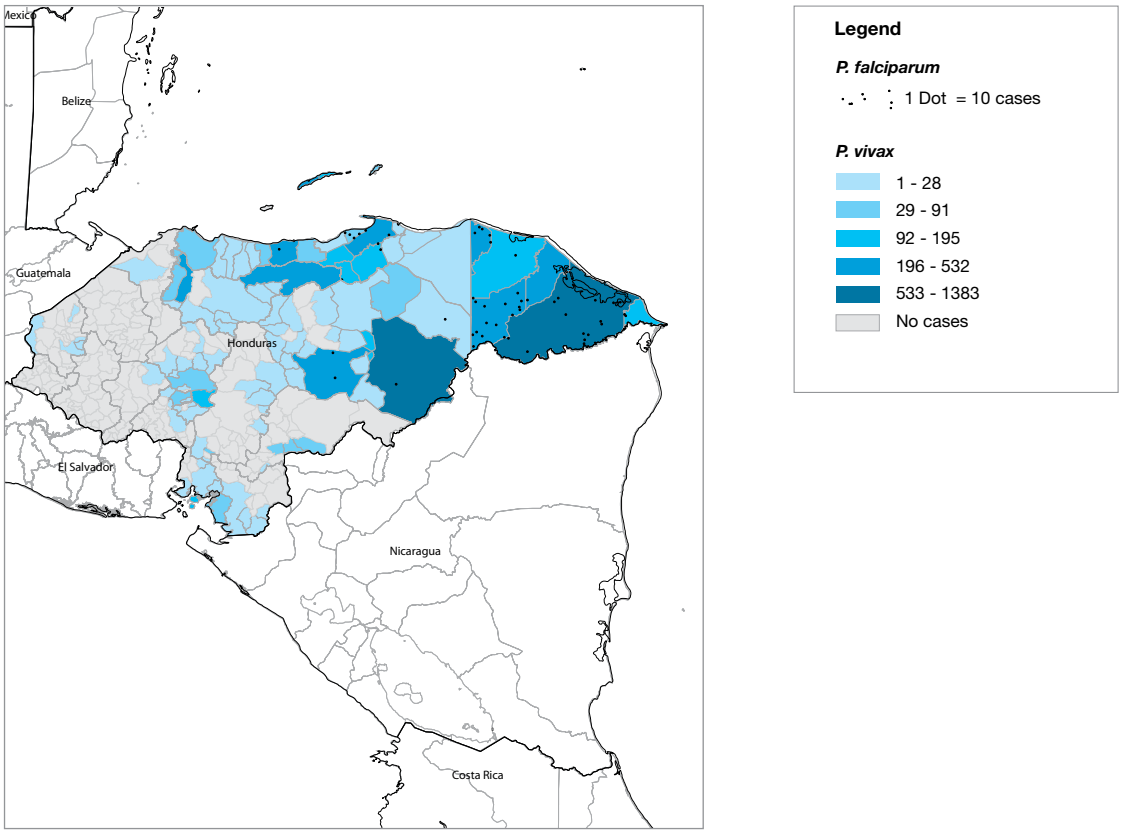


Figure 2. Proportion of cases by species, 2008

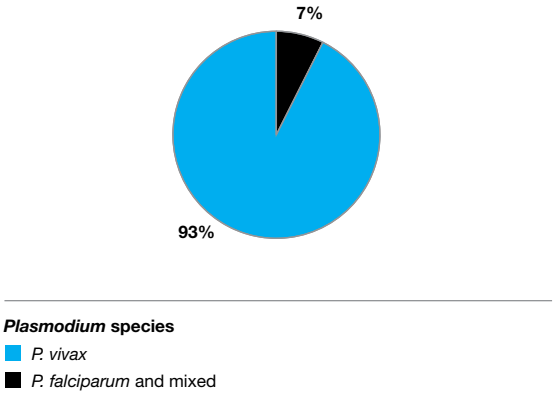
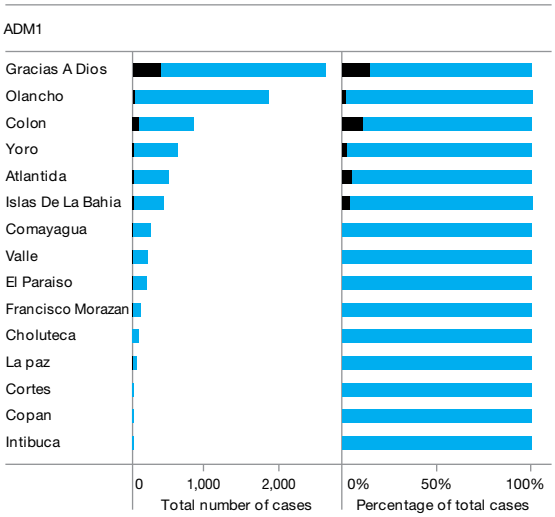


