

Supplementary information for

**Spatio-temporal analysis of malaria incidence in the  
Peruvian Amazon Region between 2002 and 2013**

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This document includes: -Supplementary Table S1

**Supplementary Table S1.** Temporal clusters of malaria cases at district level (Pastaza, Balsapuerto, Tigre, Alto Nanay, Yavari, Soplin, Sarayacu) in Loreto Region, 2002-2013

Pastaza District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Jan	2.10	0.001	Nov-Dec	1.66	0.001	Jan	2.81	0.001
2003	Aug-Oct	1.96	0.001	Aug-Oct	1.55	0.001	Jul-Nov	2.53	0.001
2004	Feb-Apr	1.84	0.001	Feb-Apr	2.39	0.001	Feb-Jun	1.48	0.001
2005	Jun	1.54	0.001	Nov-Dec	2.53	0.001	Apr-Sep	1.68	0.001
2006	Apr-Aug	1.94	0.001	Apr-Aug	1.76	0.001	Apr-Sep	2.69	0.001
2007	Jun-Sep	2.48	0.001	Jun-Sep	3.27	0.001	May-Sep	1.97	0.001
2008	Aug	1.36	0.001	Jan-Feb	1.30	0.001	Aug	1.83	0.001
2009	Jan-Jun	3.48	0.001	Jan-Jun	2.93	0.001	Jan-Jun	8.09	0.001
2010	Sep	2.13	0.001	Sep	2.32	0.001	May-Aug	2.27	0.231
2011	Apr-Jul	2.02	0.001	Apr-Jul	2.05	0.001	Dec	21.55	0.001
2012	Jul-Dec	1.87	0.001	Nov	2.04	0.001	Jul-Dec	4.17	0.001
2013	Mar-Apr	1.33	0.001	Sep-Nov	1.39	0.001	Jan-Jun	2.73	0.001
Balsapuerto District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Sep	1.45	0.001	Sep-Oct	1.45	0.001	Jan-Apr	1.42	0.001
2003	Jan-May	2.48	0.001	Jan-May	2.88	0.001	Feb-May	2.05	0.001
2004	Feb-May	1.58	0.001	Mar-May	2.14	0.001	Jan-Feb	1.60	0.001
2005	Jul-Sep	1.46	0.001	Jul-Sep	1.40	0.001	Apr-Sep	1.65	0.001
2006	Jul-Dec	1.42	0.001	Aug-Sep	1.36	0.001	Jul-Dec	1.99	0.001
2007	Jan-May	2.36	0.001	Jan-May	2.37	0.001	Jan-May	2.36	0.001
2008	Jul-Dec	1.96	0.001	Jul-Dec	1.92	0.001	Jul-Dec	2.02	0.001
2009	Jan-May	3.54	0.001	Jan-May	3.14	0.001	Jan-Apr	5.69	0.001
2010	Jan-Apr	4.44	0.001	Jan-Apr	5.34	0.001	Mar-May	3.96	0.455
2011	Oct	5.39	0.022	Oct	5.39	0.022		No cluster found	
2012	Sep-Dec	8.00	0.057	Sep-Dec	8.00	0.057		No cluster found	
2013	Feb-Mar	4.28	0.001	Feb-Mar	4.28	0.001		No cluster found	
Tigre District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Jun-Nov	2.71	0.001	Jul-Oct	3.34	0.001	Jun-Nov	2.46	0.001
2003	Sep-Nov	1.71	0.001	Jul-Nov	2.30	0.001	May	2.67	0.001
2004	Jul-Sep	2.15	0.001	Jul	1.96	0.001	Jul-Oct	4.35	0.001
2005	Jul-Sep	2.11	0.001	Jul-Sep	2.17	0.001	Aug-Nov	2.92	0.001
2006	May-Oct	2.06	0.001	May-Oct	2.08	0.001	Jul-Oct	2.48	0.001
2007	Mar-Apr	3.09	0.001	Mar-Apr	3.13	0.001	Mar-Apr	2.91	0.001
2008	Oct-Dec	2.34	0.001	Oct-Dec	2.37	0.001	Nov-Dec	2.41	0.001
2009	Apr-Jun	2.37	0.001	Mar-Jun	2.28	0.001	Apr-Sep	3.50	0.001
2010	Jan	2.10	0.183	Jan	2.31	0.092		No cluster found	
2011	Aug-Dec	11.61	0.001	Aug-Dec	12.31	0.001	Nov	10.63	0.001
2012	Mar-Jul	3.69	0.001	Mar-Jul	3.74	0.001	Mar-Jul	2.55	0.102
2013	Jun-Nov	3.99	0.001	Jun-Nov	3.82	0.001	Jun-Nov	4.30	0.001
Alto Nanay District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Mar-Jul	2.31	0.001	Mar-Aug	2.62	0.001	Mar-Jun	2.36	0.001
2003	Mar-Jul	1.61	0.001	May-Oct	1.46	0.005	Apr-Jul	2.72	0.001
2004	May	3.82	0.001	May	3.72	0.001	Apr-Jun	3.35	0.001
