

ONLINE APPENDIX

Can Facebook Ads Prevent Malaria? Two Field Experiments in India

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June 2026

A Content Development and Campaign Management

A.1 Developing content for different personas

Data insights from public posts revealed that women tended to emphasize family and protection against mosquitoes. Hence, the content development team worked to develop content that women would find engaging; this included content highlighting children and motherhood. Some ads outlined the detrimental effects that malaria can have on pregnant women.

Figure A1: Examples of content to activate women



Figure A2: Examples of content to activate men



Men, on the other hand, tended to engage more on non-personal aspects of campaigns, such as government, healthcare, symptoms, treatment, and awareness days. Content was also developed to engage male audiences including content which featured a popular sport cricket.

Younger audiences, especially in the 18-24 age bucket, were posting about malaria and other mosquito-borne diseases at a lower rate when compared to older people. The MNM team made a conscious effort to use meme-styled content and humor to engage this audience.

Figure A3: Examples of content to activate younger audiences



The data insights demonstrated that older people were disproportionately more likely to post about malaria and other mosquito-borne diseases; this made older people important advocates for promoting the campaign's objectives. Thus, content was developed specifically for grandparents encouraging them to have their grandchildren tested if they experience malaria symptoms.

Figure A4: Examples of content to activate older audiences



The insights revealed that in rural areas, people were posting about malaria and other mosquito-borne diseases at a lower rate than people in urban areas; this finding underscored the need to produce resonant content for rural audiences since malaria disproportionately occurs in rural areas. Furthermore, less urbanized areas were found to post less about mosquito-borne disease in English; this demonstrated the need to have content in other languages including Hindi and Hin-glish. Moreover, analysis of public posts revealed that rural residents highlighted an appreciation for ASHAs (community health workers).

Figure A5: Examples of content for rural audiences



The campaign occurred during the context of the COVID-19 pandemic and one of the main goals was to limit the rise of malaria fatalities during COVID-19 by encouraging people to engage in preventative behavior and to seek testing. Moreover, several symptoms of COVID-19, such as fever, are similar to symptoms for malaria; this further underscored the need for people to get tested. Analysis of posts showed that a large number of mosquito-borne disease posts also mentioned COVID-19, with many posts mentioning the continued threat of malaria and other mosquito-borne diseases. Acknowledging the pandemic, the creative team wanted to highlight the continued threat of mosquito-borne disease and developed content encouraging people to get tested for malaria and take protective measures.

Figure A6: Examples of COVID-19-related content



A.2 Campaign dissemination via Facebook and Instagram ads

The dissemination of the content occurred in two phases (or campaigns). For the first campaign, from July to November 2020, the MNM team used Meta Ad Manager to create one campaign with the objective of maximizing engagement. In that campaign, the team created six ad sets, each one targeting the demographic of a specific persona. The team limited the geographic targeting by excluding the treatment areas identified by the research team. The creative designed for each persona was placed in the appropriate ad set. Ads were turned off after they reached a frequency over five or noticed a significant drop in ad engagement. The team relied on the Meta Ad Algorithm to identify the highest-performing ad in each ad set. Figure A7 reports these ads.

During a second campaign in December 2020 and January 2021, the team used Meta Ad Manager to create one campaign also with the objective of maximizing engagement. In that campaign, the team created six ad sets, each one targeting the demographic of a specific persona. They then filled each ad set with the top-performing ad creatives from the first campaign.

A.3 Facebook and Instagram community management

Instagram and Facebook channels require daily engagement. Malaria No More employed a community manager who oversaw comment threads across both channels. This person used a management guide equipped with pre-written responses for frequently asked questions. The following activities were carried out at least twice a day:

1. Hiding all negative or nonconstructive (spam-like) comments
2. Liking all positive comments
3. Responding to all Direct Messages
4. Inviting all the people who have engaged with the MNM page to also like the page

Figure A7: Top performing content



B Data and Survey Questions

B.1 Data Sources and Processing

The data sources, cleaning steps, missing-covariate exclusions, and final analysis samples are reported in Table 4 in the main text.

B.2 Longitudinal Survey

- a) *Did you sleep under a mosquito net last night?* This question was coded as 1 if the respondent reported to have slept under a bednet the previous night and 0 otherwise. Households without mosquito nets were excluded.
- b) *How many family members that live in your house (including yourself) slept under a mosquito net last night?* This question required respondents to enter a number. We used this and family size to construct a new variable reflecting the share of family members who used a bednet the night before the interview. Households without mosquito nets were excluded.
- c) *Thinking about yesterday, did you/your family use long-sleeve clothing to prevent mosquito bites?* and *Thinking about yesterday, did you/ your family use body/wall sprays to prevent mosquito bites?* These two questions were coded as 1 if the respondent answered affirmatively, and 0 otherwise.
- d) *Have you/someone in your family had a fever (100.4°F / 38°C or above) / malaria in the last two weeks?* This question was asked separately for fever and malaria, and was coded as 1 if the respondent answered affirmatively, and 0 otherwise.
- e) Conditional on respondent reporting a fever: *Did you seek medical help?* This question was coded as 1 if answered affirmatively, and 0 otherwise. If yes: *How long after the onset of the fever?* We coded as 1 those reporting help seeking within 24 hours.
- f) Conditional on respondent reporting malaria: *Were you or your family members tested for Malaria?* This question was coded as 1 if answered affirmatively, and 0 otherwise.

B.3 Cross-sectional Survey

- a) *Have you/someone in your family had Malaria since last August?* This question was coded as 1 if answered affirmatively, and 0 otherwise.
- b) Conditional on respondent reporting malaria: *How many family members (including yourself) have had Malaria since last August?* This question required respondents to enter a number. We used this and the family size to construct a new variable reflecting the share of family members who have had malaria since August 2020.
- c) *How worried are you that you/someone in your family will get COVID-19/Malaria in the next year?* This question was asked separately for COVID-19 and malaria. Respondents could choose among four options, from “Not at all worried” to “Extremely worried”.
- d) *Would you consider buying a mosquito net for your house?* This question was asked only to respondents without mosquito nets, and was coded as 1 if answered affirmatively, and 0

otherwise.