Figure 3. Number of malaria cases by species by ADM1 level in 2008

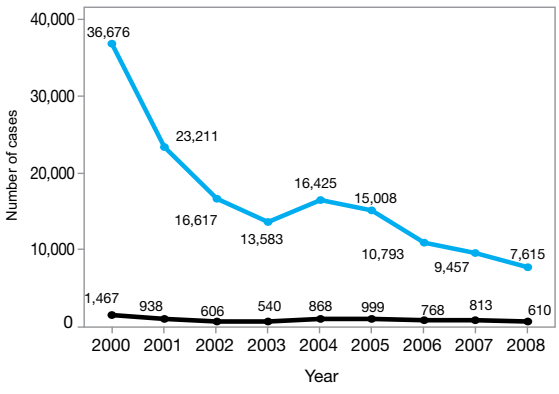
ADM1	*P. falciparum* + mixed	*P. vivax*	Total cases
Gracias A Dios	419	2,379	2,798
Olancho	37	1,937	1,974
Colon	97	796	893
Yoro	15	642	657
Atlantida	25	491	516
Islas De La Bahia	16	435	451
Comayagua	0	258	258
Valle	0	213	213
El Paraiso	0	198	198
Francisco Morazan	0	103	103
Choluteca	0	83	83
La paz	0	55	55
Cortes	0	6	6
Copan	0	5	5
Intibuca	0	1	1



