UGANDA

Malaria Indicator Survey

2018-19

GOVERNMENT OF UGANDA

Uganda

Malaria Indicator Survey 2018-19

Ministry of Health
National Malaria Control Division
Kampala, Uganda

Uganda Bureau of Statistics
Kampala, Uganda

The DHS Program
ICF
Rockville, Maryland, USA

March 2020

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The 2018-19 Uganda Malaria Indicator Survey (2018-19 UMIS) was implemented by the National Malaria Control Division (NMCD) and the Uganda Bureau of Statistics (UBOS). Financial support for the survey was provided by the United States Agency for International Development (USAID) through the President's Malaria Initiative (PMI), by the United Kingdom Department for International Development (DFID), by the World Health Organization (WHO), and by the Government of Uganda with Global Fund support. ICF provided technical assistance through The DHS Program, a USAID-funded project offering support and technical assistance in the implementation of population and health surveys in countries worldwide.

Additional information about the 2018-19 UMIS may be obtained from the National Malaria Control Division, Plot 6, Lourdes Rd., Wandegeya, P.O. Box 7272, Kampala, Uganda.

Information about The DHS Program may be obtained from ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA; telephone: +1-301-407-6500; fax: +1-301-407-6501; email: info@DHSprogram.com; internet: www.DHSprogram.com.

Recommended citation:

Uganda National Malaria Control Division (NMCD), Uganda Bureau of Statistics (UBOS), and ICF. 2020. *Uganda Malaria Indicator Survey 2018-19.* Kampala, Uganda, and Rockville, Maryland, USA: NMCD, UBOS, and ICF.

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FOREWORD

Malaria remains a major public health problem in Uganda. In order to control and eliminate malaria, the Government of Uganda has implemented several interventions that include Long-Lasting Insecticide treated Nets (LLINs), Testing and Treatment, Intermittent Preventive Treatment in Pregnancy (IPTp) and Indoor Residual Spraying (IRS).

In order to understand the impact of interventions on malaria burden, the country conducts periodic national malaria indicator surveys that measure parasite prevalence, anaemia, and the progress and status of key malaria indicators. The two previous surveys were conducted in 2009 and 2014-15 that indicated a national parasite estimate of 42% and 19% respectively.

This year (2019), we are happy to report on the findings of another periodic Malaria indicator survey 2018-19 that aimed to provide current estimates of key malaria indicators. Specific objectives were to measure the extent of ownership, uptake and use of malaria interventions such as mosquito nets, extent of indoor residual spraying; assess coverage of intermittent preventive treatment to protect pregnant women; identify practices and specific medications used for treating malaria among children under age 5; measure indicators of behaviour change communication messages, knowledge, and practices about malaria; and measure the prevalence of malaria and anaemia among children age 0-59 months.

This years UMIS was an expanded that sampled and covered special domains separately for the refugee settlements and districts targeted for indoor residual spraying to each of the 15 regions in Uganda. We are happy to report very promising results with evident reductions in parasitaemia and improvement in key indicators. However, special focus will have to be on regions that contributes highest to the malaria burden if we are to meet malaria elimination targets.

Dr. Ruth Jane Aceng
Minister of Health

ACKNOWLEDGEMENT

The Ministry of Health wishes to acknowledge and thank the United Kingdom Department for International Development (UK DFID), the United States President's Malaria Initiative (PMI), the United States Agency for International Development (USAID) and Global Fund for their financial and technical support from the design through implementation and reporting of this survey. Technical assistance from the Ministry of Health Malaria Control Division (NMCD), ICF, the Uganda Bureau of Statistics, the Infectious Disease Research Collaboration (IDRC), the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) made this survey a success.

The Ministry of Health would like to acknowledge the Principal Investigator, Dr. Jimmy Opigo, the National Malaria Indicator Survey Coordinator, Mr. Bosco Agaba and the entire team of NMCD for coordinating this important activity on behalf of the Ministry.

We appreciate in a special way all members of the Oversight Committee, Technical Committee, and the Secretariat that were drawn from the following organizations: IDRC, USAID, PMI, DFID, WHO, UNICEF, Malaria Consortium, ICF, NMCD, Jhpiego, the Makerere University Infectious Diseases Institute (IDI), the Ministry of Health Central Public Health Laboratories (CPHL), the Uganda Malaria Research Centre (UMRC), Malaria Action Program for Districts (MAPD), the Makerere University School of Public Health (MUSPH) and the African Leaders Malaria Alliance (ALMA) and many other implementing partners.

We extend sincere appreciation to all people not mentioned in this document but who provided input at different stages during the process and implementation of the survey.

We would like to thank in a special way the individual respondents and households in the various regions of Uganda who provided the valuable information and samples.

Lastly, I would like to commend every one for the efforts and contributions towards malaria control in Uganda. While we recognise the reduction in the burden being seen here in the report, it is not enough to take us to elimination. It requires an accelerated effort including universal coverage and uptake of the various interventions.

Dr. Diana Atwine
Permanent Secretary

ABBREVIATIONS AND ACRONYMS

ACT	artemisinin-based combination therapy
Ag	antigen
AHSPR	Annual Health Sector Performance Report
ANC	antenatal care
CAPI	computer-assisted personal interviewing
CHW	community health worker
CMD	community medicine distributer
CSPro	Census and Survey Processing System
DFID	United Kingdom Department for International Development
DHS	Demographic and Health Survey
EA	enumeration area
HRP-II	histidine-rich protein II
iCCM	integrated community case management
ICF	ICF *(originally, Inner City Fund)*
IDRC	Infectious Disease Research Collaboration
IFSS	internet file streaming system
IPTp	intermittent preventive treatment (of malaria) during pregnancy
IRS	indoor residual spraying
ITN	insecticide-treated net
LLIN	long-lasting insecticidal net
LPG	liquid petroleum gas
MERG	Monitoring and Evaluation Reference Group
MIP	malaria in pregnancy
MIS	malaria indicator survey
MoLab	Molecular Research Laboratory
NDPII	Second National Development Plan
NGO	nongovernmental organisation
NMCD	National Malaria Control Division
NPHC	National Population and Housing Census
Pf	*Plasmodium falciparum*
PMI	U.S. President's Malaria Initiative
PNFP	private not-for-profit
RBM	Roll Back Malaria
RDT	rapid diagnostic test

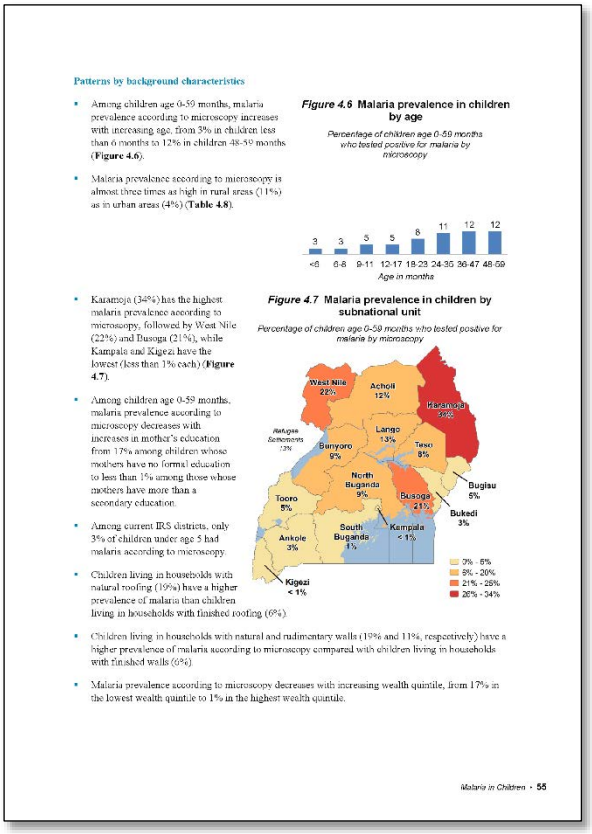
SBCC	social and behaviour change communication
SOMREC	Makerere University School of Medicine Research and Ethics Committee
SP	sulfadoxine–pyrimethamine
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UMIS	Uganda Malaria Indicator Survey
UMRSP	Uganda Malaria Reduction Strategic Plan 2014-2020
UNCST	Uganda National Council for Science and Technology
USAID	United States Agency for International Development
VHT	village health team
VIP	ventilated improved pit (latrine)
WHO	World Health Organization

READING AND UNDERSTANDING TABLES FROM THE 2018-19 UGANDA MALARIA INDICATOR SURVEY (UMIS)

The 2018-19 Uganda Malaria Indicator Survey (UMIS) report is very similar in content to the 2014-15 UMIS but is presented in a new format. The new style features more figures to highlight trends, subnational patterns, and background characteristics. The text has been simplified to highlight key points in bullets and to clearly identify indicator definitions in boxes.

The tables in this report are located at the end of each chapter. This final report is based on approximately 75 tables of data. While the text and figures featured in each chapter highlight some of the most important findings from the tables, not every finding can be discussed or displayed graphically. For this reason, data users should be comfortable reading and interpreting UMIS tables.

The following pages provide an introduction to the organization of UMIS tables, the presentation of background characteristics, and a brief summary of sampling and understanding denominators. In addition, this section provides some exercises for users as they practice their new skills in interpreting UMIS tables.



Patterns by background characteristics

- Among children age 0-59 months, malaria prevalence according to microscopy increases with increasing age, from 3% in children less than 6 months to 12% in children 48-59 months (**Figure 4.6**).
- Malaria prevalence according to microscopy is almost three times as high in rural areas (11%) as in urban areas (4%) (**Table 4.8**).

Figure 4.6 **Malaria prevalence in children by age**

Percentage of children age 0-59 months who tested positive for malaria by microscopy

- Karamoja (34%) has the highest malaria prevalence according to microscopy, followed by West Nile (22%) and Busoga (21%), while Kampala and Kigezi have the lowest (less than 1% each) (**Figure 4.7**).
- Among children age 0-59 months, malaria prevalence according to microscopy decreases with increases in mother's education from 17% among children whose mothers have no formal education to less than 1% among those whose mothers have more than a secondary education.
- Among current IRS districts, only 3% of children under age 5 had malaria according to microscopy.
- Children living in households with natural roofing (19%) have a higher prevalence of malaria than children living in households with finished roofing (6%).

Figure 4.7 **Malaria prevalence in children by subnational unit**

Percentage of children age 0-59 months who tested positive for malaria by microscopy

- Children living in households with natural and rudimentary walls (19% and 11%, respectively) have a higher prevalence of malaria according to microscopy compared with children living in households with finished walls (6%).
- Malaria prevalence according to microscopy decreases with increasing wealth quintile, from 17% in the lowest wealth quintile to 1% in the highest wealth quintile.

Malaria in Children • 55

Example 1: Prevalence of Malaria in Children

A biomarker measure taken from all eligible respondents

Table 4.8 Prevalence of malaria in children 1

Percentage of children age 0-59 months classified in two tests as having malaria, according to background characteristics, Uganda MIS 2018-19

Background characteristic 3	Malaria prevalence according to RDT 2		Malaria prevalence according to microscopy	
	RDT positive	Number of children	Microscopy positive	Number of children
Age in months				
<6	5.3	680	2.9	680
6-8	11.1	322	3.3	322
9-11	11.0	306	4.5	305
12-17	16.0	604	5.5	604
18-23	16.0	635	7.8	635
24-35	20.3	1,303	11.4	1,303
36-47	20.7	1,400	11.7	1,400
48-59	19.1	1,377	12.0	1,377
Sex				
Male	17.3	3,344	9.0	3,343
Female	16.5	3,283	9.2	3,283
Mother's interview status				
Interviewed	16.4	5,372	8.6	5,371
Not interviewed[1]	19.2	1,255	11.4	1,255
Residence				
Urban	6.1	1,510	3.3	1,510
Rural	20.1	5,117	10.8	5,115
Roofing material				
No roof	*	6	*	6
Natural[2]	33.6	1,735	19.2	1,735
Rudimentary[3]	*	10	*	10
Finished [4]	11.0	4,877	5.5	4,875
Wall material				
Natural[5]	33.8	101	18.5	101
Rudimentary[6]	20.5	3,815	11.2	3,813
Finished [7]	11.2	2,707	5.9	2,707
Other	*	4	*	4
Region				
South Buganda	1.9	948	0.6	948
North Buganda	14.2	1,069	8.8	1,069
Kampala	1.6	177	0.2	177
Busoga	39.4	648	21.1	646
Bukedi	5.3	355	3.3	355
Bugisu	10.4	422	4.8	422
Teso	20.2	382	8.2	382
Karamoja	41.6	208	34.3	208
Lango	23.0	335	13.3	335
Acholi	28.9	254	11.9	254
West Nile	50.0	459	21.8	459
Bunyoro	15.2	307	9.2	307
Tooro	7.3	380	4.7	380
Kigezi	0.0	270	0.3	270
Ankole	2.9	413	2.6	413
Special areas				
Current IRS districts[8]	7.0	724	3.4	724
Former IRS districts[9]	37.7	400	18.8	400
Mother's education[10]				
No education	27.1	805	16.6	805
Primary	18.4	3,117	9.6	3,116
Secondary	6.5	1,208	2.2	1,208
More than secondary	3.4	242	0.5	242

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Continued...

Table 4.8—*Continued*

Background characteristic	Malaria prevalence according to RDT: RDT positive	Malaria prevalence according to RDT: Number of children	Malaria prevalence according to microscopy: Microscopy positive	Malaria prevalence according to microscopy: Number of children
Wealth quintile				
Lowest	28.9	1,560	17.1	1,560
Second	19.0	1,438	9.3	1,438
Middle	18.1	1,328	9.5	1,326
Fourth	10.0	1,214	5.6	1,214
Highest	3.2	1,087	0.9	1,087
Total 0-59	16.9	6,627	9.1	6,626
Total 6-59	18.2	5,947	9.8	5,945
Refugee settlements 0-59	32.8	667	12.8	667
Refugee settlements 6-59	35.1	598	14.1	598

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Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
RDT = Rapid Diagnostic Test (SD Bioline Ag P.f)
IRS = Indoor residual spraying
[1] Includes children whose mothers are deceased
[2] Includes thatch/palm leaf and mud
[3] Includes rustic mat, wood planks, cardboard, and tarpaulin
[4] Includes iron sheets, wood, asbestos, tiles, concrete, and roofing shingles
[5] Includes thatched/straw and dirt
[6] Includes poles with mud, stone with mud, unburnt bricks with mud, plywood, cardboard, reused wood, unburnt bricks with plaster, and burnt bricks with mud
[7] Includes cement, stone with lime/cement, burnt bricks with cement, cement blocks, wood planks/shingles
[8] Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba and Paliisa districts
[9] Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac and Lamwo districts
[10] Excludes children whose mothers are not interviewed

Step 1: Read the title and subtitle—highlighted in orange in the table above. They tell you the topic and the specific population group being described. In this case, the table is about children age 0-59 months who were tested for malaria.

Step 2: Scan the column headings—highlighted in green in Example 1. They describe how the information is categorized. In this table, the first column of data shows the percentage of children who tested positive for malaria according to the rapid diagnostic test or RDT. The second column lists the number of children age 0-59 months who were tested for malaria using RDT in the survey. The third column shows the percentage of children who tested positive for malaria according to microscopy. The last column lists the number of children age 0-59 months who were tested for malaria using microscopy in the survey.

Step 3: Scan the row headings—the first vertical column highlighted in blue in Example 1. These show the different ways the data are divided into categories based on population characteristics. In this case, the table presents prevalence of malaria by age, sex, mother's interview status, urban-rural residence, type of roofing material, type of wall material, region, mother's educational level, and wealth quintile. Most of the tables in the UMIS report will be divided into these same categories.

Step 4: Look at the row at the bottom of the table highlighted in red. These percentages represent the totals of children age 0-59 months who tested positive for malaria according to the different tests. In this case, 16.9%* of children age 0-59 months tested positive for malaria according to RDT, while 9.1% tested positive for malaria according to microscopy. The 2018-19 UMIS is the first UMIS to include households and people in refugee settlements. Refugees are not included in the national total for any indicator (please see Chapter 1 for details), so you will see separate totals for households in and respondents from refugee settlements throughout this report.

Step 5: To find out what percentage of children age 0-59 in North Buganda region tested positive for malaria according to microscopy, draw two imaginary lines, as shown on the table. This shows that 8.8% of children age 0-59 months in North Buganda tested positive for malaria according to microscopy.

* For the purpose of this document, data are presented exactly as they appear in the table including decimal places. However, the text in the remainder of this report rounds data to the nearest whole percentage point.

Step 6: By looking at patterns by background characteristics, we can see how malaria prevalence varies across Uganda. Resources are often limited; knowing how malaria prevalence varies among different groups can help programme planners and policy makers determine how to most effectively use resources.

Practice: Use the table in Example 1 to answer the following questions about malaria prevalence *according to microscopy*:

a) Is malaria prevalence higher among boys or girls?
b) Is there a clear pattern in malaria prevalence by age?
c) What are the lowest and highest percentages (range) of malaria prevalence by region?
d) Is there a clear pattern in malaria prevalence by mother's education level?
e) Is there a clear pattern in malaria prevalence by wealth quintile?

Answers:

a) There is nearly no difference in malaria prevalence by microscopy between boys (9.0%) and girls (9.2%).
b) Yes, malaria prevalence increases with age from 2.9% among children under 6 months to 12.0% among children age 48-59 months.
c) Malaria prevalence is lowest in Kampala (0.2%) and highest in Karamoja region (34.3%).
d) Yes, malaria prevalence decreases as mother's level of education increases; malaria prevalence is highest among children whose mothers have no education (16.6%) and lowest among children whose mothers have more than secondary education (0.5%).
e) Yes, malaria prevalence generally decreases as household wealth increases; malaria prevalence is highest among children living in households in the lowest wealth quintile (17.1%) and is lowest among children in households in the highest wealth quintile (0.9%).

Example 2: Prevalence, Diagnosis, and Prompt Treatment of Children with Fever

A question asked about a subgroup of survey respondents

Table 4.1 Prevalence, diagnosis, and prompt treatment of children with fever 1

Percentage of children under age 5 with fever in the two weeks preceding the survey; and among children under age 5 with fever, the percentage for whom advice or treatment was sought, percentage for whom advice or treatment was sought the same or next day following the onset of fever, and percentage who had blood taken from a finger or heel for testing, according to background characteristics, Uganda MIS 2018-19

	Children under age 5		Children under age 5 with fever			
Background characteristic	Percentage with fever in the two weeks preceding the survey	Number of children 2	Percentage for whom advice or treatment was sought[1]	Percentage for whom advice or treatment was sought the same or next day[1]	Percentage who had blood taken from a finger or heel for testing	Number of children
Age in months						
< 6	20.1	720	84.0	61.9	34.2	145
6-11	32.2	627	86.7	56.2	52.0	202
12-23	32.9	1,190	91.2	56.7	53.4	392
24-35	27.8	1,169	86.4	56.0	54.4	325
36-47	23.2	1,177	84.0	58.3	54.3	273
48-59	21.4	1,126	86.4	54.5	45.9	241
Sex						
Male	26.9	3,062	87.1	56.1	52.0	822
Female	25.7	2,946	86.9	57.8	49.3	756
Residence						
Urban	16.7	1,372	88.8	58.1	58.4	230
Rural	29.1	4,636	86.7	56.7	49.4	1,349
Region						
South Buganda	11.5	836	97.1	48.6	57.9	96
North Buganda	24.9	948	89.2	46.6	59.9	236
Kampala	9.5	175	*	*	*	17
Busoga	48.2	557	88.4	67.2	36.6	269
Bukedi	30.2	316	80.8	54.6	31.8	95
Bugisu	20.1	378	84.8	62.0	44.9	76
Teso	36.9	356	81.4	42.0	50.5	131
Karamoja	23.7	206	84.7	65.5	48.9	49
Lango	31.0	318	95.3	74.3	68.5	99
Acholi	45.5	232	87.4	62.7	71.3	106
West Nile	44.8	410	85.6	70.0	49.6	184
Bunyoro	23.8	281	85.2	52.8	43.0	67
Tooro	24.0	366	79.3	50.1	48.3	88
Kigezi	12.6	258	(87.5) 4	(36.3)	(36.9)	32
Ankole	9.1	370	(91.4)	(23.8)	(69.7)	34
Mother's education						
No education	31.4	875	87.9	60.7	44.0	275
Primary	28.8	3,477	86.2	57.4	52.3	1,000
Secondary	19.6	1,372	88.4	51.4	50.6	269
More than secondary	12.3	285	(90.7)	(55.0)	(58.9)	35
Wealth quintile						
Lowest	31.5	1,420	84.8	57.5	52.0	447
Second	27.9	1,305	86.0	55.4	48.0	364
Middle	32.9	1,209	89.2	57.6	49.5	398
Fourth	23.0	1,035	86.0	55.3	43.4	238
Highest	12.7	1,039	92.3	59.7	70.3	132
Total	26.3	6,008	87.0	56.9	50.7	3 1,578
Refugee settlements	29.6	627	84.6	61.0	58.7	186

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

[1] Includes advice or treatment from the following sources: Public sector, private medical sector, shop, market, and hawker/itinerant drug seller. Excludes advice or treatment from a traditional practitioner.

Step 1: Read the title and subtitle. In this case, the table is about two separate groups of children under 5: all children under 5 (a) and children under 5 with fever in the 2 weeks before the survey (b).

Step 2: Identify the two panels. First, identify the columns that refer to all children under 5 (a), and then isolate the columns that refer only to children under 5 with fever (b).

Step 3: Look at the first panel. What percentage of children under 5 had fever in the 2 weeks before the survey? It's 26.3%. Now look at the second panel. How many children under 5 are there who had fever in

the 2 weeks before the survey? It's 1,578 children or 26.3% of the 6,008 children under 5 (with rounding). The second panel is a subset of the first panel.

Step 4: Only 26.3% of children under 5 had fever in the 2 weeks before the survey. Once these children are further divided into the background characteristic categories, there may be too few cases for the percentages to be reliable.

- What percentage of children under 5 with fever in the 2 weeks before the survey had advice or treatment sought in Kigezi region? It's 87.5%. This percentage is in parentheses because there are between 25 and 49 children under 5 (unweighted) in this category. Readers should use this number with caution—it may not be reliable. (For more information on weighted and unweighted numbers, see Example 3.)
- What percentage of children under 5 with fever in the 2 weeks before the survey had blood taken from a finger or heel for testing in Kampala? There is no number in this cell—only an asterisk. This is because fewer than 25 children under 5 with fever in Kampala had blood taken from a finger or heel for testing. Results for this group are not reported. The subgroup is too small, and therefore the data are not reliable.

Note: When parentheses or asterisks are used in a table, the explanation will be noted under the table. If there are no parentheses or asterisks in a table, you can proceed with confidence that enough cases were included in all categories that the data are reliable.

Example 3: Understanding Sampling Weights in UMIS Tables

A sample is a group of people who have been selected for a survey. In the UMIS, the sample is designed to represent the national population age 15-49. In addition to national data, most countries want to collect and report data on smaller geographical or administrative areas. However, doing so requires a minimum sample size per area. For the 2018-19 UMIS, the survey sample is representative at the national and regional levels, and for urban and rural areas.

