

## **Additional file A6 - A dataset of paired *PfEIR* and *PfPR* observations**

A previously published dataset of paired *PfEIR* and *PfPR* estimates [1] was updated to inform the modelling. This document describes how these data were assembled and updated. Table A6.1 presents the paired *PfEIR* and *PfPR* data, listed by country, and their sources.

### **A6.1 Data assembly and updates**

Estimates of *PfEIR* and *PfPR*, coincidental in geographic location and time of survey, were retrieved from published and unpublished sources, as described previously [1]. Whilst the majority of the paired estimates derived from the same publication, a few were obtained from parallel studies conducted in the same area at the same time (Table A6.1). Among the original 121 pairs, in two different study areas a single *PfPR* estimate was provided for neighbouring locations with differing *PfEIR* estimates, in which cases the *PfEIR* was averaged and both locations merged into a single record. Four additional pairs were retrieved from the published literature (two from Gabon and two from Gambia) leaving a final dataset of 123 *PfEIR-PfPR* pairs for analysis. All the paired estimates originated from studies conducted in Africa.

For the present analyses, *PfPR* estimates were updated where possible to minimise the need for age-correction and, therefore, the uncertainty incorporated in the final model output. All *PfPR* sources were checked again for estimates specifically in the 2-10 year age group, or as close to this age group as possible, and their records were updated accordingly. These updates contributed to an overall improvement of the log-linear fit between *PfEIR* and *PfPR* (Figure A6.1). These data are available on request.

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**Table A6.1.** The dataset of paired estimates of *Pf*PR and *Pf*EIR. Ex and *Pf*+ denote the number of individuals examined and positive for *Plasmodium falciparum*. The age ranges of these individuals is given by the Low age and Up age columns.