2005	Nov-Dec	2.28	0.001	Nov-Dec	2.17	0.001	Dec	3.16	0.001
2006	Jan-Jun	3.06	0.001	Jan-Jun	2.17	0.001	Jan-Jun	10.40	0.001
2007	Mar-Aug	3.57	0.001	Mar-Aug	4.00	0.001	May-Oct	3.15	0.001
2008	Nov	2.00	0.001	Nov	1.95	0.001	Nov	2.17	0.218
2009	Aug-Dec	4.79	0.001	Aug-Dec	5.06	0.001	Nov	4.55	0.005
2010	Feb	2.96	0.001	Dec	1.90	0.008	Feb	4.61	0.001
2011	Jan	2.29	0.001	Jan	1.62	0.005	Jan-Feb	2.96	0.001
2012	Jul-Dec	1.68	0.001	Jul-Dec	1.53	0.001	Nov-Dec	2.28	0.001
2013	Apr-Aug	1.35	0.001	Jun-Aug	1.63	0.001	Jan	1.81	0.002
Yavari District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Jul-Oct	13.71	0.001	Jul-Oct	13.69	0.001	Jul-Oct	13.77	0.001
2003	Apr-Aug	3.83	0.001	Apr-Aug	3.28	0.001	Apr-Jul	7.65	0.001
2004	Feb-Jul	1.55	0.002	May-Sep	1.48	0.010	Mar-Aug	6.18	0.001
2005	Jun-Jul	5.44	0.001	Jun-Jul	4.41	0.001	Jun-Jul	12.46	0.001
2006	Jun-Jul	8.75	0.001	Jun-Jul	9.34	0.001	Jun	7.38	0.001
2007	Mar-Jul	3.70	0.001	Mar-Jul	4.03	0.001	Mar-May	3.83	0.001
2008	Jan-Apr	11.72	0.001	Jan-Apr	9.43	0.001	Jan-Apr	40.21	0.001
2009	Jul-Aug	4.49	0.001	Jul-Aug	5.11	0.001	Jun-Aug	3.34	0.001
2010	Jun	2.51	0.001	Jun-Jul	1.84	0.001	May-Jun	2.99	0.001
2011	Jun-Jul	2.51	0.001	Jun-Jul	2.35	0.001	Jun-Jul	3.45	0.001
2012	Mar-Aug	2.38	0.001	Mar-Aug	2.60	0.001	May-Sep	1.81	0.001
2013	Apr-Jul	3.01	0.001	Mar-Aug	3.08	0.001	Apr-Jul	3.75	0.001
Soplin District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Jun-Aug	3.00	0.001	Jun-Jul	3.15	0.001	Aug	10.77	0.008
2003	Feb-Apr	2.50	0.001	Feb-Apr	2.52	0.001		No cluster found	
2004	Nov	2.00	0.001	Nov	2.16	0.001	Mar-Jun	11.00	0.001
2005	Oct-Dec	2.67	0.001	Oct-Dec	2.46	0.001	Oct-Dec	3.32	0.001
2006	Feb-Jul	1.75	0.001	Feb-Jul	1.48	0.001	Jan-Apr	2.93	0.001
2007	Mar-Jun	2.24	0.001	Mar-Jun	1.93	0.001	Mar-Jun	5.12	0.001
2008	Dec	5.55	0.001	Dec	5.73	0.001	Nov	18.67	0.003
2009	Nov	2.00	0.001	Jan-Jun	2.66	0.001	Oct-Dec	126.86	0.001
2010	Feb-May	2.27	0.001	Feb-Apr	2.22	0.001	Jan-May	3.79	0.001
2011	Jan-Jun	1.57	0.006	Jan-Jun	1.92	0.001	Dec	2.07	0.211
2012	Jul-Dec	2.82	0.001	Jun-Nov	2.00	0.001	Aug-Dec	12.07	0.001
2013	Jun-Jul	2.97	0.001	May-Jul	2.26	0.001	Jun-Jul	4.98	0.001
Sarayacu District									
All species			<i>Plasmodium vivax</i>			<i>Plasmodium falciparum</i>			
Year	Cluster	RR	p	Cluster	RR	p	Cluster	RR	p
2002	Nov	7.44	0.018	Nov	9.57	0.006		No cluster found	
2003	Jun-Aug	11.87	0.001	Jun-Aug	14.84	0.001	May-Aug	7.87	0.388
2004	Jun-Jul	3.21	0.091	Jun-Jul	3.08	0.153		No cluster found	
2005	Jan-Jun	2.64	0.325	Mar-Jun	3.98	0.118		No cluster found	
2006	Feb	7.22	0.154	Feb	9.03	0.118		No cluster found	
2007		No cluster found			No cluster found			No cluster found	
2008		No cluster found			No cluster found			No cluster found	
2009	Dec	7.18	0.455	Aug-Sep	4.98	0.660		No cluster found	
2010	Mar	41.56	0.001	Mar	41.56	0.001		No cluster found	
2011	Jan-Feb	16.42	0.001	Jan-Feb	19.71	0.001		No cluster found	
2012	Jan-Feb	4.08	0.467	Jan-Jun	6.07	0.345		No cluster found	
2013		No cluster found			No cluster found			No cluster found	

RR = Relative Risk