Table 2.8 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, Uganda MIS 2018-19

Background characteristic	Number of women		
	Weighted percent (3)	Weighted number (2)	Unweighted number (1)
Region			
South Buganda	17.1	1,409	704
North Buganda	14.5	1,198	469
Kampala	4.8	394	512
Busoga	8.0	656	422
Bukedi	4.3	354	421
Bugisu	6.4	523	465
Teso	5.3	434	574
Karamoja	2.1	169	397
Lango	5.6	462	676
Acholi	4.0	325	795
West Nile	6.5	539	565
Bunyoro	4.1	335	668
Tooro	5.3	438	634
Kigezi	4.2	345	453
Ankole	7.9	648	476
Total 15-49	100.0	8,231	8,231
Refugee settlements	na	637	637

na = Not applicable

To generate statistics that are representative of the country as a whole and the 15 regions, the number of women surveyed in each region should contribute to the size of the total (national) sample in proportion to size of the region. However, if some regions have small populations, then a sample allocated in proportion to each region's population may not include sufficient women from each region to produce reliable results. To solve this problem, regions with small populations are oversampled. For example, let's say that you have enough money to interview 8,231 women and want to produce results that are representative of Uganda as a whole and its regions (as in Table 2.8). However, the total population of Uganda is not evenly distributed among the regions: some regions, such as North Buganda, are heavily populated while others, such as Bunyoro, are not. Thus, Bunyoro must be oversampled.

A sampling statistician determines how many women should be interviewed in each region in order to get reliable statistics. The **blue column (1)** in the table at the right shows the actual number of women interviewed in each region. Within the regions, the number of women interviewed ranges from 397 in Karamoja to 795 in Acholi. The number of interviews is sufficient to get reliable results in each region.

With this distribution of interviews, some regions are overrepresented and some regions are underrepresented. For example, the population in North Buganda is about 14.5% of the population in Uganda, while Bunyoro's population contributes only 4.1% of the population in Uganda. But as the blue column shows, the number of women interviewed in North Buganda accounts for only about 5.7% of the total sample of women interviewed (469/8,231) and the number of women interviewed in Bunyoro accounts for 8.1% of the total sample of women interviewed (668/8,231). This unweighted distribution of women does not accurately represent the population.

In order to get statistics that are representative of Uganda, the distribution of the women in the sample needs to be weighted (or mathematically adjusted) such that it resembles the true distribution in the country. Women from a less populous region, like Bunyoro, should only contribute a small amount to the national total. Women from a more populous region, like North Buganda, should contribute much more. Therefore, DHS statisticians mathematically calculate a "weight" which is used to adjust the number of women from each region so that each region's contribution to the total is proportional to the actual population of the region. The numbers in the **purple column (2)** represent the "weighted" values. The weighted values can be smaller or larger than the unweighted values at regional level. The total national sample size of 8,231 women has not changed after weighting, but the distribution of the women in the regions has been changed to represent their contribution to the total population size.

How do statisticians weight each category? They take into account the probability that a woman was selected in the sample. If you were to compare the **green column (3)** to the actual population distribution of Uganda, you would see that women in each region are contributing to the total sample with the same weight that they contribute to the population of the country. The weighted number of women in the survey now accurately represents the proportion of women who live in North Buganda and the proportion of women who live in Bunyoro.

With sampling and weighting, it is possible to interview enough women to provide reliable statistics at national and regional levels. In general, only the weighted numbers are shown in each of the UMIS tables, so don't be surprised if these numbers seem low: they may actually represent a larger number of women interviewed.

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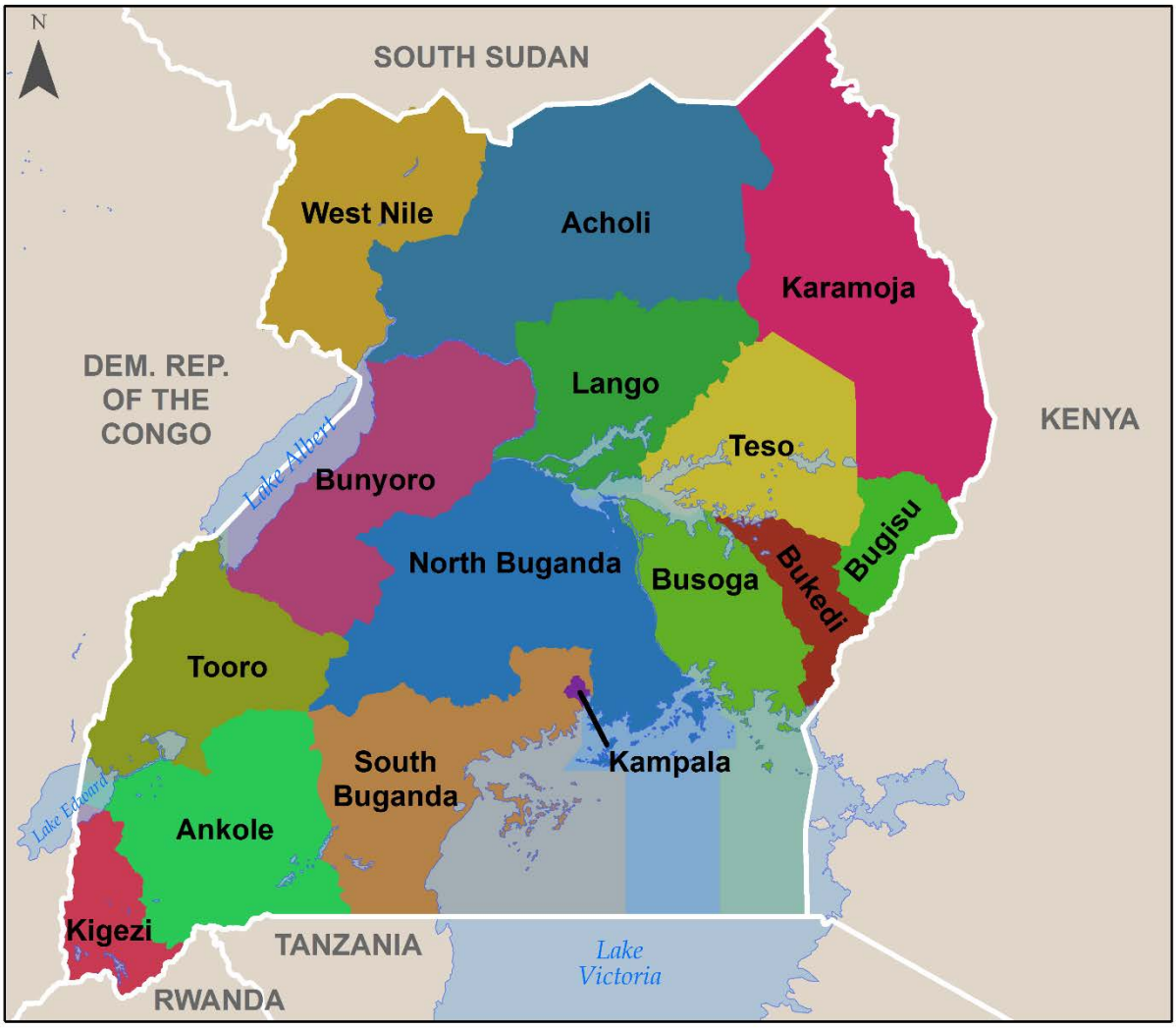
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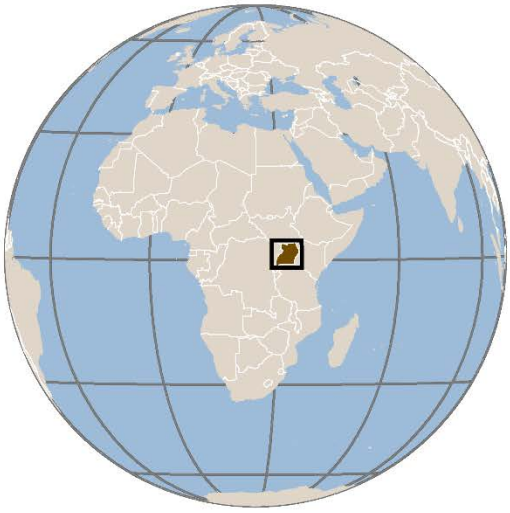
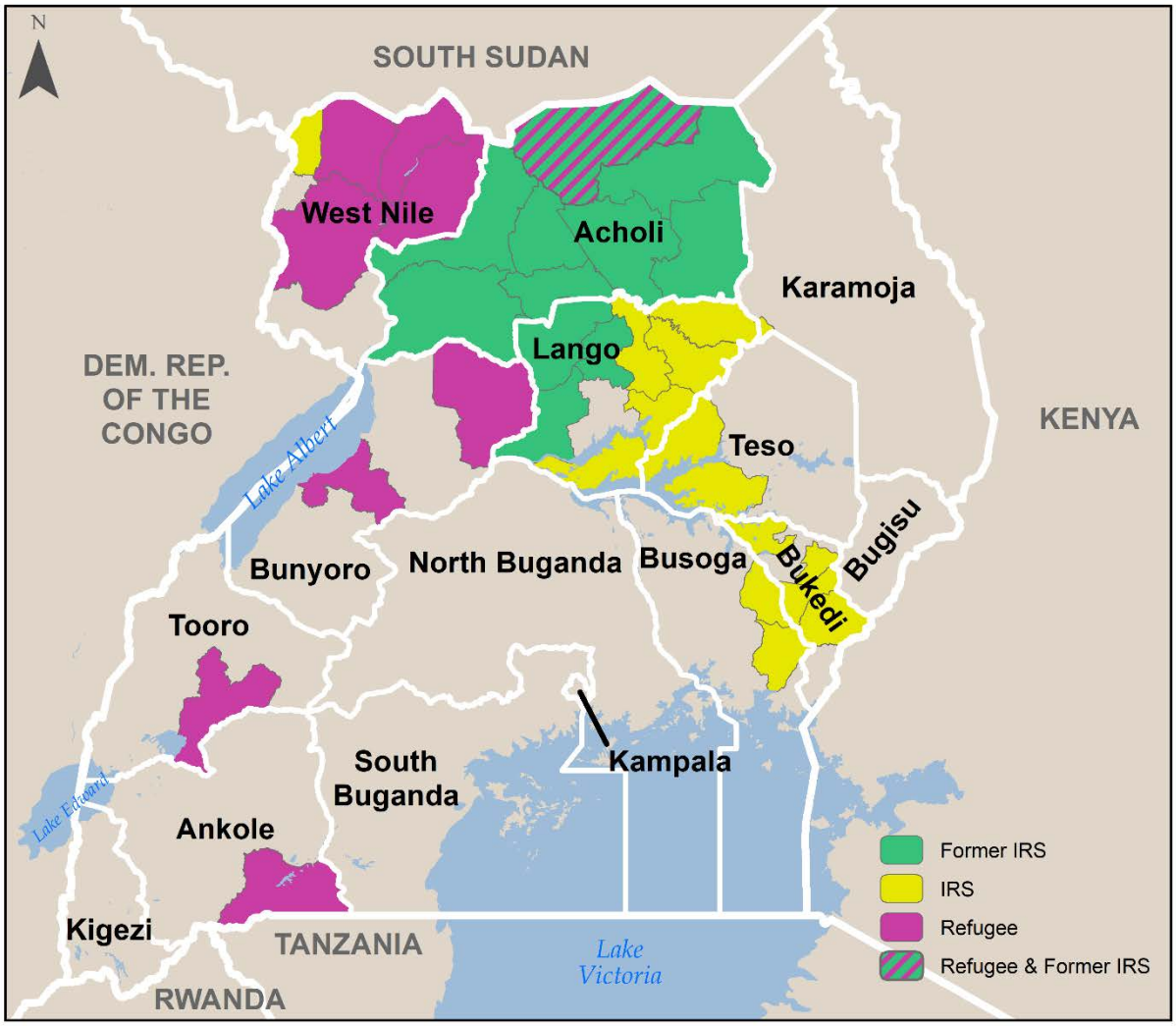


UGANDA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SOUTH SUDAN
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KENYA
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Bukedi
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Tooro
Kampala
South Buganda
Lake Edward
Ankole
Kigezi
TANZANIA
Lake Victoria
RWANDA
Former IRS
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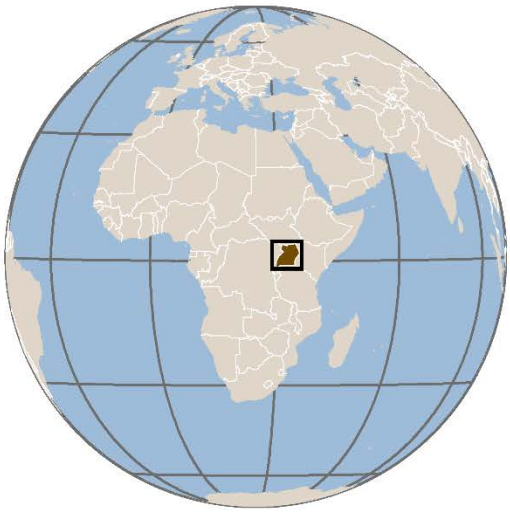
Refugee
Refugee & Former IRS
0 50 100 200
Kilometers



INTRODUCTION AND SURVEY METHODOLOGY 1

The 2018-19 Uganda Malaria Indicator Survey (UMIS) was implemented by the National Malaria Control Division (NMCD) and Uganda Bureau of Statistics (UBOS). Data collection took place from 11 December 2018 to 31 January 2019. ICF provided technical assistance. The United States Agency for International Development (USAID) through the President's Malaria Initiative (PMI), the United Kingdom Department for International Development (DFID), and the Government of Uganda with Global Fund support coordinated the successful implementation of the survey through technical or financial support.

1.1 SURVEY OBJECTIVES

The primary objective of the 2018-19 UMIS is to provide up-to-date estimates of basic demographic and health indicators related to malaria. Specifically, the 2018-19 UMIS collected information on vector control interventions such as mosquito nets and indoor residual spraying of insecticides, on intermittent preventive treatment of malaria in pregnant women, on care seeking and treatment of fever in children, and malaria knowledge, behaviour, and practices. Children less than age 5 were tested for anaemia and malaria infection.

The information collected through the 2018-19 UMIS is intended to assist policy makers and programme managers in evaluating and designing programmes and strategies for improving the health of the country's population.

1.2 SAMPLE DESIGN

The 2018-19 UMIS followed a two-stage sample design and was intended to allow estimates of key indicators for the following domains:

- National
- Urban and rural areas
- 15 regions

Regions	Districts
South Buganda	Butambala, Gomba, Mpigi, Bukomansimbi, Kalangala, Kalungu, Lwengo, Lyantonde, Masaka, Rakai, Sembabule, and Wakiso
North Buganda	Buikwe, Buvuma, Kayunga, Kiboga, Kyankwanzi, Luwero, Mityana, Mubende, Mukono, Nakaseke, and Nakasongola
Kampala	Kampala
Busoga	Bugiri, Namutumba, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, and Namayingo
Bukedi	Budaka, Butaleja, Kibuku, Pallisa, Tororo, and Busia
Bugisu	Bulambuli, Kapchorwa, Kween, Bududa, Manafwa, Mbale, Sironko, and Bukwo
Teso	Amuria, Bukedea, Katakwi, Kumi, Ngora, Soroti, Kaberamaido, and Serere
Karamoja	Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit, and Napak
Lango	Alebtong, Amolatar, Dokolo, Lira, Otuke, Apac, Kole, and Oyam
Acholi	Agago, Amuru, Gulu, Lamwo, Pader, Kitgum, and Nwoya
West Nile	Adjumani, Arua, Koboko, Maracha, Moyo, Nebbi, Yumbe, and Zombo
Bunyoro	Buliisa, Hoima, Kibaale, Kiryandongo, and Masindi
Tooro	Bundibugyo, Kabarole, Kasese, Ntoroko, Kyenjojo, Kamwenge, and Kyegegwa
Kigezi	Kabale, Kisoro, Kanungu, and Rukungiri
Ankole	Buhweju, Bushenyi, Ibanda, Isingiro, Kiruhura, Mbarara, Mitooma, Ntungamo, Rubirizi, and Sheema

- Although they were not included as separate sampling domains, the overall sample size permitted estimates to be produced for the 14 ongoing indoor residual spraying (IRS) intervention districts: Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba, and Paliisa and 11 former IRS intervention districts Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac, and Lamwo.

- Refugee settlements in Adjumani, Arua, Isingiro, Kamwenge, Kiryandongo, Kyegegwa, Lamwo, Moyo, and Yumbe districts were included as a separate sampling domain.

The first stage of sampling involved selecting sample points (clusters) from the sampling frames; the non-refugee areas and the refugee settlements used separate sampling frames. Enumeration areas (EAs) delineated for the 2014 National Population and Housing Census (NPHC) were used as the sampling frame for the non-refugee areas. A sampling frame developed for the National Refugees' Survey, conducted by UBOS in collaboration with the World Bank and Office of the Prime Minister in early 2018, was used as the frame for the refugee settlement domain. A total of 320 clusters were selected with probability proportional to size from the EAs covered in the 2014 NPHC. Of these clusters, 84 were in urban areas and 236 in rural areas. Urban areas were oversampled within regions in order to produce robust estimates for that domain. A total of 22 clusters were selected with probability proportional to size from the EAs covered in the refugee frame.

The second stage of sampling involved systematic selection of households. For the non-refugee areas, a household listing operation was undertaken in all of the selected EAs in November and December 2018, and households to be included in the survey were randomly selected from these lists. In the selected clusters for the refugee settlements domain, listing was undertaken immediately before fieldwork in those clusters. Twenty-eight households were selected from each EA, for a total sample size of 8,878 households. Because of the approximately equal sample sizes in each domain, the sample was not self-weighting at the national level. Results shown in this report have been weighted to account for the complex sample design. See Appendix A for additional details on the sampling procedures.

Because a separate sampling frame was used to identify the clusters containing refugee settlements, they are tabulated separately from the national total results throughout the report.

All women age 15-49 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. After a parent's or guardian's consent was obtained, children age 0-59 months were tested for anaemia and malaria infection.

1.3 QUESTIONNAIRES

Three questionnaires—the Household Questionnaire, the Woman's Questionnaire, and the Biomarker Questionnaire—were used for fieldwork in the 2018-19 UMIS. Core questionnaires available from the Roll Back Malaria (RBM) Monitoring and Evaluation Reference Group (MERG) were adapted to reflect the population and health issues relevant to Uganda. The modifications were decided upon at a series of meetings with various stakeholders from the NMCD and other government ministries and agencies, nongovernmental organisations, and international donors. The questionnaires were in English; UBOS arranged for translation into Luganda, Luo, Lugbara, Ateso, Runyankole/Rukiga, and Runyoro/Rutoro. The Household and Woman's Questionnaires were programmed onto tablet computers, enabling use of computer-assisted personal interviewing (CAPI) for the survey. The Biomarker Questionnaire was filled out on hard copy and entered into the CAPI system when complete.

A fourth questionnaire, the Fieldworker Questionnaire, was adapted from The DHS Program's standard questionnaire. It was completed by all fieldworkers in the 2018-19 UMIS; its purpose was to collect basic background information on the people who collect data in the field.

The Household Questionnaire was used to list all the usual members of and visitors to selected households. Basic information was collected on the characteristics of each person listed in the household, including their age, sex, and relationship to the head of the household. The data on the age and sex of household members, obtained from the Household Questionnaire, were used to identify women eligible for an individual interview and children age 0-59 months eligible for anaemia and malaria testing. Additionally, the Household Questionnaire captured information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor, ownership of various durable goods, indoor residual spraying, and ownership and use of mosquito nets.

The Woman's Questionnaire was used to collect information from all women age 15-49. These women were asked questions on the following main topics:

- Background characteristics (age, residential history, education, literacy, religion, and ethnicity)
- Reproductive history for the 6 years before the survey
- Prenatal care and preventive malaria treatment for the most recent live birth
- Prevalence and treatment of fever among children under age 5
- Knowledge and opinions about malaria (symptoms, causes, how to prevent, and types of antimalarial medications)
- Exposure to and sources of messages about malaria

The Biomarker Questionnaire was used to record the results of the anaemia and malaria testing of children 0-59 months, as well as the signature of the fieldworker who obtained consent from a parent or guardian.

Consent statements were developed for the Household and Woman's Questionnaires. The Biomarker Questionnaire included individual consent statements for malaria testing, anaemia testing, and the treatment of children with positive malaria rapid diagnostic tests (RDTs).

1.4 ANAEMIA AND MALARIA TESTING

Blood samples for biomarker testing were collected by finger- or heel-prick from children age 0-59 months. Each field team included two health technicians who carried out the anaemia and malaria testing and prepared the blood smears. One interviewer on each team was also a nurse, and that individual provided malaria medications for children who tested positive for malaria, in accordance with the approved treatment protocols. The health technicians requested informed consent for each test from the child's parent or guardian before the blood samples were collected, according to the protocols approved by the Uganda National Council for Science and Technology (UNCST), the Makerere University School of Medicine Research and Ethics Committee (SOMREC), and the institutional review board at ICF.

Malaria testing using a rapid diagnostic test (RDT). A single-use, retractable, spring-loaded, sterile lancet was used to make a finger- or heel-prick. A drop of blood was tested immediately using the SD BIOLINE Malaria Ag P.f. (HRP-II)™ rapid diagnostic test (RDT). This qualitative test detects the histidine-rich protein II antigen of malaria, *Plasmodium falciparum* (Pf), in human whole blood (Standard Diagnostics, Inc.). The parasite, transmitted by a mosquito, is the major cause of malaria in Uganda. The diagnostic test includes a disposable blood transfer device that comes in a standard package. A tiny volume of blood is captured on the blood transfer device and placed in the well of the testing device. All health technicians were trained to perform the RDT in the field, in accordance with manufacturers' instructions. RDT results were available in 15 minutes and recorded as either positive or negative, with faint test lines being considered positive. Malaria RDT results were provided to the child's parent or guardian in oral and written form and were recorded on the Biomarker Questionnaire.

Children who tested positive for malaria and who were more than 3 months of age, did not exhibit signs of severe malaria (based on symptoms or haemoglobin testing result of severe anaemia), and had not taken an artemisinin combination therapy (ACT) in the past 2 weeks were offered a full course of medicine according to standard guidelines for uncomplicated malaria treatment in Uganda. To ascertain the correct dose, nurses on each field team were provided with treatment guidance charts. The nurses provided the age-appropriate dose of ACT along with instructions on how to administer the medicine to the child. Parents of children with signs of severe malaria (malaria positive with a haemoglobin level less than 8 g/dl or malaria positive with signs of severe malaria) were advised to take the child to a health facility for care and were given a referral letter with the haemoglobin reading and severe malaria signs to show to staff at the health facility. Children who tested positive for malaria and who were 3 months of age or less also were given a referral for treatment. For children who had recently taken ACTs, the parent/guardian was counselled to take the child to a facility if he or she had a fever 2 days after the last dose.

Anaemia testing. A drop of blood from the same finger- or heel-prick was collected in a microcuvette. Haemoglobin analysis was carried out on site using a battery-operated portable HemoCue® 201+ analyser, which produces a result in less than 1 minute. Results were given to the child's parent or guardian verbally and in writing. Parents of children with a haemoglobin level under 8 g/dl were advised to take the child to a health facility for follow-up care and were given a referral letter with the haemoglobin reading to show to staff at the health facility. Results of the anaemia test were recorded on the Biomarker Questionnaire and on a brochure left in the household that also contained information on the causes and prevention of anaemia.

Malaria testing and speciation using blood smears. Thick and thin blood smears were prepared in the field. Each blood smear slide was given a bar code label, with a duplicate affixed to the Biomarker Questionnaire. An additional copy of the bar code label was affixed to a blood sample transmittal form to track the blood samples from the field to the Molecular Research Laboratory (MoLab) at the Infectious Disease Research Collaboration (IDRC) in Kampala. The slides were dried in a dust-free environment and stored in slide boxes. Thin smear slides were fixed in the field with methanol. The slides were collected regularly from the field and transported to the laboratory for logging and microscopic reading. Thick blood smears were stained with Giemsa stain and examined to determine the presence of *Plasmodium* infection. Thin blood smears were examined for the presence of specific parasites. All stained slides were read by two independent microscopists masked from RDT results. Slides with discrepant results between the two initial readings were reanalysed by a third microscopist for final validation.

The microscopic results were quality checked by internal and external quality control processes. Internal quality control consisted of an independent microscopist who read 5% of all slides in the study.