***Plasmodium* species**

P. falciparum and mixed *P. vivax*

Figure 4. Number of cases by species, 2000 - 2008



***Plasmodium* species**

P. falciparum and mixed *P. vivax*

Figure 5. Number of malaria cases, 2000-2008

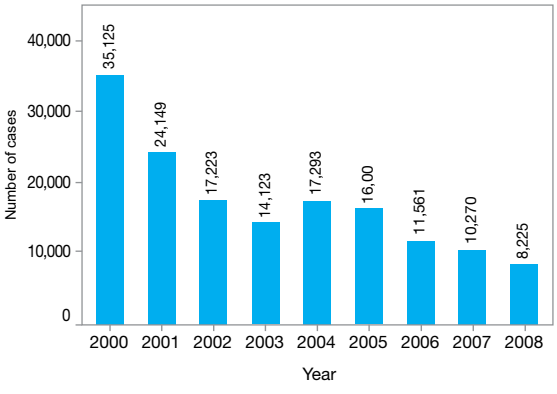


Figure 6. Number of malaria deaths, 2000-2008

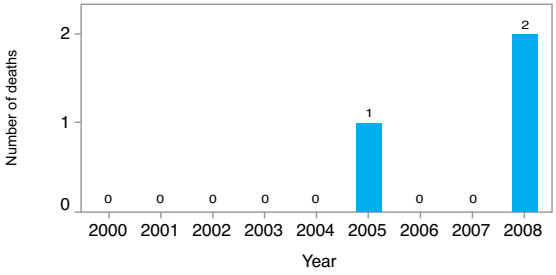


Figure 7. Number of hospitalized malaria cases, 2000 - 2008

No Data Available

Figure 8. Annual variations in number of cases

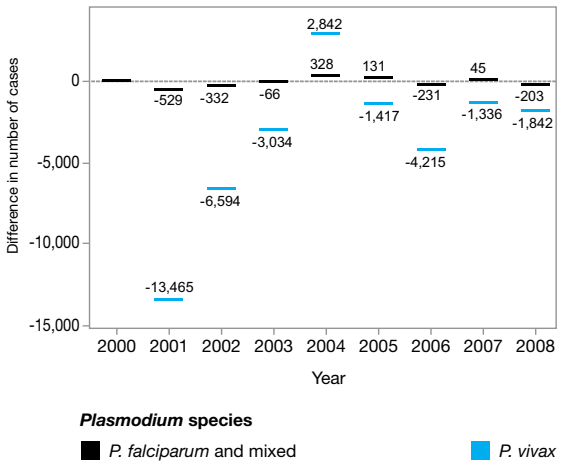


Figure 9. Percentage difference in number of cases compared to 2000

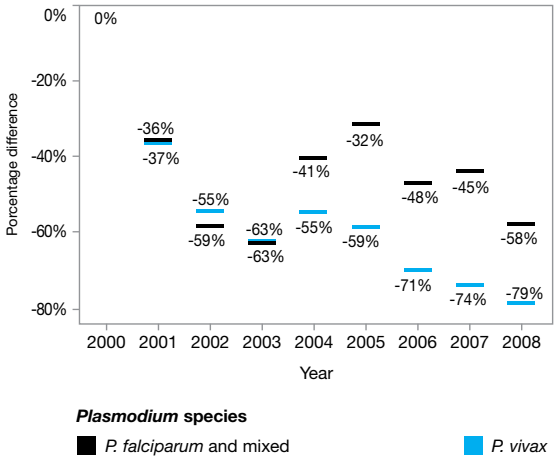


Figure 10. Number of cases and RBM / MDG targets for 2010 and 2015

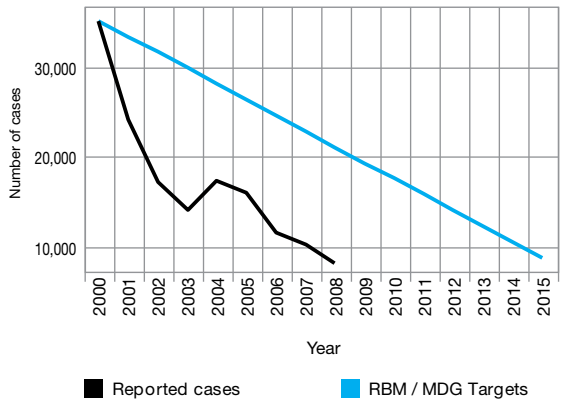
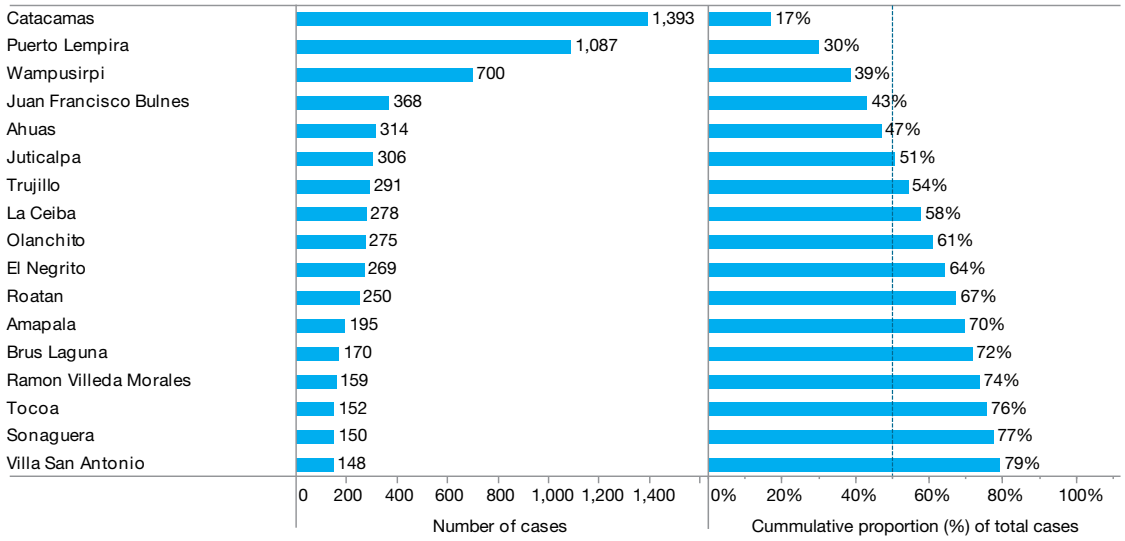


Figure 11. Percentage of hospitalized cases, 2008

No Data Available

Figure 12. Districts (ADM2) with highest malaria burden and cummulative proportion of total cases in the country, 2008



* See Annex A for a complete list.

