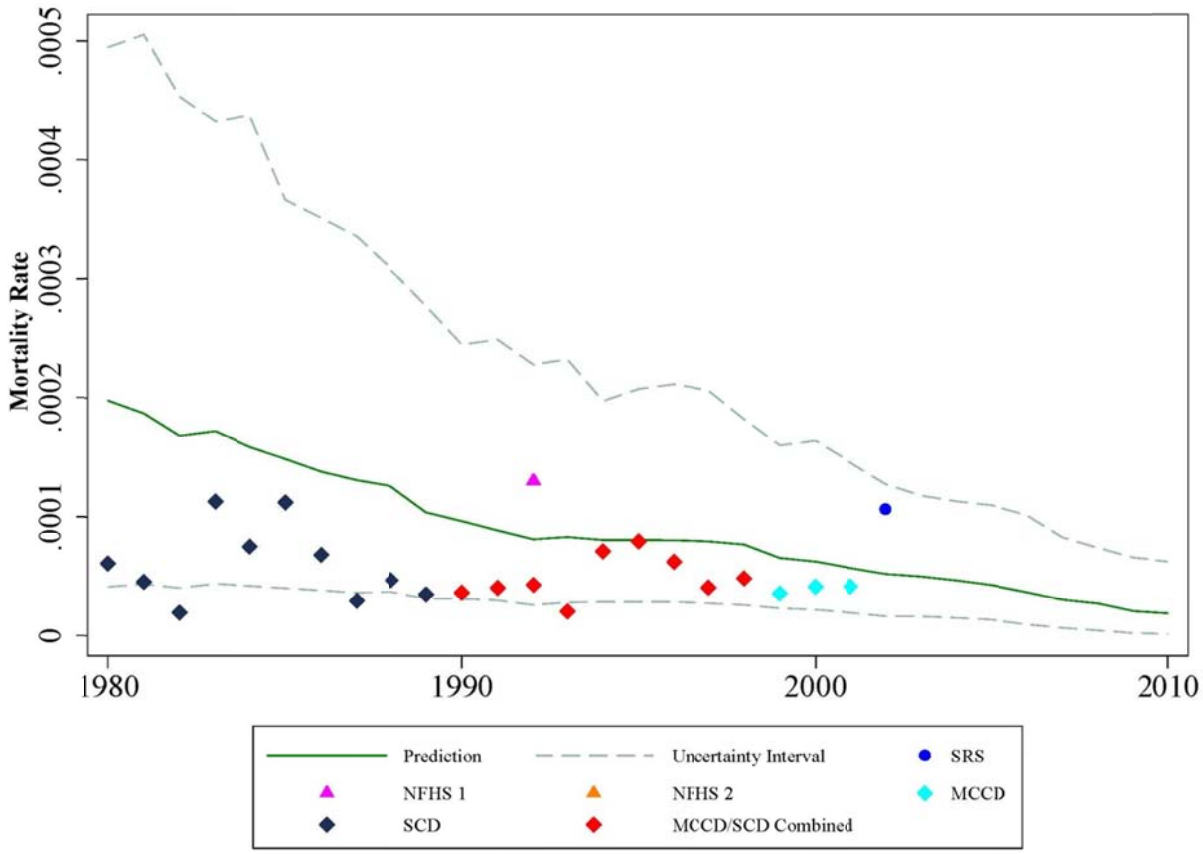
Global malaria mortality between 1980 and 2010: a systematic analysis – WEBAPPENDIX

Authors: Christopher J L Murray, Lisa C Rosenfeld, Stephen S Lim, Kathryn G Andrews, Kyle J Foreman, Diana Haring, Nancy Fullman, Mohsen Naghavi, Rafael Lozano, Alan D Lopez

Published in *The Lancet* February 2, 2012

In this Webappendix, we provide more detail on key methodological steps utilized in the analysis. We also provide additional figures referenced in the main paper as well as tables detailing country-level results as well as tables detailing all the data used to estimate malaria mortality.

Figures referenced in main paper



Web Figure 1. Data sources and estimates of the fraction of mortality due to malaria among females aged 30 to 34 years of age, India, 1980 to 2010.

Cause of death data processing
To enhance comparability of the results, we followed the conceptual approach developed by Naghavi et al[1]. There are 4 broad groups of "Garbage codes":

1. Causes that cannot or should not be considered as underlying causes of death.
2. Intermediate causes of death such as heart failure, septicemia, peritonitis, osteomyelitis, or pulmonary embolism.
3. Immediate causes of death that are the final steps in a disease pathway leading to death.
4. Unspecified causes within a larger cause grouping.

For example, those deaths under the chapter XVI in ICD 9 (780-799) or chapter XVII in ICD 10 (R00-R99) symptoms, signs and ill-defined conditions were assigned to all the causes that qualify as underlying causes of death following the observed fraction by age, sex, country and year among those deaths with a specified underlying cause. In addition to redistributing deaths assigned to the ill-defined category, some intermediate or immediate causes of death should be redistributed to a narrower set of likely underlying causes of death.

The fraction of all deaths assigned to garbage codes varies tremendously across countries and revisions of the ICD. In general, across all country-years of data available, using a very stringent definition, garbage codes have declined from more than 43% in ICD-7 to 24% in ICD-10. In some regions, such as Australasia, garbage codes in 2005 are as low as 11%, while in some developing countries, such as Sri Lanka, they are greater than 45%. Across different age groups, the composition of garbage codes varies tremendously - three classes of garbage codes steadily increase with age, but ambiguous codes within a particular disease chapter are also common for injuries at younger ages. The impact of redistribution is to change the number of deaths assigned to particular causes for a given age-sex group.

The garbage codes that are partially redistributed to malaria fall into two groups; (i) specific; and (ii) general. The specific garbage codes are provided in WebTable 1. For most of these specific causes, such as ill-defined parasitic disease, these deaths are proportionately redistributed across the deaths by age group from specified parasitic diseases. The logic is that a fraction of these deaths in areas with malaria are believed to be misclassified malaria. For selected verbal autopsy studies, notably the AMMP studies in Tanzania, results reported deaths for categories such as "acute febrile disease" or "unspecified acute febrile illness" and no deaths are attributed to malaria. We obtained results directly from the authors of a validation study in Tanzania that provided the fraction of deaths in this category by age that were considered to be malaria based on medical records review. These fractions were used for other VA studies in Africa. For VA studies that report deaths broadly due to anemia we also redistribute these deaths based on the prevalence of underlying causes (malaria, iron-deficiency, etc) and their respective effect of hemoglobin. These garbage codes account for a relatively small number of deaths except for the code unspecified parasitic disease.

WebTable 1. Specific garbage codes that are allocated to malaria and the fraction added.

Garbage Codes		Target Code		
ICD 10 Code	**Name**	**ICD 10 code**	**Name**	**Fraction added**
D65	Disseminated intravascular coagulation [defibrination syndrome]	B50	Plasmodium falciparum malaria	0·02
B89	Unspecified parasitic disease	B50	Plasmodium falciparum malaria	Observed proportion
		B53	Other parasitological confirmed malaria	
		B54	Unspecified malaria	
B94	Sequelae of other and unspecified infectious and parasitic diseases	B50	Plasmodium falciparum malaria	Observed proportion

Garbage Codes		Target Code		
ICD 9 Code	**Name**	**ICD 9 code**	**Name**	**Fraction added**
780·6	Pyrexia of unknown origin	84	Malaria Malaria	Observed proportion

286·6	Defibrination syndrome	84	Malaria	0·05

Source	Country	Garbage code	Target	Fraction
SCD (Rural)	India	Fever	Malaria	0·1 for children Observed proportion for adults
		Convulsions	Malaria	0·4 children 0·1 adults
SRS (adults)	India	Fever	Malaria	Observed proportion
VA Studies		Fever	Malaria	Observed proportion for children and adults
		Convulsions	Malaria	Observed proportion for children and adults
		Anemia	Malaria	Based on model of hemoglobin shift per prevalent case of *P. falciparum* compared to hemoglobin shifts from other causes of anemia

In addition to these source codes, there are general codes of ill-defined deaths. These play a more important role at older ages and in some Asian country vital registration systems. These may represent deaths where there is insufficient information on a death certificate or a VA to assign a cause of death, e.g. the death certificate may simply indicate "death from an unspecified cause". These deaths are redistributed proportionately across other causes that have been specified. The logic is that in the absence of other evidence, the most likely cause distribution of unspecified deaths is the same as for those deaths with a specified cause. This approach has been used for all other causes of death since the early 1990s by the World Health Organization (WHO) and many other analysts.

To illustrate the effect of misclassification, we have calculated the median correction factor by age (5-year age groups) and by country-year (WebTable 2). The overall median correction factor is 1.21. In other words, we have increased the total number of malaria deaths by 21% based on redistribution of misclassified deaths. For children under five years the median correction factor is 1.2. The largest corrections occur at older age above 60 – the median correction factor is 1.31 for adults aged 60 and above. Larger correction factors also occur in places with low numbers of malaria deaths like Thailand in East Asia/Pacific or like El Salvador, Suriname, Colombia, Brazil or Mexico in Latin America. In addition, we have also re-run our models of malaria without correcting for misclassification (see below) to demonstrate the importance of correcting for misclassified deaths.

WebTable 2. Median correction factor for redistribution of misclassified deaths.

Age	World	East Asia/Pacific	Sub - Sahara Africa	South Asia	Latin America & Caribbean	Rest
<5	1.2	1.4	1.03	1.36	1.31	1.06
5-14	1.24	1.3	1.17	1.41	1.25	1.16
15-29	1.17	1.2	1.15	1.34	1.18	1.12
30-44	1.18	1.25	1.16	1.39	1.2	1.13
45-59	1.19	1.33	1.17	1.6	1.22	1.1
60+	1.31	1.74	1.25	2.44	1.3	1.18
all	1.21	1.33	1.16	1.48	1.24	1.13

Malaria Mortality Model

Our approach to developing the model for malaria mortality follows from the methods developed[2] to estimate maternal mortality[3] and breast and cervical cancer[4]. It falls into three steps: covariate selection, spatial-temporal regression and GPR, and out-of-sample evaluation of predictive validity. We develop models separately for (i) countries from sub-Saharan Africa and Yemen (total of 45 countries); and (ii) countries outside of sub-Saharan Africa (44 countries). We develop models for males and females and broad age groups (children under the age of five and ages five years and older) separately, i.e. for a total of eight categories of models.

Covariate selection

A key predictor of malaria deaths is malaria transmission intensity such as *Pf*PR. Ideally, a time-series of malaria transmission intensity for all countries included in this analysis would be used to inform the trend over time in malaria mortality. Data on malaria transmission intensity, however, is only available for single time periods, e.g. MAP produces estimates of *Pf*PR for 2007 only. To address this limitation, we specify models that include estimates of malaria transmission intensity for a reference time period and then supplement this with available time-series data for other factors, e.g. rainfall, to reflect changes in malaria mortality from the reference time period. We do not use the time series variables to adjust the reference period transmission intensity, rather we use the combination of malaria transmission intensity and time series data to model malaria mortality directly, i.e. we only test models that include both a measure of malaria transmission intensity as well as a predictor with time series data available.

We include and test three sources of malaria transmission intensity: (i) the fraction of the population by endemicity zone defined by Lysenko for the assumed malaria transmission peak prior to the 1960s[5,6]; (ii) WHO's estimates of the proportion of the population at risk of malaria for 2006[7]; and (iii) the Malaria Atlas Project (MAP) estimates of the Plasmodium falciparum parasite rate for the standardized age interval of 2 to 10 years ($Pf\text{PR}_{2\text{-}10}$) in 2007 [8]. For the MAP $Pf\text{PR}_{2\text{-}10}$, we test continuous and categorical forms: the population-weighted average of the $Pf\text{PR}_{2\text{-}10}$; and the fraction of the population in three transmission zones ($Pf\text{PR}_{2\text{-}10}$<5%, 5 to 39%, ≥40%).[5] As MAP provides high-resolution estimates of $Pf\text{PR}_{2\text{-}10}$, we determine the study site-specific value of the 2007 $Pf\text{PR}_{2\text{-}10}$ for all sub-national studies. As we are using measures of malaria transmission intensity for a reference time period, we do not use the *Pf*PR reported for sites at the specific time of the study. As measures of malaria intensity transmission from different periods will confound trends in malaria mortality over time, we test only models using malaria intensity measures from one reference period, i.e. Lysenko, WHO, or MAP.

We tested the following time-series variables that may reflect changes from the reference period of malaria intensity: rainfall, health system access, first-line antimalarial drug resistance, insecticide-treated bednet (ITN) coverage, indoor residual spraying (IRS) coverage, income per capita and educational attainment.[9] First-line antimalarial drug resistance is a weighted average of the treatment efficacy of chloroquine, sulfadoxine-pyrimethamine (S-P), and artemisinin -combination therapy (ACT) with weights based on the frequency of drug use; both treatment efficacy and drug use were estimated for each country-year. Treatment efficacy was estimated using a spatio-temporal model of *in vivo* efficacy studies (725 datapoints for chloroquine and 370 datapoints for S-P) based on a systematic search of the literature and WHO antimalarial drug resistance database reports[10,11]. Frequency of drug use was estimated using a spatio-temporal model of survey data on antimalarial drug use among children with fever which was supplemented by program data on ACT supply, correcting for bias using survey data as the benchmark. Updated estimates of survey-based ITN household coverage and estimates for outside of Africa were produced using Bayesian statistical model that combines all available supply, distribution and household survey data.[12] As the observational data that relates ITN coverage to malaria mortality is extremely sparse – there are few data points for recent years during the ITN scale-up in sub-Saharan Africa – we also include in the database the treatment arms of cluster-randomized trials of ITNs in the Gambia and Ghana[9,13] and use the reported ITN coverage from those trials. A recent study by Lim et al. of 22 sub-Saharan African countries, as well as other observational studies,[14–16] show that the effect of ITNs on child mortality is highly consistent with that reported in the cluster-randomized trials.[17] IRS coverage was based on a spatio-temporal model of survey data on reported household spraying in the last 12 months and program data provided to WHO, correcting for bias using survey data as the benchmark. For factors for which data are not available, we depend on the available data on malaria mortality and the spatial temporal borrowing of strength.

We divide these covariates into three groups based on the strength of epidemiological evidence: Class 1 covariates for which there is strong evidence and a biologically plausible pathway, Class 2 covariates with some evidence but with a less direct causal pathway; and Class 3 covariates where there is general correlation evidence for a relationship as observed in previous time-series or cross-sectional studies. Age dummies (late neonatal, post-neonatal, ages 1 to 4 years of age, 5 year age groups up to 80+) are included in all models to account for differential patterns of malaria mortality by age. We have expectations for the direction of the relationship between each covariate and the level of malaria mortality. The level and expected direction for covariates are shown in WebTable 3.

WebTable 3: Candidate covariates, their level and assumed direction for modeling malaria mortality

Covariate	Direction	Level
Health System Access	negative	1
ITN Coverage (proportion)	negative	1
Malaria Endemicity (40-100%)	positive	1
Malaria Endemicity (5-100%)	positive	1
Malaria Indoor Residual Spraying Coverage	negative	1
Malaria Lysenko PfPR (Holoendemic)	positive	1
Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	positive	1
Malaria Lysenko PfPR (Hypoendemic-Holoendemic)	positive	1
Malaria Lysenko PfPR (Mesoendemic-Holoendemic)	positive	1
Malaria PfPR	positive	1
Malaria Population-At-Risk (proportion)	positive	1
Malaria Prev Weighted Resistance	positive	1
Rainfall (Quintiles 2-5)	positive	1
Rainfall (Quintiles 3-5)	positive	1
Rainfall (Quintiles 4-5)	positive	1
Rainfall Quintile 5	positive	1
Presence of Vivax Transmission	positive	2
Female Education by Age	negative	3
LDI (I$ per capita)	negative	3

In the first step, we run regressions for all possible combinations of category 1 covariates. All models where the signs for all covariates in that model are in the expected direction and the coefficient is significant at the $p<0.10$ level are retained. We use a less conservative p value < 0.10 given the scarcity of data on malaria mortality. Category two and three covariates are added to these models following a similar procedure. For category two and three covariates, models that are subsets of other models are not retained. We repeat the entire process for models of the log of rates and the logit of cause fractions. There has been extensive debate in the literature on maternal mortality[3] on the advantages and disadvantages of models of rates or cause fractions. We prefer to develop models of both the log rates and logit of cause fractions and then let the predictive validity assessment drive the extent to which we choose rates or cause fraction models.