1.5 TRAINING OF FIELD STAFF

UBOS recruited and trained a total of 96 fieldworkers (80 women and 16 men) to serve as interviewers for the main fieldwork. Team supervisors were selected from the pool of interviewer trainees. Health technicians were trained separately from interviewers. The interviewer training took place from 20 November – 8 December 2018 at the Hotel Africana in Kampala. The training course included instruction on interviewing techniques and field procedures, a detailed review of questionnaire content, instruction on administering the paper and electronic questionnaires, mock interviews between participants in the classroom, and practice interviews with actual respondents in areas outside the 2018-19 UMIS sample.

Forty-six individuals (12 women and 34 men) were recruited and trained on collecting biomarker data, including testing for anaemia by measuring haemoglobin levels, testing for malaria using RDTs, and preparing thick and thin smears. The biomarker training took place from 27 November – 8 December 2018 at the same venue, the Hotel Africana in Kampala, as the interviewer training. The training included lectures, demonstrations of biomarker measurement or testing procedures, practice on consenting adults at the training venue, and field practice with children at a health clinic.

To help place the importance of the 2018-19 UMIS into context for the trainees, the training also included presentations by staff of the NMCD on Uganda-specific policies and programmes related to mosquito nets, malaria prevention during pregnancy, case management, and social and behaviour change communication (SBCC).

Interviewers had 1 day of field practice using paper versions of the Household and Woman's Questionnaires on 27 November; all fieldworkers had 3 days of field practice (5-7 December) to provide trainees with additional hands-on practice before the actual fieldwork. In addition, all fieldworkers had a daylong debrief on 8 December to discuss and clarify issues encountered during the practice fieldwork.

Training participants were evaluated through classwork, in-class exercises, quizzes, and observations conducted during field practice. The selection of team supervisors was based on experience in leading survey teams and performance during the training. Team leaders received additional instructions and practice on performing supervisory activities with the CAPI system. Supervisory activities included assigning households and receiving completed interviews from interviewers, recognising and dealing with error messages, receiving system updates and distributing updates to interviewers, completing Biomarker Questionnaires and slide transmittal sheets, resolving duplicated cases, closing clusters, and transferring interviews to the central office via a secure internet file streaming system (IFSS). In addition to the training on CAPI material, team supervisors also received training on their roles and responsibilities.

1.6 FIELDWORK

Twenty-three teams were organised for field data collection with seven people per team. Each team consisted of one supervisor, two health technicians, one interviewer who was also a nurse, two other interviewers, and one driver. The field staff also included a health technician supervisor and four regional laboratory coordinators who followed up with teams to check on and furnish the supplies needed. They also collected slides from the field teams and delivered them to the laboratory at IDRC.

UBOS arranged for printing of questionnaires, manuals, consent forms, brochures, and other field forms, and organised field supplies, which included backpacks, identification cards, and the health technicians' supplies. UBOS coordinated the fieldwork logistics.

Field data collection for the 2018-19 UMIS started on 11 December 2018 and finished on 31 January 2019. To ensure maximum supervision, the national monitors, largely members of the technical working group, visited all 23 teams over the entire period of data collection.

1.7 LABORATORY TESTING

Standard protocols were used to read blood slides for the presence of malaria parasites. All microscopic slides were stained with Giemsa and read by laboratory technicians. Blood smears were considered negative if no parasites were found after counting 200 fields. To ensure quality control, a second laboratory technician read all slides, and a third reviewer settled any discrepant readings.

1.8 DATA PROCESSING

All electronic data files for the 2018-19 UMIS were transferred via ICF's IFSS to the UBOS central office in Kampala, where they were stored on a password-protected computer. The data processing operation included registering and checking for inconsistencies, incompleteness, and outliers. Data editing and cleaning included structure and consistency checks to ensure completeness of work in the field. The central office also conducted secondary editing, which required resolution of computer-identified inconsistencies and coding of open-ended questions. The data were processed by UBOS staff who took part in the main fieldwork training and were supervised by senior staff from UBOS. The Census and Survey Processing (CSPro) System software package was used for data editing. Secondary editing and data processing were completed in February 2019.

1.9 Ethical Consideration

The protocol for the 2018-19 UMIS was approved by UNCST, SOMREC, and the institutional review board at ICF. All data and other information collected were kept confidential. Respondents' names and identification numbers were removed from the electronic dataset during data finalisation. The risks and benefits of participation in the survey were explained to respondents, and informed consent for interview or blood collection was sought. Respondents gave consent prior to participation in the survey.

1.10 Community Mobilisation

Prior to the onset of fieldwork, the UBOS Communication and Public Relations Team conducted advocacy and mobilisation activities that were designed to encourage acceptance of the 2018-19 UMIS and encourage maximum community support and participation.

Radio and television talk shows and community meetings were conducted to mobilise the general public and create public awareness. The advocacy also included field visits to the local communities before fieldwork began in a given area. During these visits, the advocacy teams discussed the survey objectives, implementation, content, and how the community would benefit from the exercise.

1.11 Response Rates

As described in Section 1.2, Sample Design, the refugee settlements included in the survey were drawn from a different sampling frame than the frame used for the 'main' survey. It is not possible to tabulate results from separate sampling frames together and calculate weights that allow for representative estimates; therefore, throughout the report, refugee settlements are tabulated separately from the national total.

Table 1.1 shows that of the 8,878 households selected for the sample in the main survey, 8,448 were occupied at the time of fieldwork. Among the occupied households, 8,351 were successfully interviewed, yielding a total household response rate of 99%. In the interviewed households, 8,389 women were eligible for individual interview, and 8,231 were successfully interviewed, yielding a response rate of 98%. In the refugee settlements, the household response rate was almost 100%, and the response rate among women was 99%.

Table 1.1 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence (unweighted), Uganda MIS 2018-19

Result	Residence		Total	Refugee settlements
	Urban	Rural		
Household interviews				
Households selected	2,343	6,535	8,878	616
Households occupied	2,190	6,258	8,448	609
Households interviewed	2,149	6,202	8,351	606
Household response rate[1]	98.1	99.1	98.9	99.5
Interviews with women age 15-49				
Number of eligible women	2,198	6,191	8,389	643
Number of eligible women interviewed	2,155	6,076	8,231	637
Eligible women response rate[2]	98.0	98.1	98.1	99.1

[1] Households interviewed/households occupied
[2] Respondents interviewed/eligible respondents

CHARACTERISTICS OF HOUSEHOLDS AND WOMEN

2

Key Findings

- ***Drinking water:*** 76% of households have an improved source of drinking water.
- ***Sanitation:*** 44% of households use an improved toilet facility, 52% use an unimproved facility, and 5% do not use a facility.
- ***Housing characteristics:*** Almost all households in urban areas have finished roofs (94%) compared with those in rural areas (73%).
- ***Literacy:*** Younger women are more likely to be literate than older women. For example, 83% percent of women age 15-19 are literate compared with 54% of women age 45-49.

Information on the socioeconomic characteristics of the household population in the 2018-19 Uganda MIS survey provides context to interpret demographic and health indicators and can indicate approximate representativeness of the survey. In addition, this information sheds light on the living conditions of the population.

This chapter presents information on source of drinking water, sanitation, wealth, ownership of durable goods, composition of the household population, and housing characteristics. In addition, the chapter presents characteristics of the survey respondents such as age, education, and literacy. Socioeconomic characteristics improve understanding of the factors that affect use of health services and other health behaviours related to malaria control.

2.1 DRINKING WATER SOURCES AND TREATMENT

Improved sources of drinking water

Include piped water, public taps, standpipes, tube wells, boreholes, protected dug wells and springs, rainwater, water delivered via tanker truck or a bicycle with jerrycans, and bottled or sachet water.

Sample: Households

Access to clean water for the population has been prioritised by the Government of Uganda and international organisations as a key issue to address quickly. For example, in Uganda, one target of the Second National Development Plan (NDPII) is increasing access to safe water from 65% to 79% of households in rural areas and from 77% to 100% in urban areas by 2020 (Uganda 2015).

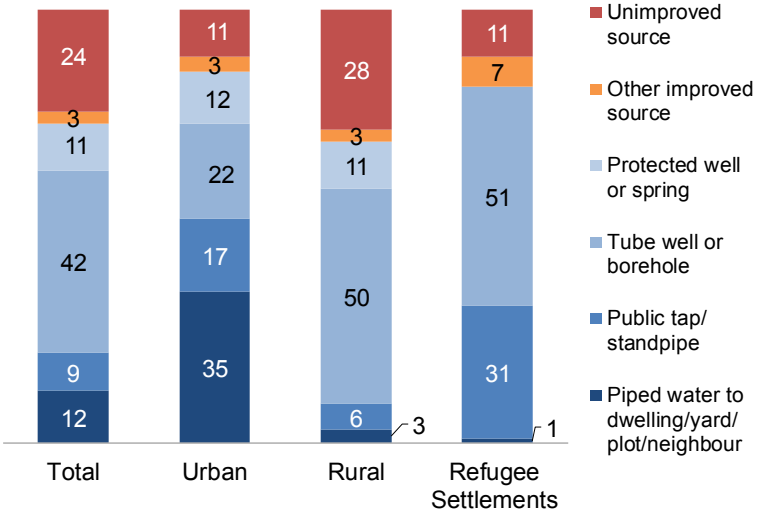
Table 2.1.1 shows that 76% of households use an improved source of drinking water. Tube wells or boreholes are the most common source of drinking water among households (42%), followed by piped water into dwelling/yard/plot or piped to neighbour (12%) and public taps/standpipes (9%) (**Figure 2.1**). Thirty percent of households take more than 30 minutes (round trip) to collect water.

Among households in refugee settlements, 89% use an improved source of drinking water.

The percentage of households using improved sources of drinking water is higher among urban households (89%) than rural households (72%). The percentage of the population with an improved source of drinking water ranges from 55% in Ankole to 99% in Kampala and Teso (**Table 2.1.2**).

Figure 2.1 **Household drinking water by residence and refugee settlements**

Percent distribution of households by source of drinking water



2.2 SANITATION

Improved toilet facility

Is a flush/pour flush toilet that flushes the water and waste to a piped sewer system, septic tank, pit latrine, or unknown destination; a ventilated improved pit (VIP) latrine; a pit latrine with a slab; or a composting toilet

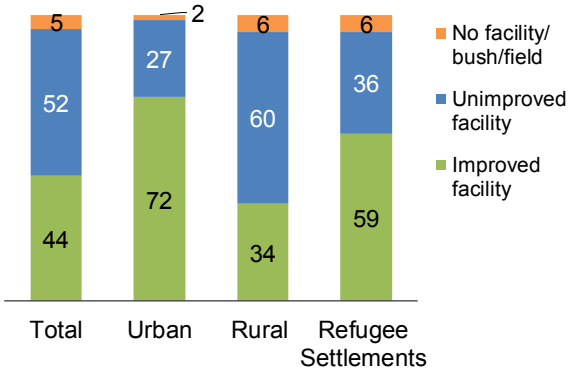
Sample: Households

Nationally, 44% of households use improved toilet facilities, 52% use unimproved sanitation, and 5% use open defecation (**Table 2.2.1** and **Figure 2.2**). More households in urban areas (72%) use improved sanitation as compared to households in rural areas (34%). The most commonly used improved toilet facility is the pit latrine with a slab (26% of all households). Among refugee settlements, the majority (59%) of households use an improved toilet facility.

The use of an improved sanitation facility by region ranges from 2% of households in Karamoja to 87% of households in Kampala (**Table 2.2.2**).

Figure 2.2 **Household toilet facilities by residence**

Percent distribution of households by type of toilet facilities



2.3 HOUSING CHARACTERISTICS

The UMIS collected data on household features such as access to electricity, number of sleeping rooms, and types of fuel used for cooking. The responses to these questions, along with information on ownership of household durable goods, contribute to the creation of the household wealth index and provide information that may be relevant for other health indicators.

Overall, 41% of households in Uganda have electricity. Seventy-one percent of urban households and 31% of rural households have electricity. Among refugee settlements, only 20% of households have electricity (**Table 2.3**).

Trends: The percentage of households with electricity has increased over time, from 10% of households in the 2009 UMIS to 41% in the 2018-19 UMIS.

The number of rooms a household uses for sleeping is an indicator of socioeconomic level and of crowding in the household, which can facilitate the spread of disease. Nationally, 29% of households use three or more rooms for sleeping, 29% use two rooms, and 41% use one room. Thirty-one percent of rural households use three or more rooms for sleeping compared with 25% of households in urban areas.

Exposure to cooking smoke, especially to smoke produced from solid fuels, is potentially harmful to health. The percentage of households using clean fuel for cooking is still low (2%) compared with those using solid fuels like charcoal, wood, straw/shrubs/grass, and agricultural crop residues (97%) for cooking (**Table 2.3**).

2.4 Dwelling Characteristics

Improved housing characteristics, such as finished roofs and walls, contribute to malaria control and elimination by reducing household entry by malaria vectors and thus exposure to biting. Nationally, 79% of households have a finished roof defined as roofing materials composed of iron sheets, wood, asbestos, tiles, concrete, and roofing shingles (**Table 2.3**). Almost all households in urban areas have finished roofs (94%) compared with rural areas (73%). The most common roofing material in the refugee settlements is natural roofing (48%). In examining wall material, the majority of households in Uganda (54%) have rudimentary walls defined as rustic mat, wood planks, cardboard, or tarpaulin wall materials. The most common flooring material is earth/sand (42%) followed by cement (34%) (**Table 2.3**).

2.5 Household Wealth

Household durable goods

Data from the survey revealed information on ownership of household goods, means of transport, agricultural land, and farm animals. Seventy-seven percent of households own a mobile phone. Possession of a mobile phone is more common in urban (90%) than rural households (72%). Six in 10 households own a radio (59%), and 2 in 10 households (19%) own a television. Only 5% of households own a refrigerator, and 4% own a computer. Thirty-two percent of households own a bicycle, 13% own a motorcycle or scooter, and 3% own a car or truck (**Table 2.4**)

Overall, 60% of households own agricultural land and 56% own farm animals. As expected, households in rural areas are more likely than households in urban areas to own agricultural land (68% versus 36%) or farm animals (64% versus 34%).

Wealth index

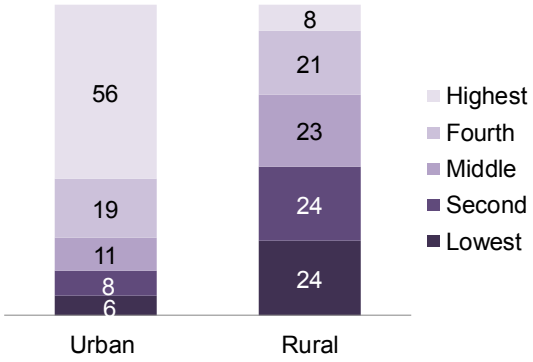
Households are given scores based on the number and kinds of consumer goods they own, ranging from a television to a bicycle or car, and housing characteristics such as source of drinking water, toilet facilities, and flooring materials. These scores are derived using principal component analysis. National wealth quintiles are compiled by assigning the household score to each usual (de jure) household member, ranking each person in the household population by their score, and then dividing the distribution into five equal categories, each with 20% of the population.

Sample: Households

Table 2.5 presents the distribution of the de jure household population by wealth quintile according to residence and region. In Uganda, urban households are more likely than rural households to fall into the higher wealth quintiles, while rural households are more likely to fall into the lower wealth quintiles. Seventy-five percent of the urban population is in the two highest wealth quintiles. By contrast, 48% of the rural population falls in the two lowest wealth quintiles (**Figure 2.3**).

***Figure 2.3* Household wealth by residence**

Percent distribution of de jure population by wealth quintiles



Wealth varies widely by region. Ninety-five percent of the population in Kampala is in the highest wealth quintile, as compared with less than 1% of the population in Karamoja. Ninety-four percent of the population in Karamoja is in the lowest wealth quintile, compared with 0% in Kampala.

2.6 Household Population and Composition

Household

A person or group of related or unrelated persons who live together in the same dwelling unit(s), who acknowledge one adult male or female as the head of the household, who share the same housekeeping arrangements, and who are considered a single unit.

De facto population

All persons who stayed in the selected households the night before the interview (whether usual residents or visitors)

De jure population

All persons who are usual residents of the selected households, whether or not they stayed in the household the night before the interview

How data are calculated

All tables are based on the de facto population, unless specified otherwise.

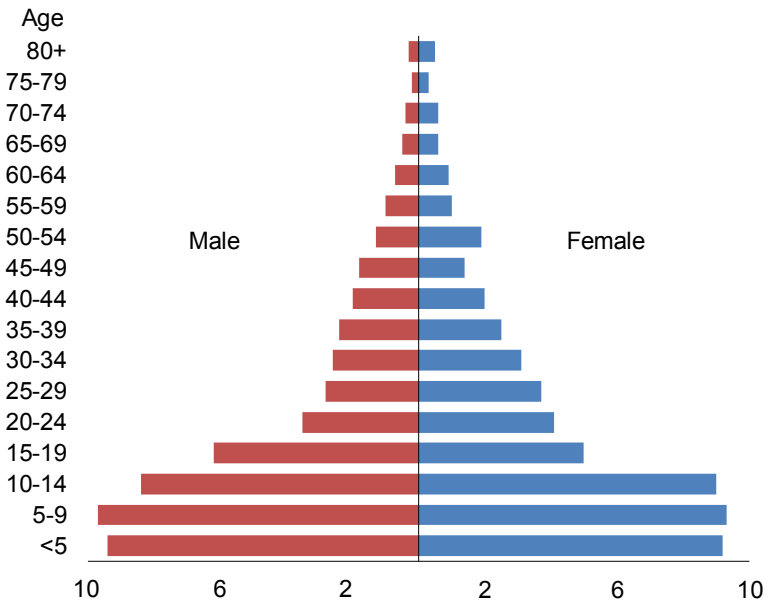
In the 2018-19 UMIS, 40,062 people stayed overnight in 8,351 households. The overall sex ratio is 98 males per 100 females and the majority of the population (76%) lives in rural areas (**Table 2.6**).

The population pyramid in **Figure 2.4** illustrates the population distribution by sex and by 5-year age groups. The broad base of the pyramid shows that Uganda's population is young. Half of the population (50%) is under age 15, 47% is age 15-64, and only 3% is age 65 and older (**Table 2.6**).

On average, households in Uganda consist of 4.8 persons in ordinary households and 5.5 persons in households in refugee settlements (**Table 2.7**). Men predominantly head ordinary households in Uganda (72%) whereas women are more often the head of the household in refugee settlements (60%).

***Figure 2.4* Population pyramid**

Percent distribution of the household population



2.7 Characteristics of Respondents

Table 2.8 shows the weighted and unweighted numbers and the weighted percentage distributions of women who were interviewed in 2018-19 UMIS by background characteristics. Thirty-eight percent of women are Catholic followed by 33% Anglican. Seventy-one percent of respondents live in rural areas. The largest percentage of respondents live in South Buganda (17%) followed by North Buganda (15%) regions.

2.8 Educational Attainment of Women

Studies have consistently shown that educational attainment has a strong effect on health behaviours and attitudes. Generally, the higher the level of education a woman has attained, the more knowledgeable she is about both the use of health facilities and health management for herself and for her children.

***Figure 2.5* Education of survey respondents**

Percent distribution of women age 15-49 by highest level of schooling attended or completed

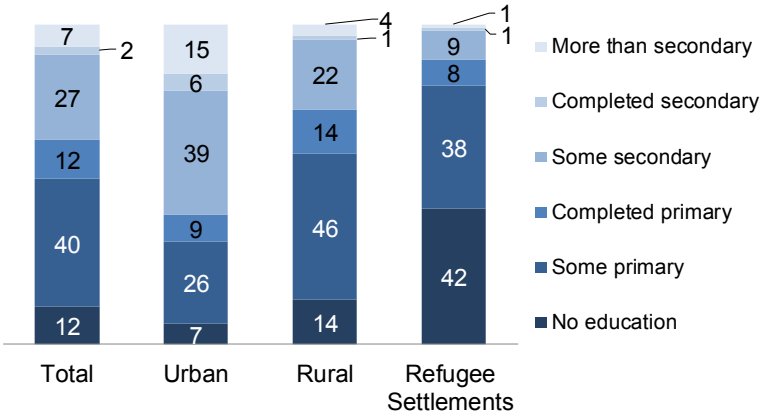


Table 2.9 shows the percent distribution of women age 15-49 by highest level of schooling attended or completed, and median years completed, according to background characteristics. Overall, 12% of women age 15-49 have no formal education. In refugee settlements, 42% of women have no education. When examining the highest level of schooling among women age 15-49, 12% of women have completed primary school but gone no further, and 7% of women have more than secondary education (**Figure 2.5**).

Nationally, the median years of education completed by women is 5.9 years. For refugee settlements, the median years of education completed by women is just 2.0 years.

Trends: The percentage of women with no education has declined from 17% in the 2009 UMIS to 12% in the 2018-19 UMIS.

Patterns by background characteristics

- The percentage of women with more than secondary education is higher among women from urban areas (15%) than among women from rural areas (4%) (**Figure 2.5**).
- By region, median years of education ranges from 0.0 years in Karamoja to 9.3 years in Kampala. Less than one percent of women in Karamoja have more than secondary education versus 21% in Kampala.

2.9 LITERACY OF WOMEN

Literacy

Respondents who have attended higher than secondary school are assumed literate. All other respondents were given a sentence to read, and they were considered literate if they could read all or part of the sentence.

Sample: Women age 15-49

Knowing the level and distribution of literacy among the population is an important factor in the design and delivery of health messages and interventions. The results show that, overall, 70% of women age 15-49 are literate (**Table 2.10**). Among refugee settlements, only 28% of women are literate.

Trends: The percentage of literate women increased from 66% in the 2014-15 UMIS to 70% in the 2018-19 UMIS.

Patterns by background characteristics

- By region, literacy among women ranges from 12% in Karamoja to 93% in Kampala.
- Literacy varies by place of residence; 85% of women in urban areas are literate compared with 64% of women in rural areas.
- The percentage of literate women increases with increasing wealth, from 40% in the lowest wealth quintile to 92% in the highest wealth quintile.