Figure 13. Districts (ADM2) by number of malaria cases, 2008

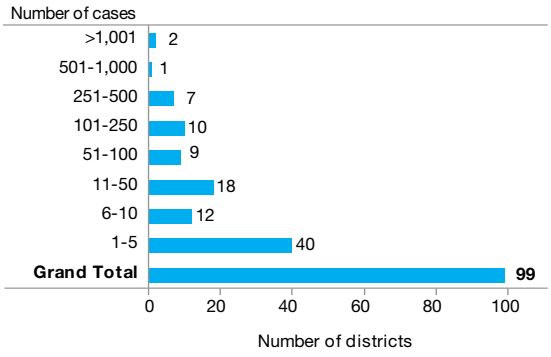


Figure 14. Districts (ADM2) by number of *P. falciparum cases*, 2008

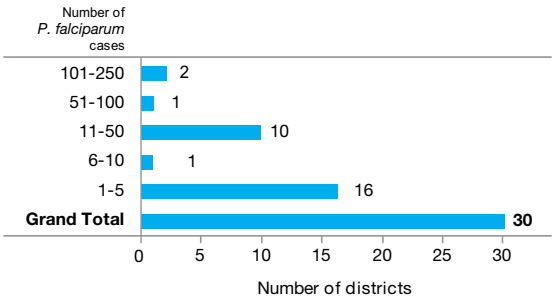


Figure 15. Districts by number of cases, API and percentage of *P. falciparum* cases, 2008