This approach yields 145 combinations of covariates for under-five males in Africa; 56 combinations of covariates for males aged five years and over in Africa; 69 combinations of covariates for under-five females in Africa; 41 combinations of covariates for females aged five years and over in Africa; 119 combinations of covariates for under-five males in countries outside of Africa; 337 combinations of covariates for males aged five years and over in countries outside of Africa; 183 combinations of covariates for under-five females in countries outside of Africa; and 343 combinations of covariates for females aged five years and over in countries outside of Africa.

Mixed Effects Linear Regression and Spatial temporal Regression and GPR

Studies on child mortality, adult mortality and maternal mortality[3,18,19] along with work in many other fields have shown that there are often spatial and temporal patterns in the unexplained component of age-specific death rates. Spatial temporal regression is a powerful approach to identifying these patterns and using them to improve predictions. Rajaratnam et al use spatial temporal approaches implemented in the context of Gaussian Process Regression (GPR) to improve the performance of models and yield plausible uncertainty estimation. We use the same approach. Each spatial temporal model for malaria identified in the covariate selection step is used as the mean function in a Gaussian Process Regression. To formally test that the spatial temporal component of the model is improving prediction, we run a spatial temporal GPR version of each model as well as the simple mixed effects linear version. In other words, each combination of covariates for rates and cause fractions in each country grouping is run in two forms: the mixed effects linear and the spatial-temporal GPR.

Ensemble Models

The literature in other fields on prediction strongly suggests that ensemble models will have better performance out-of-sample than the single best model and will also generate more accurate uncertainty intervals that capture uncertainty due to model specification. The range of ensembles is determined by the following equation:

$$W_i = \frac{\psi^{(N-rank_i)}}{\sum_{j=1}^{N}\left(\psi^{(N-j)}\right)}$$

Where N is the number of models and ψ is a parameter influencing the relative weighting of models.

Predictive Validity

The ability of each of these models to make accurate predictions is formally evaluated. We create 50 train-test-test splits. For each of these datasets, we randomly assign 70% of the data to the train set, 15% to test1 and the last 15% to test2. The assignment of the data to train and test is implemented so that the pattern of holding out the data for the test datasets mimics the pattern of missingness in the full dataset. For each train dataset, we re-estimate each of the proposed models including both the linear model and the spatial-temporal model. We use the results of the models estimated on the training data alone to predict for the test set. The test data have not been included in the model estimation; the performance of each model is therefore being evaluated out-of-sample. In this way, the out-of-sample predictions for the test set are a fair test of how each model will perform in predicting malaria mortality where the data are sparse or missing. Individual component models are assessed in the first test set with the results used to construct the ensemble models. Both ensemble and individual component models are assessed in the second test set.

Predictive validity is evaluated using three metrics. First, we evaluate how well each model predicts age-specific death rates using the RMSE of the ln death rate. Log death rates are comparable across age-groups so that we can pool results from model performance across age groups with quite different underlying rates. Second, we also want models that predict accurate trends. To do this, for the test data, we compute where possible the log death rate in year t minus the log death rate in year t-1. We also compute the same metric for the prediction. We then count the percentage of the time that the model predicts the same trend as the test data. Finally, we also want models that generate plausible prediction intervals so we compute the percent of the data in the test set included in the 95% prediction interval. The prediction interval is based both on the uncertainty in the predicted death rate and the data variance for each observation.

WebTable 4 provides details on the out-of-sample performance of individual component models.

WebTable 4: Out-of-sample performance for each covariate model for malaria mortality

Model	Rank	Model Type	Dependent Variable	Covariates	Root Mean Squared Error		Proprtion with Correct Trend		Draws
					In-Sample	Test 1	In-Sample	Test 1	
Females under 5 in Africa	1	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·711	0·849	0·554	0·556	21
	2	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·725	0·889	0·554	0·556	21
	3	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·721	0·903	0·537	0·556	20
	4	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·737	0·877	0·562	0·550	20
	5	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·723	0·897	0·554	0·545	19
	6	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·715	0·917	0·554	0·545	19
	7	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·760	1·000	0·579	0·586	19
	8	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·710	0·961	0·537	0·550	18
	9	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·729	0·908	0·562	0·529	18

10	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	0·599	0·863	0·479	0·520	18
11	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·718	1·002	0·554	0·556	17
12	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·764	1·013	0·545	0·579	17
13	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·600	0·992	0·521	0·550	17
14	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·780	1·021	0·545	0·556	16
15	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·720	0·992	0·537	0·545	16
16	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·720	1·028	0·537	0·556	16
17	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·737	0·799	0·504	0·514	15
18	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·598	0·961	0·512	0·529	15
19	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·597	0·801	0·496	0·514	15
20	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·601	0·804	0·496	0·514	14
21	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance	0·616	0·973	0·488	0·533	14

22	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·597	0·918	0·488	0·520	14
23	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·739	0·810	0·496	0·514	14
24	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·600	0·871	0·496	0·519	13
25	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·593	0·926	0·512	0·523	13
26	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·598	0·844	0·488	0·514	13
27	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%)	0·776	1·056	0·570	0·595	13
28	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·598	0·927	0·488	0·520	12
29	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·740	0·871	0·529	0·517	12
30	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance	0·619	1·005	0·504	0·533	12
31	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance	0·754	0·864	0·512	0·514	12
32	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·733	1·004	0·545	0·529	11
33	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·759	1·088	0·810	0·750	11
34	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·594	1·022	0·529	0·541	11

35	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·751	0·891	0·521	0·517	11
36	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·711	1·007	0·537	0·529	10
37	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·741	0·796	0·496	0·500	10
38	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·743	1·050	0·562	0·550	10
39	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·726	1·070	0·554	0·556	10
40	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·611	0·972	0·496	0·520	10
41	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·602	0·817	0·488	0·500	9
42	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·747	0·841	0·504	0·500	9
43	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·597	0·845	0·488	0·500	9
44	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	0·788	1·098	0·595	0·579	9
45	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·606	0·912	0·512	0·514	9
46	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·756	0·859	0·496	0·500	9

47	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·590	0·913	0·496	0·514	8
48	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·719	1·008	0·537	0·526	8
49	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	0·608	1·055	0·554	0·541	8
50	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·632	0·951	0·545	0·519	8
51	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·622	1·041	0·521	0·531	8
52	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·767	0·925	0·529	0·514	8
53	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·604	0·873	0·512	0·500	7
54	Spatiotemporal	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·594	1·007	0·504	0·520	7
55	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·740	0·933	0·521	0·514	7
56	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	0·770	0·895	0·504	0·500	7
57	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·616	0·947	0·496	0·514	7
58	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·751	0·895	0·521	0·500	7
59	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)LDI (I$ per capita)	0·624	1·017	0·529	0·520	7
60	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·749	0·901	0·496	0·500	7
61	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·719	1·064	0·545	0·529	6

62	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·593	0·911	0·529	0·500	6
63	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)	0·643	1·028	0·537	0·520	6
64	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·610	0·963	0·512	0·514	6
65	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance	0·769	0·923	0·537	0·500	6
66	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·600	1·042	0·504	0·520	6
67	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·750	0·925	0·512	0·500	6
68	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·718	1·129	0·537	0·550	6
69	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate)	0·779	1·165	0·537	0·556	5
70	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·593	0·949	0·504	0·500	5
71	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·604	1·061	0·545	0·520	5
72	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·621	0·959	0·537	0·500	5
73	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·757	1·264	0·636	0·595	5
74	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	0·758	1·212	0·603	0·579	5
75	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) LDI (I$ per capita)	0·620	0·970	0·529	0·512	5
76	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·708	1·160	0·537	0·550	5

77	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·594	0·964	0·512	0·500	5
78	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·734	1·119	0·545	0·529	5
79	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·613	1·015	0·504	0·514	4
80	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·607	0·973	0·554	0·500	4
81	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·611	1·096	0·529	0·523	4
82	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) LDI (I$ per capita)	0·766	1·141	0·579	0·538	4
83	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·748	0·981	0·512	0·500	4
84	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·725	1·100	0·554	0·520	4
85	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·709	1·126	0·537	0·526	4
86	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%)	0·637	1·067	0·529	0·519	4
87	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate)	0·634	1·159	0·545	0·529	4
88	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·738	1·012	0·521	0·500	4
89	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·816	1·165	0·529	0·529	4
90	Mixed Effects	Logit(CF)	ITN Coverage (proportion)LDI (I$ per capita)	0·838	1·075	0·529	0·519	4
91	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·765	1·195	0·579	0·538	4

92	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·625	1·181	0·488	0·533	3
93	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%)	0·835	1·088	0·496	0·519	3
94	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·597	1·027	0·529	0·500	3
95	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·636	1·096	0·537	0·519	3
96	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·607	1·033	0·554	0·500	3
97	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·601	1·036	0·512	0·500	3
98	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·709	1·228	0·537	0·529	3
99	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·815	1·039	0·504	0·500	3
100	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·645	1·154	0·529	0·520	3
101	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·620	1·043	0·537	0·512	3
102	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·718	1·172	0·537	0·526	3
103	Mixed Effects	Logit(CF)	ITN Coverage (proportion)	0·839	1·114	0·496	0·519	3
104	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·716	1·044	0·554	0·500	3
105	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·611	1·055	0·496	0·500	3
106	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·622	1·169	0·496	0·520	3

107	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) LDI (I$ per capita)	0·817	1·062	0·529	0·500	3
108	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·738	1·070	0·521	0·500	3
109	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·718	1·297	0·537	0·526	2
110	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·760	1·084	0·529	0·500	2
111	Spatiotemporal	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·626	1·260	0·496	0·520	2
112	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·606	1·093	0·504	0·500	2
113	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·626	1·333	0·479	0·520	2
114	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·816	1·097	0·512	0·500	2
115	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·617	1·138	0·504	0·514	2
116	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) LDI (I$ per capita)	0·610	1·098	0·529	0·500	2
117	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·619	1·459	0·496	0·520	2
118	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·816	1·107	0·496	0·500	2
119	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·626	1·495	0·479	0·520	2
120	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·612	1·108	0·496	0·500	2
121	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·609	1·116	0·504	0·500	2

122	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%)	0·622	1·125	0·529	0·500	2
123	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·622	1·126	0·529	0·500	2
124	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·614	1·004	0·545	0·469	2
125	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Female Education by Age	0·726	1·126	0·521	0·500	2
126	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	0·815	1·127	0·496	0·500	2
127	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·817	1·131	0·496	0·500	2
128	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·749	1·139	0·512	0·500	2
129	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·613	1·151	0·504	0·500	2
130	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Female Education by Age	0·621	1·155	0·496	0·500	2
131	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·620	1·165	0·504	0·500	2
132	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·815	1·175	0·496	0·500	2
133	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	0·645	1·195	0·537	0·500	2
134	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·613	1·275	0·504	0·500	2
135	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·619	1·309	0·488	0·500	1
136	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·632	1·314	0·529	0·500	1
137	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·622	1·334	0·504	0·500	1
138	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	0·631	1·400	0·537	0·500	1

Females 5 and over in Africa	1	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance	0·991	1·149	0·533	0·531	49
	2	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·713	1·312	0·597	0·529	46
	3	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	1·003	1·373	0·548	0·563	44
	4	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance	0·713	1·268	0·601	0·520	42
	5	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·007	1·295	0·460	0·518	40
	6	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Female Education by Age	0·711	1·369	0·595	0·525	38
	7	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	1·007	1·314	0·460	0·518	36
	8	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·952	1·303	0·514	0·516	34
	9	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·953	1·273	0·516	0·509	33
	10	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Female Education by Age	0·951	1·316	0·540	0·516	31
	11	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	1·007	1·226	0·460	0·500	30
	12	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·940	1·366	0·580	0·520	28
	13	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·960	1·572	0·548	0·579	27
	14	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·959	1·568	0·548	0·574	26
	15	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·709	1·456	0·605	0·529	24
	16	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·714	1·354	0·606	0·516	23
	17	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·711	1·549	0·591	0·535	22
	18	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·709	1·501	0·599	0·525	21

19	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·708	1·592	0·578	0·531	20
20	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·712	1·667	0·599	0·535	19
21	Mixed Effects	Logit(CF)	Rainfall (Quintiles 3-5)	1·018	1·229	0·444	0·480	18
22	Spatiotemporal	Logit(CF)	Rainfall (Quintiles 3-5)	0·741	1·277	0·499	0·482	17
23	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·972	1·180	0·446	0·475	17
24	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·958	1·843	0·548	0·579	16
25	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·949	1·541	0·544	0·525	15
26	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·974	1·495	0·567	0·520	14
27	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·971	1·231	0·437	0·476	14
28	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·706	1·705	0·610	0·533	13
29	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·704	1·673	0·606	0·525	12
30	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·945	1·376	0·465	0·500	12
31	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·700	1·428	0·591	0·508	11
32	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·709	1·415	0·599	0·506	11
33	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·971	1·227	0·437	0·463	10
34	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·950	1·704	0·542	0·525	10

35	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·951	1·467	0·539	0·512	9
36	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·709	1·723	0·574	0·525	9
37	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·719	1·347	0·531	0·482	8
38	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·707	1·983	0·595	0·533	8
39	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·707	2·338	0·597	0·542	8
40	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·728	1·280	0·522	0·463	7
41	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·957	2·546	0·548	0·563	7
42	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·713	1·434	0·559	0·496	7
43	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·747	1·361	0·550	0·479	6
44	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·006	1·536	0·482	0·506	6
45	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·708	1·389	0·550	0·483	6
46	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·978	1·544	0·501	0·508	5
47	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5)	0·743	1·335	0·529	0·473	5
48	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·701	1·727	0·559	0·521	5
49	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·745	1·414	0·539	0·484	5

50	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·956	1·806	0·448	0·521	4
51	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·725	1·373	0·520	0·478	4
52	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·038	1·320	0·441	0·463	4
53	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·704	1·416	0·548	0·484	4
54	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·708	2·473	0·597	0·529	4
55	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5)	1·057	1·320	0·460	0·463	3
56	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·945	1·435	0·441	0·488	3
57	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·706	1·921	0·578	0·524	3
58	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·736	1·468	0·542	0·489	3
59	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·948	2·486	0·535	0·525	3
60	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·957	1·632	0·448	0·506	3
61	Spatiotemporal	Logit(CF)	Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·724	1·325	0·503	0·458	3
62	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·957	1·635	0·448	0·506	2
63	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·704	1·508	0·548	0·488	2

64	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·717	1·399	0·525	0·475	2
65	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·990	1·342	0·427	0·447	2
66	Mixed Effects	Logit(CF)	Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·986	1·341	0·418	0·435	2
67	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·946	1·401	0·443	0·471	2
68	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·734	1·383	0·531	0·463	2
69	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·944	1·622	0·450	0·492	2
70	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·955	2·525	0·448	0·520	2
71	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·708	2·010	0·593	0·516	2
72	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·713	1·464	0·557	0·475	2
73	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·948	2·005	0·540	0·512	1
74	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·942	1·901	0·433	0·496	1
75	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·707	1·855	0·552	0·495	1