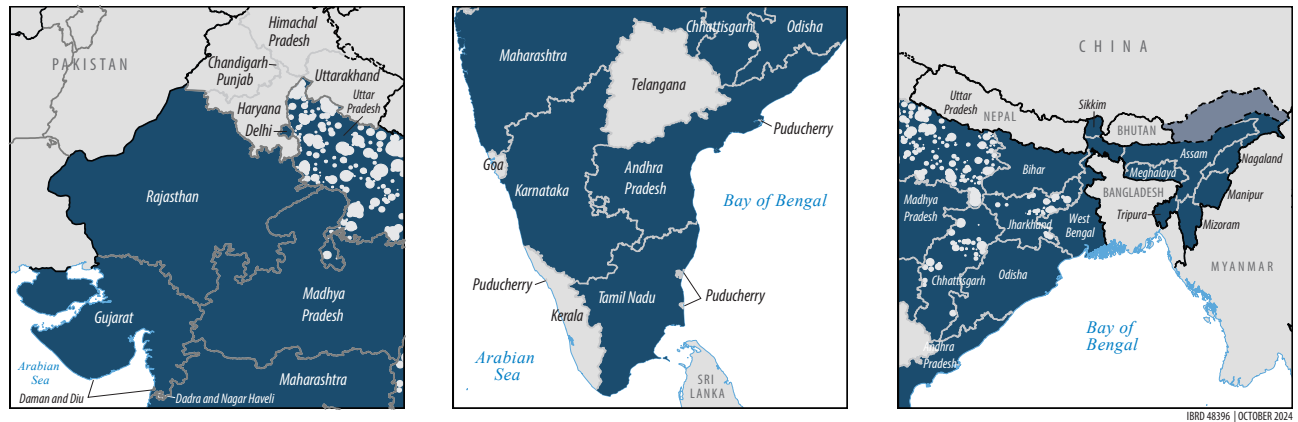
- e) *Has your mosquito net been re-treated with an insecticide since last August?* This question was asked only to respondents with mosquito nets, and was coded as 1 if answered affirmatively, and 0 otherwise.

B.4 Individual-level Study

- a) *Did you sleep under a mosquito net last night?* This question was coded as 1 if the respondent reported to have slept under a bednet the previous night and 0 otherwise. Households without mosquito nets were excluded.
- b) *What would you do if tomorrow you or a family member got a fever (100.4°F / 38°C or above) and there was a doctor or a healthcare facility near your home?* This question was coded as 1 if the respondent would seek treatment right away or within 24 hours of the onset of a fever.

C Figures

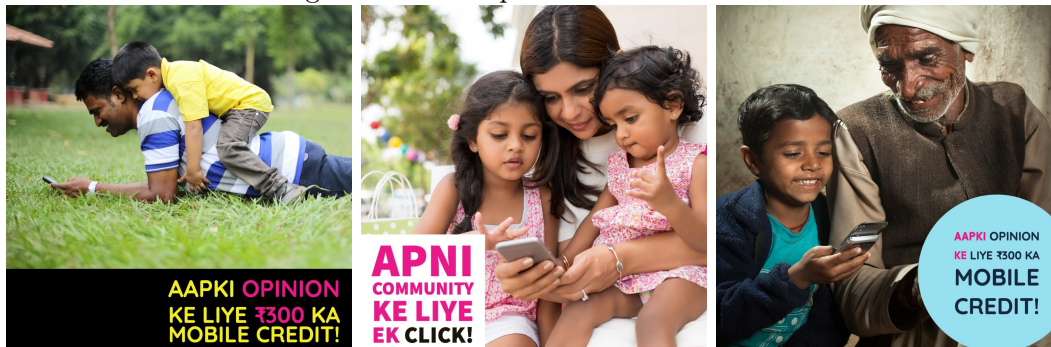
Figure C1: Potential reach of the MNM campaign



This map was produced by the Cartography Unit of the World Bank Group. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

Notes: The MNM campaign targeted individuals residing in the 22 states in blue. These are: Manipur, Assam, Andhra Pradesh, Delhi, Gujarat, Maharashtra, Meghalaya, Karnataka, Nagaland, Odisha, Rajasthan, Tamil Nadu, Tripura, West Bengal, Sikkim, Arunachal Pradesh, Mizoram, Bihar, Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Jharkhand. The last three states were part of the evaluation exercise and the gray circles in the map represent the control districts, which were excluded from the targeting of the campaign.