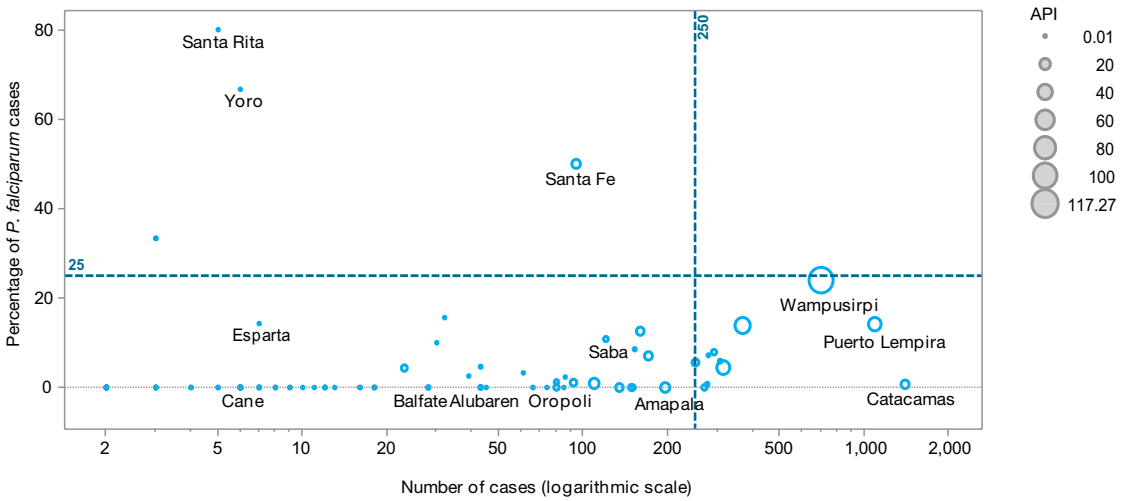


Figure 16. Annual Parasite Index (API) by districts (ADM2), 2008

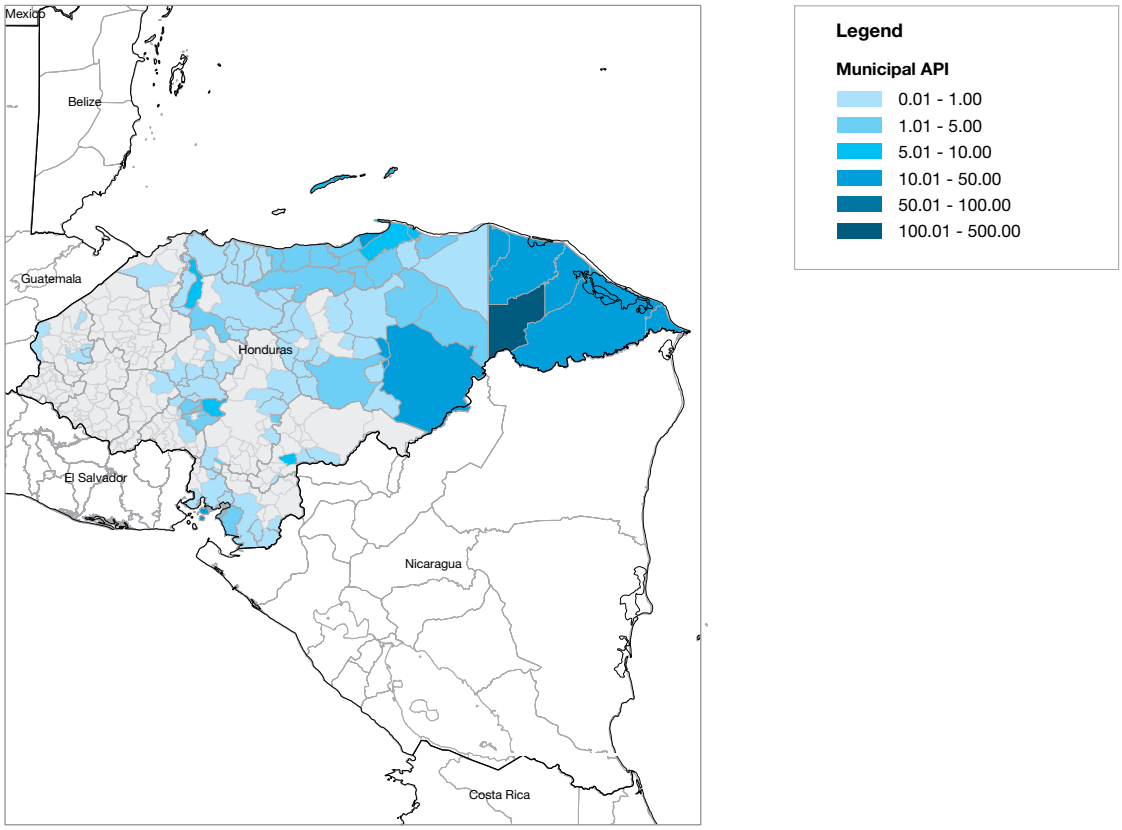


Figure 17. Population by malaria transmission risk, 2008

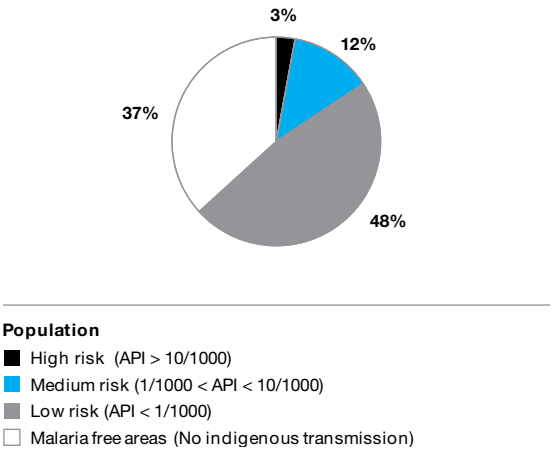
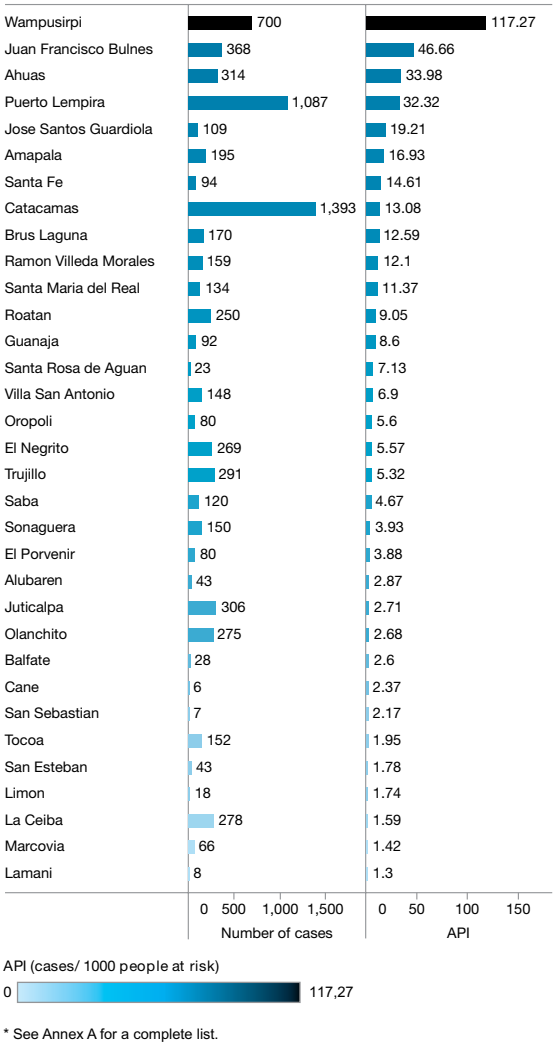