LIST OF TABLES

For detailed information on household population and housing characteristics, see the following tables:

- **Table 2.1.1 Household drinking water**
- **Table 2.1.2 Drinking water according to region and wealth**
- **Table 2.2.1 Household sanitation facilities**
- **Table 2.2.2 Sanitation facility type according to region and wealth**
- **Table 2.3 Household characteristics**
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- **Table 2.5 Wealth quintiles**
- **Table 2.6 Household population by age, sex, and residence**
- **Table 2.7 Household composition**
- **Table 2.8 Background characteristics of respondents**
- **Table 2.9 Educational attainment**
- **Table 2.10 Literacy**

Table 2.1.1 Household drinking water

Percent distribution of households and de jure population by source of drinking water and by time to obtain drinking water; percentage of households and de jure population with basic drinking water service and percentage with limited drinking water service, according to residence, Uganda MIS 2018-19

	Households				Population			
Characteristic	Urban	Rural	Total	Refugee settlements	Urban	Rural	Total	Refugee settlements
Source of drinking water								
Improved source	88.8	71.7	76.2	89.2	87.7	72.7	76.4	90.2
Piped into dwelling/yard/plot	23.0	1.9	7.5	0.2	23.4	1.8	7.0	0.3
Piped to neighbour	12.1	1.1	4.0	0.4	10.9	1.0	3.4	0.4
Public tap/standpipe	17.0	5.6	8.6	30.5	15.3	5.4	7.8	32.1
Tube well/borehole	21.7	49.7	42.3	51.0	24.0	51.5	44.8	51.1
Protected dug well	5.1	6.1	5.8	0.3	5.7	6.7	6.4	0.1
Protected spring	6.5	4.7	5.2	0.0	6.2	4.7	5.1	0.0
Rainwater	1.1	1.1	1.1	0.5	1.2	0.9	1.0	0.6
Tanker truck/bicycle with jerrycans	0.7	1.0	0.9	6.5	0.5	0.7	0.6	5.6
Bottled or sachet water	1.3	0.6	0.8	0.0	0.5	0.2	0.3	0.0
Unimproved source	11.2	28.3	23.7	10.8	12.3	27.3	23.6	9.8
Unprotected dug well	6.8	13.5	11.7	4.9	7.9	12.6	11.5	4.6
Unprotected spring	2.5	7.5	6.1	0.0	2.6	6.8	5.8	0.0
Surface water	1.9	7.3	5.9	5.9	1.8	7.8	6.4	5.2
Other source	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Time to obtain drinking water (round trip)								
Water on premises[1]	43.6	11.8	20.2	13.4	43.0	11.0	18.8	14.7
30 minutes or less	44.1	51.2	49.3	57.0	42.3	50.3	48.4	56.6
More than 30 minutes	11.7	35.9	29.5	28.3	14.1	37.8	32.0	27.8
Don't know	0.6	1.1	1.0	1.2	0.7	0.8	0.8	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage with basic drinking water service[2]	79.0	45.4	54.3	65.1	75.5	44.7	52.2	66.9
Percentage with limited drinking water service[3]	9.4	25.4	21.2	23.0	11.8	27.4	23.6	22.3
Number of households/ population	2,204	6,147	8,351	606	9,819	30,444	40,264	3,358

[1] Includes water piped to a neighbour and those reporting a round trip collection time of 0 minutes
[2] Defined as drinking water from an improved source, provided either water is on the premises or round-trip collection time is 30 minutes or less. Includes safely managed drinking water, which is not shown separately.
[3] Drinking water from an improved source, provided round-trip collection time is more than 30 minutes

Table 2.1.2 Drinking water according to region and wealth

Percent distribution of de jure population by drinking water source, percentage of de jure population with basic drinking water service, and percentage with limited drinking water service, according to region and wealth quintile, Uganda MIS 2018-19

Background characteristic	Improved source of drinking water[1]	Unimproved source of drinking water[2]	Total	Percentage with basic drinking water service [3]	Percentage with limited drinking water service[4]	Number of persons
Region						
South Buganda	80.2	19.8	100.0	63.0	16.4	6,227
North Buganda	64.5	35.5	100.0	44.3	19.4	6,555
Kampala	98.7	1.3	100.0	97.3	1.2	1,373
Busoga	91.0	9.0	100.0	45.2	44.3	3,609
Bukedi	97.1	2.9	100.0	63.4	33.8	1,976
Bugisu	75.2	24.8	100.0	59.4	15.5	2,496
Teso	99.3	0.7	100.0	52.2	47.0	2,139
Karamoja	92.8	7.2	100.0	38.0	54.6	935
Lango	83.2	16.8	100.0	51.2	31.9	2,185
Acholi	72.0	28.0	100.0	46.6	24.0	1,528
West Nile	76.7	23.3	100.0	52.7	24.0	2,675
Bunyoro	58.9	41.1	100.0	42.7	15.5	1,609
Tooro	58.1	41.9	100.0	35.9	22.2	2,271
Kigezi	72.1	27.9	100.0	48.6	21.2	1,665
Ankole	55.2	44.8	100.0	48.6	6.6	3,019
Wealth quintile						
Lowest	76.3	23.7	100.0	43.2	32.7	10,141
Second	71.8	28.2	100.0	45.0	25.9	9,112
Middle	74.5	25.5	100.0	47.9	25.8	8,154
Fourth	72.7	27.3	100.0	50.8	21.3	8,136
Highest	93.0	7.0	100.0	83.5	9.1	8,079
Total	76.4	23.6	100.0	52.2	23.6	40,264
Refugee settlements	90.2	9.8	100.0	66.9	22.3	3,358

[1] See Table 2.1.1 for definition of an improved source.
[2] See Table 2.1.1 for definition of an unimproved source.
[3] Defined as drinking water from an improved source, provided either water is on the premises or round-trip collection time is 30 minutes or less. Includes safely managed drinking water, which is not shown separately.
[4] Drinking water from an improved source, provided round-trip collection time is more than 30 minutes

Table 2.2.1 Household sanitation facilities

Percent distribution of households and de jure population by type of toilet/latrine facilities; percentage of households and de jure population with basic sanitation services, and percentage with limited sanitation services, according to residence, Uganda MIS 2018-19

	Households				Population			
Type of toilet/latrine facility	Urban	Rural	Total	Refugee settlements	Urban	Rural	Total	Refugee settlements
Improved sanitation	71.8	33.7	43.7	58.9	70.0	34.2	42.9	59.6
Flush/pour flush to piped sewer system	1.9	0.0	0.5	0.0	1.1	0.0	0.3	0.0
Flush/pour flush to septic tank	8.6	0.1	2.3	0.1	7.9	0.1	2.0	0.1
Flush/pour flush to pit latrine	2.0	0.0	0.6	0.1	1.7	0.0	0.4	0.2
Flush/pour flush, don't know where	0.3	0.0	0.1	0.4	0.3	0.0	0.1	0.3
Ventilated improved pit (VIP) latrine	29.6	7.5	13.3	9.9	30.1	7.2	12.8	9.3
Pit latrine with slab	28.8	24.7	25.8	48.2	27.9	25.7	26.3	49.6
Composting toilet	0.8	1.4	1.3	0.3	0.9	1.2	1.1	0.2
Unimproved sanitation	26.7	60.4	51.5	35.5	28.4	60.6	52.8	36.0
Flush/pour flush not to sewer/septic tank/pit latrine	0.4	0.0	0.1	0.0	0.4	0.0	0.1	0.0
Pit latrine without slab/open pit	25.9	59.6	50.7	34.5	27.5	59.8	51.9	34.9
Bucket	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Hanging toilet/hanging latrine	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7
Other	0.1	0.2	0.2	0.4	0.1	0.2	0.2	0.4
Open defecation (no facility/ bush/field)	1.5	5.9	4.7	5.5	1.6	5.2	4.3	4.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage with basic sanitation service[1]	32.3	23.9	26.1	40.1	37.7	26.9	29.5	42.6
Percentage with limited sanitation service[2]	39.1	9.8	17.5	18.9	32.1	7.3	13.4	17.0
Number of households/ population	2,204	6,147	8,351	606	9,819	30,444	40,264	3,358

[1] Defined as use of improved facilities that are not shared with other households. Includes safely managed sanitation service, which is not shown separately.
[2] Defined as use of improved facilities shared by 2 or more households

Table 2.2.2 Sanitation facility type according to region and wealth

Percent distribution of de jure population by type of sanitation, percentage of de jure population with basic sanitation service, and percentage with limited sanitation service, according to region and wealth quintile, Uganda MIS 2018-19

Background characteristic	Type of sanitation			Total	Percentage with basic sanitation service[3]	Percentage with limited sanitation service[4]	Number of persons
	Improved sanitation facility[1]	Unimproved sanitation facility[2]	Open defecation				
Region							
South Buganda	65.5	33.9	0.6	100.0	40.4	25.1	6,227
North Buganda	48.6	51.2	0.1	100.0	36.1	12.5	6,555
Kampala	86.7	13.2	0.1	100.0	31.7	54.2	1,373
Busoga	36.6	61.4	2.0	100.0	29.8	6.7	3,609
Bukedi	41.9	54.3	3.8	100.0	29.7	12.2	1,976
Bugisu	43.0	56.6	0.4	100.0	33.0	10.0	2,496
Teso	18.4	70.1	11.5	100.0	13.2	5.2	2,139
Karamoja	2.1	21.2	76.7	100.0	0.7	1.3	935
Lango	14.7	81.9	3.4	100.0	8.6	6.1	2,185
Acholi	32.2	54.8	13.0	100.0	16.1	16.1	1,528
West Nile	33.7	57.7	8.6	100.0	20.2	13.4	2,675
Bunyoro	32.6	66.1	1.3	100.0	23.0	9.6	1,609
Tooro	36.8	62.8	0.4	100.0	32.5	4.3	2,271
Kigezi	31.1	68.6	0.3	100.0	26.7	4.4	1,665
Ankole	53.2	46.2	0.6	100.0	41.8	11.5	3,019
Wealth quintile							
Lowest	17.5	66.0	16.5	100.0	12.0	5.5	10,141
Second	28.6	70.0	1.4	100.0	21.2	7.4	9,112
Middle	35.3	63.9	0.8	100.0	27.2	8.2	8,154
Fourth	58.8	41.2	0.1	100.0	45.1	13.6	8,136
Highest	89.8	10.2	0.0	100.0	52.9	36.7	8,079
Total	42.9	52.8	4.3	100.0	29.5	13.4	40,264
Refugee settlements	59.6	36.0	4.4	100.0	42.6	17.0	3,358

[1] See Table 2.2.1 for definition of an improved facility.
[2] See Table 2.2.1 for definition of an unimproved facility.
[3] Defined as use of improved facilities that are not shared with other households. Includes safely managed sanitation service, which is not shown separately.
[4] Defined as use of improved facilities shared by 2 or more households

Table 2.3 Household characteristics

Percent distribution of households and de jure population by housing characteristics, percentage using solid fuel for cooking and percentage using clean fuel for cooking, according to residence, Uganda MIS 2018-19

Housing characteristic	Households				Population			
	Urban	Rural	Total	Refugee settlements	Urban	Rural	Total	Refugee settlements
Electricity								
Yes	70.8	30.7	41.3	20.3	70.6	33.7	42.7	22.9
No	29.2	69.3	58.7	79.7	29.4	66.3	57.3	77.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Flooring material								
Earth/sand	18.2	50.2	41.8	78.8	19.4	49.3	42.0	79.4
Dung	7.1	23.2	18.9	16.6	8.2	23.5	19.8	16.6
Wood planks	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Parquet or polished wood	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Concrete	2.4	1.7	1.9	0.3	2.6	2.0	2.2	0.5
Ceramic tiles	5.6	0.4	1.8	0.0	5.7	0.6	1.8	0.0
Cement	61.6	23.9	33.9	3.9	60.2	24.2	33.0	3.1
Carpet	4.4	0.3	1.4	0.1	3.5	0.2	1.0	0.1
Stones	0.2	0.0	0.1	0.2	0.2	0.0	0.1	0.1
Bricks	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Roofing material								
No roof	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.0
Natural[1]	5.5	26.7	21.1	48.3	6.4	27.8	22.6	51.2
Rudimentary[2]	0.2	0.1	0.1	31.6	0.2	0.1	0.2	28.7
Finished[3]	94.1	73.0	78.6	20.1	93.1	71.9	77.1	20.1
Other	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wall material								
No walls	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.2
Natural[4]	0.7	1.8	1.5	1.3	0.9	1.8	1.6	0.7
Rudimentary[5]	24.6	64.1	53.7	96.1	25.6	62.7	53.7	96.8
Finished[6]	74.5	34.1	44.7	2.0	73.4	35.4	44.7	2.2
Other	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rooms used for sleeping								
One	49.0	38.4	41.2	35.9	33.3	25.3	27.3	25.1
Two	26.1	30.6	29.4	39.0	28.9	32.1	31.3	41.5
Three or more	24.9	31.0	29.4	25.1	37.8	42.6	41.4	33.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cooking fuel								
Electricity	1.5	0.5	0.7	0.0	1.5	0.4	0.7	0.0
LPG/cylinder gas/biogas	2.2	0.2	0.7	0.0	1.2	0.1	0.4	0.0
Kerosene	1.0	0.1	0.3	0.0	0.4	0.0	0.1	0.0
Charcoal	56.9	10.5	22.7	24.2	53.8	8.2	19.3	22.1
Wood	35.5	87.7	73.9	74.2	42.3	90.9	79.1	76.6
Straw/shrubs/grass	0.0	0.0	0.0	0.8	0.0	0.0	0.0	1.1
Agricultural crop	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2
Other fuel	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No food cooked in household	2.8	1.0	1.5	0.2	0.7	0.3	0.4	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage using solid fuel for cooking[7]	92.4	98.2	96.7	99.8	96.2	99.1	98.4	100.0
Percentage using clean fuel for cooking[8]	3.7	0.7	1.5	0.0	2.7	0.6	1.1	0.0
Number of households/ population	2,204	6,147	8,351	606	9,819	30,444	40,264	3,358

LPG = Liquefied petroleum gas
[1] Includes thatch/palm leaf and mud
[2] Includes rustic mat, wood planks, cardboard, and tarpaulin
[3] Includes iron sheets, wood, asbestos, tiles, concrete, and roofing shingles
[4] Includes thatched/straw and dirt
[5] Includes poles with mud, stone with mud, unburnt bricks with mud, plywood, cardboard, reused wood, unburnt bricks with plaster, and burnt bricks with mud
[6] Includes cement, stone with lime/cement, burnt bricks with cement, cement blocks, unburnt bricks with cement, wood planks/shingles
[7] Includes charcoal, wood, straw/shrubs/grass, and agricultural crop residue
[8] Includes electricity and LPG/cylinder gas/biogas

Table 2.4 Household possessions

Percentage of households possessing various household effects, means of transportation, agricultural land, and livestock/ farm animals according to residence, Uganda MIS 2018-19

Possession	Residence		Total	Refugee settlements
	Urban	Rural		
Household effects				
Radio	64.0	57.2	59.0	14.7
Television	49.9	8.1	19.1	1.5
Mobile phone	90.4	72.0	76.9	54.3
Non-mobile telephone	2.7	0.8	1.3	0.3
Computer	10.8	0.9	3.5	0.6
Refrigerator	16.8	1.1	5.2	0.4
Cassette/CD/DVD player	28.0	5.2	11.2	0.8
Table	72.5	63.4	65.8	29.3
Chair	80.7	81.6	81.3	61.2
Sofa set	47.2	16.6	24.7	0.1
Bed	91.3	80.6	83.4	45.4
Cupboard	44.2	18.1	25.0	0.4
Clock	23.2	8.7	12.5	0.8
Means of transport				
Bicycle	19.1	36.3	31.8	11.0
Animal drawn cart	0.7	0.5	0.6	0.0
Motorcycle/scooter	14.4	12.0	12.6	1.4
Car/truck	8.3	1.4	3.2	0.1
Boat with a motor	0.6	0.4	0.5	0.0
Boat without a motor	0.4	0.9	0.8	0.0
Ownership of agricultural land	35.6	68.0	59.5	7.1
Ownership of farm animals[1]	34.0	64.0	56.0	29.4
Number of households	2,204	6,147	8,351	606

[1] Local cattle, exotic/cross-breed cattle, horses, donkeys, mules, goats, sheep, chickens, other poultry, and/or pigs

Table 2.5 Wealth quintiles

Percent distribution of the de jure population by wealth quintiles, and the Gini coefficient, according to residence and region, Uganda MIS 2018-19

Residence/region	Wealth quintile					Total	Number of persons	Gini coefficient
	Lowest	Second	Middle	Fourth	Highest			
Residence								
Urban	6.3	8.3	10.6	18.7	56.0	100.0	9,819	0.21
Rural	24.4	23.8	23.0	20.5	8.4	100.0	30,444	0.26
Region								
South Buganda	1.5	9.4	18.3	24.8	46.0	100.0	6,227	0.23
North Buganda	12.4	13.6	27.8	29.5	16.7	100.0	6,555	0.29
Kampala	0.0	0.0	0.3	4.5	95.2	100.0	1,373	0.07
Busoga	11.3	24.7	28.7	22.8	12.5	100.0	3,609	0.27
Bukedi	24.2	32.6	23.4	11.7	8.2	100.0	1,976	0.28
Bugisu	12.1	31.9	22.3	18.7	15.1	100.0	2,496	0.42
Teso	58.2	13.5	8.1	8.9	11.2	100.0	2,139	0.37
Karamoja	93.9	4.6	0.6	0.6	0.3	100.0	935	0.24
Lango	50.0	19.6	11.4	9.4	9.7	100.0	2,185	0.33
Acholi	55.3	21.5	7.9	7.5	7.9	100.0	1,528	0.34
West Nile	46.4	28.1	10.5	8.8	6.2	100.0	2,675	0.26
Bunyoro	13.5	29.2	23.7	24.2	9.4	100.0	1,609	0.28
Tooro	6.0	30.4	33.6	22.3	7.8	100.0	2,271	0.30
Kigezi	5.1	33.7	30.5	23.4	7.3	100.0	1,665	0.27
Ankole	7.3	22.5	18.0	32.1	20.1	100.0	3,019	0.33
Total	20.0	20.0	20.0	20.0	20.0	100.0	40,264	0.28
Refugee settlements	62.2	31.6	3.3	2.1	0.8	100.0	3,358	0.31

Table 2.6 Household population by age, sex, and residence

Percent distribution of the de facto household population by various age groups and percentage of the de facto household population age 10-19, according to sex and residence, Uganda MIS 2018-19

	Urban			Rural			Total			Refugee settlements		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	16.9	15.7	16.3	17.6	16.6	17.1	17.5	16.4	16.9	20.7	19.9	20.3
5-9	16.7	14.7	15.7	18.3	17.5	17.9	17.9	16.8	17.4	22.0	18.7	20.2
10-14	14.0	14.0	14.0	15.8	17.1	16.4	15.4	16.3	15.8	19.6	16.7	18.0
15-19	11.5	10.1	10.8	11.5	8.9	10.2	11.5	9.2	10.3	13.0	8.9	10.8
20-24	7.5	9.2	8.4	6.4	7.0	6.7	6.6	7.6	7.1	6.2	6.2	6.2
25-29	7.6	9.4	8.5	4.9	5.9	5.4	5.5	6.8	6.1	3.1	6.7	5.0
30-34	6.1	6.4	6.3	4.6	5.3	4.9	4.9	5.6	5.2	4.5	5.7	5.1
35-39	5.2	5.3	5.3	4.5	4.4	4.4	4.6	4.6	4.6	3.2	4.8	4.1
40-44	4.0	3.5	3.7	3.8	3.6	3.7	3.8	3.6	3.7	2.4	3.2	2.8
45-49	3.2	2.4	2.8	3.5	2.6	3.1	3.5	2.5	3.0	1.9	1.4	1.6
50-54	2.2	3.2	2.7	2.6	3.6	3.1	2.5	3.5	3.0	0.9	2.3	1.7
55-59	1.7	1.8	1.7	2.0	1.8	1.9	1.9	1.8	1.9	0.7	1.4	1.1
60-64	1.4	1.2	1.3	1.4	1.8	1.6	1.4	1.7	1.5	0.9	1.7	1.3
65-69	0.9	0.8	0.8	1.0	1.2	1.1	1.0	1.1	1.0	0.7	0.7	0.7
70-74	0.4	0.8	0.6	0.9	1.2	1.0	0.8	1.1	0.9	0.1	1.0	0.6
75-79	0.4	0.5	0.4	0.5	0.6	0.5	0.5	0.6	0.5	0.0	0.5	0.2
80 +	0.4	0.9	0.7	0.8	1.1	0.9	0.7	1.0	0.9	0.3	0.3	0.3
Don't know	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Dependency age groups												
0-14	47.7	44.5	46.0	51.7	51.2	51.4	50.8	49.5	50.1	62.3	55.2	58.5
15-64	50.2	52.5	51.4	45.1	44.8	44.9	46.3	46.7	46.5	36.7	42.3	39.7
65+	2.1	3.0	2.5	3.2	4.0	3.6	2.9	3.8	3.4	1.0	2.5	1.8
Don't know	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Child and adult populations												
0-17	54.2	50.8	52.4	59.2	56.3	57.8	58.0	55.0	56.5	70.8	60.7	65.5
18+	45.8	49.1	47.5	40.8	43.7	42.2	42.0	45.0	43.5	29.2	39.3	34.5
Don't know	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Adolescents 10-19	25.5	24.1	24.8	27.2	25.9	26.6	26.8	25.5	26.2	32.6	25.6	28.9
Number of persons	4,658	5,014	9,672	15,136	15,254	30,390	19,794	20,267	40,062	1,569	1,764	3,332

Table 2.7 Household composition

Percent distribution of households by sex of head of household and by household size and mean size of households, according to residence, Uganda MIS 2018-19

	Residence			
Characteristic	Urban	Rural	Total	Refugee settlements
Household headship				
Male	68.1	73.0	71.7	39.6
Female	31.9	27.0	28.3	60.4
Total	100.0	100.0	100.0	100.0
Number of usual members				
1	15.6	12.8	13.6	7.6
2	11.4	9.0	9.7	8.1
3	15.5	11.8	12.8	7.5
4	12.8	13.9	13.6	12.3
5	11.1	13.4	12.8	17.4
6	12.1	12.2	12.2	14.6
7	8.8	8.8	8.8	9.1
8	5.1	7.1	6.6	9.0
9+	7.6	11.1	10.1	14.4
Total	100.0	100.0	100.0	100.0
Mean size of households	4.5	5.0	4.8	5.5
Number of households	2,204	6,147	8,351	606

Note: Table is based on de jure household members, i.e., usual residents.