	76	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·705	2·371	0·573	0·506	1
	77	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·738	1·683	0·546	0·479	1
	78	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·725	1·587	0·522	0·471	1
	79	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·706	2·211	0·548	0·482	1
	80	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	1·007	1·770	0·463	0·471	1
	81	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·942	2·240	0·444	0·476	1
	82	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·970	1·697	0·435	0·441	1
Males under 5 in Africa	1	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·679	0·924	0·639	0·594	15
	2	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·683	0·948	0·648	0·594	15
	3	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·810	1·051	0·582	0·626	15
	4	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·823	0·986	0·615	0·597	14
	5	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·694	0·970	0·623	0·594	14
	6	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·793	0·994	0·639	0·594	14

7	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·842	1·060	0·574	0·638	14
8	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·681	1·035	0·582	0·600	13
9	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·686	1·065	0·574	0·636	13
10	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·680	1·022	0·566	0·597	13
11	Spatiotemporal	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·673	1·042	0·598	0·600	13
12	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·674	1·028	0·582	0·595	13
13	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·671	1·053	0·598	0·600	13
14	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·767	1·074	0·639	0·604	12
15	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·847	1·091	0·590	0·638	12
16	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·837	1·043	0·607	0·594	12

17	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·792	1·018	0·615	0·588	12
18	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·795	1·008	0·639	0·586	12
19	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·680	1·035	0·557	0·591	11
20	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·695	0·969	0·631	0·583	11
21	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·675	1·070	0·607	0·600	11
22	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·806	1·097	0·582	0·638	11
23	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·840	1·054	0·549	0·594	11
24	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·765	1·079	0·639	0·600	11
25	Mixed Effects	Ln(Rate)	Malaria Indoor Residual Spraying Coverage Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·797	1·098	0·574	0·610	10
26	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) Female Education by Age	0·792	1·108	0·664	0·644	10

27	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·773	1·053	0·590	0·591	10
28	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·761	1·051	0·639	0·589	10
29	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·768	1·058	0·590	0·591	10
30	Spatiotemporal	Ln(Rate)	Malaria Indoor Residual Spraying Coverage Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·686	1·107	0·582	0·610	10
31	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·681	1·014	0·639	0·576	10
32	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·771	1·038	0·607	0·581	9
33	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·680	1·034	0·549	0·581	9
34	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·799	1·058	0·631	0·588	9
35	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·796	1·116	0·615	0·610	9
36	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·672	1·078	0·623	0·594	9

37	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·804	1·079	0·623	0·594	9
38	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·674	1·094	0·590	0·597	9
39	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%)	0·847	1·091	0·574	0·594	9
40	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·798	1·124	0·607	0·617	8
41	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·699	1·031	0·607	0·577	8
42	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·678	1·006	0·557	0·574	8
43	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·801	0·958	0·541	0·564	8
44	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·793	1·093	0·615	0·594	8
45	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·689	0·866	0·533	0·561	8
46	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·769	1·112	0·631	0·603	8

47	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·675	1·078	0·582	0·589	8
48	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·701	0·985	0·623	0·565	7
49	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·794	1·058	0·615	0·583	7
50	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·673	1·133	0·598	0·611	7
51	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·695	1·015	0·639	0·569	7
52	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·804	1·125	0·607	0·609	7
53	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·677	1·054	0·566	0·581	7
54	Mixed Effects	Logit(CF)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·803	0·973	0·549	0·561	7
55	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·810	1·008	0·541	0·567	7
56	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·760	1·117	0·598	0·600	7
57	Spatiotemporal	Ln(Rate)	Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·684	1·059	0·598	0·582	7
58	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·782	1·083	0·615	0·589	6

59	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·811	1·141	0·607	0·620	6
60	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·814	1·075	0·615	0·583	6
61	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·798	1·075	0·615	0·583	6
62	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·688	1·122	0·566	0·600	6
63	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·672	1·001	0·590	0·561	6
64	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·784	1·127	0·615	0·604	6
65	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·685	1·099	0·574	0·594	6
66	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·808	1·066	0·615	0·581	6
67	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·775	1·123	0·623	0·600	6
68	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·802	1·049	0·631	0·576	6

69	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·773	1·112	0·623	0·597	5
70	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance	0·833	0·974	0·557	0·559	5
71	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·675	1·129	0·607	0·603	5
72	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·769	1·140	0·615	0·604	5
73	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·811	1·158	0·811	0·847	5
74	Spatiotemporal	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·681	1·026	0·566	0·564	5
75	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·687	1·090	0·607	0·586	5
76	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·677	1·081	0·566	0·583	5
77	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·768	1·146	0·615	0·610	5
78	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) Female Education by Age	0·679	1·148	0·574	0·611	5
79	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·701	1·024	0·615	0·561	5

	80	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·780	1·090	0·607	0·583	5
	81	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·679	1·016	0·574	0·559	5
	82	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·690	1·146	0·574	0·606	4
	83	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·685	1·079	0·598	0·582	4
	84	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·805	1·153	0·623	0·624	4
	85	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·804	0·910	0·541	0·554	4
	86	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·681	0·971	0·639	0·556	4
	87	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·678	1·142	0·615	0·603	4
	88	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·796	1·080	0·623	0·581	4
	89	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·674	1·025	0·566	0·559	4
	90	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·790	1·085	0·582	0·581	4

91	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·685	1·119	0·590	0·594	4
92	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·688	0·952	0·533	0·553	4
93	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·767	1·101	0·574	0·586	4
94	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·835	1·109	0·598	0·589	4
95	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·812	1·152	0·590	0·604	4
96	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·795	1·076	0·615	0·576	4
97	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·681	1·151	0·549	0·603	4
98	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·678	1·146	0·598	0·600	4
99	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·803	0·998	0·541	0·554	3
100	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·806	1·103	0·582	0·583	3
101	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·688	0·984	0·541	0·553	3
102	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·830	1·057	0·557	0·564	3

103	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·806	1·105	0·549	0·586	3
104	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·687	0·953	0·541	0·548	3
105	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·680	1·079	0·541	0·576	3
106	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·676	1·179	0·557	0·610	3
107	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·777	1·113	0·590	0·586	3
108	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·831	1·006	0·541	0·551	3
109	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·805	1·076	0·557	0·571	3
110	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·690	1·023	0·533	0·553	3
111	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·811	1·041	0·541	0·556	3
112	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·782	1·124	0·590	0·588	3
113	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·678	1·033	0·566	0·554	3

114	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·836	1·041	0·623	0·556	3
115	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·681	1·057	0·549	0·559	3
116	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·681	1·006	0·533	0·548	3
117	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·804	1·054	0·623	0·559	3
118	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·860	1·018	0·566	0·551	3
119	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·812	1·096	0·582	0·576	3
120	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·759	1·172	0·590	0·600	3
121	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5)	0·803	1·225	0·598	0·645	3
122	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 2-5)	0·843	1·153	0·549	0·597	2
123	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·686	1·123	0·582	0·583	2
124	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate)	0·851	1·152	0·533	0·594	2
125	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·758	1·136	0·598	0·588	2

126	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·805	1·107	0·615	0·580	2
127	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·674	1·042	0·590	0·554	2
128	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·677	1·220	0·598	0·611	2
129	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·697	1·066	0·525	0·559	2
130	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·684	1·037	0·566	0·552	2
131	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·809	1·255	0·639	0·667	2
132	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·766	1·190	0·631	0·600	2
133	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·685	1·192	0·557	0·600	2
134	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·858	1·042	0·549	0·551	2
135	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·812	1·042	0·549	0·551	2
136	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·795	1·090	0·557	0·566	2
137	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	0·855	1·092	0·582	0·567	2

138	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·776	1·143	0·574	0·588	2
139	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·804	1·053	0·557	0·553	2
140	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·861	1·036	0·574	0·546	2
141	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·802	1·090	0·607	0·562	2
142	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance	0·848	1·078	0·549	0·559	2
143	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	0·684	1·029	0·533	0·535	2
144	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·803	1·071	0·566	0·557	2
145	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·766	1·227	0·615	0·604	2
146	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·686	1·032	0·607	0·531	2
147	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5)	0·804	1·288	0·607	0·611	2
148	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·674	1·226	0·574	0·603	2
149	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·679	1·219	0·598	0·600	2
150	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·767	1·132	0·574	0·581	2
151	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 2-5)	0·691	1·246	0·557	0·606	2

152	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·816	1·121	0·582	0·576	2
153	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·808	1·124	0·582	0·578	2
154	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·767	1·246	0·615	0·604	2
155	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·694	1·093	0·533	0·560	2
156	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·849	1·074	0·566	0·555	1
157	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·776	1·148	0·574	0·583	1
158	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·765	1·122	0·574	0·576	1
159	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	0·689	1·047	0·557	0·539	1
160	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·815	1·065	0·566	0·552	1
161	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·792	1·131	0·582	0·577	1
162	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·675	1·178	0·574	0·591	1
163	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5)	0·702	1·312	0·566	0·609	1
164	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 2-5)	0·708	1·457	0·557	0·611	1

165	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance	0·685	1·138	0·533	0·579	1
166	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·682	1·281	0·566	0·603	1
167	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·676	1·181	0·598	0·591	1
168	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·689	1·058	0·582	0·543	1
169	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·804	1·161	0·607	0·586	1
170	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)LDI (I$ per capita)	0·695	1·043	0·557	0·525	1
171	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·760	1·176	0·598	0·588	1
172	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·799	1·099	0·533	0·559	1
173	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·814	1·099	0·557	0·559	1
174	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·682	1·124	0·574	0·574	1
175	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·704	1·054	0·623	0·526	1
176	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·687	1·207	0·582	0·592	1
177	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	0·845	1·063	0·541	0·535	1

178	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·678	1·097	0·574	0·557	1
179	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·774	1·219	0·631	0·594	1
180	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·705	1·044	0·516	0·509	1
181	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·773	1·143	0·590	0·576	1
182	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·683	1·154	0·533	0·581	1
183	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·693	1·068	0·574	0·532	1
184	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·700	1·387	0·590	0·600	1
185	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Female Education by Age	0·684	1·152	0·541	0·578	1
186	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·704	1·456	0·590	0·600	1
187	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·708	1·470	0·590	0·600	1
188	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·802	1·141	0·557	0·568	1
189	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	0·809	1·306	0·598	0·594	1

190	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·674	1·190	0·582	0·583	1
191	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·678	1·257	0·574	0·594	1
192	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·709	1·074	0·615	0·522	1
193	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·702	1·073	0·557	0·514	1
194	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·845	1·108	0·557	0·554	1
195	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·811	1·097	0·549	0·548	1
196	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·798	1·116	0·574	0·556	1
197	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·814	1·111	0·549	0·554	1
198	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·781	1·170	0·590	0·576	1
199	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·683	1·177	0·525	0·577	1
200	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·765	1·231	0·574	0·586	1
201	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·865	1·089	0·566	0·523	1
202	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·700	1·321	0·607	0·591	1

203	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·685	1·206	0·508	0·581	1
204	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·716	1·077	0·557	0·500	1
205	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·680	1·165	0·541	0·570	1
206	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 2-5)	0·860	1·082	0·541	0·506	1
207	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·695	1·145	0·525	0·559	1
208	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) LDI (I$ per capita)	0·693	1·112	0·590	0·549	1
209	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·774	1·284	0·574	0·583	1
210	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·692	1·147	0·533	0·559	1
211	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) LDI (I$ per capita)	0·817	1·137	0·566	0·555	1
212	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·684	1·191	0·516	0·574	1
213	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·700	1·463	0·533	0·588	1
214	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·861	1·103	0·533	0·523	1
215	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·696	1·205	0·598	0·575	1
216	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·694	1·140	0·566	0·554	1

	217	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·774	1·218	0·574	0·576	1
	218	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·868	1·097	0·549	0·500	1
	219	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Female Education by Age	0·801	1·110	0·557	0·530	1
	220	Mixed Effects	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 2-5)	0·858	1·100	0·541	0·511	1
	221	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·685	1·229	0·516	0·577	1
	222	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·901	1·098	0·516	0·500	1
	223	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·688	1·193	0·533	0·568	1
	224	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·812	1·163	0·549	0·559	1
	225	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion)	0·699	1·169	0·549	0·560	1
	226	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 2-5)	0·707	1·106	0·615	0·515	1
	227	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 2-5)	0·705	1·365	0·598	0·582	1
	228	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Rainfall (Quintiles 2-5) LDI (I$ per capita)	0·901	1·104	0·549	0·500	1
	229	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Population-At-Risk (proportion) LDI (I$ per capita)	0·872	1·104	0·516	0·500	1
Males 5 and over in Africa	1	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance	0·663	1·115	0·604	0·568	48
	2	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance Female Education by Age	0·914	1·149	0·559	0·560	46

3	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·655	1·160	0·602	0·568	43
4	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·933	1·184	0·572	0·600	41
5	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance	0·915	1·119	0·537	0·547	39
6	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·891	1·227	0·572	0·600	37
7	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·876	1·175	0·533	0·545	36
8	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·874	1·191	0·561	0·549	34
9	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Female Education by Age	0·657	1·230	0·600	0·568	32
10	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance Female Education by Age	0·662	1·227	0·604	0·563	31
11	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·871	1·212	0·561	0·550	29
12	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·658	1·223	0·597	0·552	28
13	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	0·665	1·119	0·599	0·500	27
14	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·872	1·206	0·532	0·545	25
15	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Female Education by Age	0·874	1·233	0·561	0·557	24
16	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·894	1·284	0·572	0·600	23
17	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·876	1·217	0·535	0·545	22
18	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Female Education by Age	0·666	1·138	0·597	0·488	21

19	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Female Education by Age	0·931	1·240	0·572	0·546	20
20	Mixed Effects	Logit(CF)	Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·917	1·074	0·448	0·438	19
21	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·657	1·317	0·600	0·571	18
22	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5)	0·973	1·139	0·463	0·459	17
23	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·927	1·149	0·463	0·459	16
24	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·872	1·248	0·559	0·538	16
25	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·654	1·302	0·602	0·552	15
26	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·662	1·256	0·593	0·541	14
27	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·927	1·130	0·463	0·438	13
28	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·658	1·322	0·599	0·558	13
29	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·901	1·348	0·572	0·587	12
30	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·874	1·301	0·533	0·547	12
31	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·936	1·238	0·513	0·506	11
32	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·927	1·171	0·463	0·459	11
33	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·889	1·281	0·565	0·538	10

34	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·654	1·364	0·597	0·571	10
35	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·660	1·309	0·595	0·545	9
36	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·894	1·391	0·572	0·600	9
37	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·877	1·220	0·493	0·483	8
38	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·652	1·368	0·600	0·571	8
39	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·675	1·111	0·537	0·425	7
40	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance LDI (I$ per capita)	0·647	1·284	0·602	0·524	7
41	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·876	1·115	0·433	0·425	7
42	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·872	1·338	0·561	0·547	6
43	Mixed Effects	Logit(CF)	Rainfall (Quintiles 3-5)	0·944	1·091	0·420	0·414	6
44	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·892	1·445	0·572	0·600	6
45	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·870	1·189	0·463	0·448	6
46	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·668	1·183	0·565	0·438	5
47	Spatiotemporal	Logit(CF)	Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·673	1·095	0·528	0·414	5
48	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·927	1·185	0·470	0·438	5

49	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·661	1·311	0·593	0·536	5
50	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·667	1·161	0·569	0·437	4
51	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·897	1·098	0·414	0·408	4
52	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·659	1·197	0·580	0·438	4
53	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·651	1·325	0·586	0·538	4
54	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·653	1·204	0·580	0·438	4
55	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·898	1·112	0·413	0·408	3
56	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·680	1·205	0·565	0·438	3
57	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·656	1·244	0·572	0·477	3
58	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·889	1·294	0·476	0·504	3
59	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance	0·660	1·330	0·589	0·536	3
60	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·685	1·211	0·561	0·438	3
61	Mixed Effects	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·870	1·240	0·461	0·469	3
62	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5)	0·695	1·169	0·532	0·431	2