Figure 18. Annual Parasite Index (API) and number of cases by district, 2008



* See Annex A for a complete list.

Figure 19. Population by malaria transmission risk, 2000-08

Year	High risk (API > 10/1000)	Medium risk (1/1000 < API < 10/1000)	Low risk (API < 1/1000)	Malaria free areas (No indigenous transmission)
2000	2,714,000	1,788,000	1,578,000	337,000
2001	4,407,000	680,000	1,693,000	0
2002	2,661,000	1,407,000	2,421,000	365,000
2003	1,813,000	2,286,000	2,324,000	431,000
2004	377,000	365,000	4,564,000	1,722,000
2005	901,000	239,000	4,642,000	1,413,548
2006	299,000	317,000	5,107,000	1,645,677
2007	299,000	317,000	5,107,000	1,645,677
2008	225,305	991,641	3,701,561	2,856,652

Figure 20. Slides examined and Slide Positivity Rate (SPR). 2000-2008

Year	Number of slides examined	Number of slides positive	Slide Positivity Rate (%)
2000	175,577	35,125	20.01
2001	174,430	24,149	13.84
2002	178,616	17,223	9.64
2003	136,979	14,123	10.31
2004	144,945	17,293	11.93
2005	153,140	16,007	10.45
2006	122,783	11,561	9.42
2007	127,529	10,270	8.05
2008	378	8,225	6.89

Figure 21. Cases diagnosed by microscopy and RDTs, 2000-08

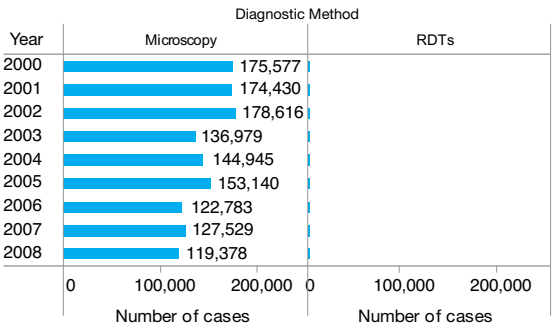
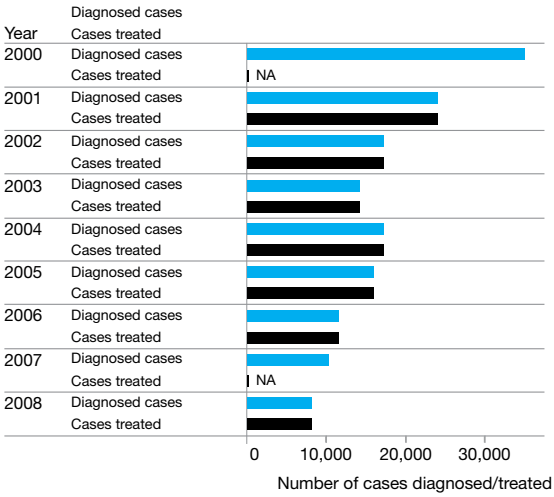