Table 2.8 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, Uganda MIS 2018-19

Background characteristic	Number of women		
	Weighted percent	Weighted number	Unweighted number
Age			
15-19	22.9	1,884	1,883
20-24	19.3	1,586	1,703
25-29	16.7	1,372	1,393
30-34	14.2	1,172	1,165
35-39	11.4	941	887
40-44	9.1	750	698
45-49	6.4	526	502
Religion			
Anglican	32.7	2,695	2,739
Catholic	37.8	3,108	3,404
Muslim	12.0	987	786
Pentecostal/Born again/Evangelical	14.5	1,192	1,078
Seventh Day Adventist	1.8	145	116
Other	1.3	104	108
Residence			
Urban	28.7	2,364	2,155
Rural	71.3	5,867	6,076
Region			
South Buganda	17.1	1,409	704
North Buganda	14.5	1,198	469
Kampala	4.8	394	512
Busoga	8.0	656	422
Bukedi	4.3	354	421
Bugisu	6.4	523	465
Teso	5.3	434	574
Karamoja	2.1	169	397
Lango	5.6	462	676
Acholi	4.0	325	795
West Nile	6.5	539	565
Bunyoro	4.1	335	668
Tooro	5.3	438	634
Kigezi	4.2	345	453
Ankole	7.9	648	476
Education			
No education	11.8	972	1,203
Primary	52.1	4,290	4,404
Secondary	29.1	2,392	2,105
More than secondary	7.0	577	519
Wealth quintile			
Lowest	17.6	1,448	2,060
Second	18.8	1,545	1,673
Middle	18.3	1,505	1,376
Fourth	20.0	1,647	1,380
Highest	25.3	2,086	1,742
Total	100.0	8,231	8,231
Refugee settlements	na	637	637

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
na = Not applicable

Table 2.9 Educational attainment

Percent distribution of women age 15-49 by highest level of schooling attended or completed, and median years completed, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Highest level of schooling						Total	Median years completed	Number of women
	No education	Some primary	Completed primary[1]	Some secondary	Completed secondary[2]	More than secondary			
Age									
15-24	0.0	36.4	15.0	36.1	3.2	5.5	100.0	6.6	3,470
15-19	2.8	36.4	15.1	40.6	3.1	2.0	100.0	6.7	1,884
20-24	5.1	36.4	14.9	30.8	3.2	9.6	100.0	6.4	1,586
25-29	8.8	37.9	12.6	25.8	2.8	12.1	100.0	6.3	1,372
30-34	18.3	40.3	9.3	20.9	1.9	9.3	100.0	5.4	1,172
35-39	20.8	44.8	9.5	16.3	2.2	6.5	100.0	4.5	941
40-44	23.9	45.3	7.9	17.2	0.8	4.9	100.0	4.0	750
45-49	24.7	51.0	10.1	11.0	0.4	2.7	100.0	3.3	526
Residence									
Urban	6.6	25.6	8.5	38.5	5.5	15.3	100.0	8.4	2,364
Rural	13.9	45.7	13.7	21.9	1.2	3.7	100.0	5.2	5,867
Region									
South Buganda	6.8	25.5	12.8	37.0	6.9	11.0	100.0	8.1	1,409
North Buganda	8.7	45.3	7.9	31.1	1.9	5.1	100.0	5.7	1,198
Kampala	2.5	20.3	4.6	46.7	5.3	20.7	100.0	9.3	394
Busoga	14.3	43.2	12.1	26.2	0.7	3.6	100.0	5.5	656
Bukedi	11.0	48.8	17.8	18.5	0.8	3.1	100.0	5.1	354
Bugisu	4.9	38.7	14.7	32.0	1.8	7.9	100.0	6.5	523
Teso	8.0	42.0	19.5	21.3	2.0	7.2	100.0	5.6	434
Karamoja	73.0	20.2	2.7	3.8	0.0	0.3	100.0	0.0	169
Lango	14.5	44.9	18.7	16.1	0.6	5.3	100.0	5.1	462
Acholi	16.1	43.9	16.8	17.0	1.0	5.2	100.0	5.1	325
West Nile	19.7	54.4	11.8	10.4	0.0	3.7	100.0	3.9	539
Bunyoro	13.1	43.1	14.9	24.7	0.7	3.5	100.0	5.4	335
Tooro	11.7	47.6	12.2	24.8	0.1	3.5	100.0	5.6	438
Kigezi	13.8	49.6	12.5	18.3	1.1	4.7	100.0	5.2	345
Ankole	11.8	40.3	8.1	26.3	3.2	10.3	100.0	6.3	648
Wealth quintile									
Lowest	27.1	48.5	15.6	7.8	0.2	0.8	100.0	3.7	1,448
Second	15.5	52.5	14.3	16.5	0.1	1.2	100.0	4.7	1,545
Middle	10.7	50.1	13.1	23.0	0.3	2.7	100.0	5.4	1,505
Fourth	7.0	35.8	13.6	35.6	1.7	6.3	100.0	6.5	1,647
Highest	3.1	20.5	6.5	42.8	7.8	19.3	100.0	9.5	2,086
Total	11.8	39.9	12.2	26.6	2.4	7.0	100.0	5.9	8,231
Refugee settlements	42.4	38.0	8.1	9.4	0.8	1.3	100.0	2.0	637

[1] Completed 7th grade at the primary level
[2] Completed 6th grade at the secondary level

Table 2.10 Literacy

Percent distribution of women age 15-49 by level of schooling attended and level of literacy, and percentage literate, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Higher than secondary schooling	No schooling, primary or secondary school: Can read a whole sentence	Can read part of a sentence	Cannot read at all	No card with required language	Blind/ visually impaired	Total	Percentage literate[1]	Number of women
Age									
15-24	5.5	53.4	20.9	19.8	0.2	0.3	100.0	79.7	3,470
15-19	2.0	60.8	20.4	16.3	0.3	0.1	100.0	83.3	1,884
20-24	9.6	44.5	21.5	23.8	0.1	0.5	100.0	75.5	1,586
25-29	12.1	39.9	22.4	25.5	0.0	0.0	100.0	74.4	1,372
30-34	9.3	30.4	22.1	37.8	0.3	0.1	100.0	61.8	1,172
35-39	6.5	28.0	24.5	40.7	0.2	0.0	100.0	59.0	941
40-44	4.9	31.8	19.3	43.2	0.7	0.0	100.0	56.0	750
45-49	2.7	31.1	20.2	45.6	0.0	0.4	100.0	54.0	526
Residence									
Urban	15.3	53.2	16.8	14.3	0.3	0.1	100.0	85.3	2,364
Rural	3.7	36.9	23.4	35.6	0.2	0.2	100.0	64.0	5,867
Region									
South Buganda	11.0	56.5	20.7	11.8	0.0	0.0	100.0	88.2	1,409
North Buganda	5.1	36.8	29.6	27.4	0.3	0.8	100.0	71.5	1,198
Kampala	20.7	58.1	14.5	6.6	0.0	0.0	100.0	93.4	394
Busoga	3.6	31.2	25.5	39.2	0.0	0.6	100.0	60.2	656
Bukedi	3.1	28.1	26.6	42.0	0.2	0.0	100.0	57.8	354
Bugisu	7.9	46.6	18.4	27.1	0.0	0.0	100.0	72.9	523
Teso	7.2	36.8	22.2	33.8	0.0	0.0	100.0	66.2	434
Karamoja	0.3	5.0	6.7	87.9	0.0	0.0	100.0	12.1	169
Lango	5.3	35.6	24.8	34.3	0.0	0.0	100.0	65.7	462
Acholi	5.2	35.8	15.0	43.9	0.0	0.1	100.0	56.0	325
West Nile	3.7	23.1	16.5	54.0	2.6	0.0	100.0	43.4	539
Bunyoro	3.5	39.3	23.0	34.1	0.1	0.0	100.0	65.8	335
Tooro	3.5	48.3	23.0	25.3	0.0	0.0	100.0	74.7	438
Kigezi	4.7	42.6	25.4	27.3	0.0	0.0	100.0	72.7	345
Ankole	10.3	53.2	13.4	23.1	0.0	0.0	100.0	76.9	648
Wealth quintile									
Lowest	0.8	21.0	18.4	59.3	0.6	0.0	100.0	40.1	1,448
Second	1.2	31.9	26.5	40.1	0.2	0.0	100.0	59.6	1,545
Middle	2.7	38.8	27.3	30.9	0.0	0.2	100.0	68.8	1,505
Fourth	6.3	50.5	22.9	19.4	0.4	0.6	100.0	79.6	1,647
Highest	19.3	58.0	14.9	7.8	0.0	0.0	100.0	92.2	2,086
Total	7.0	41.6	21.5	29.5	0.2	0.2	100.0	70.1	8,231
Refugee settlements	1.3	13.5	12.6	62.8	9.7	0.1	100.0	27.5	637

[1] Refers to women who attended schooling higher than the secondary level and women who can read a whole sentence or part of a sentence

MALARIA PREVENTION 3

Key Findings

- ***Ownership of insecticide-treated nets (ITNs):*** 83% of households in Uganda own at least one ITN, and 54% of households have at least one ITN for every two people.
- ***Sources of ITNs:*** 93% of ITNs owned by households were obtained from distribution campaigns, 5% from routine distribution, and the rest from other sources, including shops/markets.
- ***Access to an ITN:*** Over 7 in 10 people (72%) have access to an ITN. This means that 72% of the country's population could sleep under an ITN if every ITN in a household were used by two people.
- ***Use of ITNs:*** 59% of the household population, 60% of children under age 5, and 65% of pregnant women slept under an ITN the night before the survey.
- ***Indoor residual spraying (IRS):*** 74% of households in districts designated for spraying were sprayed in the past 12 months.
- ***Intermittent preventive therapy (IPTp):*** Four in ten women with a pregnancy in the 2 years preceding the survey (41%) received at least 3 doses of sulfadoxine and pyrimethamine (Fansidar) to prevent malaria during pregnancy.

This chapter describes the population coverage rates of some key malaria control interventions in Uganda, including the ownership and use of insecticide-treated nets (ITNs), indoor residual spraying (IRS), and intermittent preventive treatment in pregnancy (IPTp). Malaria control efforts in Uganda focus on scale-up of these interventions to targeted populations.

The Uganda Malaria Reduction Strategic Plan 2014-2020 (UMRSP) was developed to provide a common framework to accelerate evidence-based malaria reduction interventions by the government, its development partners, the private sector, and all stakeholders for malaria prevention and treatment. The plan envisions universal coverage with ITNs through mass campaigns and maintenance through routine distribution. These campaigns primarily target vulnerable groups such as children under 5 and pregnant women. Additionally, the UMRSP highlights IPTp as a key intervention to prevent malaria in pregnancy.

3.1 OWNERSHIP OF INSECTICIDE-TREATED NETS

Ownership of insecticide-treated nets

Households that have at least one insecticide-treated net (ITN). An ITN is defined as a factory-treated net that does not require any further treatment.

Sample: Households

Full household ITN coverage

Percentage of households with at least one ITN for every two people.

Sample: Households

In surveys conducted prior to 2016, the definition of an ITN included nets that had been soaked/retreated with insecticides within the past 12 months. In the 2016 UDHS and the 2018-19 UMIS, questions were dropped on the retreatment of nets, since nets that require annual retreatment and the products used to do this are no longer distributed. As a result, the distinction between ITNs and long-lasting insecticide-treated nets (LLIN) is no longer meaningful.

ITNs provide protection against mosquito bites and thus reduce the transmission of malaria parasites. Additionally, ITNs repel and kill mosquitoes. By reducing the vector population, ITNs help to reduce malaria risk at the individual level as well as at the community level when high coverage is achieved. The distribution and use of ITNs is one of the central interventions for preventing malaria infection in Uganda. The UMRSP 2014-2020 aims to provide enough ITNs to cover all household members. This indicator is operationalised as one ITN for every two household members. Note that the last mass ITN distribution campaign in Uganda took place between March 2017 and March 2018.

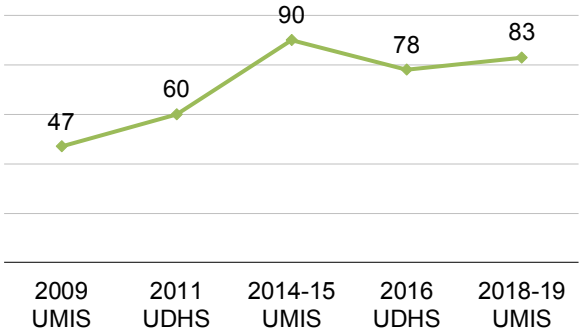
The 2018-19 UMIS revealed that 83% of households in Uganda own at least one ITN. The UMRSP states that by 2020 100% of households will have at least one ITN for every two people. In the 2018-19 UMIS, 54% of households had at least one ITN for every two people in the household (**Table 3.1**).

Trends:

- The percentage of households that own at least one ITN increased from 47% in the 2009 UMIS to 90% in the 2014-15 UMIS, dropped to 78% in the 2016 UDHS and increased again to 83% in the 2018-2019 UMIS (**Figure 3.1**).
- The percentage of households with at least one ITN for every two persons who stayed in the household the night before the survey increased from 16% in the 2009 UMIS to 62% in the 2014-2015, dropped to 51% in the 2016 UDHS and then increased again to 54% in the 2018-2019 UMIS.

Figure 3.1 **Trends in ITN ownership**

Percentage of households owning at least one insecticide-treated net (ITN)



Note: The definition of an ITN in surveys conducted prior to 2016 included nets that had been soaked with insecticides within the past 12 months.

Patterns by background characteristics

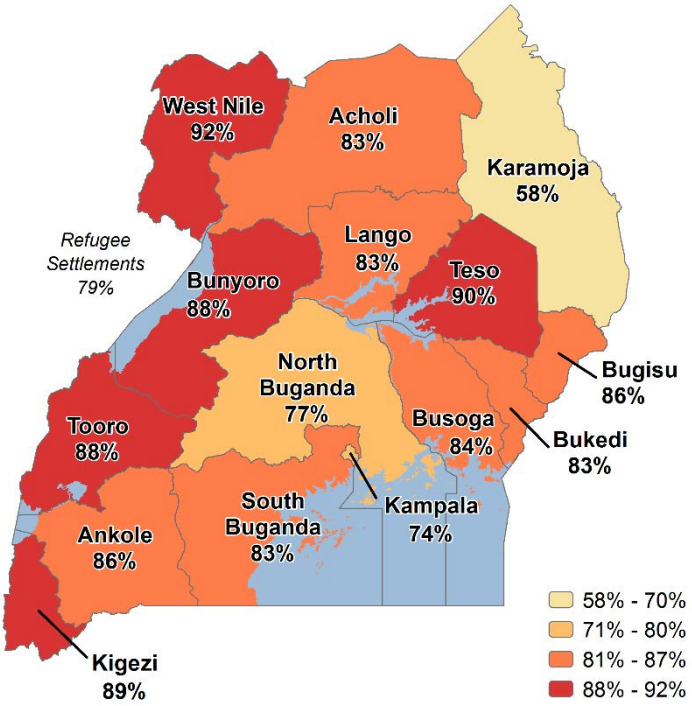
- The percentage of households with at least one ITN generally increases as household wealth increases, from 75% in the lowest wealth quintile to 89% in the fourth wealth quintile (**Figure 3.2**).
- The percentage of households with at least one ITN is highest in West Nile (92%) and lowest in Karamoja (58%) (**Figure 3.3**).
- A higher percentage of households in urban areas have at least one ITN for every two persons who stayed in the household the night before the survey (59%) compared with households in rural areas (52%) (**Table 3.1**).

Figure 3.2 ITN ownership by wealth

Percentage of households with at least one ITN

Figure 3.3 ITN ownership by region

Percentage of households with at least one ITN

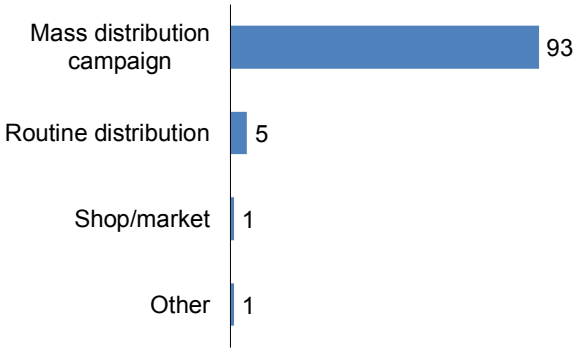


Source of nets

The majority of ITNs (93%) come from mass distribution campaigns. Five percent come from routine distribution (antenatal care, immunisation visits, and government health facilities), 1% from shop/markets, and another 1% from other sources including private health facility, private not-for-profit (PNFP)/non-profit organisation (NGO), pharmacy, community health worker, religious institution, and hawker (**Figure 3.4** and **Table 3.2**).

***Figure 3.4* Source of nets**

Percent distribution of ITNs in interviewed households



3.2 HOUSEHOLD ACCESS AND USE OF ITNS

Access to an ITN

Percentage of population that could sleep under an ITN if each ITN in the household were used by up to two people.

Sample: De facto household population

Use of ITNs

Percentage of population that slept under an ITN the night before the survey.

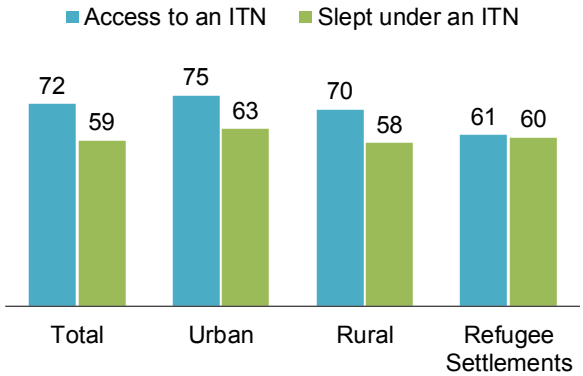
Sample: De facto household population

Access to an ITN is measured by the proportion of the population that could sleep under an ITN if each ITN in the household were used by up to two people. Comparing ITN access and ITN use indicators can help programmes identify if there is a behavioural gap where available ITNs are not being used. If the difference among these indicators is substantial, the programme may need to focus on behaviour change and how to identify the main drivers or barriers to ITN use to design appropriate interventions. This analysis helps National Malaria Control Division (NMCD) determine whether they need to achieve higher ITN coverage, promote ITN use, or both.

Seventy-two percent of the household population in Uganda have access to an ITN, but only 59% were reported to have slept under an ITN the night before the survey (**Table 3.4** and **Table 3.5**). Comparing these two population-level indicators, it is evident that ITN access and ITN use differ at the population level. The difference between access and use of ITNs is the same in rural and urban households (12 percentage points) (**Figure 3.5**). There is a negligible difference in the refugee settlements between the household population that has access to an ITN (61%) and the population that slept under an ITN the night before the survey (60%) (**Figure 3.5**) Overall, 74% of all existing ITNs were used by the household population the night before the survey, while the refugee settlement household population used 83% of the existing ITNs the night before the survey (**Table 3.6**).

***Figure 3.5* Access to and use of ITNs**

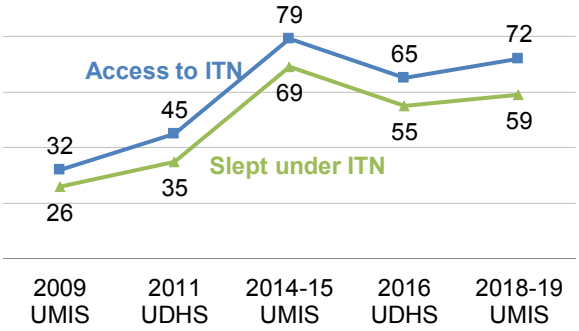
Percentage of the household population with access to an ITN and who slept under an ITN the night before the survey



Trends: The percentage of the household population with access to an ITN increased from 32% in the 2009 UMIS to 79% in the 2014-2015 UMIS, decreased to 65% in the 2016 UDHS, and increased to 72% in the 2018-2019 UMIS. The percentage of the household population that slept under an ITN the night before the survey increased from 26% in the 2009 UMIS to 69% in the 2014-2015 UMIS, but decreased to 55% in the 2016 UDHS and increased to 59% in the 2018-2019 UMIS (**Figure 3.6**). The difference between ITN access and ITN use was 10 percentage points in the 2016 UDHS but has increased to 13 percentage points in the 2018-19 UMIS.

Figure 3.6 Trends in ITN access and use

Percentage of the household population that has access to an ITN and percentage of the population that slept under an ITN the night before the survey



Note: The definition of an ITN in surveys conducted prior to 2016 included nets that had been soaked with insecticides within the past 12 months.

Patterns by background characteristics

- The population in urban areas has a slightly higher access to ITNs (75%) compared with the population living in rural areas (70%) (**Table 3.4**).
- ITN access ranges from 41% in Karamoja to 79% in Ankole (**Figure 3.7**)
- ITN use ranges from 28% in Karamoja to 70% in Bugisu (**Figure 3.8**)
- Among all regions, the difference between ITN access and ITN use is largest in Kigezi (20 percentage points) and the lowest in Bugisu (4 percentage points).

Figure 3.7 ITN access by region

Percentage of the household population that could sleep under an ITN if each ITN in the household were used by up to 2 people

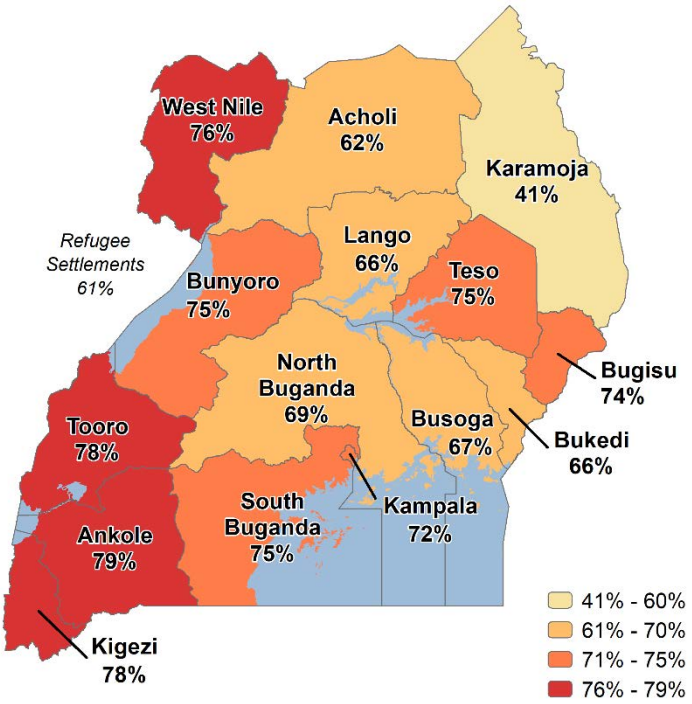
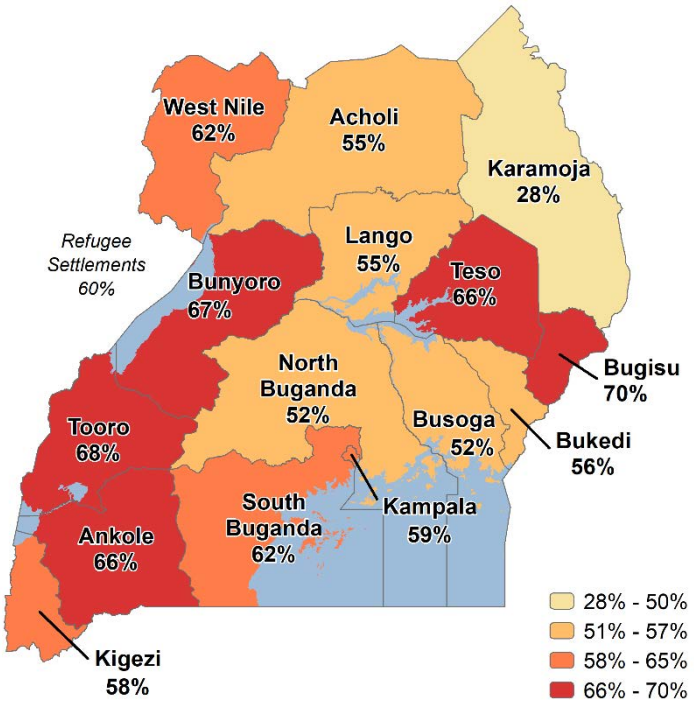


Figure 3.8 ITN use by household population by region

Percentage of the household population that slept under an ITN the previous night



3.3 Reasons Mosquito Nets Were Not Used

Table 3.7 presents reasons why mosquito nets were not used the night before the survey. This information is important to the NMCD for identifying barriers to net usage. Overall, 25% of mosquito nets in households were not used while sleeping the night before the survey.

By region, the proportion of nets that were not used ranges from 19% in Tooro to 47% in Karamoja. A slightly larger percentage of nets in rural households were not used (27%) than in urban households (22%). The main reasons given for not using a net for sleeping the night before the survey were saving/keeping the net to replace another net (34%), usual user did not sleep there (16%), and net too old (12%). Other reasons for non-use included hanging, such as no place to hang (8%) and unable to hang (5%).

Trends: The percentage of mosquito nets not used for sleeping the night before the survey stayed the same between the 2014-15 UMIS and the 2018-19 UMIS (25% each).

3.4 Indoor Residual Spraying

Indoor residual spraying (IRS) is a vector control method recommended by WHO. In 2007, IRS was introduced in the Mid-North of Uganda using mostly pyrethroids and organochlorines. With rising vector resistance, the Ministry of Health switched to carbamates for IRS. Between 2010 and 2014, IRS was scaled up to cover 11 high-malaria-burden districts in the Mid-North: Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac, and Lamwo. These are classified as former IRS districts in **Table 3.8**. These districts were also included as part of an emergency spray campaign due to an upsurge of malaria in 2016-17.

In 2014, IRS shifted spraying from these 11 high-burden districts to 14 high-burden districts in the Mid-North, North East, Mid-Eastern, and East Central districts: Alebtong, Amolatar, Dokolo, Lira, Otuke,

Kaberamaido, Serere, Tororo, Pallisa, Koboko, Budaka, Butaleja, Namutumba, and Bugiri. These districts are tabulated as current IRS districts in **Table 3.8**.

It is important to note that because IRS spraying is not conducted across all of Uganda, the national total is not an accurate representation of this important malaria control intervention. Instead the results presented by current IRS districts is a better representation of the coverage of IRS in Uganda.

Table 3.8 shows that 10% of all households received IRS in the past 12 months. Eighty-four percent of households had at least one ITN and/or IRS in the past 12 months, while 59% of households had at least one ITN for every two persons and/or IRS in the past 12 months. Among households with IRS in the past 12 months, the majority of households were sprayed by a government programme or NGO (96%). The results are not comparable to the 2014-15 UMIS because the reference period for the 2014-15 survey questions about IRS was 6 months.