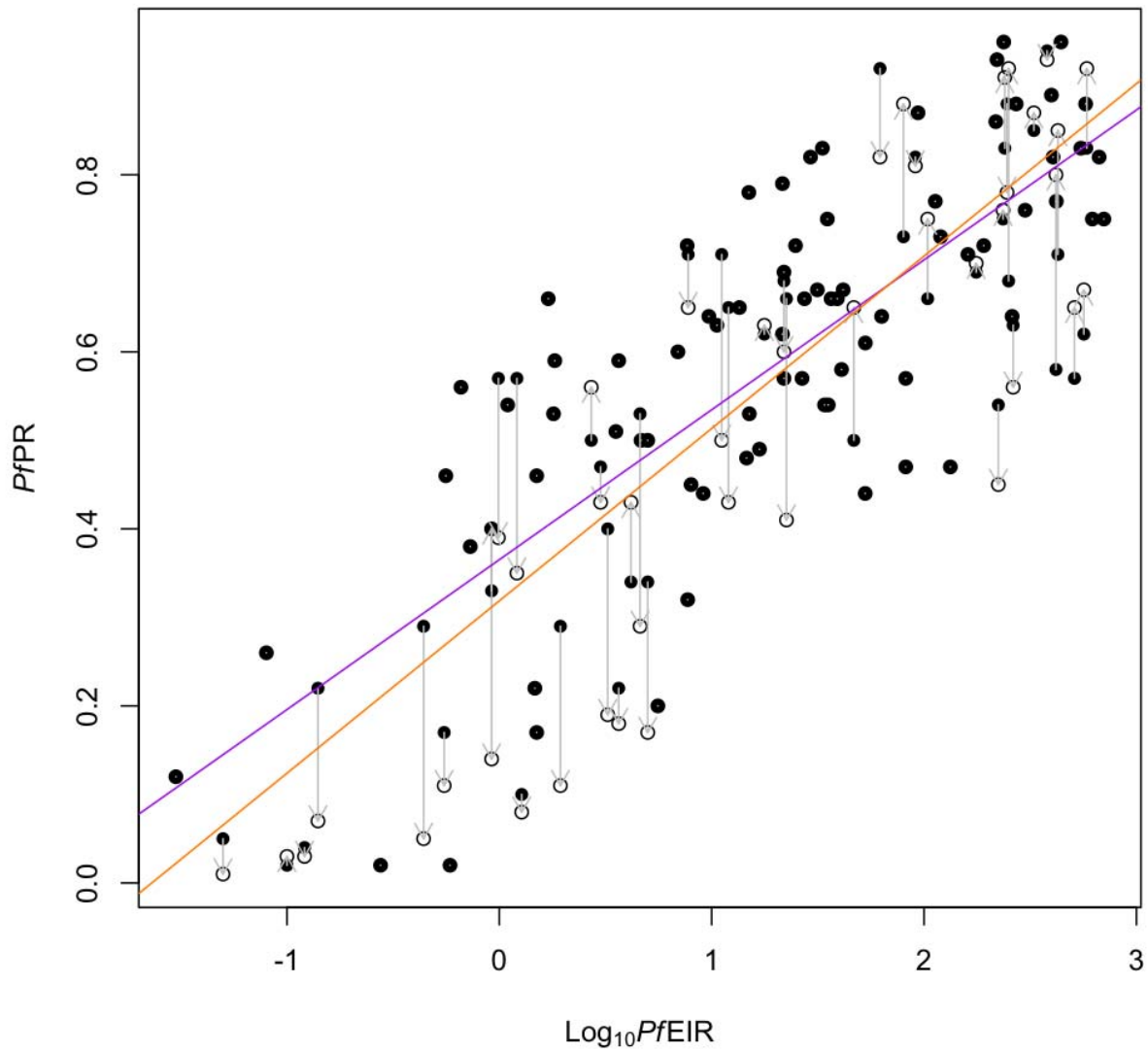
Country	Study area	Lat	Long	Year	<i>Pf</i> EIR	Ex	<i>Pf</i> +	<i>Pf</i> PR	Low age	Up age	<i>Pf</i> EIR ref	<i>Pf</i> PR ref
Burkina Faso	Bobo-Dioulasso, Colma-Nord quarter	11.21	-4.30	1985	4.60	377	109	0.29	2	10	[2]	[3]
Burkina Faso	Bobo-Dioulasso, Diaradougou quarter	11.18	-4.29	1985	0.14	382	25	0.07	2	10	[2]	[3]
Burkina Faso	Bobo-Dioulasso, Dioulassoba quarter	11.19	-4.30	1985	0.55	408	46	0.11	2	10	[2]	[3]
Burkina Faso	Karangasso	11.22	-4.63	1985-1986	262.80	413	233	0.56	5	9	[4]	[4]
Burkina Faso	Karangasso, Koko suburb	11.22	-4.65	1985-1986	223.80	108	49	0.45	2	9	[5]	[5]
Burkina Faso	Kongodjan	11.58	-4.45	1982-1985	133.00	747	348	0.47	0	15	[6]	[6]
Burkina Faso	Koubri	12.15	-1.38	1984	441.60	59	56	0.95	2	5	[7]	[8]
Burkina Faso	Ouagadougou, Kologh Naba suburb	12.39	-1.54	1984	1.47	203	45	0.22	2	5	[7]	[8]
Burkina Faso	Ouagadougou, Nongremassm suburb	12.40	-1.51	1984	7.71	162	51	0.31	2	5	[7]	[8]
Burkina Faso	Ouagadougou, Saint Camille suburb	12.36	-1.52	1984	5.58	157	31	0.20	2	5	[7]	[8]
Burkina Faso	Pabré	12.50	-1.58	1984	113.00	118	91	0.77	2	5	[7]	[8]
Burkina Faso	Tago	11.67	-4.38	1982-1985	82.00	432	204	0.47	0.5	15	[6]	[6]
Burkina Faso	Zagtouli	12.33	-1.63	1984	82.00	260	148	0.57	2	5	[7]	[8]
Cameroon	Ebolakounou	3.93	12.13	1997-1998	17.70	1504	953	0.63	0	10	[9]	[10]
Cameroon	Etoa	3.77	11.47	1994-1995	511.00	116	75	0.65	1	10	[11]	[11]
Cameroon	Koundou	3.90	12.12	1997-1998	176.10	2335	1623	0.70	0	10	[9]	[10]
Cameroon	Mbébé	4.15	11.00	1989-1991	191.05	n/a	n/a	0.72	0	15	[12]	[12]
Cameroon	Mutengene, Molyko, Likoko, Vasingi	4.08	9.30	1998-2000	161.00	105	75	0.71	2	9	[13]	[13]
Cameroon	Simbok	3.82	11.47	1994-1995	565.75	334	222	0.66	1	10	[11]	[11]
Cameroon	Yaoundé, Obili district	3.87	11.52	1989-1990	3.00	237	101	0.43	6	15	[14]	[15]
Congo	Brazzaville	-4.26	15.28	1982-1984	22.50	278	115	0.41	5	9	[16]	[17]
Congo	Kulila	-4.17	12.43	1982	397.90	134	119	0.89	2	10	[18]	[19]
Congo	Linzolo	-4.41	15.11	1981-1984	246.00	919	714	0.78	1	9	[20]	[21]
Congo	Makaba	-4.14	12.38	1982	80.00	412	364	0.88	2	10	[18]	[19]
Congo (D.R.)	Mbansalé	-4.26	15.64	1990-1991	250.18	73	67	0.92	8	14	[22]	[22]
Côte d'Ivoire	Zaipobly and Gahably	5.95	-7.45	1995-1996	427.00	2023	1720	0.85	0	14	[23]	[23]
Gabon	Benguia	-1.63	13.44	1998-1999	269.00	1220	419	0.34	0	75	[24]	[24]
Gabon	Dienga	-1.87	12.68	1995-1996	114.00	2395	809	0.34	7	17	[24]	[24]
Gambia	40 villages			1996	48.40	961	390	0.41	0.5	6	[25]	[25]
Gambia	8 villages			1996	3.40	223	78	0.35	0.5	6	[25]	[25]
Gambia	Bakau	13.48	-16.68	1988-1989	0.28	386	8	0.02	0.25	9	[26]	[26]