63	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·668	1·226	0·565	0·454	2
64	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·951	1·153	0·448	0·421	2
65	Spatiotemporal	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·654	1·319	0·569	0·523	2
66	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·891	1·364	0·561	0·545	2
67	Spatiotemporal	Logit(CF)	Rainfall (Quintiles 3-5)	0·689	1·158	0·511	0·420	2
68	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·867	1·232	0·463	0·454	2
69	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Female Education by Age	0·663	1·413	0·589	0·551	2
70	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·666	1·161	0·554	0·414	2
71	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance Female Education by Age	0·890	1·471	0·569	0·553	2
72	Spatiotemporal	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·667	1·163	0·563	0·417	1
73	Mixed Effects	Ln(Rate)	Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·904	1·341	0·487	0·523	1
74	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·897	1·156	0·411	0·408	1
75	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·660	1·310	0·582	0·500	1

76	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·866	1·282	0·483	0·475	1
77	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·891	1·333	0·476	0·504	1
78	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Female Education by Age	0·891	1·413	0·561	0·545	1
79	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·659	1·286	0·580	0·471	1
80	Mixed Effects	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·888	1·331	0·446	0·500	1
81	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Rainfall (Quintiles 3-5)	0·682	1·213	0·552	0·431	1
82	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·659	1·290	0·580	0·466	1
83	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·869	1·251	0·478	0·438	1
84	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·897	1·176	0·411	0·408	1
85	Spatiotemporal	Ln(Rate)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·685	1·251	0·558	0·438	1
86	Mixed Effects	Logit(CF)	Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·915	1·176	0·431	0·368	1
87	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·675	1·265	0·554	0·438	1
88	Spatiotemporal	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance	0·663	1·401	0·584	0·531	1
89	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·679	1·280	0·558	0·438	1

	90	Mixed Effects	Ln(Rate)	Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·889	1·378	0·442	0·504	1
	91	Spatiotemporal	Ln(Rate)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Malaria Prev Weighted Resistance	0·655	1·399	0·597	0·512	1
	92	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·655	1·345	0·578	0·483	1
	93	Spatiotemporal	Logit(CF)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·658	1·243	0·582	0·431	1
	94	Mixed Effects	Ln(Rate)	Malaria Population-At-Risk (proportion) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·891	1·406	0·476	0·504	1
Females under 5 outside of Africa	1	Mixed Effects	Logit(CF)	Health System Access LDI (I$ per capita)	1·073	1·483	0·635	0·650	38
	2	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	1·090	1·502	0·624	0·645	37
	3	Mixed Effects	Logit(CF)	ITN Coverage (proportion) LDI (I$ per capita)	1·031	1·509	0·627	0·643	36
	4	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Female Education by Age	1·034	1·505	0·616	0·638	34
	5	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita)	1·065	1·521	0·628	0·643	33
	6	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) LDI (I$ per capita) Female Education by Age	1·103	1·524	0·629	0·646	32
	7	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·020	1·498	0·627	0·633	30
	8	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	1·028	1·514	0·625	0·638	29

	9	Mixed Effects	Logit(CF)	Health System Access	1·098	1·528	0·621	0·640	28
	10	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)	1·043	1·524	0·617	0·638	27
	11	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	1·032	1·465	0·604	0·624	26
	12	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 3-5) LDI (I$ per capita)	1·071	1·460	0·626	0·623	25
	13	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	1·003	1·534	0·617	0·637	24
	14	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	1·023	1·538	0·623	0·633	23
	15	Mixed Effects	Logit(CF)	ITN Coverage (proportion)	1·048	1·549	0·616	0·636	22
	16	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance	1·085	1·536	0·613	0·628	21
	17	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita) Female Education by Age	1·075	1·498	0·615	0·621	21
	18	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	1·054	1·565	0·621	0·648	20
	19	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·019	1·515	0·604	0·624	19
	20	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·028	1·534	0·616	0·625	18
	21	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·000	1·541	0·607	0·627	18

	22	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	1·072	1·572	0·635	0·644	17
	23	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·088	1·512	0·613	0·621	16
	24	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%)	1·098	1·556	0·621	0·627	16
	25	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·001	1·543	0·613	0·625	15
	26	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance	1·043	1·575	0·617	0·640	14
	27	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·027	1·512	0·609	0·618	14
	28	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·000	1·501	0·610	0·617	13
	29	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·029	1·530	0·609	0·621	13
	30	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·000	1·501	0·609	0·617	12

	31	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·060	1·470	0·617	0·615	12
	32	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·006	1·558	0·612	0·624	11
	33	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·006	1·549	0·611	0·621	11
	34	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Female Education by Age	1·078	1·564	0·619	0·625	11
	35	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·026	1·472	0·590	0·613	10
	36	Mixed Effects	Logit(CF)	Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·073	1·438	0·616	0·611	10
	37	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	1·051	1·584	0·618	0·633	9
	38	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·051	1·559	0·621	0·622	9
	39	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·064	1·587	0·627	0·634	9

40	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·026	1·485	0·615	0·612	8
41	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·041	1·568	0·616	0·624	8
42	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Rainfall (Quintiles 3-5)	1·040	1·565	0·607	0·621	8
43	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·024	1·539	0·613	0·616	7
44	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·028	1·538	0·608	0·615	7
45	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·002	1·580	0·619	0·624	7
46	Spatiotemporal	Logit(CF)	Health System Access	0·767	1·565	0·615	0·620	7
47	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate)	1·136	1·587	0·612	0·625	6
48	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	1·041	1·592	0·617	0·625	6
49	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·020	1·548	0·617	0·615	6
50	Spatiotemporal	Logit(CF)	Health System AccessLDI (I$ per capita)	0·767	1·601	0·617	0·631	6
51	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·083	1·538	0·610	0·613	5
52	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita)	0·764	1·598	0·621	0·626	5
53	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·048	1·581	0·610	0·621	5

54	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·016	1·525	0·612	0·611	5
55	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·018	1·522	0·612	0·610	5
56	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·045	1·576	0·612	0·619	4
57	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·049	1·561	0·610	0·616	4
58	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·004	1·583	0·615	0·620	4
59	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·072	1·497	0·611	0·608	4
60	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance	1·125	1·607	0·615	0·625	4
61	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·101	1·524	0·621	0·610	4
62	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·027	1·628	0·625	0·640	4
63	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·026	1·476	0·593	0·607	3

	64	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate)	1·069	1·604	0·607	0·625	3
	65	Spatiotemporal	Ln(Rate)	Health System Access Log Malaria PFPR (rate) LDI (I$ per capita) Female Education by Age	0·768	1·611	0·618	0·625	3
	66	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	1·089	1·630	0·625	0·643	3
	67	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	1·030	1·556	0·597	0·613	3
	68	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·050	1·627	0·621	0·635	3
	69	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	0·760	1·598	0·619	0·622	3
	70	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5)	1·006	1·551	0·602	0·611	3
	71	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance	1·008	1·561	0·609	0·614	2
	72	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·017	1·508	0·609	0·608	2
	73	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 3-5)	1·096	1·527	0·608	0·609	2

74	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·039	1·500	0·604	0·606	2
75	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·026	1·582	0·612	0·617	2
76	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·018	1·628	0·625	0·632	2
77	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	1·071	1·596	0·615	0·618	2
78	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) Female Education by Age	1·031	1·496	0·609	0·604	2
79	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	0·757	1·598	0·623	0·619	2
80	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·999	1·510	0·615	0·606	2
81	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	1·101	1·641	0·629	0·636	2
82	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·043	1·513	0·597	0·605	2

83	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·049	1·576	0·594	0·612	2
84	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·071	1·655	0·635	0·641	1
85	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·001	1·615	0·621	0·621	1
86	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·059	1·527	0·611	0·606	1
87	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·099	1·548	0·615	0·608	1
88	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·027	1·602	0·610	0·618	1
89	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·998	1·554	0·612	0·609	1
90	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	1·032	1·598	0·608	0·617	1

91	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·757	1·559	0·617	0·609	1
92	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·756	1·589	0·619	0·615	1
93	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·038	1·514	0·597	0·603	1
94	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·759	1·563	0·613	0·609	1
95	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)	0·759	1·580	0·618	0·610	1
96	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·087	1·563	0·612	0·609	1
97	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	0·779	1·642	0·615	0·625	1
98	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·026	1·614	0·613	0·617	1
99	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita) Female Education by Age	1·101	1·667	0·629	0·639	1

	100	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·040	1·590	0·603	0·612	1
	101	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	1·027	1·622	0·597	0·618	1
	102	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·015	1·559	0·610	0·607	1
	103	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·071	1·499	0·596	0·600	1
	104	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·763	1·659	0·621	0·627	1
	105	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·775	1·645	0·611	0·625	1
	106	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·763	1·629	0·609	0·619	1
	107	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) Rainfall (Quintiles 3-5)	1·067	1·596	0·605	0·611	1

	108	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·048	1·595	0·597	0·610	1
	109	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·070	1·597	0·612	0·610	1
	110	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Rainfall (Quintiles 3-5)	1·045	1·586	0·602	0·609	1
	111	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·024	1·589	0·593	0·609	1
Females 5 and over outside of Africa	1	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	1·106	1·474	0·589	0·577	24
	2	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·105	1·467	0·597	0·575	24
	3	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) LDI (I$ per capita)	1·106	1·511	0·589	0·577	23
	4	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·105	1·496	0·598	0·574	23
	5	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·116	1·519	0·599	0·577	22
	6	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·096	1·511	0·587	0·572	22
	7	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·096	1·469	0·577	0·570	21

	8	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·097	1·504	0·574	0·570	21
	9	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·106	1·518	0·592	0·572	20
	10	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·105	1·448	0·581	0·568	20
	11	Mixed Effects	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·117	1·517	0·581	0·571	19
	12	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	1·107	1·547	0·590	0·575	19
	13	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·117	1·488	0·580	0·567	18
	14	Mixed Effects	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·116	1·552	0·599	0·576	18
	15	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita)	1·097	1·541	0·576	0·573	17
	16	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·105	1·489	0·581	0·567	17
	17	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·074	1·538	0·593	0·572	16

	18	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·096	1·527	0·578	0·570	16
	19	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	1·095	1·533	0·567	0·571	16
	20	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·118	1·547	0·580	0·573	15
	21	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·106	1·540	0·586	0·571	15
	22	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·105	1·556	0·591	0·573	15
	23	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 4-5) LDI (I$ per capita)	1·107	1·566	0·599	0·578	14
	24	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·106	1·535	0·586	0·570	14
	25	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·741	1·525	0·584	0·568	13
	26	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	1·076	1·554	0·580	0·572	13
	27	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	1·118	1·504	0·588	0·564	13

28	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·739	1·545	0·594	0·569	13
29	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%)	1·119	1·529	0·581	0·567	12
30	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·079	1·519	0·578	0·566	12
31	Mixed Effects	Logit(CF)	Health System AccessLDI (I$ per capita)	1·108	1·582	0·588	0·581	12
32	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%)	0·742	1·521	0·586	0·566	11
33	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·077	1·548	0·585	0·569	11
34	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·741	1·545	0·584	0·568	11
35	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·095	1·490	0·587	0·562	11
36	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·095	1·575	0·574	0·573	10
37	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%)	1·119	1·588	0·592	0·576	10
38	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) LDI (I$ per capita) Female Education by Age	1·106	1·584	0·590	0·575	10

39	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	1·073	1·560	0·585	0·570	10
40	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·118	1·504	0·570	0·562	9
41	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	1·078	1·511	0·585	0·562	9
42	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·123	1·569	0·583	0·572	9
43	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·737	1·545	0·579	0·567	9
44	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·048	1·523	0·580	0·564	8
45	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	1·119	1·550	0·600	0·567	8
46	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·122	1·593	0·593	0·575	8
47	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·095	1·448	0·586	0·560	8
48	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·074	1·588	0·580	0·574	8

49	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·734	1·503	0·584	0·561	7
50	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·735	1·498	0·573	0·561	7
51	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·739	1·581	0·598	0·572	7
52	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·095	1·436	0·573	0·559	7
53	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·075	1·543	0·575	0·564	7
54	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·739	1·567	0·595	0·570	7
55	Spatiotemporal	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·739	1·599	0·598	0·574	6
56	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·078	1·517	0·573	0·561	6
57	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	1·095	1·590	0·566	0·573	6

58	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·095	1·486	0·573	0·559	6
59	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·736	1·541	0·586	0·563	6
60	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (40-100%)	1·120	1·592	0·582	0·572	6
61	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·048	1·531	0·580	0·562	6
62	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·094	1·492	0·573	0·559	5
63	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5)	0·733	1·527	0·579	0·561	5
64	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·732	1·520	0·584	0·561	5
65	Mixed Effects	Logit(CF)	Health System Access	1·120	1·598	0·581	0·572	5
66	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	1·096	1·613	0·566	0·573	5
67	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita)	0·737	1·586	0·582	0·570	5

68	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	0·740	1·565	0·588	0·566	5
69	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	0·733	1·473	0·585	0·558	5
70	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·738	1·518	0·577	0·560	4
71	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·735	1·534	0·578	0·561	4
72	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·735	1·519	0·574	0·560	4
73	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 3-5) LDI (I$ per capita)	1·107	1·590	0·582	0·570	4
74	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	1·119	1·570	0·574	0·566	4
75	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Female Education by Age	1·106	1·571	0·564	0·567	4
76	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5)	1·048	1·509	0·576	0·558	4
77	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·735	1·539	0·578	0·561	4
78	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	0·742	1·493	0·597	0·558	4

79	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·734	1·460	0·577	0·557	4
80	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·743	1·458	0·576	0·557	3
81	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance	1·107	1·563	0·563	0·564	3
82	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·074	1·569	0·576	0·566	3
83	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Endemicity (40-100%)	1·081	1·628	0·578	0·572	3
84	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 4-5)	1·120	1·572	0·588	0·566	3
85	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%)	0·742	1·562	0·588	0·564	3
86	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·072	1·586	0·582	0·567	3
87	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	0·733	1·516	0·585	0·558	3
88	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	1·106	1·517	0·564	0·558	3
89	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 3-5)	1·119	1·583	0·574	0·566	3
90	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·050	1·500	0·562	0·557	3

91	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·734	1·526	0·586	0·558	3
92	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·108	1·640	0·588	0·572	3
93	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·736	1·563	0·578	0·563	3
94	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·733	1·554	0·584	0·561	2
95	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	0·741	1·606	0·593	0·569	2
96	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Rainfall (Quintiles 4-5)	1·079	1·624	0·585	0·570	2
97	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	0·742	1·568	0·583	0·563	2
98	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·745	1·528	0·578	0·558	2
99	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·050	1·510	0·563	0·557	2

100	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·734	1·537	0·580	0·559	2
101	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·738	1·547	0·578	0·560	2
102	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·071	1·594	0·584	0·567	2
103	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Endemicity (40-100%) LDI (I$ per capita)	1·109	1·675	0·594	0·582	2
104	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·734	1·536	0·579	0·559	2
105	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	1·119	1·587	0·588	0·566	2
106	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·077	1·608	0·586	0·569	2
107	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·733	1·559	0·584	0·561	2
108	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·076	1·675	0·594	0·579	2

109	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·094	1·495	0·568	0·556	2
110	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·072	1·578	0·585	0·564	2
111	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·737	1·597	0·580	0·567	2
112	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·733	1·557	0·585	0·561	2
113	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	0·742	1·529	0·578	0·558	2
114	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·095	1·654	0·577	0·573	1
115	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)LDI (I$ per capita)	1·078	1·662	0·579	0·573	1
116	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·094	1·648	0·586	0·572	1
117	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·734	1·528	0·575	0·558	1

118	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·074	1·652	0·594	0·573	1
119	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Female Education by Age	0·740	1·576	0·579	0·563	1
120	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	1·091	1·705	0·610	0·588	1
121	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	0·741	1·566	0·590	0·562	1
122	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Endemicity (5-100%) LDI (I$ per capita)	1·077	1·674	0·579	0·575	1
123	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) LDI (I$ per capita)	0·740	1·590	0·588	0·565	1
124	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5)	1·049	1·519	0·576	0·557	1
125	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·733	1·552	0·583	0·559	1
126	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·739	1·563	0·578	0·561	1
127	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance	0·738	1·557	0·583	0·560	1
128	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·734	1·560	0·589	0·561	1