Patterns by background characteristics

- A higher percentage of households in rural areas (11%) than in urban areas (7%) are sprayed with IRS.
- Bukedi and Lango had the highest proportions of households sprayed with IRS (60% and 57%, respectively), while Bunyoro, North Buganda, West Nile, Ankole, and Karamoja had the lowest percentage of households sprayed with IRS (less than 1%).
- Among current IRS districts, 74% of households have been sprayed with IRS, while only 13% of households located in former IRS districts have been sprayed in the past 12 months.
- Among households sprayed with IRS in the past 12 months, more in urban areas (13%) than in rural areas (2%) have been sprayed by a private company.

3.5 Use of ITNs by Children and Pregnant Women

Natural immunity to malaria is acquired over time for those living in high malaria transmission areas such as Uganda (Doolan et al. 2009). Children under 5 are prone to severe malaria infection due to lack of acquired immunity. For about 6 months following birth, antibodies acquired from the mother during pregnancy protect the child, but this maternal immunity gradually disappears, after which the child starts to develop his or her own immunity to malaria. Age is an important factor in determining levels of acquired immunity to malaria. Acquired immunity does not prevent infection but rather protects against severe disease and death. Children living in high-endemic areas may experience episodes of malaria illness but usually do not suffer from severe, life-threatening conditions.

Malaria transmission in Uganda is stable, and adults usually acquire some degree of immunity; however, pregnancy suppresses immunity and women in their first pregnancies are at increased risk for severe malaria. Malaria in pregnancy is frequently associated with the development of anaemia, which interferes with the maternal-foetal blood exchange, and can lead to placental insufficiency, low-birth-weight infants, prematurity, foetal death, abortion, and stillbirth (Shulman and Dorman 2003).

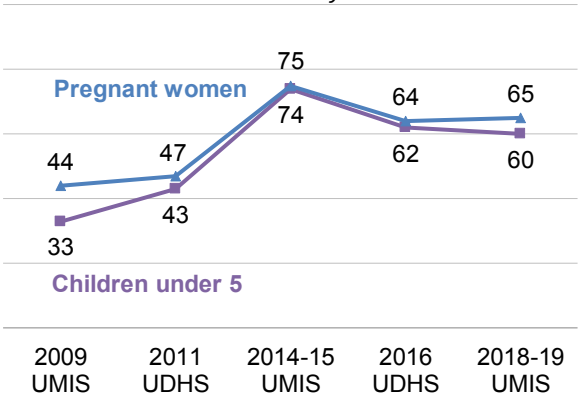
Table 3.9 and **Table 3.10** show the percentage of children under 5 and the percentage of pregnant women who slept under an ITN the night before the survey. Overall, 60% of children under age 5 in Uganda and 65% of pregnant women slept under an ITN the previous night. In households with at least one ITN, 69% of children under age 5 and 78% of pregnant women slept under an ITN the night before the survey.

Among refugee settlements 63% of both children under age 5 and pregnant women slept under an ITN the night before the survey.

Trends: ITN use among children under age 5 in households increased from 33% in 2009 to 74% in 2014-15. It then decreased, dropping to 60%, in 2018-19. The percentage of pregnant women who slept under an ITN the night before the survey also increased, from 44% in 2009 to a high of 75% in 2014-15, and then dropped off, to 65%, in 2018-19 (**Figure 3.9**).

Figure 3.9 Trends in use of ITNs by children and pregnant women

Percentage of children and pregnant women using an ITN the night before the survey



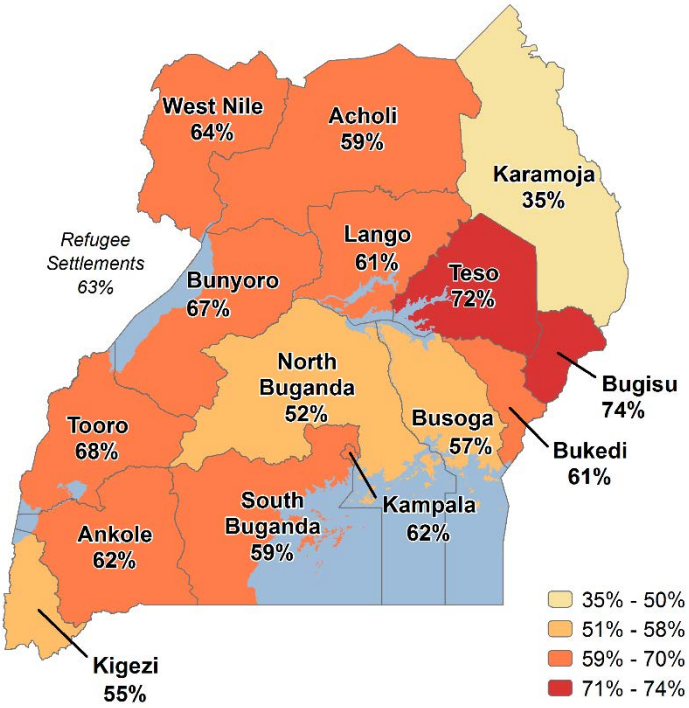
Note: The definition of an ITN in surveys conducted prior to 2016 included nets that had been soaked with insecticides within the past 12 months.

Patterns by background characteristics

- ITN use by children under age 5 ranges from 35% in Karamoja to 74% in Bugisu (**Figure 3.10**)
- The percentage of children under age 5 who slept under an ITN the previous night increases as household wealth increases, from 56% in the lowest quintile to 64% in the fourth wealth quintile.
- ITN use by pregnant women is slightly higher in urban areas (68%) than rural areas (65%).

Figure 3.10 ITN use by children under age 5 by region

Percentage of children under age 5 who slept under an ITN the previous night



3.6 MALARIA IN PREGNANCY

Intermittent preventive treatment (IPTp) during pregnancy (IPTp2+)
Percentage of women who took at least two doses of SP/Fansidar during their last pregnancy.
Sample: Women age 15-49 with a live birth in the 2 years before the survey

Intermittent preventive treatment (IPTp) during pregnancy (IPTp3+)
Percentage of women who took at least three doses of SP/Fansidar during their last pregnancy.
Sample: Women age 15-49 with a live birth in the 2 years before the survey

Malaria infection during pregnancy is a major public health problem in Uganda, with substantial risks for the mother, her foetus, and the neonate. The World Health Organization (WHO) recommends a package of interventions for reducing the negative health effects associated with malaria in pregnancy (MIP): prompt diagnosis and treatment of confirmed infection, use of LLINs, and IPTp (WHO 2017).

IPTp is a full therapeutic course of antimalarial medicine given to pregnant women at routine antenatal care visits to prevent malaria. IPTp helps prevent maternal malaria episodes, maternal and foetal anaemia, placental parasitaemia, low birth weight, and neonatal mortality.

Antenatal care

The 2018-19 UMIS assessed the use of antenatal care services for the last birth in the 5 years preceding the survey and IPTp usage for the last birth in the 2 years preceding the survey among women age 15-49. Overall, 95% of women received antenatal care from a skilled provider for their last birth in the past 5 years (**Table 3.11**). Eighty-one percent received care from a nurse or midwife, and 14% received care from a doctor. Two percent of women received no antenatal care.

In examining the distribution of women age 15-49 who had a live birth in the 5 years preceding the survey by number of ANC visits for the most recent live birth, 57% of women had four or more ANC visits followed by 38% of women who had two or three ANC visits. The largest percentage of women attended their first ANC visit between months 4 and 5 of pregnancy (47%). Among those who attended ANC, the median months pregnant at first visit was 4.6 (**Table 3.12**).

Among women who did not receive ANC during pregnancy for the most recent live birth, 29% cited that they *did not want to attend* as the reason for not seeking ANC (**Table 3.14**).

IPTp

Sulfadoxine-pyrimethamine (SP), also known as Fansidar, is the recommended drug for IPTp in Uganda. For over 10 years, the Ministry of Health has been implementing IPTp, defined as provision of at least two doses of SP/Fansidar to protect the mother and her child from malaria during routine antenatal care visits in the second and third trimesters of pregnancy (IPTp2+). In 2016, the NMCD adopted the WHO recommendation to administer one dose of SP/Fansidar at each antenatal care (ANC) visit after the first trimester, with at least 1 month between doses (WHO 2012a; WHO 2012b). The household survey indicator used to measure coverage of this intervention is the percentage of women with a live birth in the 2 years preceding the survey who received three or more doses of SP/Fansidar to prevent malaria during her most recent pregnancy (IPTp3+).

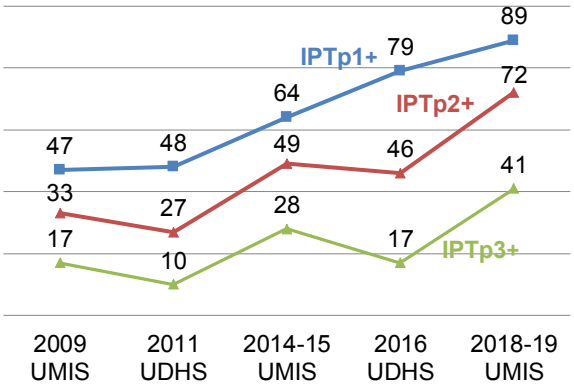
Eighty-nine percent of women with a live birth in the 2 years preceding the survey received one or more doses of SP/Fansidar to prevent malaria. Seventy-two percent of the women received two or more doses of SP/Fansidar, and 41% of the women received three or more doses of SP/Fansidar (**Table 3.13**).

Among women with a live birth in the 2 years preceding the survey who took SP/Fansidar only once during pregnancy, the most commonly cited reason for not taking SP/Fansidar more than once was that it was *not given* (42%) (**Table 3.14**).

Trends: The percentage of women receiving IPTp1+ increased from 47% in the 2009 UMIS to 89% in the 2018-19 UMIS. The percentage of women receiving two or more doses of SP/Fansidar for IPTp increased from 33% in the 2009 UMIS to 72% in the 2018-19 UMIS. Similarly, the percentage of women receiving three or more doses of SP/Fansidar for IPTp increased from 17% in the 2009 UMIS to 41% in the 2018-19 UMIS (**Figure 3.11**).

Figure 3.11 **Trends in IPTp**

Percentage of women with a live birth in the 2 years before the survey who received at least 1, 2, or 3 doses of SP/Fansidar



Patterns by background characteristics

- IPTp2+ coverage ranges from 63% in Kampala to 86% in Teso (**Figure 3.12**).
- IPTp3+ coverage ranges from 36% in Busoga and Southern Buganda to 52% in Kigezi (**Figure 3.13**).
- IPTp3+ coverage is higher among the refugee population (48%) than the national population (41%).

Figure 3.12 **IPTp 2+**

Percentage of women with a live birth in the 2 years before the survey who received at least 2 doses of SP/Fansidar

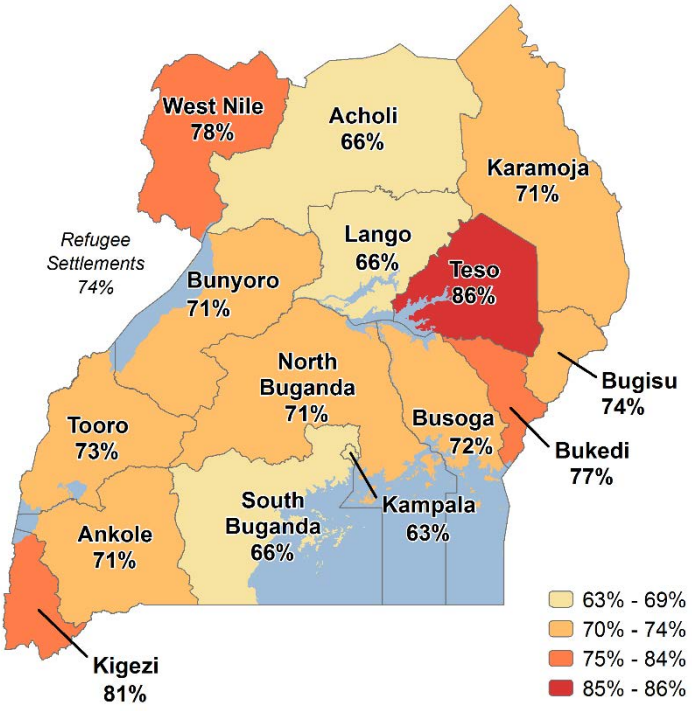
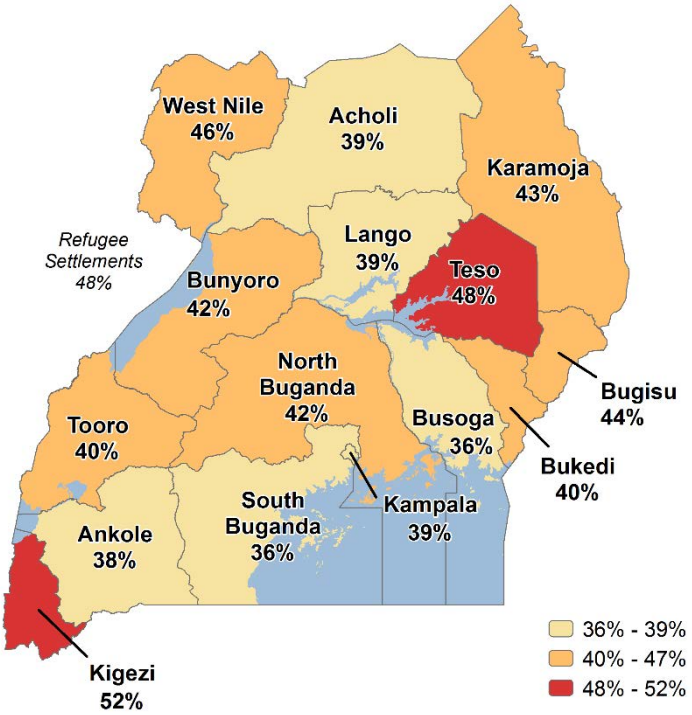


Figure 3.13 IPTp 3+

Percentage of women with a live birth in the 2 years before the survey who received at least 3 doses of SP/Fansidar



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- **Table 3.2 Source of mosquito nets**
- **Table 3.3.1 Access to an insecticide-treated net (ITN)**
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- **Table 3.4 Access to an ITN**
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- **Table 3.6 Use of existing ITNs**
- **Table 3.7 Reasons mosquito nets were not used the night before the survey**
- **Table 3.8 Indoor residual spraying against mosquitoes**
- **Table 3.9 Use of mosquito nets by children**
- **Table 3.10 Use of mosquito nets by pregnant women**
- **Table 3.11 Antenatal care**
- **Table 3.12 Number of antenatal care visits and timing of first visit**
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Table 3.1 Household possession of mosquito nets

Percentage of mosquito nets observed by the survey team; percentage of households with at least one mosquito net (treated or untreated) and insecticide-treated net (ITN); average number of nets and ITNs per household; and percentage of households with at least one net and ITN per two persons who stayed in the household last night, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage of nets that were observed	Number of nets	Percentage of households with at least one mosquito net		Average number of nets per household		Number of households	Percentage of households with at least one net for every two persons who stayed in the household last night		Number of households with at least one person who stayed in the household last night
			Any mosquito net	Insecticide-treated mosquito net (ITN)[1]	Any mosquito net	Insecticide-treated mosquito net (ITN)[1]		Any mosquito net	Insecticide-treated mosquito net (ITN)[1]	
Residence										
Urban	81.9	5,332	87.7	82.2	2.4	2.3	2,204	64.6	59.3	2,196
Rural	86.7	13,687	84.0	83.3	2.2	2.2	6,147	53.0	52.0	6,140
Region										
South Buganda	86.9	3,307	88.9	83.2	2.4	2.2	1,377	63.9	58.6	1,372
North Buganda	77.9	3,028	77.4	76.7	2.0	2.0	1,487	51.4	49.8	1,487
Kampala	68.0	770	82.1	73.9	2.2	2.0	354	67.7	59.2	354
Busoga	96.8	1,496	85.1	84.1	2.2	2.2	679	51.3	50.8	677
Bukedi	86.4	803	83.2	82.7	2.0	2.0	404	48.4	47.3	404
Bugisu	89.3	1,207	86.6	86.0	2.4	2.3	512	58.0	57.7	512
Teso	99.6	965	91.3	90.1	2.6	2.6	365	53.8	52.3	364
Karamoja	50.7	234	58.3	58.1	1.2	1.2	196	25.1	25.0	196
Lango	80.6	940	84.5	82.5	2.1	2.1	441	52.2	49.9	441
Acholi	86.5	585	85.4	83.0	2.1	2.0	279	47.9	45.5	278
West Nile	92.6	1,365	92.8	92.4	2.8	2.8	487	57.6	55.9	484
Bunyoro	92.2	786	89.1	87.6	2.5	2.4	313	55.6	54.8	311
Tooro	81.1	1,081	88.7	88.4	2.5	2.5	439	57.9	57.5	439
Kigezi	78.5	829	88.9	88.9	2.4	2.4	351	61.7	61.7	350
Ankole	85.5	1,622	87.5	86.2	2.4	2.4	667	63.4	62.0	667
Wealth quintile										
Lowest	87.5	2,930	75.4	74.9	1.7	1.7	1,722	42.7	42.3	1,719
Second	88.6	3,564	84.1	83.7	2.1	2.1	1,722	52.8	52.2	1,720
Middle	85.6	3,704	87.1	86.4	2.4	2.3	1,571	53.7	52.9	1,568
Fourth	85.5	4,225	90.2	89.3	2.7	2.6	1,580	63.8	62.3	1,574
Highest	81.1	4,597	88.7	81.5	2.6	2.4	1,757	67.5	60.4	1,755
Total	85.3	19,019	85.0	83.0	2.3	2.2	8,351	56.1	53.9	8,336
Refugee settlements	89.2	1,197	79.3	78.5	2.0	2.0	606	38.0	37.6	606

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.2 Source of mosquito nets

Percent distribution of mosquito nets by source of net, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Mass distribution campaign	ANC visit	Immunisation visit	Government health facility	Private health facility	PNFP/ NGO	Pharmacy	Shop/ market	Community health worker	Religious institution	Hawker	Other	Don't know	Total	Number of mosquito nets
Type of net															
ITN[1]	93.3	3.7	0.6	0.2	0.1	0.1	0.1	1.2	0.0	0.0	0.3	0.4	0.1	100.0	18,450
Other[2]	0.0	0.0	0.0	0.3	0.2	0.3	3.0	86.4	0.1	0.0	4.2	3.9	1.7	100.0	569
Residence															
Urban	86.2	2.5	0.3	0.2	0.1	0.2	0.6	8.1	0.0	0.0	0.9	0.6	0.2	100.0	5,332
Rural	92.2	4.0	0.7	0.1	0.0	0.0	0.1	2.1	0.0	0.0	0.2	0.5	0.1	100.0	13,687
Region															
South Buganda	87.5	3.0	0.5	0.1	0.0	0.0	0.6	7.3	0.0	0.0	0.6	0.4	0.0	100.0	3,307
North Buganda	90.3	4.4	0.6	0.3	0.0	0.1	0.1	3.7	0.0	0.0	0.2	0.3	0.0	100.0	3,028
Kampala	81.8	0.8	0.9	0.1	0.4	0.1	1.0	13.6	0.0	0.0	1.0	0.1	0.3	100.0	770
Busoga	95.5	2.1	0.1	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.2	100.0	1,496
Bukedi	95.1	2.9	0.4	0.1	0.0	0.2	0.0	1.0	0.0	0.0	0.3	0.0	0.0	100.0	803
Bugisu	92.3	2.8	0.2	0.2	0.1	0.5	0.0	2.2	0.0	0.0	0.8	0.9	0.1	100.0	1,207
Teso	91.0	3.2	0.9	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.6	0.8	0.0	100.0	965
Karamoja	88.4	6.2	5.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	100.0	234
Lango	89.6	5.0	0.6	0.2	0.3	0.2	0.5	3.0	0.0	0.0	0.0	0.5	0.1	100.0	940
Acholi	84.4	7.6	1.0	0.7	0.0	0.0	0.0	3.5	0.1	0.0	1.1	1.3	0.2	100.0	585
West Nile	84.3	8.9	1.7	0.1	0.2	0.0	0.0	3.2	0.0	0.1	0.2	0.7	0.6	100.0	1,365
Bunyoro	91.1	3.3	0.5	0.2	0.1	0.0	0.0	2.4	0.1	0.0	0.2	1.7	0.3	100.0	786
Tooro	97.3	1.5	0.1	0.0	0.0	0.1	0.1	0.5	0.0	0.0	0.0	0.4	0.0	100.0	1,081
Kigezi	93.8	3.2	0.6	0.0	0.0	0.0	0.1	1.8	0.0	0.0	0.1	0.4	0.0	100.0	829
Ankole	94.6	1.8	0.1	0.4	0.0	0.0	0.4	1.8	0.0	0.0	0.4	0.5	0.0	100.0	1,622
Wealth quintile															
Lowest	90.2	6.1	1.5	0.1	0.0	0.0	0.0	1.5	0.0	0.1	0.1	0.4	0.1	100.0	2,930
Second	93.7	3.8	0.5	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.6	0.2	100.0	3,564
Middle	93.6	3.2	0.6	0.3	0.0	0.0	0.0	1.5	0.0	0.0	0.3	0.5	0.0	100.0	3,704
Fourth	93.5	3.2	0.3	0.2	0.0	0.0	0.0	1.9	0.0	0.0	0.3	0.4	0.1	100.0	4,225
Highest	83.1	2.5	0.3	0.2	0.2	0.2	0.9	11.1	0.0	0.0	0.9	0.5	0.2	100.0	4,597
Total	90.5	3.6	0.6	0.2	0.1	0.1	0.2	3.8	0.0	0.0	0.4	0.5	0.1	100.0	19,019
Refugee settlements	93.1	3.0	0.3	0.1	0.1	0.5	0.0	2.3	0.0	0.0	0.4	0.4	0.0	100.0	1,197

ANC = Antenatal care
PNFP = Private not-for-profit
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Any net that is not an ITN

Table 3.3.1 Access to an insecticide-treated net (ITN)

Percent distribution of the de facto household population by number of ITNs the household owns, and percentage with access to an ITN, according to number of persons who stayed in the household the night before the survey, Uganda MIS 2018-19

	Number of persons who stayed in the household the night before the survey								
Number of ITNs[1]	1	2	3	4	5	6	7	8+	Total
0	36.9	25.7	15.6	13.8	11.4	11.4	8.8	11.5	13.0
1	46.8	34.7	23.9	16.0	12.2	8.5	6.6	5.2	11.9
2	11.0	27.4	38.2	35.2	28.4	23.2	17.9	14.5	22.7
3	3.8	6.9	16.7	22.2	27.4	29.0	32.2	22.4	23.6
4	1.2	3.1	3.6	8.7	11.6	18.2	19.2	19.9	14.7
5	0.3	1.0	1.5	2.2	5.3	4.7	8.9	12.2	6.9
6	0.0	1.0	0.2	1.2	3.3	3.7	3.6	6.6	3.8
7+	0.0	0.1	0.3	0.7	0.4	1.3	2.7	7.9	3.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,145	1,663	3,244	4,466	5,218	6,117	4,892	13,318	40,062
Percentage of the de facto population with access to an ITN[1,2]	63.1	74.3	76.4	78.2	75.6	75.2	74.2	64.2	71.5

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Percentage of the de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people

Table 3.3.2 Access to an insecticide-treated net (ITN) – Refugee settlements

Percent distribution of the de facto household population in refugee settlements by number of ITNs the household owns, according to number of persons who stayed in the household the night before the survey, Uganda MIS 2018-19