Figure 22. Number of cases diagnosed and cases treated, 2000-2008



NA- No Data Available

Figure 23. Slide Positivity Rate (SPR) by ADM1, 2008

ADM1	Examined	Total cases	SPR (%)
El Oro	37,284	890	2.39
Orellana	10,600	780	7.36
Sucumbfos	18,367	594	3.23
Los Rfos	47,413	586	1.24
Guayas	118,193	469	0.4
Esmeraldas	75,752	403	0.53
Napo	2,735	374	13.67
Pastaza	2,421	327	13.51
Morona Santiago	4,360	168	3.85
Pichincha	22,649	111	0.49
Cotopaxi	1,056	105	9.94
Manabf	38,244	69	0.18
Ca±ar	1,041	40	3.84
Bolfvar	2,171	25	1.15
Loja	1,222	7	0.57
Azuay	174	2	1.15
Zamora Chinchipe	393	2	0.51
Chimborazo	125	0	0
Galapagos	5	0	0
Tungurahua	7	0	0

Figure 24. Time span between onset of symptoms and diagnosis, 2008

No Data Available

Figure 25. Number and percentage of cases by age group, 2008

No Data Available

Figure 26. Number and percentage of cases by locality type, 2008

No Data Available

Figure 27. Number and percentage of cases in pregnant women among women of child bearing age, 2008

No Data Available

Figure 28. Number and percentage of cases in indigenous population, 2008

No Data Available

Figure 29. Proportion of *P. falciparum* cases, 2000-2008

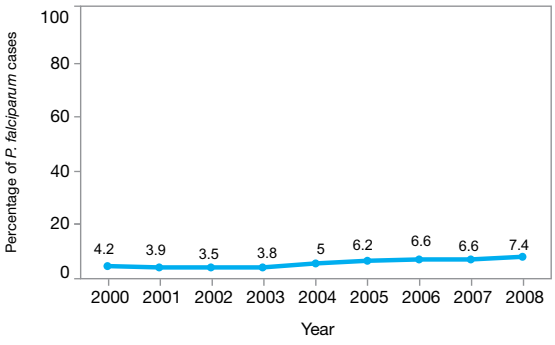


Figure 30. Number of ACT treatments distributed by year, 2000-08

No Data Available

Figure 31. Indoor residual spraying coverage by year, 2000-08

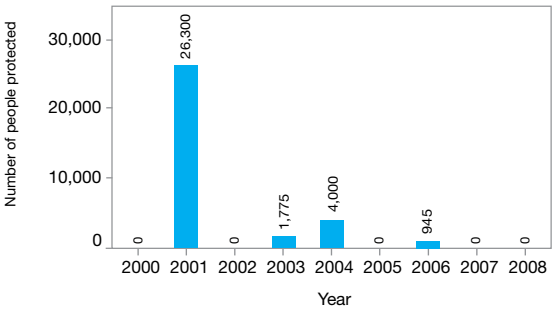


Figure 32. Number of LLINs distributed by year, 2000-2008

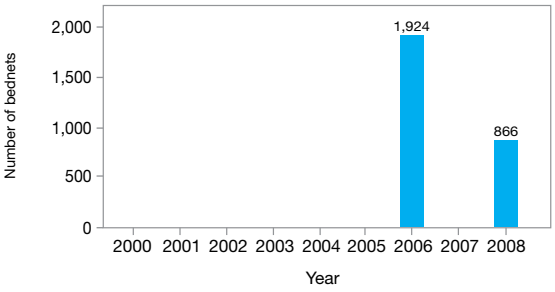
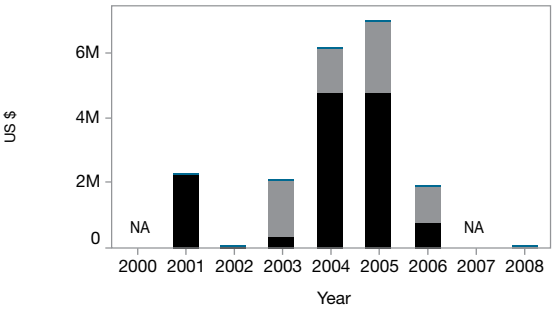


Figure 33. Number of ITNs distributed by year, 2000-08

Not Distributed

Figure 34. Sources for malaria control funds by year, 2000-08



Financing sources

USAID
UN agencies
Other bilateral funds
Global Fund
Government

NA - Data not available