129	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·050	1·500	0·566	0·556	1
130	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·076	1·692	0·594	0·578	1
131	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·096	1·581	0·568	0·564	1
132	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·739	1·575	0·580	0·563	1
133	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·733	1·525	0·578	0·557	1
134	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	1·073	1·639	0·585	0·570	1
135	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	1·092	1·722	0·659	0·656	1
136	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·734	1·540	0·586	0·558	1
137	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Endemicity (40-100%) LDI (I$ per capita)	1·078	1·692	0·579	0·575	1

138	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·105	1·715	0·588	0·582	1
139	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·739	1·576	0·580	0·562	1
140	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·735	1·542	0·575	0·558	1
141	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	1·092	1·747	0·853	0·857	1
142	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·736	1·564	0·588	0·560	1
143	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Endemicity (40-100%)	1·120	1·733	0·592	0·585	1
144	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·104	1·717	0·597	0·581	1
145	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	0·734	1·518	0·577	0·556	1
146	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate)	1·121	1·738	0·592	0·585	1
147	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%)	0·745	1·577	0·585	0·562	1
148	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) LDI (I$ per capita) Female Education by Age	1·108	1·727	0·591	0·582	1

	149	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	0·745	1·562	0·579	0·560	1
	150	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	1·105	1·558	0·564	0·559	1
	151	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	0·744	1·547	0·593	0·558	1
	152	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·116	1·743	0·599	0·586	1
	153	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·107	1·741	0·596	0·583	1
	154	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Rainfall (Quintiles 3-5)	1·080	1·639	0·573	0·568	1
	155	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Endemicity (5-100%)	1·081	1·674	0·578	0·573	1
	156	Mixed Effects	Ln(Rate)	Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	1·214	1·769	0·705	0·681	1
	157	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	1·106	1·542	0·566	0·557	1
	158	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5)	0·734	1·520	0·576	0·556	1
Males under 5 outside of Africa	1	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·077	1·442	0·605	0·614	29
	2	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·046	1·439	0·598	0·605	28

3	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·764	1·435	0·604	0·603	27
4	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·040	1·461	0·607	0·605	27
5	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·041	1·442	0·598	0·603	26
6	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%)	1·079	1·468	0·600	0·606	25
7	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 3-5)	1·078	1·522	0·606	0·613	24
8	Mixed Effects	Logit(CF)	Health System Access	1·079	1·504	0·599	0·606	24
9	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·054	1·543	0·603	0·616	23
10	Spatiotemporal	Logit(CF)	Health System AccessRainfall (Quintiles 3-5)	0·758	1·467	0·607	0·602	22
11	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·765	1·533	0·604	0·607	22
12	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Female Education by Age	1·108	1·523	0·595	0·606	21
13	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	0·758	1·541	0·602	0·608	20
14	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·025	1·547	0·607	0·612	20
15	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·044	1·489	0·603	0·601	19
16	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·051	1·562	0·609	0·618	19

17	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	1·042	1·449	0·594	0·597	18
18	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·126	1·543	0·608	0·607	18
19	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·109	1·566	0·599	0·616	17
20	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%)	1·110	1·550	0·599	0·610	17
21	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·760	1·547	0·603	0·608	16
22	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)	1·043	1·519	0·598	0·602	16
23	Spatiotemporal	Logit(CF)	Health System Access	0·758	1·461	0·600	0·597	15
24	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·044	1·546	0·599	0·606	15
25	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·008	1·465	0·597	0·598	14
26	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) Female Education by Age	1·107	1·561	0·604	0·610	14
27	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 3-5) LDI (I$ per capita)	1·052	1·583	0·604	0·617	14
28	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·753	1·433	0·602	0·594	13
29	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	1·064	1·503	0·590	0·599	13

30	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	1·026	1·524	0·600	0·601	12
31	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	1·033	1·402	0·602	0·593	12
32	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·749	1·456	0·605	0·595	12
33	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	1·075	1·586	0·606	0·615	11
34	Spatiotemporal	Logit(CF)	Health System AccessRainfall (Quintiles 3-5) LDI (I$ per capita)	0·754	1·524	0·604	0·601	11
35	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·063	1·464	0·587	0·595	11
36	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%)	0·765	1·461	0·594	0·594	10
37	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%)	1·048	1·545	0·595	0·603	10
38	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·754	1·458	0·604	0·594	10
39	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	1·060	1·511	0·591	0·596	9
40	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) Female Education by Age	0·768	1·571	0·601	0·605	9
41	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·001	1·506	0·598	0·596	9

42	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	1·032	1·424	0·593	0·590	9
43	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Female Education by Age	0·770	1·560	0·594	0·602	8
44	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·040	1·487	0·604	0·593	8
45	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	0·767	1·582	0·602	0·605	8
46	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·046	1·541	0·605	0·598	8
47	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Rainfall (Quintiles 3-5)	1·041	1·565	0·605	0·602	7
48	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·050	1·652	0·604	0·616	7
49	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·755	1·437	0·592	0·588	7
50	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·042	1·539	0·595	0·596	7
51	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·755	1·467	0·603	0·591	7
52	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%)	0·752	1·463	0·605	0·590	6
53	Mixed Effects	Logit(CF)	Health System AccessLDI (I$ per capita)	1·053	1·584	0·598	0·604	6
54	Spatiotemporal	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Female Education by Age	0·763	1·570	0·597	0·601	6

	55	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	1·045	1·582	0·592	0·602	6
	56	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·750	1·503	0·604	0·592	6
	57	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)	0·751	1·501	0·603	0·591	6
	58	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate)	1·111	1·662	0·602	0·612	5
	59	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·063	1·551	0·587	0·598	5
	60	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	1·078	1·633	0·600	0·608	5
	61	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic)	1·076	1·620	0·600	0·606	5
	62	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·753	1·516	0·604	0·593	5
	63	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	1·052	1·596	0·595	0·604	5
	64	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·756	1·452	0·598	0·587	5
	65	Spatiotemporal	Ln(Rate)	Health System Access Log Malaria PFPR (rate)	0·768	1·574	0·595	0·599	4
	66	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Rainfall (Quintiles 3-5)	0·749	1·492	0·601	0·590	4
	67	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·023	1·678	0·603	0·611	4
	68	Mixed Effects	Logit(CF)	ITN Coverage (proportion)	1·048	1·597	0·595	0·603	4

69	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	1·059	1·502	0·588	0·590	4
70	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·758	1·501	0·587	0·590	4
71	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·076	1·683	0·599	0·613	4
72	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)	0·753	1·472	0·594	0·588	4
73	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5) Female Education by Age	1·104	1·687	0·605	0·613	3
74	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·755	1·464	0·611	0·587	3
75	Mixed Effects	Logit(CF)	ITN Coverage (proportion)LDI (I$ per capita)	1·028	1·596	0·598	0·602	3
76	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·749	1·454	0·604	0·585	3
77	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Female Education by Age	1·109	1·672	0·598	0·607	3
78	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·001	1·521	0·591	0·591	3
79	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	0·767	1·593	0·594	0·600	3

	80	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) LDI (I$ per capita)	1·079	1·686	0·600	0·609	3
	81	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	1·107	1·702	0·601	0·611	3
	82	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·752	1·501	0·597	0·588	3
	83	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·062	1·593	0·594	0·599	3
	84	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%)	0·772	1·593	0·588	0·599	3
	85	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance	1·064	1·573	0·591	0·596	2
	86	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·018	1·591	0·602	0·599	2
	87	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·747	1·420	0·608	0·583	2
	88	Spatiotemporal	Logit(CF)	Health System AccessLDI (I$ per capita)	0·758	1·544	0·600	0·593	2
	89	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·751	1·482	0·612	0·586	2
	90	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita)	1·043	1·618	0·592	0·601	2
	91	Spatiotemporal	Ln(Rate)	Health System Access Log Malaria PFPR (rate) LDI (I$ per capita)	0·764	1·595	0·592	0·599	2
	92	Mixed Effects	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	1·066	1·588	0·597	0·598	2

93	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	1·042	1·579	0·594	0·596	2
94	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance Female Education by Age	0·748	1·501	0·607	0·586	2
95	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance	0·753	1·562	0·593	0·594	2
96	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	1·044	1·550	0·597	0·593	2
97	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·751	1·455	0·611	0·583	2
98	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic)	1·107	1·721	0·599	0·610	2
99	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·756	1·516	0·601	0·588	2
100	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	1·125	1·750	0·709	0·716	2
101	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) Female Education by Age	0·755	1·494	0·600	0·585	2
102	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·750	1·513	0·595	0·587	1
103	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	1·020	1·643	0·599	0·600	1
104	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	1·036	1·736	0·609	0·611	1

105	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita)	1·048	1·708	0·598	0·605	1
106	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic)	1·038	1·693	0·599	0·605	1
107	Mixed Effects	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance	1·044	1·598	0·598	0·596	1
108	Mixed Effects	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	1·122	1·736	0·608	0·609	1
109	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Female Education by Age	1·105	1·718	0·595	0·605	1
110	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·746	1·460	0·602	0·581	1
111	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate)	0·755	1·542	0·595	0·588	1
112	Spatiotemporal	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·757	1·677	0·606	0·601	1
113	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·039	1·667	0·591	0·600	1
114	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita)	0·752	1·581	0·592	0·593	1
115	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Log Malaria PFPR (rate)	1·065	1·673	0·591	0·600	1

116	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·743	1·447	0·604	0·577	1
117	Mixed Effects	Ln(Rate)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·077	1·714	0·598	0·604	1
118	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·024	1·664	0·598	0·599	1
119	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	1·003	1·595	0·594	0·594	1
120	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·749	1·540	0·606	0·587	1
121	Spatiotemporal	Logit(CF)	Malaria Lysenko PfPR (Hyperendemic-Holoendemic) Rainfall (Quintiles 3-5)	0·760	1·740	0·608	0·606	1
122	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)Malaria Prev Weighted Resistance	0·751	1·514	0·614	0·584	1
123	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·009	1·595	0·594	0·594	1
124	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) LDI (I$ per capita)	1·051	1·720	0·595	0·604	1
125	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	1·009	1·508	0·583	0·583	1
126	Mixed Effects	Logit(CF)	Health System Access Malaria Lysenko PfPR (Mesoendemic-Holoendemic) Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·062	1·582	0·588	0·591	1

	127	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	0·765	1·580	0·597	0·590	1
	128	Spatiotemporal	Logit(CF)	ITN Coverage (proportion)LDI (I$ per capita)	0·749	1·544	0·598	0·586	1
	129	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Hyperendemic-Holoendemic)	1·122	1·907	0·642	0·632	1
	130	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Lysenko PfPR (Mesoendemic-Holoendemic)	1·117	2·062	0·672	0·677	1
	131	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5) LDI (I$ per capita)	0·750	1·555	0·593	0·588	1
	132	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	1·042	1·626	0·592	0·595	1
	133	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	0·752	1·532	0·601	0·584	1
	134	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Female Education by Age	0·757	1·510	0·593	0·581	1
	135	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita)	0·758	1·604	0·588	0·593	1
	136	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Log Malaria PFPR (rate) LDI (I$ per capita) Female Education by Age	1·067	1·544	0·584	0·584	1
	137	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·756	1·575	0·600	0·588	1
	138	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance LDI (I$ per capita)	0·742	1·554	0·593	0·586	1
Males 5 and over outisde of Africa	1	Spatiotemporal	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·760	1·470	0·598	0·575	48

2	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·762	1·436	0·595	0·566	45
3	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·754	1·414	0·587	0·562	43
4	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·124	1·568	0·590	0·588	41
5	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·761	1·458	0·597	0·562	39
6	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	0·764	1·463	0·600	0·562	37
7	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·133	1·571	0·593	0·582	36
8	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·094	1·540	0·581	0·568	34
9	Spatiotemporal	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·760	1·568	0·598	0·576	32
10	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·755	1·448	0·599	0·560	31
11	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·755	1·504	0·586	0·563	29

12	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·762	1·457	0·597	0·561	28
13	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·754	1·469	0·588	0·561	27
14	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·123	1·575	0·590	0·579	25
15	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·764	1·426	0·596	0·559	24
16	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 4-5) LDI (I$ per capita)	1·124	1·587	0·591	0·586	23
17	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·765	1·438	0·595	0·559	22
18	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·753	1·435	0·587	0·558	21
19	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·760	1·523	0·597	0·563	20
20	Mixed Effects	Logit(CF)	Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·133	1·536	0·572	0·564	19
21	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	0·755	1·420	0·591	0·558	18

22	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·755	1·528	0·586	0·563	17
23	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·755	1·440	0·589	0·558	16
24	Spatiotemporal	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·755	1·529	0·586	0·563	16
25	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%)	0·767	1·539	0·601	0·564	15
26	Spatiotemporal	Logit(CF)	Health System AccessMalaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·761	1·559	0·595	0·566	14
27	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (5-100%) LDI (I$ per capita)	1·125	1·589	0·581	0·576	13
28	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) LDI (I$ per capita)	0·763	1·521	0·600	0·562	13
29	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·756	1·528	0·586	0·562	12
30	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·760	1·435	0·594	0·558	12
31	Mixed Effects	Logit(CF)	Health System AccessLDI (I$ per capita)	1·125	1·585	0·583	0·574	11

32	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·754	1·507	0·587	0·560	10
33	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·762	1·559	0·591	0·565	10
34	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·124	1·609	0·590	0·586	10
35	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·091	1·576	0·581	0·568	9
36	Mixed Effects	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·115	1·570	0·572	0·566	9
37	Spatiotemporal	Logit(CF)	Health System AccessMalaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·761	1·574	0·596	0·567	8
38	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%)	0·769	1·458	0·593	0·558	8
39	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	0·756	1·514	0·585	0·560	7
40	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·756	1·435	0·591	0·556	7
41	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	1·094	1·572	0·583	0·566	7

42	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·133	1·602	0·588	0·575	6
43	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·756	1·517	0·598	0·560	6
44	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·762	1·567	0·595	0·564	6
45	Mixed Effects	Logit(CF)	Health System AccessMalaria Endemicity (40-100%) LDI (I$ per capita)	1·125	1·606	0·582	0·576	6
46	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) LDI (I$ per capita)	0·755	1·513	0·598	0·559	5
47	Spatiotemporal	Logit(CF)	Health System AccessRainfall (Quintiles 4-5) LDI (I$ per capita)	0·760	1·575	0·596	0·565	5
48	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·105	1·587	0·588	0·567	5
49	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·761	1·538	0·598	0·560	5
50	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5) Female Education by Age	0·755	1·472	0·587	0·557	4
51	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	0·764	1·560	0·602	0·563	4

	52	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·094	1·593	0·581	0·567	4
	53	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	0·767	1·459	0·595	0·556	4
	54	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance	0·756	1·445	0·591	0·556	4
	55	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·758	1·525	0·586	0·558	3
	56	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·755	1·498	0·589	0·557	3
	57	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita)	1·123	1·611	0·580	0·570	3
	58	Spatiotemporal	Logit(CF)	Health System AccessMalaria Endemicity (40-100%) LDI (I$ per capita)	0·763	1·553	0·600	0·561	3
	59	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (40-100%)	0·767	1·578	0·601	0·564	3
	60	Spatiotemporal	Logit(CF)	Health System AccessMalaria Prev Weighted Resistance LDI (I$ per capita) Female Education by Age	0·760	1·589	0·598	0·565	3
	61	Mixed Effects	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·132	1·633	0·592	0·581	3
	62	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%)	0·768	1·514	0·593	0·558	2