	Number of persons who stayed in the household the night before the survey								
Number of ITNs[1]	1	2	3	4	5	6	7	8+	Total
0	(32.5)	25.6	8.8	25.3	22.3	23.4	23.9	15.6	20.0
1	(61.6)	54.5	44.5	14.4	10.8	15.0	10.7	8.6	14.3
2	(5.0)	13.1	28.2	29.3	46.6	23.1	25.2	8.5	21.3
3	(0.9)	5.9	15.4	24.0	12.1	23.2	25.8	30.0	23.4
4	(0.0)	0.0	0.0	4.7	3.7	7.0	7.8	22.3	11.9
5	(0.0)	1.0	1.0	1.1	2.4	2.8	1.7	4.8	3.1
6	(0.0)	0.0	1.0	1.1	1.7	1.5	0.8	6.1	3.2
7+	(0.0)	0.0	1.2	0.0	0.4	4.0	4.1	4.0	2.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	48	104	131	310	517	522	367	1,334	3,332
Percentage of the de facto population with access to an ITN[1,2]	(67.5)	74.4	76.4	67.5	61.9	58.9	54.0	58.9	60.9

Note: Figures in parentheses are based on 25-49 unweighted cases.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Percentage of the de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people

Table 3.4 Access to an ITN

Percentage of the de facto population with access to an ITN in the household, by background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage of the de facto population with access to an ITN[1,2]	Number of persons
Residence		
Urban	75.0	9,672
Rural	70.4	30,390
Region		
South Buganda	75.4	6,139
North Buganda	68.5	6,677
Kampala	72.2	1,319
Busoga	66.8	3,581
Bukedi	65.7	1,958
Bugisu	73.6	2,495
Teso	74.8	2,105
Karamoja	40.6	923
Lango	65.7	2,164
Acholi	61.7	1,502
West Nile	76.0	2,670
Bunyoro	75.2	1,586
Tooro	78.2	2,281
Kigezi	77.9	1,648
Ankole	79.3	3,013
Wealth quintile		
Lowest	60.2	7,912
Second	69.8	8,029
Middle	72.7	8,090
Fourth	79.8	8,010
Highest	75.0	8,020
Total	71.5	40,062
Refugee settlements	60.9	3,332

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Percentage of the de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people

Table 3.5 Use of mosquito nets by persons in the household

Percentage of the de facto household population who slept the night before the survey under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN); and among the de facto household population in households with at least one ITN, percentage who slept under an ITN the night before the survey, according to background characteristics, Uganda MIS 2018-19

	Household population		Household population in households with at least one ITN[1]		
Background characteristic	Percentage who slept under any mosquito net last night	Percentage who slept under an ITN[1] last night	Number of persons	Percentage who slept under an ITN[1] last night	Number of persons
Age					
<5	62.1	60.3	6,836	68.7	5,998
5-14	53.9	53.0	13,247	60.4	11,619
15-34	61.3	58.8	11,534	69.0	9,829
35-49	71.3	69.2	4,536	79.0	3,973
50+	69.0	67.5	3,902	77.1	3,415
Don't know	*	*	6	*	5
Sex					
Male	58.6	56.9	19,794	65.8	17,122
Female	63.1	61.3	20,267	70.2	17,717
Residence					
Urban	67.4	62.6	9,672	72.0	8,413
Rural	58.7	58.0	30,390	66.7	26,426
Region					
South Buganda	67.6	62.4	6,139	71.1	5,389
North Buganda	53.1	52.4	6,677	62.9	5,559
Kampala	66.1	58.8	1,319	73.1	1,061
Busoga	52.5	51.7	3,581	59.3	3,127
Bukedi	56.5	56.0	1,958	66.2	1,656
Bugisu	70.0	69.7	2,495	78.8	2,206
Teso	67.3	66.4	2,105	71.0	1,966
Karamoja	28.3	28.2	923	47.5	549
Lango	57.1	55.4	2,164	66.5	1,803
Acholi	56.1	54.5	1,502	65.0	1,259
West Nile	63.1	62.3	2,670	66.3	2,510
Bunyoro	68.4	66.9	1,586	74.1	1,431
Tooro	68.1	67.8	2,281	74.1	2,086
Kigezi	58.6	58.4	1,648	64.8	1,486
Ankole	67.3	66.2	3,013	72.6	2,749
Wealth quintile					
Lowest	52.3	51.8	7,912	65.6	6,254
Second	59.6	59.2	8,029	68.3	6,965
Middle	60.1	59.6	8,090	66.6	7,238
Fourth	63.2	62.4	8,010	67.3	7,422
Highest	68.9	62.7	8,020	72.2	6,960
Total	60.8	59.2	40,062	68.0	34,839
Refugee settlements	60.4	60.1	3,332	75.1	2,666

Note: An asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.6 Use of existing ITNs

Percentage of insecticide-treated nets (ITNs) that were used by anyone the night before the survey, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage of existing ITNs[1] used last night	Number of ITNs[1]
Residence		
Urban	76.4	4,985
Rural	73.5	13,465
Region		
South Buganda	79.0	3,071
North Buganda	70.1	2,940
Kampala	75.5	693
Busoga	74.8	1,478
Bukedi	74.3	798
Bugisu	76.2	1,200
Teso	80.5	947
Karamoja	51.9	233
Lango	77.8	912
Acholi	79.6	567
West Nile	64.0	1,346
Bunyoro	75.6	765
Tooro	80.7	1,076
Kigezi	65.0	828
Ankole	74.8	1,596
Wealth quintile		
Lowest	73.1	2,898
Second	72.7	3,534
Middle	73.9	3,664
Fourth	72.6	4,165
Highest	78.5	4,189
Total	74.3	18,450
Refugee settlements	83.0	1,189

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.7 Reasons mosquito nets were not used the night before the survey

Percentage of mosquito nets that were not used by anyone the night before the survey, and among the nets that were not used, percentage not used for various reasons, according to background characteristics, Uganda MIS 2018-19

			Reason(s) each net was not used last night													
Background characteristic	Percentage of nets not used last night	Number of mosquito nets	Too hot	Don't like smell	No mosquitoes	Net too old/too many holes	Unable to hang	No place to hang	Chemicals not safe	Saving for rainy season	Saving to replace other net	Material too hard/ rough	Usual user did not sleep here	Other	Don't know	Number of existing nets not used last night
Type of net																
ITN[1]	25.4	18,450	10.2	1.6	3.9	11.9	4.5	7.4	1.9	0.8	34.0	2.7	15.7	9.2	0.4	4,693
Other[2]	21.1	569	4.9	0.0	4.5	8.2	3.8	11.5	2.3	0.5	26.2	0.0	35.3	4.6	1.2	120
Residence																
Urban	22.4	5,332	11.4	1.9	2.7	7.8	4.1	6.8	1.7	0.5	33.1	3.1	23.0	6.9	0.3	1,192
Rural	26.5	13,687	9.7	1.4	4.3	13.1	4.6	7.7	1.9	0.9	34.1	2.5	14.0	9.8	0.5	3,622
Region																
South Buganda	19.9	3,307	10.1	3.1	2.2	4.2	5.9	11.5	2.4	0.2	22.7	11.8	24.8	5.2	0.5	658
North Buganda	30.5	3,028	13.0	0.8	1.8	7.3	3.6	8.9	3.2	0.5	35.8	0.8	11.4	15.9	0.1	923
Kampala	22.6	770	15.8	1.4	6.1	4.6	1.3	6.4	2.1	0.4	23.4	10.7	21.6	11.8	0.0	174
Busoga	24.7	1,496	11.3	1.0	5.2	27.4	2.6	4.8	0.4	0.0	18.4	0.4	15.0	11.6	2.5	369
Bukedi	25.4	803	15.6	0.2	9.0	32.0	1.4	1.8	0.5	0.0	23.7	0.7	10.8	5.8	0.0	204
Bugisu	23.8	1,207	2.0	0.0	0.8	13.5	0.0	3.7	1.3	0.6	56.7	0.2	12.2	9.5	0.8	287
Teso	19.6	965	11.7	1.5	3.8	17.0	5.8	0.8	0.7	0.0	30.1	0.0	24.0	7.4	0.0	189
Karamoja	46.5	234	4.0	1.0	4.4	62.3	0.0	0.0	0.5	5.8	21.6	1.2	2.5	1.3	0.0	109
Lango	21.6	940	7.6	0.5	4.7	7.1	5.0	2.6	1.0	0.0	32.8	0.5	25.1	14.1	0.2	203
Acholi	19.8	585	5.6	1.5	2.6	15.2	2.7	6.8	0.7	0.7	40.1	1.3	18.4	8.3	0.0	116
West Nile	35.9	1,365	12.8	1.0	7.1	11.9	2.6	8.3	2.7	2.3	49.7	0.2	9.2	5.4	0.2	491
Bunyoro	24.1	786	5.9	1.4	3.1	8.8	3.9	10.9	1.7	0.6	41.3	0.8	18.8	6.2	0.0	189
Tooro	19.3	1,081	7.4	0.0	7.0	8.5	5.8	6.6	0.6	1.2	33.2	0.7	23.0	10.5	0.0	209
Kigezi	34.9	829	5.0	2.5	4.0	6.9	17.6	19.1	0.5	0.0	21.5	3.4	14.6	10.3	0.5	290
Ankole	24.9	1,622	10.3	4.5	3.9	4.1	5.5	3.5	2.7	1.9	45.1	1.0	17.6	2.3	0.3	404
Wealth quintile																
Lowest	26.8	2,930	9.7	0.9	4.8	19.8	2.8	8.0	3.3	1.4	34.9	0.4	10.7	9.0	0.0	786
Second	27.1	3,564	9.3	1.1	4.7	13.5	6.8	8.2	1.7	1.3	35.3	2.7	11.0	7.1	0.6	968
Middle	25.9	3,704	8.4	0.7	4.5	13.0	5.8	6.6	1.3	0.8	36.1	3.1	13.8	10.5	0.7	960
Fourth	26.9	4,225	12.0	1.9	2.6	9.3	2.6	6.8	1.2	0.4	33.0	2.9	19.1	10.3	0.3	1,136
Highest	21.0	4,597	10.7	2.9	3.3	5.4	4.4	8.0	2.2	0.3	30.2	3.7	24.9	8.2	0.4	964
Total	25.3	19,019	10.1	1.5	3.9	11.8	4.5	7.5	1.9	0.8	33.8	2.7	16.2	9.1	0.4	4,814
Refugee settlements	17.1	1,197	3.4	2.9	2.5	13.4	3.1	7.4	0.8	0.7	43.7	0.8	23.3	4.9	0.0	205

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Any net that is not an ITN

Table 3.8 Indoor residual spraying against mosquitoes

Percentage of households in which someone has come into the dwelling to spray the interior walls against mosquitoes (IRS) in the past 12 months, the percentage of households with at least one ITN and/or IRS in the past 12 months, and the percentage of households with at least one ITN for every two persons and/or IRS in the past 12 months; among households with IRS in the past 12 months, percentage of households sprayed by a government programme or non-governmental organisation (NGO) and the percentage paying for IRS; and percentage of the de jure household population whose dwelling had IRS in the past 12 months, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage of households with IRS[3] in the past 12 months	Percentage of households with at least one ITN[4] and/or IRS in the past 12 months	Percentage of households with at least one ITN for every 2 persons and/or IRS in the past 12 months	Number of households	Among households with IRS in the past 12 months			Number of households with IRS in the past 12 months	Percentage of usual household residents whose dwelling had IRS in the past 12 months	Number of persons
					Percentage sprayed by a government programme or NGO	Percentage sprayed by a private company	Percentage paying for IRS			
Residence										
Urban	7.2	83.2	62.0	2,204	87.3	12.5	11.4	160	7.1	9,819
Rural	11.1	84.6	57.5	6,147	98.3	1.9	4.2	682	12.3	30,444
Region										
South Buganda	1.3	83.4	59.0	1,377	*	*	*	17	1.0	6,227
North Buganda	0.2	76.9	49.9	1,487	*	*	*	3	0.1	6,555
Kampala	3.4	74.7	60.4	354	*	*	*	12	2.9	1,373
Busoga	11.6	86.7	57.5	679	97.7	2.3	9.6	79	11.2	3,609
Bukedi	60.0	89.3	78.0	404	100.0	0.5	2.8	242	62.7	1,976
Bugisu	6.1	87.2	60.4	512	*	*	*	32	7.7	2,496
Teso	39.1	91.0	68.5	365	98.9	1.1	2.3	143	42.3	2,139
Karamoja	0.7	58.4	25.7	196	*	*	*	1	1.1	935
Lango	57.2	89.7	76.7	441	99.6	0.4	1.3	252	58.1	2,185
Acholi	14.4	84.7	52.9	279	100.0	0.0	6.8	40	15.4	1,528
West Nile	0.7	92.4	56.1	487	*	*	*	3	0.7	2,675
Bunyoro	0.2	87.7	54.5	313	*	*	*	1	0.4	1,609
Tooro	1.8	88.8	58.3	439	*	*	*	8	1.8	2,271
Kigezi	1.2	89.2	62.2	351	*	*	*	4	1.3	1,665
Ankole	0.7	86.5	62.2	667	*	*	*	4	0.2	3,019
Special areas										
Current IRS districts[1]	74.1	93.5	86.7	829	99.7	0.5	2.2	614	75.4	4,298
Former IRS districts[2]	12.8	81.4	49.0	432	100.0	0.0	7.0	55	13.4	2,362
Wealth quintile										
Lowest	18.7	77.5	52.2	1,722	99.8	0.6	2.4	321	20.4	8,053
Second	11.0	84.9	57.5	1,722	98.6	1.4	3.0	190	13.4	8,051
Middle	8.4	87.5	57.0	1,571	95.5	4.5	9.4	132	9.7	8,044
Fourth	7.0	89.9	64.9	1,580	95.5	4.5	4.1	111	6.8	8,067
Highest	5.0	82.2	62.2	1,757	79.9	19.7	18.6	89	5.1	8,050
Total	10.1	84.2	58.7	8,351	96.2	3.9	5.6	842	11.1	40,264
Refugee settlements	0.0	78.5	37.6	606	*	*	*	0	0.0	3,358

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
[1] Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba, and Paliisa districts
[2] Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac, and Lamwo districts
[3] Indoor residual spraying (IRS) is limited to spraying conducted by a government, private, or non-governmental organisation.
[4] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.9 Use of mosquito nets by children

Percentage of children under age 5 who, the night before the survey, slept under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN); and among children under age 5 in households with at least one ITN, percentage who slept under an ITN the night before the survey, according to background characteristics, Uganda MIS 2018-19

	Children under age 5 in all households			Children under age 5 in households with at least one ITN[1]	
Background characteristic	Percentage who slept under any mosquito net last night	Percentage who slept under an ITN[1] last night	Number of children	Percentage who slept under an ITN[1] last night	Number of children
Age in months					
<12	68.4	65.4	1,359	75.2	1,182
12-23	64.5	62.4	1,273	71.5	1,112
24-35	59.5	58.6	1,344	66.0	1,193
36-47	58.7	57.4	1,439	66.2	1,248
48-59	59.7	58.0	1,420	65.1	1,264
Sex					
Male	61.7	59.5	3,463	68.2	3,022
Female	62.5	61.1	3,373	69.2	2,976
Residence					
Urban	68.2	63.0	1,592	72.6	1,382
Rural	60.2	59.5	5,243	67.5	4,616
Region					
South Buganda	64.8	58.5	1,004	67.5	870
North Buganda	53.4	52.4	1,088	60.4	944
Kampala	71.3	61.7	201	74.7	166
Busoga	57.6	57.3	667	65.1	587
Bukedi	61.5	61.3	364	69.9	319
Bugisu	74.4	74.4	435	81.5	397
Teso	72.6	71.9	395	76.6	371
Karamoja	35.0	35.0	219	57.4	133
Lango	62.3	61.1	340	74.7	278
Acholi	60.3	58.6	264	69.1	224
West Nile	65.2	64.2	467	68.9	435
Bunyoro	68.4	67.0	314	73.9	285
Tooro	69.0	68.3	390	74.1	360
Kigezi	55.7	55.1	272	62.1	242
Ankole	63.2	62.3	417	67.0	387
Wealth quintile					
Lowest	56.6	56.0	1,598	69.6	1,287
Second	59.4	58.9	1,476	67.2	1,293
Middle	62.4	61.7	1,350	67.3	1,236
Fourth	64.5	63.6	1,241	67.3	1,172
Highest	70.0	62.7	1,171	72.8	1,009
Total	62.1	60.3	6,836	68.7	5,998
Refugee settlements	63.5	63.4	682	78.4	551

Note: Table is based on children who stayed in the household the night before the interview.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.10 Use of mosquito nets by pregnant women

Percentage of pregnant women age 15-49 who, the night before the survey, slept under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN); and among pregnant women age 15-49 in households with at least one ITN, percentage who slept under an ITN the night before the survey, according to background characteristics, Uganda MIS 2018-19

	Among pregnant women age 15-49 in all households			Among pregnant women age 15-49 in households with at least one ITN[1]	
Background characteristic	Percentage who slept under any mosquito net last night	Percentage who slept under an ITN[1] last night	Number of pregnant women	Percentage who slept under an ITN[1] last night	Number of pregnant women
Residence					
Urban	75.2	67.9	140	80.3	118
Rural	65.3	64.7	494	76.7	416
Region					
South Buganda	(73.3)	(66.6)	100	(78.6)	85
North Buganda	(39.3)	(37.4)	97	(43.9)	83
Kampala	*	*	12	*	9
Busoga	(69.6)	(69.6)	54	(80.6)	46
Bukedi	(84.1)	(84.1)	27	(94.4)	24
Bugisu	(66.1)	(66.1)	32	*	22
Teso	(72.6)	(70.0)	36	(78.3)	32
Karamoja	36.8	36.8	23	(62.8)	14
Lango	73.7	73.7	36	(89.4)	30
Acholi	66.8	65.6	24	(80.9)	20
West Nile	82.0	81.1	60	86.6	56
Bunyoro	80.1	80.1	31	89.6	28
Tooro	84.7	84.7	37	94.8	33
Kigezi	(53.1)	(53.1)	28	(63.7)	23
Ankole	(82.2)	(73.4)	36	*	29
Education					
No education	59.1	59.1	58	77.0	45
Primary	67.7	66.8	405	76.5	354
Secondary	69.5	64.7	144	81.6	114
More than secondary	(72.8)	(61.4)	27	(73.6)	22
Wealth quintile					
Lowest	72.1	71.2	140	86.5	115
Second	70.5	70.1	137	83.2	115
Middle	60.3	60.3	133	72.3	111
Fourth	61.2	61.0	127	67.1	115
Highest	74.7	63.1	96	78.3	77
Total	67.5	65.4	633	77.5	534
Refugee settlements	63.2	63.2	66	(85.8)	49

Note: Table is based on women who stayed in the household the night before the interview. Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.11 Antenatal care

Percent distribution of women age 15-49 who had a live birth in the 5 years preceding the survey by antenatal care (ANC) provider during pregnancy for the most recent birth and the percentage receiving antenatal care from a skilled provider for the most recent birth, according to background characteristics, Uganda MIS 2018-19

	Antenatal care provider										
Background characteristic	Doctor	Nurse/ midwife	Medical assistant/ clinical officer	Nursing aide/ assistant	Community/ village health worker	Tradi-tional birth attendant	Other	No ANC	Total	Percentage receiving antenatal care from a skilled provider[1]	Number of women
Age at birth											
<20	10.7	81.8	1.5	2.7	0.7	0.0	0.0	2.6	100.0	94.0	615
20-34	14.2	80.9	1.0	1.7	0.4	0.3	0.0	1.5	100.0	96.1	2,924
35-49	13.0	77.5	1.0	5.8	0.2	0.0	0.0	2.4	100.0	91.6	679
Birth order											
1	15.5	79.4	0.8	2.1	0.7	0.0	0.0	1.6	100.0	95.6	817
2-3	14.5	80.3	1.0	1.4	0.4	0.2	0.0	2.3	100.0	95.7	1,445
4-5	14.3	77.5	1.4	5.1	0.5	0.2	0.0	1.1	100.0	93.1	921
6+	10.1	84.4	1.2	1.8	0.2	0.4	0.1	1.8	100.0	95.6	1,035
Residence											
Urban	21.8	74.0	0.5	1.8	0.3	0.0	0.0	1.6	100.0	96.4	1,011
Rural	10.9	82.5	1.3	2.7	0.5	0.3	0.0	1.9	100.0	94.7	3,208
Region											
South Buganda	15.3	79.5	0.9	1.4	0.2	0.5	0.0	2.2	100.0	95.7	633
North Buganda	18.6	66.9	1.7	10.0	0.0	0.5	0.0	2.4	100.0	87.2	644
Kampala	42.0	54.3	1.1	1.3	0.0	0.0	0.0	1.3	100.0	97.4	135
Busoga	12.3	85.0	0.7	0.8	0.0	0.0	0.0	1.1	100.0	98.1	354
Bukedi	13.6	72.2	1.9	6.3	0.4	0.3	0.0	5.3	100.0	87.7	202
Bugisu	14.0	83.7	2.3	0.0	0.0	0.0	0.0	0.0	100.0	100.0	257
Teso	1.5	97.3	0.0	0.0	0.6	0.0	0.0	0.6	100.0	98.8	238
Karamoja	7.6	73.6	7.7	1.1	0.0	0.8	0.0	9.3	100.0	88.8	132
Lango	8.7	90.2	0.3	0.0	0.0	0.0	0.3	0.5	100.0	99.2	239
Acholi	16.4	81.4	1.0	0.3	0.2	0.0	0.1	0.6	100.0	98.8	172
West Nile	6.8	91.9	0.0	0.0	0.0	0.0	0.0	1.3	100.0	98.7	303
Bunyoro	9.9	87.8	0.6	0.1	0.0	0.2	0.0	1.3	100.0	98.3	201
Tooro	9.2	84.0	0.3	3.4	1.0	0.0	0.0	2.2	100.0	93.4	255
Kigezi	9.7	89.1	0.8	0.0	0.0	0.0	0.0	0.4	100.0	99.6	181
Ankole	17.0	77.5	0.0	1.0	4.3	0.0	0.0	0.3	100.0	94.5	273
Education											
No education	9.2	82.8	2.0	1.1	0.2	0.9	0.0	3.9	100.0	94.0	578
Primary	11.1	82.6	1.0	2.8	0.6	0.1	0.0	1.7	100.0	94.6	2,394
Secondary	17.2	77.8	1.0	2.8	0.0	0.0	0.0	1.2	100.0	96.0	1,018
More than secondary	33.6	65.0	0.0	0.7	0.7	0.0	0.0	0.0	100.0	98.6	230
Wealth quintile											
Lowest	7.1	87.1	1.4	1.4	0.2	0.2	0.0	2.6	100.0	95.6	938
Second	10.0	82.5	1.2	3.5	0.4	0.2	0.0	2.1	100.0	93.7	891
Middle	12.0	82.7	0.8	2.1	0.2	0.4	0.1	1.7	100.0	95.5	831
Fourth	12.8	79.5	0.8	4.5	1.0	0.2	0.0	1.3	100.0	93.1	758
Highest	27.3	69.1	1.1	1.0	0.4	0.0	0.0	1.1	100.0	97.5	802
Total	13.5	80.5	1.1	2.5	0.4	0.2	0.0	1.8	100.0	95.1	4,219
Refugee settlements	7.9	81.3	1.0	2.2	3.3	0.0	0.2	4.2	100.0	90.1	393

Note: If more than one source of ANC was mentioned, only the provider with the highest qualifications is considered in this tabulation.
[1] Skilled provider includes doctor, nurse, midwife, medical assistant, and clinical officer.