Figure C2: Examples of Recruitment ads



D Tables

Table D1: Comparison of district characteristics by study inclusion

	In Study	Out of Study	Normalized	<i>T-test</i>
	<i>Mean</i>	<i>Mean</i>	Difference	(<i>p-value</i>)
	(1)	(2)	(3)	(4)
N. of districts	79	42		
A: Scoping survey (August 2020)				
Share living in solid houses	0.498	0.386	0.507	0.000
Share with university degree	0.596	0.578	0.079	0.495
Share unemployed	0.443	0.450	-0.031	0.787
Share with malaria in last 2 weeks	0.016	0.019	-0.096	0.437
Share with malaria in last 5 years	0.187	0.230	-0.231	0.072
Average cost per mille (USD)	0.761	1.341	-0.744	0.000
Average click-through rate (%)	1.838	1.566	0.799	0.000
Average ad cost per survey started (USD)	0.247	1.031	-0.957	0.000
Average ad cost per survey completed (USD)	0.839	4.419	-1.053	0.000
B: Administrative sources (2011-2020)				
Area (thousand sq km)	3.606	3.479	0.053	0.690
Population (millions, Census 2011)	2.692	1.107	1.223	0.000
Population (millions, UN, 2020 estimate)	2.941	1.211	1.173	0.000
Share of rural population (UN, 2020 estimate)	0.710	0.873	-0.772	0.000
Malaria positivity rate (Sep 2019 - Aug 2020)	0.018	0.019	-0.030	0.824
Household size	5.827	5.342	0.531	0.001
Share of females	0.479	0.489	-0.592	0.000
Share of Hindu	0.821	0.719	0.396	0.002
Share with age under 7	0.154	0.164	-0.423	0.003
Socioeconomic Development Index	0.364	-0.899	1.046	0.000
Share from ST and SC/Dalit castes	0.251	0.446	-0.785	0.000
Share unemployed	0.649	0.567	0.905	0.000
Share with no literacy	0.422	0.482	-0.549	0.000
Share living in solid houses	0.586	0.321	0.967	0.000
Share living in semi-solid houses	0.254	0.535	-0.900	0.000
Share with banking access	0.672	0.534	0.692	0.000
Share with radio	0.215	0.179	0.359	0.022
Share with tv	0.326	0.171	0.934	0.000
Share with bicycle	0.649	0.613	0.208	0.138
Share with motorbike	0.185	0.109	0.976	0.000
Share with car	0.034	0.016	0.576	0.001
Share with mobile phone	0.563	0.376	0.812	0.000
Share with landline phone	0.030	0.016	0.897	0.000
Share with internet	0.016	0.005	0.483	0.007
C: Demographic and Health Survey (2019-2021)				
Share from disadvantaged castes	0.808	0.896	-0.805	0.000
Share with no education	0.322	0.398	-0.614	0.000
Share with closed drainage system	0.381	0.176	0.935	0.000
Share covered by health insurance	0.255	0.521	-0.842	0.000
Share with access to public health facility	0.666	0.788	-0.790	0.000
Number of bednets in the household	1.023	1.320	-0.421	0.002
Share with mobile phone	0.937	0.876	0.717	0.000
Share with internet	0.524	0.417	0.701	0.000

Notes: The table reports district characteristics from the scoping survey (Panel A) and administrative sources (Panel B), and the India Demographic and Health Survey (Panel C), comparing districts included in the study to those excluded. Administrative data refer to the 2011 Census unless otherwise specified. The normalized difference is calculated as the difference in means divided by the square root of the sum of the two variances.

Table D2: Household-level predictors of malaria incidence

	Any HH member had malaria in last 5 years		Any HH member had malaria in last 2 weeks	
	(1)	(2)	(3)	(4)
Solid house	-0.025*** (0.007)		-0.006*** (0.002)	
Semi-solid house	-0.005 (0.007)		-0.004* (0.002)	
Within 60 min to health facility	-0.010** (0.005)		-0.003 (0.002)	
University degree	0.023*** (0.005)		0.001 (0.002)	
Advantaged caste	-0.013*** (0.004)		-0.003** (0.001)	
Has air conditioning	-0.006 (0.005)		0.001 (0.001)	
Household size	0.017*** (0.005)		0.005** (0.002)	
SES index (PC1 score)		-0.022*** (0.004)		-0.004*** (0.001)
Constant	0.184*** (0.011)	0.184*** (0.011)	0.016*** (0.001)	0.016*** (0.001)
Observations	7548	7548	7548	7548
Adj. R-squared	0.010	0.003	0.004	0.001
Mean of Y	0.184	0.184	0.016	0.016

Notes: Columns (1)-(3) report OLS coefficients from multivariate regressions of malaria incidence on standardized SES components. Columns (2)-(4) report regressions of malaria incidence on the SES index (PC1 score) only. Baseline responses collected from July 23 to August 19, 2020 are included in the sample. Standard errors are clustered at the district level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D3: Additional district characteristics by experimental condition (2011 Census)

	Treatment	Control	Normalized	<i>T-test</i>
	<i>Mean</i>	<i>Mean</i>	<i>Difference</i>	<i>(p-value)</i>
	(1)	(2)	(3)	(4)
N. of districts	39	40		
Share from ST and SC/Dalit castes	0.245	0.256	-0.072	0.652
Share unemployed	0.648	0.650	-0.026	0.872
Share with no literacy	0.430	0.415	0.166	0.299
Share living in solid houses	0.602	0.570	0.120	0.453
Share living in semi-solid houses	0.257	0.252	0.015	0.926
Share of urban living in solid houses	0.791	0.782	0.071	0.656
Share of rural living in solid houses	0.542	0.519	0.076	0.635
Share of urban living in semi-solid houses	0.138	0.134	0.027	0.868
Share of rural living in semi-solid houses	0.298	0.285	0.041	0.798
Share with banking access	0.668	0.676	-0.046	0.774
Share with radio	0.211	0.220	-0.082	0.606
Share with tv	0.338	0.315	0.111	0.489
Share with bicycle	0.626	0.672	-0.314	0.052
Share with motorbike	0.194	0.177	0.177	0.268
Share with car	0.039	0.029	0.229	0.151
Share with mobile phone	0.567	0.558	0.047	0.770
Share with landline phone	0.031	0.029	0.140	0.380
Share with internet	0.019	0.013	0.219	0.170

Notes: The table reports district characteristics by experimental condition. All data are from the 2011 Census. The normalized difference is calculated as the difference in means divided by the square root of the sum of the two variances.