63	Mixed Effects	Logit(CF)	Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·133	1·582	0·572	0·564	2
64	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5)	1·115	1·649	0·649	0·660	2
65	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	0·756	1·524	0·585	0·558	2
66	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·759	1·537	0·587	0·559	2
67	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) LDI (I$ per capita) Female Education by Age	1·134	1·633	0·589	0·579	2
68	Spatiotemporal	Ln(Rate)	Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·759	1·614	0·594	0·569	2
69	Spatiotemporal	Logit(CF)	Health System AccessLDI (I$ per capita)	0·762	1·549	0·600	0·560	2
70	Spatiotemporal	Ln(Rate)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·762	1·596	0·591	0·566	2
71	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·757	1·445	0·596	0·555	2
72	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) LDI (I$ per capita)	0·756	1·460	0·598	0·555	1

	73	Mixed Effects	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	1·090	1·570	0·578	0·562	1
	74	Spatiotemporal	Ln(Rate)	Health System Access Log Malaria PFPR (rate) Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·758	1·592	0·586	0·565	1
	75	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Malaria Prev Weighted Resistance	0·756	1·481	0·588	0·556	1
	76	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 3-5) Rainfall (Quintiles 4-5)	1·114	1·648	0·596	0·590	1
	77	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·759	1·505	0·597	0·557	1
	78	Mixed Effects	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 4-5)	1·102	1·631	0·583	0·574	1
	79	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Female Education by Age	0·758	1·495	0·598	0·556	1
	80	Spatiotemporal	Ln(Rate)	Health System Access ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·758	1·538	0·597	0·558	1
	81	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	0·767	1·507	0·594	0·556	1
	82	Mixed Effects	Ln(Rate)	ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	1·114	1·655	0·613	0·625	1

83	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5) LDI (I$ per capita)	1·122	1·646	0·591	0·580	1
84	Spatiotemporal	Logit(CF)	Health System Access Malaria Endemicity (40-100%) Malaria Prev Weighted Resistance Rainfall (Quintiles 4-5) LDI (I$ per capita) Female Education by Age	0·760	1·438	0·594	0·554	1
85	Spatiotemporal	Logit(CF)	Health System AccessMalaria Endemicity (5-100%) LDI (I$ per capita)	0·762	1·574	0·600	0·562	1
86	Mixed Effects	Ln(Rate)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) LDI (I$ per capita) Female Education by Age	1·133	1·593	0·575	0·564	1
87	Mixed Effects	Logit(CF)	Health System Access	1·137	1·620	0·572	0·567	1
88	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5) Rainfall (Quintiles 4-5) LDI (I$ per capita)	0·755	1·412	0·578	0·552	1
89	Spatiotemporal	Logit(CF)	ITN Coverage (proportion) Malaria Endemicity (5-100%)	0·758	1·504	0·597	0·555	1
90	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%) Rainfall (Quintiles 4-5)	0·756	1·472	0·591	0·555	1
91	Mixed Effects	Logit(CF)	Health System AccessRainfall (Quintiles 4-5)	1·137	1·625	0·585	0·567	1
92	Mixed Effects	Logit(CF)	Health System Access ITN Coverage (proportion)Malaria Prev Weighted Resistance Rainfall (Quintiles 3-5)	1·070	1·552	0·555	0·559	1
93	Spatiotemporal	Logit(CF)	Health System Access ITN Coverage (proportion) Malaria Endemicity (40-100%)	0·757	1·511	0·596	0·556	1
94	Mixed Effects	Logit(CF)	Health System Access Malaria Endemicity (5-100%) Rainfall (Quintiles 3-5)	1·135	1·577	0·564	0·561	1

Final Models

Based on the predictive validity tests, we choose the final model with the lowest RMSE and best trend metric. For all eight groups, this was one of the ensemble models. Given the number of models for malaria mortality, we do not present a full table of predictive validity for all possible models assessed. WebTable 5 presents the final eight ensemble models with their predictive validity. Given that the ensemble models have lower RMSE and predict trends better than the best component model, we use the ensemble models to generate a time series of predictions for each country-sex-age group from 1980 to 2010.

WebTable 5: Out-of-sample performance for the ensemble model for malaria mortality, for each of the eight groups.

Model	Root Mean Squared Error		Proportion with Correct Trend		Coverage (%)	
	In-Sample	Test 2	In-Sample	Test 2	In-Sample	Test 2
Females under 5 in Africa	0·6541	1·0210	0·5207	0·5889	98·8	93·7
Females 5 and over in Africa	0·8208	1·3615	0·5254	0·4631	98·2	91·0
Males under 5 in Africa	0·7195	1·1988	0·6393	0·5960	98·2	92·0
Males 5 and over in Africa	0·7629	1·4509	0·5818	0·5018	99·5	92·5
Females under 5 outside of Africa	1·0204	1·4768	0·6055	0·5935	97·8	95·3
Females 5 and over outside of Africa	0·9878	1·4860	0·5964	0·5674	98·8	95·9
Males under 5 outside of Africa	0·9243	1·5127	0·6009	0·5825	98·7	95·8
Males 5 and over outside of Africa	0·8175	1·4941	0·5969	0·5769	99·4	95·0

Garbage code redistribution sensitivity analysis

To document how important the redistribution of misclassified deaths is to the final results, we have conducted a sensitivity analysis where we run the models for malaria for each region, sex, and age group again excluding the redistribution of garbage codes to malaria as covered under the section on cause of death processing. The effect of garbage code redistribution has a greater effect on adults due to the larger contribution of general garbage codes, i.e. unspecified deaths at older ages. In 2010, we find 3% fewer malaria deaths than with redistribution for those aged under five years. For those aged five years and over, we find 14% less malaria deaths than with redistribution. This analysis emphasizes the importance of redistributing garbage codes for estimates of malaria deaths, particularly among adults. It is important to note that these results without redistribution of garbage codes are highly unlikely to be a true reflection of the extent of malaria mortality but rather we have performed this analysis to quantify the importance of redistribution to the final results.

Verbal autopsy misclassification sensitivity analysis

Verbal autopsy misclassification is independent from the garbage code misclassification discussed above. The garbage code misclassification includes the 4 main categories of problematic ICD codes found in datasets, such as unspecified causes ("unspecified parasitic disease"). The phenomenon here relates to the tendency of physicians to misinterpret the signs and symptoms of verbal autopsies. In areas where malaria is not a common cause of death, physicians are more

likely to assign malaria as the cause of death based on the symptoms recorded, e.g. fever. In areas where malaria is a common cause of death, however, physicians tend to underestimate it.

To quantify the extent of VA misclassification we use a study by Lozano et al[20] of over 12,500 verbal autopsies collected on deaths meeting rigorous gold standard clinical criteria for inclusion. To be included as a known gold standard death due to malaria, the death records must include for adults a malaria smear with ≥5,000 parasites/microL or ≥150 parasites/200 wbcs plus at least one of the following: an axillary or oral temperature ≥38.5^{o}C or a rectal temperature ≥39^{o}C and no evidence of another cause of death. For children, the death records must include a thick malaria smear ≥10,000 parasites/microL, plus one of the following: rectal temperature >38^{o}C; Oral or Axillary temperature >37.5^{o}C. This is the first VA validation study that used pre-defined criteria for a gold standard death. All previous studies use hospital discharge diagnosis or in some cases chart review. For many of these deaths, insufficient information is available in the chart to confirm an adequate diagnosis.

To examine the extent of misclassification, the results of physician certified verbal autopsies were compared against the known cause of death that met strict clinical, pathological criteria for establishing cause of death. The resulting data were used to generate 500 train-test datasets where through resampling the number of deaths due to each cause was varied according to a Dirichelet distribution. Across the 500 train-test datasets, the true malaria cause fraction varied from near zero to more than 20%. Where the true cause fraction was less than 5% of deaths physicians tended to overestimate the malaria cause fraction; where the true cause fraction is over 5% they underestimated the true cause fraction. This result follows from the complex pattern of sensitivity and specificity for each cause and the varying cause composition in each of the test datasets. The relationship between the estimated malaria CSMF and true malaria CSMF was examined and the functional form estimated in regression model with the logit of the estimated CSMF as the dependent variable and the logit of the true CSMF as the independent variable. Using these relationships, we adjust the VA data in the database for misclassification bias and rerun the analysis as outlined above, i.e. all the steps from covariate selection through the final model selection and prediction.

Country-level results

WebTable 6, WebTable 7, and WebTable 8 provide country specific estimates of malaria deaths including uncertainty intervals and the cumulative probability of dying from malaria in the absence of other causes for 1980, 1990, 2000, and 2010 for under-fives, those aged five years and over, and all ages, respectively. A full time series for each year 1980 to 2010 for death numbers are available from the authors upon request.

Data Annex
WebTables 9 and 10 provide details of all the data, including vital registration, verbal autopsy studies, and other cause of death surveillance points used in the estimation of malaria mortality for countries in Africa and countries outside of Africa, respectively.

WebTable 9: Data used to estimate malaria mortality, countries in Africa

Country	Source Type	Study Site	Time Period	Age Range	Total Deaths	Malaria Deaths Under 5 (%)	Malaria Deaths Over 5 (%)	VR Completeness
		* denotes ITN coverage						
Burkina Faso	VA Subnational[21]	Kongodjan area	1984	0+	51	6.1	5.5	
	VA Subnational[22]	Pissila	1986	0-4	176	3.4	0.0	
	VA Subnational[23]	Niangoloko	1987	0-4	164	6.1	0.0	
	VA Subnational[24]	Nouna DSS	2001	0-4	3492	43.4	16.1	
	VA Subnational[25]	Nouna*	2001	0-4	340	46.5	0.0	
	VA Subnational[26]	Oubritenga	2002	0-4	1626	39.7	0.0	
	VA Subnational[26]	Kourqeogo	2002	0-4	1118	36.7	0.0	
	VA Subnational[27]	Nouna	2009	0+	1256	27.4	41.3	
Burundi	VA Subnational[28]	Nyanza-Lac District	1990	0-4	160	34.4	0.0	
Congo, the Democratic Republic of the	VA Subnational[29]	Kivu	1986	0-4	358	12.3	0.0	
	VA Subnational[30]	Bwamanda	1990	0-4	246	29.4	0.0	
	VA Subnational[31]	East	2000	0-4	197	19.2	0.0	
	VA Subnational[31]	West	2000	0-4	103	27.1	0.0	
	VA Subnational[32]	East	2003	0+	3169	27.7	0.0	
	VA Subnational[32]	West	2003	0+	827	28.2	0.0	
Ethiopia	VA Subnational[33]	Butajira District	2000	0+	175	0.0	6.8	
	VA Subnational[34]	Butajira District	2003	0+	325	21.1	11.5	
	VA Subnational[35]	Raya Azebo	2006	0+	1106	8.3	4.1	
	VA Subnational[35]	Alamata	2006	0+	991	4.3	2.1	
Gambia	VA Subnational[36]	Farafenni	1982	0-4	171	14.0	0.0	

	VA Subnational[37]	Farafenni	1986	0-4	904	0.8	0.0
	VA Subnational[38]	Upper River Division	1988	0-4	668	29.8	0.0
	VA Subnational[9]	South Bank of Gambia River*	1989	0-5	2345	0.3	0.0
	VA Subnational[39]	Upper River Division	1989-1993	0-4	3776	26.3	0.0
	VA Subnational[9]	South Bank of Gambia River	1989-1990	0-5	150	19.7	0.0
	VA Subnational[15]	5 areas along Gambia River	1992	1-9	235	31.0	64.2
	VA Subnational[15]	5 areas along Gambia River*	1992	1-9	19907	1.4	0.2
	VA Subnational[40]	Farafenni	2006	0-4	141	11.3	0.0
Ghana	VA National[41]	National	2007	10-45	4203	0.0	6.5
	VA Subnationa[13]l	Kassena-Nankana District*	1994	1	396	33.1	0.0
	VA Subnational[13]	Kassena-Nankana District	1994	0-4	451	42.7	0.0
	VA Subnational[33]	Navrongo	2000	0+	8480	34.8	16.8
	VA Subnational[42]	Kassena-Nankana District	2003	15-45	45	0.0	3.1
	VR Subnational	Accra	2000	0+	21876	12.3	4.6
	VR Subnational	Accra	2007	0+	7600	35.9	17.3
Guinea	VA Subnational[43]	Mandiana	1998	0-4	330	32.3	0.0
Guinea-Bissau	VA Subnational[44]	Bissau	1995	0-4	148	28.9	0.0
Kenya	VA Subnational[45]	Saradidi	1981	0-4	233	3.9	0.0
	VA Subnational[46]	Muran'ga District	1986	0-4	216	6.0	0.0
	VA Subnational[21]	Brookebond Tea Estate	1997	0+	325	26.2	15.8
	VA Subnational[47]	Nyanza Province	2001	0-12	661	30.6	31.8
	VA Subnational[33]	Kisumu	2002	0-4	1044	29.1	29.1

	VA Subnational[48]	Western Kenya	2003	0-4	3064	26.0	0.0	
	VA Subnational[49]	Asembo & Gem	2003	10-75	1816	0.0	6.5	
	VA Subnational[50]	Nairobi	2003-2005	0-4	377	6.7	0.0	
	VA Subnational[51]	Nairobi	2005	0+	572	14.7	8.2	
	VA Subnational[52]	Asembo Bay	2003-2008	0-4	6922	25.3	0.0	
Madagascar	VR Subnational	Antananarivo	1984-1995	0+	71335	1.7	6.2	
Malawi	VA Subnational[53]	Mangochi	1987-1990	0-4	712	10.9	0.0	
	VA Subnational[54]	Karonga District DSS	2004	0+	342	15.4	9.1	
Mali	VR Subnational	Bamako	1980-1985	0+	24895	18.9	7.0	
Mozambique	VA National[55]	National	2007	0-4	3860	33.7	0.0	
	VA National[56]	National	2007-2008	0+	10020	44.0	18.5	
	VA Subnational[33]	Manhica	2002	0+	1251	20.3	21.9	
	VA Subnational[57]	Tete Province	2003	0+	216	26.5	16.6	
Nigeria	VA Subnational[58]	Lagun (village in southwest Nigeria)	1995	0-4	64	23.4	0.0	
Sao Tome and Principe	VR	National	1985	0+	3247	11.0	12.1	3.42
Senegal	VA Subnational[59]	Niakhar	1984	0-4	830	10.2	0.0	
	VA Subnational[60]	national	1986	0-4	383	22.5	0.0	
	VA Subnational[61]	Bandafassi	1986	0-4	588	5.1	0.0	
	VA Subnational[61]	Mlomp	1986	0-9	66	2.4	8.9	
	VA Subnational[62]	Niakhar	1986	0-4	3842	4.5	0.0	
	VA Subnational[61]	Niakhar	1986	0-9	1877	7.8	25.0	
	VA Subnational[59]	Mlomp	1987	0-4	42	5.8	0.0	
	VA Subnational[61]	Mlomp	1992	0-9	128	14.1	39.0	
	VA Subnational[61]	Bandafassi	1992	0-4	579	10.4	0.0	
	VA Subnational[63]	Fatick	1995	0-10	3422	26.7	36.1	
Sierra Leone	VA Subnational[64]	Southern Province	1990	0-4	33	24.7	0.0	