Country	Study area	Lat	Long	Year	PfEIR	Ex	Pf+	PfPR	Low age	Up age	PfEIR ref	PfPR ref
Gambia	Bwiam	13.23	-16.09	1991	0.92	59	8	0.14	1	4	[27]	[28]
Gambia	Dasilami	13.41	-14.27	1991	1.21	121	42	0.35	1	4	[27]	[28]
Gambia	Jahally	13.55	-14.97	1991	4.17	67	29	0.43	1	4	[27]	[28]
Gambia	Kerewan	13.49	-16.09	1991	0.44	112	6	0.05	1	4	[27]	[28]
Gambia	Kulari	13.40	-14.08	1991	7.75	60	39	0.65	1	4	[27]	[28]
Gambia	Salikene	13.48	-15.97	1991	1.94	98	12	0.12	1	4	[27]	[28]
Gambia	Sare Alpha	13.37	-13.98	1991	11.15	30	15	0.50	1	4	[27]	[28]
Gambia	Saruja	13.55	-14.90	1991	5.00	59	10	0.17	1	4	[27]	[28]
Gambia	Sibanor	13.21	-16.20	1991	3.24	115	22	0.19	1	4	[27]	[28]
Gambia	Sutukoba	13.50	-14.02	1991	0.99	118	46	0.39	1	4	[27]	[28]
Ghana	Kassena Nankana District	10.76	-1.44	2001	418.00	430	345	0.80	2	9	[29]	[30]
Kenya	Amani	-4.12	39.29	1997-1998	119.72	100	73	0.73	6	12	[31]	[31]
Kenya	Barani	-3.93	39.79	1997-1998	13.51	100	65	0.65	6	12	[31]	[31]
Kenya	Dabaso	-3.34	40.00	1997-1998	0.73	99	38	0.38	6	12	[31]	[31]
Kenya	Dindiri	-3.79	39.74	1997-1998	52.93	101	62	0.61	6	12	[31]	[31]
Kenya	Dumbule	-4.12	39.37	1997-1998	29.20	100	82	0.82	6	12	[31]	[31]
Kenya	Fumbini	-3.61	39.84	1992-1993	2.71	135	75	0.56	0	9	[32]	[33]
Kenya	Garithe	-3.03	40.17	1997-1998	21.54	100	79	0.79	6	12	[31]	[31]
Kenya	Gazi	-4.42	39.50	1997-1998	6.94	100	60	0.60	6	12	[31]	[31]
Kenya	Jaribuni	-3.62	39.74	1997-1998	35.41	98	53	0.54	6	12	[31]	[31]
Kenya	Kagombani	-3.11	40.15	1997-1998	24.82	100	72	0.72	6	12	[31]	[31]
Kenya	Kambi ya Wari	-3.52	39.84	1992-1993	4.65	289	143	0.49	0	99	[32]	[32]
Kenya	Kaoyeni	-3.46	39.90	1992-1993	1.50	233	108	0.46	0	99	[32]	[32]
Kenya	Kenyawegi	-0.92	34.67	1991-1993	259.90	480	307	0.64	0	9	[34]	[34]
Kenya	Kibarani	-3.58	39.85	1992-1993	15.04	272	143	0.53	0	99	[32]	[32]
Kenya	Kilifi town	-3.62	39.85	1990-1991	1.50	35	6	0.17	1	4	[35]	[35]
Kenya	Kisian	-0.07	34.67	1985-1988	299.30	n/a	n/a	0.76	2	10	[36]	[37]
Kenya	Kitsoeni	-3.70	39.73	1997-1998	21.90	100	69	0.69	6	12	[31]	[31]
Kenya	Magaoni	-4.38	39.47	1997-1998	63.15	78	50	0.64	6	12	[31]	[31]
Kenya	Majajani	-3.66	39.79	1997-1998	35.04	101	76	0.75	6	12	[31]	[31]
Kenya	Majenjeni	-3.14	40.14	1997-1998	40.88	100	58	0.58	6	12	[31]	[31]
Kenya	Masheheni	-3.13	40.11	1997-1998	39.06	101	67	0.66	6	12	[31]	[31]
Kenya	Maziwani	-3.21	40.07	1997-1998	14.60	100	48	0.48	6	12	[31]	[31]
Kenya	Mbarak Chembe	-3.29	40.08	1997-1998	1.83	100	59	0.59	6	12	[31]	[31]