Table D4: Longitudinal Sample - Baseline covariates and outcomes by experimental condition

	Treatment <i>Mean</i> (1)	Control <i>Mean</i> (2)	Normalized Difference (3)	<i>T-test</i> (<i>p-value</i>) (4)
Panel A: Covariates				
N. of respondents	2524	2677		
N. of total survey waves per respondent	3.031	2.991	0.013	0.700
Female	0.084	0.088	-0.011	0.628
N. of HH members	6.540	6.700	-0.032	0.316
Solid house	0.469	0.455	0.020	0.517
Non/Semi-solid house	0.531	0.545	-0.020	0.517
Age	27.266	26.980	0.024	0.382
Has completed university	0.594	0.598	-0.005	0.854
Has completed secondary school	0.273	0.266	0.011	0.665
Has completed primary school	0.097	0.102	-0.013	0.577
Unemployed	0.485	0.501	-0.024	0.267
Student	0.195	0.181	0.025	0.245
OBC caste	0.372	0.390	-0.026	0.324
SC/Dalit caste	0.121	0.130	-0.019	0.456
ST caste	0.064	0.052	0.036	0.505
General caste	0.399	0.385	0.021	0.513
Medical center distance < 15min	0.275	0.270	0.007	0.798
Medical center distance 15-30min	0.266	0.267	-0.001	0.973
Medical center distance 30-60min	0.211	0.216	-0.010	0.663
Has mosquito net	0.761	0.778	-0.027	0.530
Has air conditioning	0.091	0.076	0.038	0.117
Pregnant woman in house	0.133	0.128	0.010	0.675
Hindu	0.843	0.865	-0.045	0.234
Muslim	0.116	0.099	0.038	0.378
Any member had malaria in last 5 years	0.206	0.209	-0.004	0.925
Worried/Very worried about malaria	0.357	0.370	-0.019	0.315
Worried/Very worried about COVID-19	0.449	0.448	0.001	0.970
Panel B: Outcomes				
Used bednet the previous night	0.710	0.694	0.024	0.512
Share of HH members who used bednet the previous night	0.708	0.685	0.045	0.220
Used long-sleeve clothing the previous day	0.561	0.582	-0.029	0.384
Used body/wall sprays the previous day	0.351	0.369	-0.027	0.292
Any member had malaria in last 2 weeks	0.019	0.019	-0.000	0.988
Any member had a fever in last 2 weeks	0.063	0.067	-0.011	0.658
Any member tested for malaria	0.596	0.580	0.022	0.873
Any member sought medical help if fever	0.792	0.849	-0.105	0.224

The table reports covariates and outcomes measured at baseline for individuals' and households' in the experience sample, by experimental condition. The normalized difference is the difference between the two means divided by the square root of the sum of the variances of the two variables.

Table D5: Cross-sectional Sample - Covariates by experimental condition

	Treatment	Control	Normalized	<i>T-test</i>
	<i>Mean</i>	<i>Mean</i>	Difference	(<i>p-value</i>)
	(1)	(2)	(3)	(4)
Covariates				
N. of respondents	1476	1576		
Female	0.121	0.115	0.013	0.669
N. of HH members	6.524	6.442	0.016	0.668
Solid house	0.425	0.437	-0.016	0.633
Non/Semi-solid house	0.575	0.563	0.016	0.633
Age	27.238	27.699	-0.034	0.300
Has completed university	0.566	0.560	0.009	0.798
Has completed secondary school	0.255	0.278	-0.036	0.195
Has completed primary school	0.121	0.114	0.015	0.505
Unemployed	0.545	0.496	0.071	0.008
Student	0.180	0.201	-0.037	0.204
OBC caste	0.341	0.345	-0.006	0.869
SC/Dalit caste	0.122	0.121	0.002	0.955
ST caste	0.060	0.055	0.015	0.715
General caste	0.438	0.438	-0.000	0.995
Medical center distance < 15min	0.307	0.280	0.041	0.132
Medical center distance 15-30min	0.280	0.282	-0.002	0.934
Medical center distance 30-60min	0.192	0.199	-0.013	0.589
Has mosquito net	0.701	0.711	-0.016	0.763
Mosquito nets per HH member	0.499	0.511	-0.015	0.739
Has air conditioning	0.100	0.096	0.007	0.788
Pregnant woman in house	0.158	0.133	0.049	0.085
Hindu	0.862	0.865	-0.005	0.902
Muslim	0.102	0.101	0.003	0.937

The table reports covariates for individuals' and households' in the cross-sectional sample by experimental condition. The normalized difference is the difference between the two means divided by the square root of the sum of the variances of the two variables.

Table D6: Longitudinal Sample 5+ waves - Baseline covariates/outcomes by experimental condition

	Treatment <i>Mean</i> (1)	Control <i>Mean</i> (2)	Normalized Difference (3)	<i>T-test</i> (<i>p-value</i>) (4)
Panel A: Covariates				
N. of respondents	704	744		
N. of total survey waves per respondent	5.947	5.961	-0.012	0.752
Female	0.064	0.074	-0.028	0.456
N. of HH members	6.321	6.526	-0.042	0.352
Solid house	0.520	0.491	0.041	0.346
Non/Semi-solid house	0.480	0.509	-0.041	0.346
Age	27.562	27.171	0.035	0.364
Has completed university	0.658	0.659	-0.001	0.969
Has completed secondary school	0.283	0.259	0.037	0.302
Has completed primary school	0.045	0.070	-0.074	0.059
Unemployed	0.489	0.501	-0.018	0.581
Student	0.185	0.195	-0.018	0.653
OBC caste	0.381	0.398	-0.025	0.603
SC/Dalit caste	0.119	0.137	-0.038	0.344
ST caste	0.068	0.048	0.060	0.324
General caste	0.402	0.383	0.027	0.563
Medical center distance < 15min	0.281	0.263	0.028	0.542
Medical center distance 15-30min	0.256	0.265	-0.015	0.709
Medical center distance 30-60min	0.186	0.227	-0.072	0.065
Has mosquito net	0.794	0.802	-0.015	0.797
Has air conditioning	0.085	0.073	0.033	0.390
Pregnant woman in house	0.105	0.101	0.010	0.788
Hindu	0.848	0.864	-0.033	0.493
Muslim	0.111	0.102	0.020	0.702
Any member had malaria in last 5 years	0.224	0.214	0.018	0.782
Worried/Very worried about malaria	0.342	0.347	-0.007	0.845
Worried/Very worried about COVID-19	0.484	0.454	0.043	0.300
Panel B: Outcomes				
Used bednet the previous night	0.710	0.683	0.041	0.427
Share of HH members who used bednet the previous night	0.713	0.690	0.044	0.386
Used long-sleeve clothing the previous day	0.571	0.593	-0.031	0.530
Used body/wall sprays the previous day	0.352	0.364	-0.018	0.648
Any member had malaria in last 2 weeks	0.009	0.015	-0.041	0.292
Any member had a fever in last 2 weeks	0.053	0.069	-0.047	0.231
Any member tested for malaria	0.667	0.545	0.165	0.665
Any member sought medical help if fever	0.838	0.843	-0.010	0.955