	VA Subnational[65]	Western Area and Porto Loko	1993	0-4	559	17.9	0.0	
Somalia	VA Subnational[66]	Lama-Doonka and Buulalow	1988	0-4	78	19.2	0.0	
South Africa	VA Subnational[67]	Agincourt	1993	0+	1001	0.6	0.3	
	VA Subnational[68]	Agincourt	1996	5-10	37	0.0	10.8	
	VA Subnational[68]	Agincourt	1999	5-45	659	0.0	4.6	
	VA Subnational[69]	Agincourt	2001	0+	1176	1.6	3.7	
	VA Subnational[33]	ACDIS	2001	0+	3677	0.0	0.7	
	VA Subnational[68]	Agincourt	2003	15-45	1352	0.0	2.1	
	VR	National	1993-1995	0+	660789	<0.1	0.1	0.75
	VR	National	1996-2008	0+	6226148	<0.1	0.2	0.99
Tanzania, United Republic of	VA Subnational[70]	Bagamoyo District	1984-1985	0-4	672	24.4	0.0	
	VA Subnational[71]	Muheza	1992	0-4	83	36.1	0.0	
	VA Subnational[72]	Bagamoyo District	1993	0-4	118	53.4	0.0	
	VA Subnational[73]	Hai	1995	0+	4627	16.8	9.4	
	VA Subnational[73]	Morogoro	1995	0+	5215	32.2	14.4	
	VA Subnational[73]	Dar es Salaam	1995	0+	2725	22.4	8.4	
	VA Subnational[73]	Hai	1998	0+	4710	17.7	11.0	
	VA Subnational[73]	Morogoro	1998	0+	5566	34.5	15.6	
	VA Subnational[73]	Dar es Salaam	1998	0+	2483	29.1	8.0	
	VA Subnational[33]	Rufiji	2000	0+	3931	22.8	11.6	
	VA Subnational[33]	Ifakara	2001	0+	1805	40.3	33.9	
	VA Subnational[74]	Muleba District	2001	0+	415	74.5	14.2	
	VA Subnational[73]	Morogoro	2001	0+	4435	33.1	17.2	
	VA Subnational[73]	Dar es Salaam	2001	0+	2011	21.8	9.1	
	VA Subnational[73]	Hai	2001	0+	4226	15.5	9.1	
	VA Subnational[75]	Dar es Salaam	2002	0+	686	22.4	7.4	

	VA Subnational[75]	Kilimanjaro	2002	0+	1386	6.3	1.8	
	VA Subnational[26]	Rufiji	2002	0-4	831	36.8	0.0	
	VA Subnational[76]	Ifakara	2003-2004	0-4	643	52.1	0.0	
	VA Subnational[77]	Ifakara	2005	15-55	1111	0.0	13.4	
	VA Subnational[76]	Ifakara	2006	0-4	563	33.3	0.0	
Uganda	VA National[78]	National	2005	0-4	641	32.0	0.0	
	VA Subnational[79]	Mbarara District	1988	0-4	104	6.4	0.0	
	VA Subnational[80]	Iganga/Mayuge	2006	0-4	530	31.8	0.0	
Zambia	VA National[81]	National	2009	0+	1048	13.4	10.5	
	VA Subnational[82]	Kawambwa district and Samfya	2002	0-4	360	26.4	0.0	
Zimbabwe	VR	National	1990	0+	32037	1.5	3.4	0.43
	VR Subnational		1995	0+	75529	1.1	4.6	

WebTable 10: Data used to estimate malaria mortality, countries outside of Africa

Country	Source Type	Study Site	Time Period	Age Range	Total Deaths	Malaria Deaths Under 5 (%)	Malaria Deaths Over 5 (%)	VR Completeness
Afghanistan	VA Subnational[83]	Badghis	2000	0-4	53	7.5	0.0	
	VA Subnational[84]	Kabul	2000	15-45	742	0.0	0.1	
	VA Subnational[84]	Kandahar	2000	15-45	300	0.0	0.3	
Argentina	VR	National	1980-2009	0+	7771008	<0.1	<0.1	1.03
Azerbaijan	VR	National	1981-1982	0+	85263	0.0	0.0	0.78
	VR	National	1985-2004	0+	949796	<0.1	<0.1	0.85
	VR	National	2007	0+	50245	0.0	<0.1	0.82
Bangladesh	VA Subnational[85]	Matlab	1987	0+	1004	0.1	0.2	
	VA Subnational[86]	Matlab	1989	0+	937	0.3	0.5	
	VA Subnational[86]	Matlab	1994	0+	835	0.1	0.2	
	VA Subnational[33]	HSID-A	2000	0+	290	0.0	<0.1	
	VA Subnational[86]	Matlab	2000	0+	850	0.1	0.2	
	VA Subnational[86]	Matlab	2003	35-39	17	0.0	6.6	
Belize	VR	National	1980-1984	0+	3609	0.2	0.2	0.68
	VR	National	1986-1987	0+	1524	0.3	0.3	0.72
	VR	National	1989-1991	0+	2115	0.1	<0.1	0.66
	VR	National	1993-2008	0+	19096	<0.1	<0.1	0.78
Brazil	VR	National	1980-2009	0+	26795756	<0.1	<0.1	0.92
Cambodia	VA Subnational[87]	7 rural communes	2001	0+	445	6.7	6.8	
China	VA National[88]	National	1991-2000	0+	573281	<0.1	<0.1	
	VA National[88]	National	2004-2009	0+	2512994	<0.1	<0.1	
	VR	National	1987-2000	0+	9389220	<0.1	<0.1	0.08
	VR	National	2002-2007	0+	3624795	<0.1	<0.1	0.07
Colombia	VR	National	1980-2008	0+	969946	0.2	0.1	0.95
Costa Rica	VR	National	1980-2009	0+	390854	<0.1	<0.1	0.96
Dominican Republic	VR	National	1980-1992	0+	315697	<0.1	<0.1	0.61
	VR	National	1994-2001	0+	196957	<0.1	<0.1	0.50
	VR	National	2003-2009	0+	165561	<0.1	<0.1	0.41
Ecuador	VA National[60]	National	1987	0-4	202	7.5	0.0	
	VR	National	1980-2009	0+	1609746	<0.1	<0.1	0.98

El Salvador	VR	National	1981-1984	0+	131404	0.5	0.5	0.86
	VR	National	1990-1993	0+	109518	<0.1	0.1	0.81
	VR	National	1995-2008	0+	413307	<0.1	<0.1	0.85
Georgia	VR	National	1981-1982	0+	86692	0.0	0.0	0.93
	VR	National	1985-1992	0+	372500	<0.1	<0.1	0.92
	VR	National	1994-2001	0+	311625	<0.1	<0.1	0.85
	VR	National	2004-2007	0+	135918	<0.1	<0.1	0.25
	VR	National	2009	0+	46471	0.0	0.0	0.91
Guatemala	VR	National	1980-1981	0+	142077	0.7	2.0	0.96
	VR	National	1984	0+	65732	0.4	1.2	0.95
	VR	National	1986-2008	0+	1553324	0.1	0.3	0.97
Guyana	VR	National	1984	0+	4652	<0.1	<0.1	0.80
	VR	National	1988-1999	0+	55309	0.5	0.8	0.77
	VR	National	2001-2006	0+	30074	0.4	0.7	0.86
Haiti	VR	National	1981	0+	40696	1.2	2.3	0.42
	VR	National	1999	0+	22840	1.1	1.5	0.25
	VR	National	2002-2004	0+	17969	1.3	2.0	0.06
Honduras	VR	National	1980-1983	0+	73067	0.2	0.2	0.71
	VR	National	1987-1990	0+	59668	0.2	0.2	0.53
India	VA National[89]	National	1992	0+	10990	1.5	2.2	
	VA National[90]	National	1998	0+	11942	3.9	4.4	
	VA National[91]	National	2002	0+	104296	5.0	4.7	
	VA Subnational[92]	SCD rural	1980-1989	0+	186217	2.1	2.3	
	VR	National	1990-1998	0+	5004664	1.1	1.7	
	VR Subnational	MCCD urban	1999-2001	0+	1622199	1.0	1.2	
Indonesia	VA Subnational[93]	Gorontalo	2007	0+	5139	0.7	0.4	
	VA Subnational[93]	Papua	2007	0+	2550	10.3	9.1	
	VA Subnational[93]	West Kalimantan	2007	0+	3105	0.7	0.4	
Iran, Islamic Republic of	VR	National	1980-1985	0+	439289	<0.1	<0.1	0.20
	VR	National	1987	0+	80676	<0.1	<0.1	0.22
	VR	National	1996-2003	0+	1859019	<0.1	<0.1	0.80
	VR	National	2004-2006	0+	738649	<0.1	<0.1	0.74
Iraq	VR		2008	0+	105974	0.0	0.0	
Korea, Republic of	VR	National	1985-2006	0+	4917303	0.0	<0.1	0.93
	VR	National	2009	0+	246841	0.0	<0.1	0.90
Kyrgyzstan	VR	National	1981-1982	0+	58768	0.0	0.0	0.78
	VR	National	1985-2009	0+	853979	<0.1	<0.1	0.85
Malaysia	VR	National	1997-1998	0+	86564	<0.1	0.1	0.46

	VR	National	2000-2006	0+	426218	<0.1	<0.1	0.57
	VR Subnational	Peninsular Malaysia	1980-1982	0+	70975	0.2	0.1	
Mexico	VR	National	1980-2009	0+	13270171	<0.1	<0.1	0.97
Myanmar	VA Subnational[94]	Pyinmana Township	2007	0+	970	4.3	3.2	
Nicaragua	VR	National	1988-1994	0+	88971	0.3	0.3	0.56
	VR	National	1996-2006	0+	162633	0.2	0.1	0.61
Pakistan	VA National[95]	National	2006	15-45	1062	0.0	0.7	
	VA National[96]	National	2006	0-4	535	0.6	0.0	
Panama	VR	National	1980-1989	0+	85881	<0.1	<0.1	0.95
	VR	National	1996-2004	0+	110490	<0.1	<0.1	0.96
	VR	National	2006-2008	0+	44229	<0.1	<0.1	0.94
Papua New Guinea	VA Subnational[97]	Madang	1983	0+	407	1.2	2.2	
	VA Subnational[98]	Wosera	1992	0+	164	7.4	4.4	
	VR	National	1980	0+	3390	5.3	9.7	0.12
Paraguay	VR	National	1980-1991	0+	154621	<0.1	<0.1	0.72
	VR	National	1994-2006	0+	242304	<0.1	<0.1	0.74
	VR	National	2008	0+	23309	0.0	<0.1	0.73
Peru	VR	National	1980-1983	0+	369060	<0.1	<0.1	0.68
	VR	National	1986-1992	0+	568645	<0.1	<0.1	0.63
	VR	National	1994-2007	0+	1215643	<0.1	<0.1	0.76
Philippines	VR	National	1980-2005	0+	8534208	<0.1	0.1	0.90
	VR	National	2009	0+	461404	<0.1	<0.1	
Saudi Arabia	VR	National	2009	0+	35159	0.0	0.0	
Sri Lanka	VR	National	1980-1989	0+	935810	0.2	0.1	1.08
	VR	National	1991-1996	0+	609603	0.4	0.2	1.02
	VR	National	2004-2005	0+	246330	<0.1	<0.1	0.85
Suriname	VR	National	1980-1982	0+	7305	0.2	0.2	0.84
	VR	National	1984-1992	0+	18222	0.7	0.3	0.72
	VR	National	1995-2000	0+	12533	1.9	1.1	0.62
	VR	National	2002-2007	0+	16446	0.4	0.3	0.70
Tajikistan	VR	National	1981-1982	0+	63678	<0.1	<0.1	0.73
	VR	National	1985-2005	0+	668234	<0.1	<0.1	0.67
Thailand	VA National[99]	National	2005	0+	4344	0.0	0.2	
	VR	National	1980-1987	0+	1840608	2.3	1.7	0.92
	VR	National	1990-1992	0+	791603	5.1	0.9	0.96
	VR	National	1994-2000	0+	2307272	0.8	0.6	0.92
	VR	National	2002-2007	0+	2337176	0.2	0.1	0.91
Turkey	VR	Reporting Areas	1983-1984	0+	270924	<0.1	<0.1	0.36

	VR	Reporting Areas	1987-2008	0+	3790998	<0.1	<0.1	0.47
Uzbekistan	VR	National	1981-1982	0+	241924	<0.1	<0.1	0.82
	VR	National	1985-2005	0+	2859133	<0.1	<0.1	0.79
Venezuela	VR	National	1980-1983	0+	307692	<0.1	<0.1	1.09
	VR	National	1985-1990	0+	488906	<0.1	<0.1	1.05
	VR	National	1992-1994	0+	279595	<0.1	<0.1	1.02
	VR	National	1996-2007	0+	1335703	<0.1	<0.1	1.00
Viet Nam	VA National[100]	National	2008	10-55	404	0.0	1.0	

References

1 Naghavi M, Makela S, Foreman K, O'Brien J, Pourmalek F, Lozano R. Algorithms for enhancing public health utility of national causes-of-death data. *Popul Health Metrics* 2010; **8**: 9.

2 Foreman K, Lozano R, Lopez A, Murray C. Modeling causes of death: an integrated approach using CODEm. *Population Health Metrics* In press.

3 Hogan MC, Foreman KJ, Naghavi M, *et al.* Maternal mortality for 181 countries, 1980-2008: a systematic analysis of progress towards Millennium Development Goal 5. *Lancet* 2010; **375**: 1609–23.

4 Forouzanfar M, Foreman K, Delossantos, *et al.* Breast and Cervical Cancer Trends for 187 Countries, 1980-2010: A Systematic Analysis. .

5 Hay SI, Smith DL, Snow RW. Measuring malaria endemicity from intense to interrupted transmission. *The Lancet Infectious Diseases* 2008; **8**: 369–78.

6 Lysenko A, Semashko I. Geography of malaria. A medico-geographic profile of an ancient disease. In: Itogi Nauki: Medicinskaja Geografija. Moscow, USSR, Academy of Sciences, 1968: 25–146.

7 World Health Organization. World Malaria Report 2010. Geneva, World Health Organization, 2010http://www.who.int/malaria/world_malaria_report_2010/worldmalariareport2010.pdf (accessed 2 Aug2011).

8 Hay SI, Guerra CA, Gething PW, *et al.* A World Malaria Map: Plasmodium falciparum Endemicity in 2007. *PLoS Med* 2009; **6**: e1000048.

9 Alonso PL, Lindsay SW, Armstrong Schellenberg JR, *et al.* A malaria control trial using insecticide-treated bed nets and targeted chemoprophylaxis in a rural area of The Gambia, west Africa. 2. Mortality and morbidity from malaria in the study area. *Trans R Soc Trop Med Hyg* 1993; **87 Suppl 2**: 13–7.

10 Ringwald P. Susceptibility of Plasmodium falciparum to antimalarial drugs: report on global monitoring, 1996-2004. , World Health Organization Suiza, 2005.

11 WHO | Global report on antimalarial efficacy and drug resistance: 2000-2010. WHO. http://www.who.int/malaria/publications/atoz/9789241500470/en/ (accessed 13 Dec2011).

12 Flaxman AD, Fullman N, Otten MW Jr, *et al.* Rapid scaling up of insecticide-treated bed net coverage in Africa and its relationship with development assistance for health: a systematic synthesis of supply, distribution, and household survey data. *PLoS Med* 2010; **7**: e1000328.

13 Binka FN, Kubaje A, Adjuik M, *et al.* Impact of permethrin impregnated bednets on child mortality in Kassena-Nankana district, Ghana: a randomized controlled trial. *Trop Med Int Health* 1996; **1**: 147–54.

14 Fegan GW, Noor AM, Akhwale WS, Cousens S, Snow RW. Effect of expanded insecticide-treated bednet coverage on child survival in rural Kenya: a longitudinal study. *Lancet* 2007; **370**: 1035–9.

15 D'Alessandro U, Olaleye B, Langerock P, *et al.* Mortality and morbidity from malaria in Gambian children after introduction of an impregnated bednet programme. *The Lancet* 1995; **345**: 479–83.

16 Schellenberg JR, Abdulla S, Nathan R, *et al.* Effect of large-scale social marketing of insecticide-treated nets on child survival in rural Tanzania. *Lancet* 2001; **357**: 1241–7.

17 Lim SS, Fullman N, Stokes A, *et al.* Net Benefits: A Multicountry Analysis of Observational Data Examining Associations between Insecticide-Treated Mosquito Nets and Health Outcomes. *PLoS Med* 2011; **8**: e1001091.

18 Rajaratnam JK, Marcus JR, Levin-Rector A, *et al.* Worldwide mortality in men and women aged 15-59 years from 1970 to 2010: a systematic analysis. *Lancet* 2010; **375**: 1704–20.