Country	Study area	Lat	Long	Year	PfEIR	Ex	Pf+	PfPR	Low age	Up age	PfEIR ref	PfPR ref
Kenya	Mijomboni	-3.26	40.01	1997-1998	10.59	100	63	0.63	6	12	[31]	[31]
Kenya	Mjanaheri	-3.07	40.14	1997-1998	16.79	100	49	0.49	6	12	[31]	[31]
Kenya	Moyeni	-4.14	39.39	1997-1998	14.97	100	78	0.78	6	12	[31]	[31]
Kenya	Mtepeni	-3.91	39.73	1997-1998	33.22	99	82	0.83	6	12	[31]	[31]
Kenya	Mtondia	-3.57	39.90	1992-1993	31.44	247	166	0.67	0	99	[32]	[32]
Kenya	Mukombe	-3.52	39.86	1992-1993	3.54	210	108	0.51	0	99	[32]	[32]
Kenya	Mumias	0.18	34.49	1995-1996	46.70	72	47	0.65	1	9	[38]	[38]
Kenya	Mwaroni	-4.27	39.58	1997-1998	5.00	100	50	0.50	6	12	[31]	[31]
Kenya	Paziani	-3.18	39.98	1997-1998	7.67	100	72	0.72	6	12	[31]	[31]
Kenya	Saradidi	-0.12	34.38	1985-1988	237.25	1007	954	0.95	0.5	6	[36]	[39]
Kenya	Shariani	-3.80	39.82	1997-1998	1.10	100	54	0.54	6	12	[31]	[31]
Kenya	Sokoce	-3.53	39.82	1990-1991	8.00	56	25	0.45	1	4	[35]	[35]
Kenya	Tsuini	-4.61	39.16	1997-1998	41.61	100	67	0.67	6	12	[31]	[31]
Kenya	Ufuoni	-3.46	39.93	1992-1993	0.56	109	50	0.46	0	9	[32]	[33]
Kenya	Vinuni	-4.21	39.55	1997-1998	27.35	100	66	0.66	6	12	[31]	[31]
Kenya	Vuga	-4.19	39.50	1997-1998	9.13	100	44	0.44	6	12	[31]	[31]
Kenya	Ziwani	-4.15	39.45	1997-1998	3.65	100	59	0.59	6	12	[31]	[31]
Kenya	Zowerani	-3.51	39.92	1992-1993	0.66	249	139	0.56	0	99	[32]	[32]
Liberia	Yekepa, close (<3 km)	7.56	-8.55	1982	3.65	232	42	0.18	2	9	[40]	[40]
Liberia	Yekepa, far (>15 km)			1982	62.05	378	310	0.82	2	9	[40]	[40]
Liberia	Yekepa, middle (5-15 km)	7.58	-8.63	1982	21.90	195	117	0.60	2	9	[40]	[40]
Madagascar	Ambodifotatra & Lonkinty	-16.98	49.86	1988-1990	104.00	713	533	0.75	5	9	[41]	[41]
Madagascar	Manarintsoa	-18.92	47.42	1988-1990	0.92	n/a	n/a	0.40	2	9	[42]	[42]
Mozambique	Matola	-25.95	32.45	1994-1996	52.85	3600	1571	0.44	0	99	[43]	[43]
Senegal	Dakar, District Centre	14.70	-17.44	1996-1997	0.05	5365	75	0.01	2	9	[44]	[44]
Senegal	Dakar, District South	14.76	-17.44	1994-1995	0.10	361	9	0.02	2	9	[45]	[46]
Senegal	Dakar, Grande Niaye Marsh	14.75	-17.42	1987-1988	0.12	820	27	0.03	2	9	[47]	[47]
Senegal	Dielmo	13.72	-16.42	1990-1992	240.05	2488	2251	0.90	2	9	[48]	[48]
Senegal	Diohine	14.48	-16.51	1996	12.00	332	142	0.43	0	10	[49]	[50]
Senegal	Kotiokh & Ngayokhème	14.48	-16.58	1995	17.65	~1500	n/a	0.57	0	9	[51]	[51]
Senegal	Niayes	14.95	-17.05	1991-1993	1.28	n/a	n/a	0.08	2	9	[52]	[52]
Sierra Leone	Mendewa	8.16	-11.48	1990-1991	21.90	171	97	0.57	0	7	[53]	[54]
Sierra Leone	Nengbema	8.13	-11.68	1990-1991	21.54	441	274	0.62	0	7	[53]	[54]
Sierra Leone	Njala Komboya	8.20	-11.54	1990-1991	26.65	398	227	0.57	0	7	[53]	[54]