The table reports covariates and outcomes measured at baseline for individuals' and households' in the experience sample, by experimental condition. Only individuals who completed five or more survey waves are included. The normalized difference is the difference between the two means divided by the square root of the sum of the variances of the two variables.

Table D7: Longitudinal Sample: Differential Attrition Analysis

	Y=1 if individual response is missing in eligible survey wave	
	(1) T only	(2) T + T × Wave
T	-0.005 (0.011)	0.019 (0.017)
T × Wave 2		-0.047 (0.041)
T × Wave 3		-0.031 (0.033)
T × Wave 4		-0.027 (0.030)
T × Wave 5		-0.029 (0.028)
T × Wave 6		-0.022 (0.027)
T × Wave 7		-0.023 (0.027)
T × Wave 8		-0.022 (0.023)
T × Wave 9		-0.022 (0.017)
Wave FE	✓	✓
Observations	57685	57685
Adj. R-squared	0.230	0.230

Notes: The table reports estimates from individual-wave regressions in which the dependent variable equals one if the respondent did not answer a given eligible post-treatment survey wave in the raw data, and zero otherwise. T is the treatment indicator. Column (1) includes the treatment indicator and wave fixed effects. Column (2) additionally includes interactions between the treatment indicator and wave dummies. State fixed effects are included in all columns. Standard errors are clustered at the district level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table D8: Baseline subdistrict characteristics by experimental condition

	Treatment <i>Mean</i> (1)	Control <i>Mean</i> (2)	Normalized Difference (3)	<i>T-test</i> (<i>p-value</i>) (4)
N. of subdistricts	62	57		
Population (millions, UN, 2020 estimate)	0.737	0.654	0.103	0.427
Share of rural population (UN, 2020 estimate)	0.671	0.712	-0.125	0.336
Area (thousand sq km)	0.060	0.067	-0.128	0.320
Elevation mean (m)	201.598	204.015	-0.016	0.905
Elevation std. deviation (m)	11.480	13.916	-0.095	0.462
Distance to district capital (thousand km)	2.021	1.731	0.206	0.112
Malaria tests conducted per thousand people	2.489	3.754	-0.131	0.312
Urban malaria positivity rate (%)	2.175	0.978	0.165	0.385
Rural malaria positivity rate (%)	2.666	0.621	0.153	0.273

Notes: The table reports subdistrict characteristics before the campaign, by experimental condition. Only subdistricts with more than 50% of the population within study circles are included. The normalized difference is the difference between the two means divided by the square root of the sum of the variances of the two variables.

Table D9: Concerns about malaria, bednet ownership, willingness to purchase, and knowledge (after the campaign)

	Respondent is very worried about malaria		Respondent has a bednet		Respondent would buy bednet		Respondent knows where to buy bednet	
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS	(8) Logit
T	0.029* (0.017)	0.148* (0.085)	-0.014 (0.032)	-0.066 (0.157)	0.015 (0.032)	0.066 (0.140)	-0.039 (0.038)	-0.157 (0.151)
Observations	3052	3052	3052	3052	844	844	898	898
Adj. R-squared	0.000		0.005		0.036		-0.001	
Pseudo R-squared		0.001		0.006		0.029		0.002
Marginal effect		0.029		-0.014		0.015		-0.039
Mean in control	0.253	0.253	0.711	0.711	0.389	0.389	0.513	0.513
SD in control	0.435	0.435	0.454	0.454	0.488	0.488	0.500	0.500

Notes: Each observation is an individual. Responses collected from January 7, 2021 to March 31, 2021 are included. T is the treatment indicator. Willingness to buy a bednet and knowledge of where to buy a bednet are elicited only among respondents in households without a bednet. All regressions include state fixed effects. Standard errors are clustered at the district level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D10: Tests conducted for malaria and positivity rates

	Tests per M people			Positive cases/Tests		
	(1) All	(2) Urban	(3) Rural	(4) All	(5) Urban	(6) Rural
T × Post	444.807 (338.641)	265.388 (232.203)	325.588 (461.989)	-0.017** (0.006)	-0.022* (0.013)	-0.003 (0.010)
Subdistrict FE	✓	✓	✓	✓	✓	✓
Month and year FE	✓	✓	✓	✓	✓	✓
Subdistrict controls	✓	✓	✓	✓	✓	✓
District controls	✓	✓	✓	✓	✓	✓
Observations	1498	791	1338	1498	791	1338
Adj. R-squared	0.563	0.350	0.665	0.085	0.080	0.061

Notes: Each observation is a subdistrict-month-year. The panel spans April 2020 to May 2021. Post takes value 1 after August 2020, i.e. when the Facebook campaign started. T takes value 1 if the subdistrict belongs to a treated district. Subdistrict controls include: subdistrict population (only in columns 4-6), area, share of urban population, elevation, terrain ruggedness and distance to the state capital, all interacted with Post. District controls include total population from the Census as well as the shares of baseline survey respondents living in kutcha dwellings, with university degree, sleeping under mosquito nets, and reporting any malaria cases in the last 5 years and 2 weeks, all interacted with Post. All regressions include state indicators interacted with Post. Standard errors are clustered at the district level. Data come from the Indian Health Management Information System. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table D11: Recorded malaria outcomes in subdistricts with internet penetration > 50%