19 Rajaratnam JK, Marcus JR, Flaxman AD, *et al.* Neonatal, postneonatal, childhood, and under-5 mortality for 187 countries, 1970-2010: a systematic analysis of progress towards Millennium Development Goal 4. *Lancet* 2010; **375**: 1988–2008.

20 Lozano R, Lopez AD, Atkinson C, *et al.* Performance of physician-certified verbal autopsies: multisite validation study using clinical diagnostic gold standards. *Popul Health Metr* 2011; **9**.

21 Rowe AK, Rowe SY, Snow RW, *et al.* The burden of malaria mortality among African children in the year 2000. *Int J Epidemiol* 2006; **35**: 691–704.

22 Debouverie M, Duboz P, Vaugelade J. Analyse de la mortalité dans l'enfance après trois années d'observation : région de Pissila (Burkina Faso). *ORSTOM* 1988; : 12.

23 Duboz P, Vaugelade J, Debouverie M. Mortalité dans l'enfance dans la région de Niangoloko (Burkina Faso). , ORSTOM, 1989.

24 Becher H, Kynast-Wolf G, Sié A, *et al.* Patterns of Malaria: Cause-Specific and All-Cause Mortality in a Malaria-Endemic Area of West Africa. *The American Journal of Tropical Medicine and Hygiene* 2008; **78**: 106–13.

25 Ramroth H, Ndugwa RP, Müller O, *et al.* Decreasing childhood mortality and increasing proportion of malaria deaths in rural Burkina Faso. *Glob Health Action*; **2**. doi:10.3402/gha.v2i0.1909.

26 Abdullah S, Adazu K, Masanja H, *et al.* Patterns of age-specific mortality in children in endemic areas of sub-Saharan Africa. *Am J Trop Med Hyg* 2007; **77**: 99–105.

27 Yé M, Diboulo E, Niamba L, *et al.* An improved method for physician-certified verbal autopsy reduces the rate of discrepancy: experiences in the Nouna Health and Demographic Surveillance Site (NHDSS), Burkina Faso. *Population Health Metrics* 2011; **9**: 34.

28 Delacollette C, Barutwanayo M. Mortality and morbidity at young ages in a stable hyperendemic malaria region, community Nyanza-Lac, Imbo South, Burundi. *Bull Soc Pathol Exot* 1993; **86**: 373–9.

29 Delacollette C, Van der Stuyft P, Molima K, Delacollette-Lebrun C, Wery M. Study of general mortality and of mortality related to malaria in the mountains of Kivu, Zaire. *Rev Epidemiol Sante Publique* 1989; **37**: 161–6.

30 Van den Broeck J, Eeckels R, Vuylsteke J. Influence of nutritional status on child mortality in rural Zaire. *The Lancet* 1993; **341**: 1491–5.

31 Ngoy P, Kinshasa I, Mone DRCC, Burundi I. Mortality in the Democratic Republic of Congo: Results from a Nationwide Survey. 2002.

32 Coghlan B, Brennan R, Ngoy P, *et al.* Mortality in the Democratic Republic of Congo: results from a nationwide survey. *International Rescue Committee-Burnet Institute* 2004.

33 Adjuik M, Smith T, Clark S, *et al.* Cause-specific mortality rates in sub-Saharan Africa and Bangladesh. *Bull World Health Organ* 2006; **84**: 181–8.

34 Deressa W, Fantahun M, Ali A. Malaria-related mortality based on verbal autopsy in an area of low endemicity in a predominantly rural population in Ethiopia. *Malaria Journal* 2007; **6**: 128.

35 World Health Organization, others. Deployment at community level of artemether-lumefantrine and rapid diagnostic tests, Raya Valley, Tigray, Ethiopia. *Geneva: World Health Organization* 2009.

36 Greenwood BM, Bradley AK, Greenwood AM, *et al.* Mortality and morbidity from malaria among children in a rural area of The Gambia, West Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1987; **81**: 478–86.

37 Menon A, Snow RW, Byass P, Greenwood BM, Hayes RJ, N'jie ABH. Sustained protection against mortality and morbidity from malaria in rural Gambian children by chemoprophylaxis given by village health workers. *Transactions of the Royal Society of Tropical Medicine and Hygiene* November; **84**: 768–72.

38 De Francisco A, Hall AJ, Schellenberg JR, Greenwood AM, Greenwood BM. The pattern of infant and childhood mortality in Upper River Division, The Gambia. *Ann Trop Paediatr* 1993; **13**: 345–52.

39 Jaffar S, Leach A, Greenwood AM, *et al.* Changes in the pattern of infant and childhood mortality in Upper River Division, The Gambia, from 1989 to 1993. *Tropical Medicine & International Health* 1997; **2**: 28–37.

40 Rutherford ME, Dockerty JD, Jasseh M, *et al.* Preventive measures in infancy to reduce under-five mortality: a case–control study in The Gambia. *Tropical Medicine & International Health* 2009; **14**: 149–55.

41 Demographic Health Survey, 2007, Ghana. .

42 Mills S, Williams JE, Wak G, Hodgson A. Maternal mortality decline in the Kassena-Nankana district of northern Ghana. *Matern Child Health J* 2008; **12**: 577–85.

43 Schumacher R, Swedberg E, Diallo M, Keita D, Kalter H, Pasha O. Mortality Study in Guinea: Investigating the Causes of Death in Children Under 5. , Save the Children Federation, Inc. and the Basic Support for Institutionalizing Child Survival (BASICS II) Project., 2002.

44 Roth A, Gustafson P, Nhaga A, *et al.* BCG vaccination scar associated with better childhood survival in Guinea-Bissau. *Int J Epidemiol* 2005; **34**: 540–7.

45 Spencer HC, Kaseje DC, Mosley WH, Sempebwa EK, Huong AY, Roberts JM. Impact on mortality and fertility of a community-based malaria control programme in Saradidi, Kenya. *Ann Trop Med Parasitol* 1987; **81 Suppl 1**: 36–45.

46 Mirza NM, Macharia WM, Wafula EM, Agwanda R, Onyango FE. Mortality patterns in a rural Kenyan community. *East Afr Med J* 1990; **67**: 823–9.

47 Adazu K, Lindblade KA, Rosen DH, *et al.* Health and demographic surveillance in rural western Kenya: a platform for evaluating interventions to reduce morbidity and mortality from infectious diseases. *Am J Trop Med Hyg* 2005; **73**: 1151–8.

48 Ombok M, Adazu K, Odhiambo F, *et al.* Geospatial distribution and determinants of child mortality in rural western Kenya 2002–2005. *Tropical Medicine & International Health* 2010; **15**: 423–33.

49 Van Eijk AM, Adazu K, Ofware P, Vulule J, Hamel M, Slutsker L. Causes of deaths using verbal autopsy among adolescents and adults in rural western Kenya. *Tropical Medicine & International Health* 2008; **13**: 1314–24.

50 Ye Y, Zulu E, Mutisya M, Orindi B, Emina J, Kyobutungi C. Seasonal Pattern of Pneumonia Mortality among Under-Five Children in Nairobi's Informal Settlements. *The American Journal of Tropical Medicine and Hygiene* 2009; **81**: 770–5.

51 Oti SO, Kyobutungi C. Verbal autopsy interpretation: a comparative analysis of the InterVA model versus physician review in determining causes of death in the Nairobi DSS. *Popul Health Metr* 2010; **8**: 21.

52 Hamel MJ, Adazu K, Obor D, *et al.* A reversal in reductions of child mortality in western Kenya, 2003-2009. *Am J Trop Med Hyg* 2011; **85**: 597–605.

53 Slutsker L, Bloland P, Steketee RW, Wirima JJ, Heymann DL, Breman JG. Infant and second-year mortality in rural Malawi: causes and descriptive epidemiology. *Am J Trop Med Hyg* 1996; **55**: 77–81.

54 Jahn A, Floyd S, Crampin AC, *et al.* Declining child mortality in northern Malawi despite high rates of infection with HIV. *Bull World Health Organ* 2010; **88**: 746–53.

55 Mozambique Ministry of Health. Mozambique National Child Mortality Study 2009. , 2009.

56 Mozambique National Institute of Statistics, Mozambique Ministry of Health. Mortality in Mozambique - National Survey of Causes of Death, 2007/2008. Preliminary Report. , 2009.

57 Renzaho AMN. Mortality rates, prevalence of malnutrition, and prevalence of lost pregnancies among the drought-ravaged population of Tete Province, Mozambique. *Prehosp Disaster Med* 2007; **22**: 26–34.

58 Lawoyin TO. Infant and maternal deaths in rural south west Nigeria: a prospective study. *Afr J Med Med Sci* 2007; **36**: 235–41.

59 Pison G, Trape JF, Lefebvre M, Enel C. Rapid decline in child mortality in a rural area of Senegal. *Int J Epidemiol* 1993; **22**: 72–80.

60 Boerma J, Sommerfelt E, Van Ginneken J. Causes of death in childhood: an evaluation of the results of verbal autopsy questions used in seven DHS surveys. In: DHS Methodological Report. Calverton, MD, Macro International, 1994: 143–57.

61 Trape JF, Pison G, Preziosi MP, *et al.* Impact of chloroquine resistance on malaria mortality. *C R Acad Sci III, Sci Vie* 1998; **321**: 689–97.

62 Ewbank DC, Gribble JN. Effects of health programs on child mortality in sub-Saharan Africa. , National Academies Press, 1993.

63 Etard J-F, Le Hesran J-Y, Diallo A, Diallo J-P, Ndiaye J-L, Delaunay V. Childhood mortality and probable causes of death using verbal autopsy in Niakhar, Senegal, 1989–2000. *International Journal of Epidemiology* 2004; **33**: 1286–92.

64 Barnish G, Maude GH, Bockarie MJ, Erunkulu OA, Dumbuya MS, Greenwood BM. Malaria in a rural area of Sierra Leone. II. Parasitological and related results from pre- and post-rains clinical surveys. *Ann Trop Med Parasitol* 1993; **87**: 137–48.

65 Amin R. Immunization coverage and child mortality in two rural districts of Sierra Leone. *Soc Sci Med* 1996; **42**: 1599–604.

66 Ibrahim MM, Omar HM, Persson LA, Wall S. Child mortality in a collapsing African society. *Bull World Health Organ* 1996; **74**: 547–52.

67 Kahn K, Tollman SM, Garenne M, Gear JSS. Who dies from what? Determining cause of death in South Africa's rural north-east. *Tropical Medicine & International Health* 1999; **4**: 433–41.

68 Tollman SM, Kahn K, Sartorius B, Collinson MA, Clark SJ, Garenne ML. Implications of mortality transition for primary health care in rural South Africa: a population-based surveillance study. *Lancet* 2008; **372**: 893–901.

69 Byass P, Kahn K, Fottrell E, Collinson MA, Tollman SM. Moving from data on deaths to public health policy in Agincourt, South Africa: approaches to analysing and understanding verbal autopsy findings. *PLoS Med* 2010; **7**: e1000325.

70 Mtango FD, Neuvians D. Acute respiratory infections in children under five years. Control project in Bagamoyo District, Tanzania. *Trans R Soc Trop Med Hyg* 1986; **80**: 851–8.

71 Salum FM, Wilkes TJ, Kivumbi K, Curtis CF. Mortality of under-fives in a rural area of holoendemic malaria transmission. *Acta Tropica* 1994; **58**: 29–34.

72 Premji Z, Ndayanga P, Shiff C, Minjas J, Lubega P, MacLeod J. Community based studies on childhood mortality in a malaria holoendemic area on the Tanzanian coast. *Acta Tropica* 1997; **63**: 101–9.

73 Ministry of Health of Tanzania. Mortality Burden: Mortality Burden Profiles from Sentinel Sites, 1994-2002. Volume 4. .

74 Kaatano GM, Mashauri FM, Kinung'hi SM, *et al.* Patterns of malaria related mortality based on verbal autopsy in Muleba District, north-western Tanzania. *Tanzan J Health Res* 2009; **11**: 210–8.

75 Whiting DR, Setel PW, Chandramohan D, Wolfson LJ, Hemed Y, Lopez AD. Estimating cause-specific mortality from community- and facility-based data sources in the United Republic of Tanzania: options and implications for mortality burden estimates. *Bull World Health Organ* 2006; **84**: 940–8.

76 Kamara MK. Clustering of mortality among children under five years due to malaria at the Ifakara demographic surveillance site in Tanzania. 2008.

77 Narh-Bana S. Risk factors and causes of adult deaths in the Ifakara health and demographic surveillance system population, 2003-2007. 2010.

78 Demographic Health Survey, 2007, Uganda. .

79 Vella V, Tomkins A, Nidku J, Marshall T. Determinants of child mortality in south-west Uganda. *J Biosoc Sci* 1992; **24**: 103–12.

80 Uganda Bureau of Statistics.;Macro International.;MEASURE Evaluation Project. Uganda child verbal autopsy study, 2007. Kampala Uganda ;Calverton MD ;Chapel Hill NC, Uganda Bureau of Statistics ;;Macro International ;;MEASURE Evaluation, 2008.

81 Mudenda SS, Kamocha S, Mswia R, *et al.* Feasibility of using a World Health Organization-standard methodology for Sample Vital Registration with Verbal Autopsy (SAVVY) to report leading causes of death in Zambia: results of a pilot in four provinces, 2010. *Population Health Metrics* 2011; **9**: 40.

82 Kapungwe A. Quality of Child Health Care and under-Five Mortality in Zambia: A Case Study of Two Districts in Luapula Province. *Demographic Research http: wwwdemographic-researchorg* 2005; **12**.

83 Woodruff B, Reynolds M, Tchibindat F, Ahimana C. Nutrition and Health Survey Badghis Province, Afghanistan. , UNICEF, 2002.

84 Bartlett LA, Mawji S, Whitehead S, *et al.* Where giving birth is a forecast of death: maternal mortality in four districts of Afghanistan, 1999-2002. *Lancet* 2005; **365**: 864–70.

85 Bhatia S. Patterns and causes of neonatal and postneonatal mortality in rural Bangladesh. *Stud Fam Plann* 1989; **20**: 136–46.

86 INDEPTH. Bangladesh - Matlab Health and Demographic Surveillance System. International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). .

87 Oum S, Chandramohan D, Cairncross S. Community-based surveillance: a pilot study from rural Cambodia. *Tropical Medicine & International Health* 2005; **10**: 689–97.

88 China Third Retrospective Survey on mortality 2004-2005. , Peking Union Medical College;

89 Demographic Health Survey, 1992, India. , International Institute for Population Sciences (IIPS), 1992.

90 Demographic Health Survey, 1998, India. , International Institute for Population Sciences (IIPS), 1998.

91 Registrar General of India. Sample Registration System, 2002. .

92 Registrar General of India. Survey of Causes of Death (Rural), 1980. , 1980.

93 National Institute of Health Research and Development, Ministry of Health. Indonesian Mortality Registration System Strengthening Project. , 2009.

94 Myint S, Aye Moe Moe Lwin, Kyawt Sann Lwin. Community based verification of cause of death in Pyinmana Township. , Ministry of Health, 2007.

95 Pakistan maternal health DHS 2006. .

96 Pakistan child health DHS 2006. .

97 Moir JS, Garner PA, Heywood PF, Alpers MP. Mortality in a rural area of Madang Province, Papua New Guinea. *Ann Trop Med Parasitol* 1989; **83**: 305–19.

98 Genton B, al-Yaman F, Beck HP, *et al.* The epidemiology of malaria in the Wosera area, East Sepik Province, Papua New Guinea, in preparation for vaccine trials. II. Mortality and morbidity. *Ann Trop Med Parasitol* 1995; **89**: 377–90.

99 Porapakkham Y, Rao C, Pattaraarchachai J, *et al.* Estimated causes of death in Thailand, 2005: implications for health policy. *Popul Health Metr* 2010; **8**: 14.

100 Ngo AD, Rao C, Hoa NP, Adair T, Chuc NTK. Mortality patterns in Vietnam, 2006: Findings from a national verbal autopsy survey. *BMC Res Notes* 2010; **3**: 78.