Country	Study area	Lat	Long	Year	PfEIR	Ex	Pf+	PfPR	Low age	Up age	PfEIR ref	PfPR ref
Sierra Leone	Nyandeyama	8.12	-11.66	1990-1991	36.50	125	83	0.66	0	7	[53]	[54]
Sudan	Asar	13.75	35.25	1990	0.59	374	6	0.02	6	12	[55]	[55]
Tanzania (U.R.)	Bagamoyo	-5.07	38.44	1995-1996	1.80	650	343	0.53	0	10	[56] [57]	[57]
Tanzania (U.R.)	Balangai	-4.93	38.46	1995-1996	0.08	831	218	0.26	0	10	[56] [57]	[57]
Tanzania (U.R.)	Chasimba	-6.58	38.82	1992	217.70	57	49	0.86	0.5	3.33	[58]	[58]
Tanzania (U.R.)	Highland, Muheza			1995-1996	34.00	n/a	n/a	0.53	0	5	[59]	[59]
Tanzania (U.R.)	Idete	-8.10	36.48	1992-1993	584.00	586	539	0.92	1	5	[60]	[61]
Tanzania (U.R.)	Kasiga	-4.82	38.23	1988-1989	620.50	496	373	0.75	1	10	[62]	[62]
Tanzania (U.R.)	Kerege	-6.57	39.03	1992	271.60	n/a	n/a	0.88	0.5	3.33	[58]	[58]
Tanzania (U.R.)	Kikwazu	-5.00	38.82	1986-1989	667.43	824	673	0.82	1	10	[62]	[62]
Tanzania (U.R.)	Kongo	-6.53	38.83	1992	576.70	51	45	0.88	0.5	3.33	[58]	[58]
Tanzania (U.R.)	Kumbamtoni	-5.26	38.81	1986-1989	419.75	1451	1114	0.77	1	10	[62]	[62]
Tanzania (U.R.)	Kwameta	-5.11	38.49	1995-1996	91.00	528	430	0.81	0	10	[56] [57]	[57]
Tanzania (U.R.)	Kwamhanya	-5.06	38.46	1995-1996	1.70	400	265	0.66	0	10	[56] [57]	[57]
Tanzania (U.R.)	Lowland, Muheza			1995-1996	405.00	n/a	n/a	0.82	0	5	[59]	[59]
Tanzania (U.R.)	Magundi	-5.09	38.47	1995-1996	9.70	713	456	0.64	0	10	[56] [57]	[57]
Tanzania (U.R.)	Mapinga	-6.60	39.07	1992	235.60	55	42	0.76	0.5	3.33	[58]	[58]
Tanzania (U.R.)	Matimbwa	-6.50	38.87	1992	702.60	n/a	n/a	0.75	0.5	3.33	[58]	[58]
Tanzania (U.R.)	Michenga	-8.12	36.63	1990-1991	547.50	2473	2053	0.83	1	9	[63]	[64]
Tanzania (U.R.)	Milungui	-4.76	38.36	1995-1996	0.03	711	84	0.12	0	10	[56] [57]	[57]
Tanzania (U.R.)	Muheza (near)	-5.22	38.80	1995-1996	379.60	283	263	0.93	1	6	[65]	[65]
Tanzania (U.R.)	Namawala	-8.15	36.40	1990-1991	329.00	2302	1996	0.87	0	10	[64]	[64]
Tanzania (U.R.)	Yombo	-6.57	38.85	1992	220.60	n/a	n/a	0.93	0.5	3.33	[58]	[58]
Tanzania (U.R.)	Zinga	-6.52	38.98	1992	93.70	n/a	n/a	0.87	0.5	3.33	[58]	[58]



**Figure A6.1.** Plot of  $PfEIR$  ( $\text{Log}_{10}$ ) against  $PfPR$  showing the difference (arrows) between the original 121 (black circles) and the updated pairs (open circles). The purple and orange lines represent the fit of the original and the updated datasets, respectively.