	Malaria incidence		log(N. of cases)		Positive cases/Tests	
	(1) Urban	(2) Rural	(3) Urban	(4) Rural	(5) Urban	(6) Rural
T × Post	-7.758** (3.414)	-2.309 (5.899)	-0.478*** (0.164)	-0.145 (0.099)	-0.033+ (0.020)	0.002 (0.007)
Subdistrict FE	✓	✓	✓	✓	✓	✓
Month and year FE	✓	✓	✓	✓	✓	✓
District controls	✓	✓	✓	✓	✓	✓
Subdistrict controls	✓	✓	✓	✓	✓	✓
Observations	584	884	584	884	584	884
Adj. R-squared	0.416	0.186	0.490	0.408	0.070	0.050

Notes: The sample includes subdistricts where more than 50% of households reported having internet access, based on DHS data from 2019–2021. Both the mean and median household internet access rates across subdistricts are approximately 49%. Each observation is a subdistrict-month-year. The panel spans from April 2020 to May 2021. T takes value 1 if the subdistrict belongs to a treated district. Post takes value 1 after August 2020, i.e. when the Facebook campaign started. Subdistrict controls include: subdistrict population (only in columns 3–6), subdistrict area, share of urban population, elevation, terrain ruggedness and distance to the state capital, all interacted with Post. District controls include total population from the Census as well as the shares of baseline survey respondents living in kutcha dwellings, with university degree, sleeping under mosquito nets, and reporting any malaria cases in the last 5 years and 2 weeks, all interacted with Post. All regressions include state fixed-effects interacted with Post. Standard errors are clustered at the district level. Data come from the Indian Health Management Information System. + $p < 0.15$, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table D12: Pre-trend tests for malaria incidence rates (Monthly cases/1M people)

	Placebo post test			Linear trend test		
	(1) Overall	(2) Urban	(3) Rural	(4) Overall	(5) Urban	(6) Rural
T × Placebo Post	1.07 (7.82)	0.56 (5.29)	2.25 (8.29)			
T × Monthly Linear Trend				0.90 (4.21)	1.38 (2.99)	0.04 (5.13)
Subdistrict FE	✓	✓	✓	✓	✓	✓
Month FE	✓	✓	✓	✓	✓	✓
District Controls	✓	✓	✓	✓	✓	✓
Subdistrict Controls	✓	✓	✓	✓	✓	✓
Observations	403	216	336	403	216	336
Adj. R-squared	0.464	0.476	0.433	0.467	0.522	0.434

Notes: Each observation is a subdistrict-month in the pre-campaign period. Columns (1)–(3) report placebo difference-in-differences estimates comparing the final two pre-campaign months to the earlier two. Columns (4)–(6) report linear-trend estimates from the pre-campaign period. T takes value 1 if the subdistrict belongs to a treated district. All regressions include district and subdistrict control described in Table 11 of the main text interacted with the placebo post indicator or the monthly linear trend. All regressions include state fixed effects interacted with the placebo post indicator or the monthly linear trend. Standard errors are clustered at the district level. Data come from the Indian Health Management Information System. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table D13: Sensitivity of survey results to the addition of controls and FDR-adjusted p-values

	(1) Own bednet use	(2) HH bednet use	(3) Long sleeves	(4) Sprays
T	0.030* (0.017)	0.028** (0.014)	-0.001 (0.017)	-0.035 (0.022)
Controls	✓	✓	✓	✓
Clustered p-value	0.071	0.049	0.959	0.116
FDR-adjusted p-value	0.301	0.301	0.959	0.372
Observations	4004	3900	5174	2351
Adj. R-squared	0.015	0.029	0.028	0.012
	(5) Protective behavior index	(6) Any fever (during campaign)	(7) Care-seeking (24h)	(8) Any malaria (during campaign)
T	0.018 (0.039)	0.008 (0.014)	0.021 (0.025)	-0.007 (0.007)
Controls	✓	✓	✓	✓
Clustered p-value	0.642	0.583	0.408	0.322
FDR-adjusted p-value	0.934	0.933	0.817	0.817
Observations	5201	5158	724	5141
Adj. R-squared	0.037	0.019	0.032	0.025
	(9) Malaria test (during campaign)	(10) Any HH malaria (after campaign)	(11) Share HH malaria (after campaign)	(12) Net retreated
T	-0.012 (0.051)	0.001 (0.009)	-0.002 (0.003)	0.046* (0.025)
Controls	✓	✓	✓	✓
Clustered p-value	0.816	0.891	0.476	0.075
FDR-adjusted p-value	0.959	0.959	0.846	0.301
Observations	324	3052	3052	2017
Adj. R-squared	0.013	0.027	0.024	0.020
	(13) Very worried about malaria	(14) Has a bednet	(15) Would buy bednet	(16) Knows where to buy bednet
T	0.028* (0.015)	-0.008 (0.027)	-0.003 (0.031)	-0.026 (0.031)
Controls	✓	✓	✓	✓
Clustered p-value	0.067	0.763	0.914	0.398
FDR-adjusted p-value	0.301	0.959	0.959	0.817
Observations	3052	3052	844	898
Adj. R-squared	0.009	0.054	0.103	0.034

Notes: All specifications include state fixed effects, individual-level and district-level controls. T is the treatment indicator. Individual-level controls include age, household size, education indicators (university, secondary, primary), employment indicators (unemployed, student), gender, caste indicators (OBC, Other, SC/Dalit, ST), distance-to-health-facility indicators, air conditioning, an indicator for a pregnant woman in the household, and religion indicators (Hindu, Muslim). District-level controls include population, education, housing quality, unemployment, and ad-market measures (cost per completion, CTR, CPM, and cost per message). Standard errors are clustered at the district level. The row labeled Clustered p-value reports the conventional p-value based on clustered standard errors. The row labeled FDR-adjusted p-value reports Benjamini–Hochberg false discovery rate adjusted p-values across the 16 treatment-effect estimates shown in the table. Willingness to buy a bednet and knowledge of where to buy a bednet are estimated only among respondents in households without a bednet.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D14: Placebo regressions: Sleeping under bednet at baseline and concerns about COVID-19 after the campaign

	Share of times respondent used bednet (baseline)	Share of HH members who used bednet (baseline)	Is extremely worried about COVID (post-campaign)	
	(1)	(2)	(3)	(4)
	OLS	OLS	OLS	Logit
T	0.010 (0.019)	0.004 (0.017)	-0.004 (0.018)	-0.017 (0.082)
Observations	5544	5457	3050	3050
Adj. R-squared	0.002	0.002	-0.000	
Pseudo R-squared				0.000
Marginal effect				-0.004
Mean in control	0.691	0.684	0.317	0.317
SD in control	0.462	0.374	0.466	0.466

Notes: The table reports placebo estimates. Columns (1)–(2) use outcomes measured at baseline (pre-campaign) and are restricted to households owning at least one bednet. Columns (3)–(4) use a post-campaign outcome (extremely worried about COVID) that is not plausibly affected by the malaria campaign. T is the treatment indicator. All regressions include state fixed effects. Standard errors are clustered at the district level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D15: Robustness to n. of survey waves: Bednet use and symptoms during the campaign

	Respondent used bednet the previous night			Share of HH members who used bednet			Any member had a fever in the last 2 weeks		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1 st wave	1-4 waves	5+ waves	1 st wave	1-4 waves	5+ waves	1 st wave	1-4 waves	5+ waves
T	0.022 (0.022)	0.023 (0.023)	0.035 (0.023)	0.011 (0.018)	0.019 (0.020)	0.030 (0.021)	0.009 (0.009)	0.005 (0.009)	0.008 (0.008)
Observations	4004	5100	6865	3867	4897	6722	5157	6546	8601
Adj. R-squared	0.003	0.002	0.007	0.003	0.004	0.006	0.001	0.002	0.001
Wald-test (p-value)			0.722			0.717			0.843

Notes: Each observation is an individual-wave. Columns (1, 4, and 7) include only responses from the first survey wave. Columns (2, 5, and 8) and columns (3, 6, and 9) include responses from individuals who completed 1–4 and 5+ waves, respectively. Only responses collected from September 1, 2020 to January 31, 2021 are included. Columns (1–6) restrict the sample to households with at least one bednet. For each outcome, the last row reports the p-value from a two-sided test of equality of the treatment coefficients between the 1–4 waves and 5+ waves subsamples. T is the treatment indicator. State fixed effects are included in all specifications. Standard errors are clustered at the district level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D16: Sensitivity of administrative estimates to different population thresholds

	Overall incidence							
	>10%	>20%	>30%	>40%	>50%	>60%	>70%	>80%
T × Post	-2.87 (7.94)	2.24 (7.62)	1.88 (7.11)	2.37 (8.49)	-4.68 (5.37)	-11.05** (5.08)	-19.07* (10.61)	-45.30*** (13.25)
Observations	3337	2784	2328	1812	1498	993	792	453
Adj. R-squared	0.292	0.274	0.194	0.218	0.187	0.161	0.168	0.259
Mean incidence at baseline	49.15	36.36	33.17	31.22	35.03	43.34	55.22	70.41

	Urban incidence							
	>10%	>20%	>30%	>40%	>50%	>60%	>70%	>80%
T × Post	-6.64** (2.64)	-4.82* (2.54)	-4.00 (2.60)	-5.79** (2.85)	-6.21** (2.86)	-5.49 (3.42)	-6.84** (3.22)	-15.96*** (3.36)
Observations	1199	1155	1072	887	791	627	475	272
Adj. R-squared	0.175	0.423	0.449	0.458	0.461	0.356	0.371	0.100
Mean incidence at baseline	14.21	13.85	14.22	16.78	18.48	16.68	18.34	15.47

	Rural incidence							
	>10%	>20%	>30%	>40%	>50%	>60%	>70%	>80%
T × Post	-0.35 (8.81)	6.30 (8.81)	5.96 (8.39)	6.58 (9.44)	-2.24 (5.79)	-9.60 (6.12)	-16.20 (10.33)	-39.67** (16.12)
Observations	3102	2563	2131	1641	1338	873	689	381
Adj. R-squared	0.297	0.262	0.169	0.187	0.148	0.144	0.147	0.257
Mean incidence at baseline	46.63	32.42	28.52	24.71	27.76	36.33	50.99	73.91

Notes: Each column restricts the attention to a subsample of subdistricts whose share of the population living within our study circles is above the reported threshold. T takes value 1 if the subdistrict belongs to a treated district. All controls and fixed effects of Table 11 of the main text are included here. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table D17: Malaria monthly incidence (N. of cases)

	log(N. of cases)			Poisson(N. of cases)		
	(1) All	(2) Urban	(3) Rural	(4) All	(5) Urban	(6) Rural
T × Post	-0.125 (0.110)	-0.296** (0.145)	-0.048 (0.094)	0.192 (0.583)	-1.976*** (0.427)	0.905 (0.666)
Subdistrict FE	✓	✓	✓	✓	✓	✓
Month and year FE	✓	✓	✓	✓	✓	✓
Subdistrict controls	✓	✓	✓	✓	✓	✓
District controls	✓	✓	✓	✓	✓	✓
Observations	1498	791	1338	1498	791	1338
Adj. R-squared	0.535	0.572	0.492			
Log-likelihood				-13339.1	-2217.8	-12498.1
Mean N. of cases at baseline	20.000	10.483	15.885	20.000	10.483	15.885

Notes: Each observation is a subdistrict-month-year. The panel spans April 2020 to May 2021. Post takes value 1 after August 2020, i.e. when the Facebook campaign started. T takes value 1 if the subdistrict belongs to a treated district. Subdistrict controls include: subdistrict population, area, share of urban population, elevation, terrain ruggedness and distance to the state capital, all interacted with Post. District controls include total population from the Census as well as the shares of baseline survey respondents living in kutchra dwellings, with university degree, sleeping under mosquito nets, and reporting any malaria cases in the last 5 years and 2 weeks, all interacted with Post. All regressions include state indicators interacted with Post. Standard errors are clustered at the district level. Data come from the Indian Health Management Information System. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table D18: Additional results: Ad recall at endline

	(1)	(2)	(3)	(4)	(5)
	Full sample	Age<26	Age≥26	Concerned	Not concerned
T	0.030** (0.014)	0.069*** (0.021)	-0.014 (0.019)	0.056** (0.022)	-0.005 (0.023)
Controls	✓				
Observations	1492	814	678	834	658
Adj. R-squared	0.002	0.006	-0.004	0.005	-0.004
Mean in control	0.114	0.121	0.106	0.106	0.125

Notes: Each observation is an individual. Responses were collected in the endline survey between December 15, 2020 and January 31, 2021. Controls in column (1) include age, household size, education indicators (university, secondary, primary), employment indicators (unemployed, student), gender, caste indicators (OBC, Other, SC/Dalit, ST), distance-to-health-facility indicators, air conditioning, an indicator for a pregnant woman in the household, and religion indicators (Hindu, Muslim). Concerned individuals are those who at baseline reported being at least somewhat worried that someone in their family will get malaria in the next year. T is the treatment indicator. All regressions include state fixed effects. Standard errors are clustered at the district level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D19: Individual-level study - Covariates by experimental condition

	Ind. Treatment	Control	Normalized	T -test
	<i>Mean</i>	<i>Mean</i>	Difference	(<i>p-value</i>)
	(1)	(2)	(3)	(4)
Covariates				
N. of respondents	771	771		
In treatment district	0.471	0.486	-0.022	0.541
Female	0.256	0.235	0.034	0.344
N. of HH members	6.341	6.721	-0.079	0.029
Solid house	0.543	0.503	0.057	0.114
Semi-solid house	0.309	0.336	-0.041	0.253
Age	30.399	30.026	0.024	0.509
Has completed university	0.652	0.651	0.002	0.957
Has completed secondary school	0.258	0.248	0.017	0.640
Has completed primary school	0.069	0.080	-0.031	0.383
Unemployed	0.503	0.547	-0.062	0.083
Student	0.158	0.156	0.005	0.889
OBC caste	0.340	0.320	0.029	0.417
SC/Dalit caste	0.106	0.105	0.003	0.934
ST caste	0.043	0.053	-0.034	0.341
General caste	0.486	0.488	-0.002	0.959
Medical center distance < 15min	0.291	0.318	-0.042	0.245
Medical center distance 15-30min	0.310	0.267	0.067	0.064
Medical center distance 30-60min	0.195	0.192	0.005	0.897
Has mosquito net	0.693	0.660	0.049	0.174
Has air conditioning	0.137	0.130	0.016	0.654
Pregnant woman in house	0.095	0.096	-0.003	0.931
Hindu	0.881	0.853	0.057	0.115
Muslim	0.084	0.097	-0.032	0.376

The table reports covariates for individuals' and households' characteristics in the individual study sample by experimental condition. The normalized difference is the difference between the two means divided by the square root of the sum of the variances of the two variables.

Table D20: Additional results: Sleeping under bednet and timely treatment seeking (individual-level study)

	Respondent used bednet the night before				Timely treatment seeking if high fever			
	(1) OLS: Full sample	(2) Logit: Full sample	(3) OLS: Control districts	(4) OLS: Treatment districts	(5) OLS: Full sample	(6) Logit: Full sample	(7) OLS: Control districts	(8) OLS: Treatment districts
Individual T	0.076*** (0.029)	0.323** (0.135)	0.083** (0.040)	0.051 (0.042)	0.025** (0.013)	0.411** (0.208)	0.039** (0.018)	0.011 (0.018)
T	0.017 (0.029)	0.066 (0.136)			0.005 (0.013)	0.086 (0.207)		
Controls	✓				✓			
Observations	1043	1043	551	492	1542	1542	804	738
Pseudo R-squared		0.007				0.016		
Marginal effect		0.069				0.025		
Adj. R-squared	0.031		0.001	0.002	0.005		0.005	0.018
Mean in control	0.654	0.654	0.642	0.667	0.921	0.921	0.912	0.931
SD in control	0.476	0.476	0.480	0.472	0.270	0.270	0.284	0.254

Each observation is an individual. Individual T is the individual-level treatment indicator for the remarketing campaign. T is the indicator of district-level treatment assignment. The outcome in columns (1)–(4) is an indicator equal to one if the respondent reports having slept under a bednet the night before the survey; the sample is restricted to households owning at least one bednet. The outcome in columns (5)–(8) is an indicator equal to one if the respondent reports that they would seek treatment within 24 hours if they or a family member experienced a high fever. Columns (1-2) and (5-6) report estimates on the full sample. Columns (3) and (7) report estimates for respondents in districts assigned to the nationwide malaria campaign, while columns (4) and (8) report estimates for respondents in control districts. Controls in columns (1) and (5) include age, household size, education indicators (university, secondary, primary), employment indicators (unemployed, student), gender, caste indicators (OBC, Other, SC/Dalit, ST), distance-to-health-facility indicators, air conditioning, an indicator for a pregnant woman in the household, and religion indicators (Hindu, Muslim). Heteroskedasticity-robust standard errors are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$