Table 3.12 Number of antenatal care visits and timing of first visit

Percent distribution of women age 15-49 who had a live birth in the 5 years preceding the survey by number of antenatal care (ANC) visits for the most recent live birth, and by the timing of the first visit, and among women with ANC, median months pregnant at first visit, according to residence, Uganda MIS 2018-19

Number of ANC visits and timing of first visit	Residence		Total	Refugee settlements
	Urban	Rural		
Number of ANC visits				
None	1.6	1.9	1.8	4.2
1	1.8	2.8	2.6	1.2
2-3	36.8	37.7	37.5	28.8
4+	57.7	56.4	56.7	63.8
Don't know	2.1	1.2	1.4	2.0
Total	100.0	100.0	100.0	100.0
Number of months pregnant at time of first ANC visit				
No antenatal care	1.6	1.9	1.8	4.2
<4	32.3	31.5	31.7	52.7
4-5	46.2	47.0	46.8	36.1
6-7	18.0	17.8	17.9	5.9
8+	1.2	1.2	1.2	0.0
Don't know	0.7	0.5	0.6	1.0
Total	100.0	100.0	100.0	100.0
Number of women	1,011	3,208	4,219	393
Median months pregnant at first visit (for those with ANC)	4.6	4.6	4.6	3.9
Number of women with ANC	995	3,149	4,143	377

Table 3.13 Use of intermittent preventive treatment (IPTp) by women during pregnancy

Percentage of women age 15-49 with a live birth in the 2 years preceding the survey who, during the pregnancy that resulted in the last live birth, received one or more doses of SP/Fansidar, received two or more doses of SP/Fansidar, and received three or more doses of SP/Fansidar, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage who received one or more doses of SP/Fansidar	Percentage who received two or more doses of SP/Fansidar	Percentage who received three or more doses of SP/Fansidar	Number of women with a live birth in the 2 years preceding the survey
Residence				
Urban	91.0	74.8	40.6	577
Rural	88.5	71.3	41.1	1,904
Region				
South Buganda	86.7	65.7	36.3	349
North Buganda	87.1	71.0	41.5	376
Kampala	88.8	63.2	38.6	73
Busoga	85.6	72.4	36.3	218
Bukedi	86.6	77.4	40.2	134
Bugisu	94.8	73.9	43.6	162
Teso	96.0	86.1	48.2	153
Karamoja	89.7	70.9	42.7	83
Lango	83.9	65.6	38.9	144
Acholi	88.3	66.0	39.1	101
West Nile	92.8	78.0	45.7	184
Bunyoro	91.1	70.8	41.5	115
Tooro	95.4	73.0	40.3	150
Kigezi	87.2	81.1	52.2	100
Ankole	87.1	70.6	37.8	139
Education				
No education	81.3	67.5	39.2	338
Primary	89.7	73.0	42.1	1,403
Secondary	90.5	70.9	39.7	609
More than secondary	94.7	79.4	39.6	132
Wealth quintile				
Lowest	87.2	71.6	41.9	613
Second	91.1	72.2	40.1	536
Middle	85.3	72.3	40.0	469
Fourth	90.8	71.5	40.7	425
Highest	91.4	73.1	42.0	438
Total	89.0	72.1	41.0	2,481
Refugee settlements	90.0	74.3	48.1	258

Table 3.14 Reasons for not seeking antenatal care or for not taking more than one dose of SP/Fansidar

Among women with a live birth in the 5 years preceding the survey who did not receive antenatal care (ANC) during pregnancy for the most recent live birth, percent distribution by reasons for not seeking ANC, and among women with a live birth in the 2 years preceding the survey who took SP/Fansidar only once during pregnancy for their most recent live birth, the percentage by reason for only taking SP/Fansidar only once, according to residence, Uganda MIS 2018-19

Background characteristic	Residence		Total	Refugee settlements
	Urban	Rural		
Main reason for not seeking ANC				
Facility too far	*	27.0	23.3	*
Had no money	*	14.4	13.2	*
Had no time	*	7.9	6.2	*
Not aware had to attend	*	10.3	8.1	*
Did not want to attend	*	20.3	29.3	*
Other	*	15.7	16.1	*
Don't know	*	4.3	3.6	*
Total	100.0	100.0	100.0	100.0
Number of women who did not attend ANC	16	60	76	16
Reason for not taking SP/Fansidar more than once[1]				
Facility too far	0.0	2.3	1.8	(0.0)
Had no money	0.0	2.6	2.0	(3.2)
Side effects	4.3	2.0	2.5	(0.0)
Not aware had to take more	23.0	39.4	35.8	(32.0)
Did not want to take	4.7	2.6	3.1	(0.0)
Not given	43.0	41.1	41.5	(63.4)
Not available	4.0	6.5	5.9	(9.7)
Other	3.2	4.2	4.0	(4.9)
Don't know	27.0	11.5	14.9	(10.3)
Number of women who took SP/Fansidar once	94	326	420	40

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
[1] Respondents may have mentioned more than one reason.

MALARIA IN CHILDREN 4

Key Findings

- ***Malaria:*** About 1 in 10 children (9%) age 0-59 months tested positive for malaria via microscopy.
- ***Fever prevalence:*** 26% of children under age 5 had a fever in the 2 weeks before the survey.
- ***Care seeking for fever:*** Caretakers of children with fever sought advice or treatment for 87% of the children in the 2 weeks before the survey. Only 57% sought this help the same or next day.
- ***Source of advice or treatment:*** Among children with recent fever for whom treatment was sought, 43% received advice or treatment from the public sector, 59% from the private sector, and only 1% elsewhere.
- ***Testing:*** 51% of children with a recent fever received a finger- or heel-prick to collect blood for testing.
- ***Type of antimalarial drug used:*** Among children under age 5 with a recent fever who received an antimalarial, 88% received an artemisinin combination therapy (ACT).
- ***Low haemoglobin:*** 4% of children age 0-59 months have a haemoglobin level less than 8 g/dl.
- ***Malaria speciation:*** While *P. falciparum* is still dominant, the presence of *P.malariae* and *P.ovale* has increased since 2014-15.

This chapter presents data to assess how well fever management strategies work. Specific areas of focus are care seeking for febrile children, diagnostic testing for children with fever, and therapeutic use of antimalarial drugs. Prevalence of anaemia and malaria among children age 0-59 months is assessed.

4.1 CARE SEEKING FOR FEVER IN CHILDREN

Care seeking for children under 5 with fever

Percentage of children under 5 with a fever in the 2 weeks before the survey for whom advice or treatment was sought from a health provider, a health facility, or a pharmacy.

Sample: Children under 5 with a fever in the 2 weeks before the survey

A key case management objective of the Uganda Malaria Reduction Strategic Plan 2014-2020 (UMRSP) is to ensure that all suspected malaria cases have access to confirmatory diagnosis and receive effective treatment. Fever is a key symptom of malaria and other acute infections in children. All fevers require a diagnostic test and, if malaria is confirmed, prompt, effective treatment to prevent morbidity and mortality. Twenty-six percent of children under age 5 had fever in the 2 weeks preceding the survey. Advice or

treatment was sought for 87% of the children with fever in the 2 weeks preceding the survey, and timely care seeking (the same or next day following fever onset) occurred for 57% of the children with fever (**Table 4.1**)

Among children with recent fever for whom advice or treatment was sought, caretakers sought advice or treatment for 43% of children from a public sector source, and for 59% of children, caretakers sought advice or treatment from the private sector. The most visited types of facilities included private hospital/clinics (44%), government health centres (23%) and pharmacies/drug shops (14%) (**Table 4.2.1**).

Among children in refugee settlements with recent fever for whom advice or treatment was sought, caretakers sought advice or treatment for 61% of children from a public sector source, and caretakers sought advice or treatment for 42% of children from a private sector source. The most-visited facility among children under age 5 with fever for whom care was sought living in refugee settlements was a government health centre (44%) (**Table 4.2.2**).

Table 4.3 shows among children under age 5 with fever in the 2 weeks preceding the survey for whom advice or treatment was not sought, the reasons why care was not sought. The most commonly cited reasons were the following: *already had medicine at home* (35%), *have no money* (26%), and *child not very ill* (15%).

Patterns by background characteristics

- The percentage of children under age 5 with fever was lower in urban areas (17%) compared with rural areas (29%).
- The percentage of children under age 5 with fever for whom advice and treatment were sought ranges from 79% in Tooro to 97% in South Buganda.
- Among children under age 5 with fever, the percentage for whom advice or treatment was sought the same or next day was highest among children whose mothers had no education (61%) and lowest among those whose mothers had secondary education (51%).

4.2 Diagnostic Testing of Children with Fever

Diagnosis of malaria in children under 5 with fever

Percentage of children under 5 with a fever in the 2 weeks before the survey who had blood taken from a finger or heel for testing. This is a proxy measure of diagnostic testing for malaria.

Sample: Children under 5 with a fever in the 2 weeks before the survey

National Malaria Control Division policy recommends prompt parasitological confirmation by microscopy or, alternatively, by rapid diagnostic test (RDT) for all patients suspected of having malaria before treatment is started. Adherence to this policy cannot be directly measured through household surveys; however, the UMIS asked interviewed women age 15-49 with children under 5 who had a fever in the 2 weeks before the survey if the children had blood taken from a finger or heel for testing during the illness. This information is used as a proxy measure for adherence to the policy of conducting diagnostic testing for all suspected malaria cases.

In the 2018-19 UMIS, 51% of children under age 5 with a fever in the 2 weeks preceding the survey had blood taken from a finger or heel for testing (**Table 4.1**). Among the refugee population 59% of children had blood taken from a finger or heel for testing.

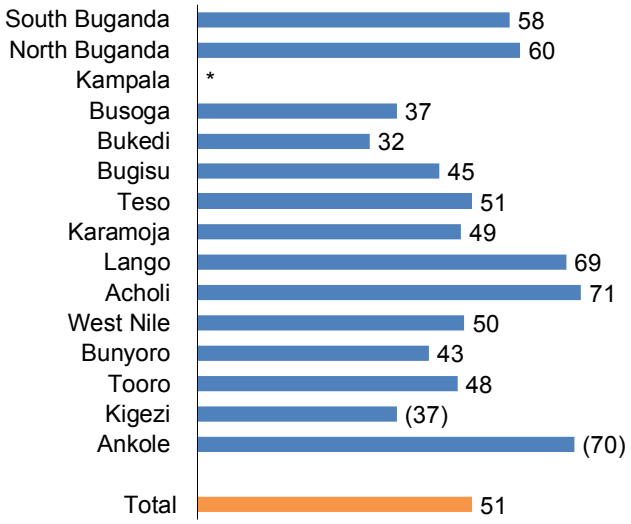
Trends: The percentage of children under age 5 with fever in the 2 weeks preceding the survey, who had blood taken from a finger or heel for testing, showed a dramatic increase from 17% in the 2009 UMIS to 51% in the 2018-19 UMIS.

Patterns by background characteristics

- Fifty-eight percent of children under age 5 with recent fever in urban areas had blood taken from a finger or heel for testing, compared with 49% in rural areas (**Table 4.1**).
- The percentage of children under age 5 with fever who had blood taken from a finger or heel for testing ranges from 32% of children in Bukedi to 71% of children in Acholi (**Figure 4.1**).
- The percentage of children under age 5 with recent fever who had blood taken from a finger or heel for testing increases from 44% among mothers with no education to 51% among mothers who have secondary education (**Table 4.1**).

Figure 4.1 **Diagnostic testing of fever in children by region**

Percent of children under age 5 with fever in the 2 weeks preceding the survey who had blood taken from a finger or heel for testing



Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

4.3 COMMUNITY HEALTH WORKERS

Health services at the community level are provided by community health workers (CHWs) and community medicine distributors (CMDs). Together these form village health teams (VHTs). Each village has at least five members selected by the community to form the VHT. Two members are trained to provide integrated community case management (iCCM) for malaria, pneumonia, and diarrhoea. VHTs facilitate community participation and empowerment in the delivery of health services. The VHTs are responsible for health promotion activities, community mobilisation to improve health-seeking behaviour, disease prevention, provision and adherence to treatment, as well as referral to a health facility. Overall, 52% of households reported that community health workers or CMDs who distribute malaria medicines were present in their community (**Table 4.4**).

Patterns by background characteristics

- There is a higher percentage of rural households (58%) than urban households (35%) reporting the presence of CHWs, CMDs, or VHTs in the villages or communities that distribute malaria medicines (**Table 4.4**).
- Karamoja and West Nile had the highest percentage of households reporting that they have CHWs, CMDs, or VHTs in the village or community that distribute malaria medicines (86%), while Kampala had the lowest percentage (12%).

4.4 USE OF RECOMMENDED ANTIMALARIALS

Artemisinin-based combination therapy (ACT) for children under 5 with fever

Among children under 5 with a fever in the 2 weeks before the survey who took any antimalarial drugs, the percentage who took an artemisinin-based combination therapy (ACT).

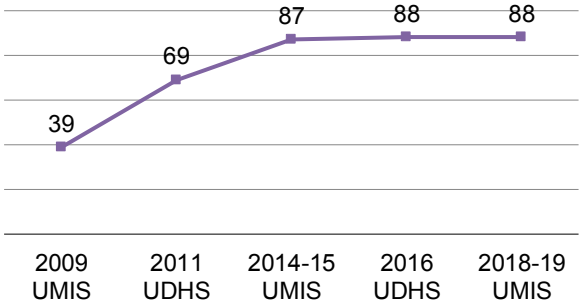
Sample: Children under 5 with a fever in the 2 weeks before the survey

Artemisinin-based combination therapy (ACT) is the recommended first-line antimalarial drug for the treatment of uncomplicated malaria in Uganda. Use has been recommended since 2004 and implemented since 2006 (Uganda 2011).

According to the results in **Table 4.5**, 88% of the children under age 5 with recent fever who received an antimalarial took an ACT, 4% received an artesunate injection/IV, while another 4% received a quinine injection/IV (**Table 4.5**). Among refugee settlements, 95% of children under age 5 with recent fever who received an antimalarial took an ACT.

Figure 4.2 **Trends in ACT use**

Among children under 5 with recent fever who took an antimalarial, percentage who received ACT



Trends: Among children under 5 with recent fever who took an antimalarial, the percentage who received an ACT increased from 39% in the 2009 UMIS to 87% in the 2014-15 UMIS. No change occurred between the 2016 UDHS and the 2018-19 UMIS (88% each) (**Figure 4.2**).

4.5 PREVALENCE OF LOW HAEMOGLOBIN IN CHILDREN

Prevalence of low haemoglobin in children

Percentage of children age 6-59 months who had a haemoglobin measurement of less than 8 grams per deciliter (g/dl) of blood. The cutoff of 8 g/dl is often used to classify malaria-related anaemia.

Sample: Children age 0-59 months

Anaemia, defined as a reduced level of haemoglobin in the blood, decreases the amount of oxygen reaching the tissues and organs of the body and reduces their capacity to function. Anaemia is associated with impaired motor and cognitive development in children. The main causes of anaemia in children are malaria and inadequate intake of iron, folate, vitamin B12, or other nutrients. Other causes of anaemia include intestinal worms, and haemoglobinopathy including sickle cell disease. Although anaemia is not specific to malaria, trends in anaemia prevalence can reflect malaria morbidity, and can respond to changes in the coverage of malaria interventions (Korenromp 2004). Malaria interventions have been associated with a 60% reduction in the risk of anaemia using a cut-off of 8 g/dl (RBM 2003).

Among eligible children age 0-59 months from interviewed households, 97% were tested for anaemia (**Table 4.6**).

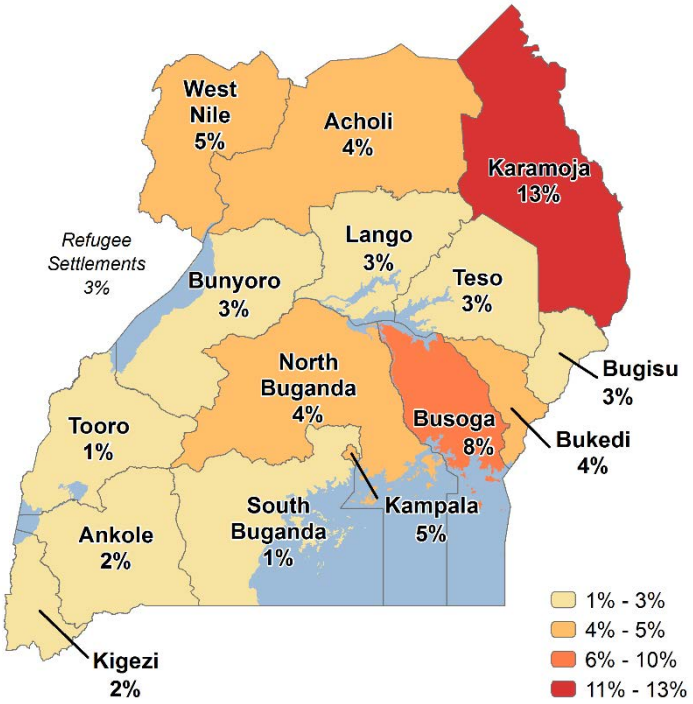
Table 4.7 shows the percentage of children age 0-59 months classified as having low haemoglobin (less than 8 g/dl). Overall, 4% of children age 0-59 months have low haemoglobin. Among refugee settlements, 3% of children have low haemoglobin.

Trends: The prevalence of low haemoglobin decreased from 10% in the 2009 UMIS to 5% in 2014-15 and 4% in 2018-19.

Patterns by background characteristics

Figure 4.3 Low haemoglobin in children by subnational unit

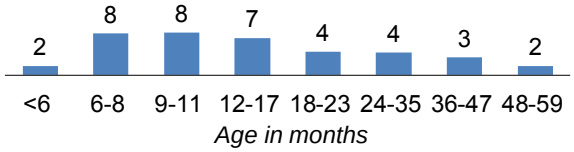
Percentage of children age 0-59 months with haemoglobin lower than 8.0g/dl



- The prevalence of low haemoglobin in children age 0-59 months was highest in Karamoja (13%), followed by Busoga (8%), and lowest in South Buganda and Tooro (1% each) (**Figure 4.3**).
- Generally, the percentage of children age 0-59 months with haemoglobin lower than 8.0 g/dl decreases with increasing age, declining from 8% among children age 6-8 months to 2% among children age 48-59 months (**Figure 4.4**).
- The prevalence of low haemoglobin in children age 0-59 months is similar in urban (3%) and rural (4%) areas.

Figure 4.4 Low haemoglobin in children by age in months

Percentage of children age 0-59 months with haemoglobin lower than 8.0g/dl



4.6 PREVALENCE OF MALARIA IN CHILDREN

Malaria prevalence in children

Percentage of children age 0-59 months classified as infected with malaria, according to microscopy results.

Sample: Children age 0-59 months

As is the case in many other countries in sub-Saharan Africa, malaria is one of the leading causes of death among children under age 5 in Uganda (Uganda 2017-18). Malaria transmission is high throughout the year, contributing to development of partial immunity within the first 2 years of life. However, many people, including children, may have malaria parasites in their blood without showing any signs of infection. Such asymptomatic infection not only contributes to further transmission of malaria but also increases the risk of anaemia and other associated morbidity among the infected individuals.

Among eligible children age 0-59 months from interviewed households, 97% were tested for malaria with RDT and 97% were tested for malaria by microscopy (**Table 4.6**).

In the 2018-19 UMIS, 9% of children age 0-59 months tested positive by microscopy for malaria parasites (**Table 4.8**). Among the children who tested positive for malaria, 97% had the presence of *P. falciparum* infection, 10% had *P. malariae*, and 2% had *P. ovale* infection; 9% had mixed infections (**Table 4.9**).

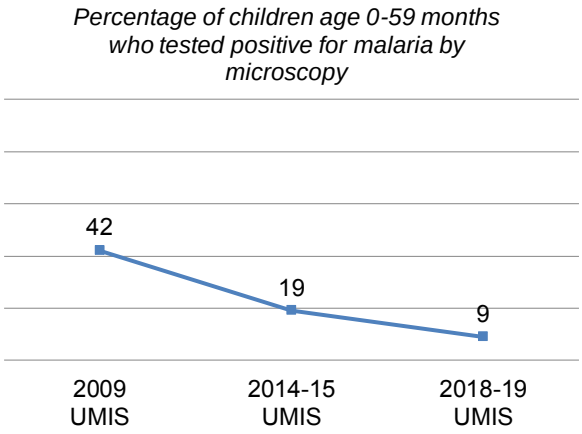
Among refugee settlements, 13% of children age 0-59 months were positive for malaria parasites, according to microscopy. Among children in refugee settlements who tested positive for malaria, 99% had the presence of *P. falciparum* infection and 1% had the presence of *P. malariae.*

Rapid diagnostic tests (RDTs) were done in conjunction with microscopy to facilitate treatment of infected children during the survey fieldwork. Results from these RDTs are in **Table 4.8** for reference. Seventeen percent of children age 0-59 months tested positive for *P. falciparum* antigens using RDTs.

The 2018-19 UMIS was conducted between December 2018 and February of 2019 at the peak of malaria season. Normally a spike in malaria cases occurs during these months. The 2014-15 UMIS was conducted between November 2014 and January 2015, during a similar period when malaria transmission is at its peak.

Trends: National malaria prevalence according to microscopy in children under age 5 has decreased consistently from 42% in 2009 to 19% in 2014-15, and finally to 9% in 2018-19 (**Figure 4.5**).

Figure 4.5 **Trends in malaria prevalence in children**

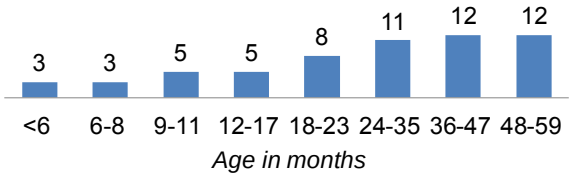


Patterns by background characteristics

- Among children age 0-59 months, malaria prevalence according to microscopy increases with increasing age, from 3% in children less than 6 months to 12% in children 48-59 months (**Figure 4.6**).
- Malaria prevalence according to microscopy is almost four times as high in rural areas (11%) as in urban areas (3%) (**Table 4.8**).

Figure 4.6 Malaria prevalence in children by age

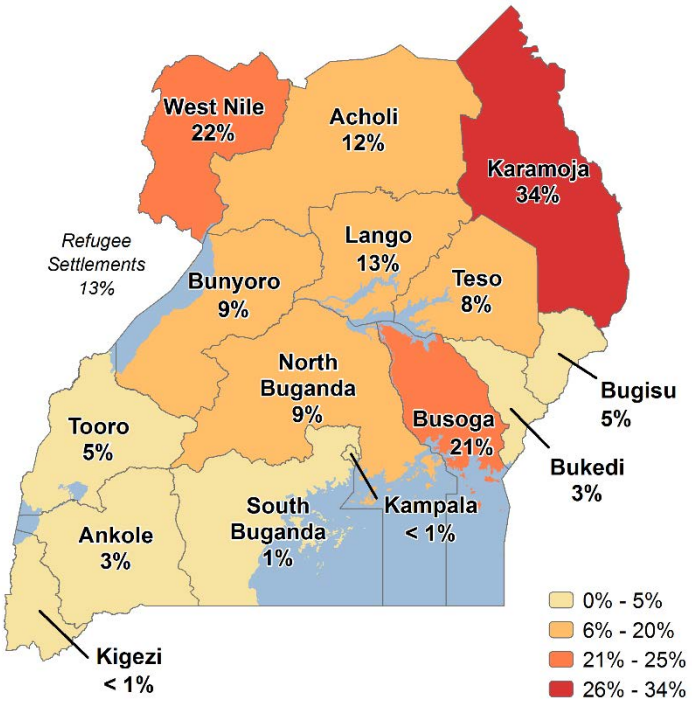
Percentage of children age 0-59 months who tested positive for malaria by microscopy



- Karamoja (34%) has the highest malaria prevalence according to microscopy, followed by West Nile (22%) and Busoga (21%), while Kampala and Kigezi have the lowest (less than 1% each) (**Figure 4.7**).
- Among children age 0-59 months, malaria prevalence according to microscopy decreases with increases in mother's education from 17% among children whose mothers have no formal education to less than 1% among those whose mothers have more than a secondary education.
- Among current IRS districts, only 3% of children under age 5 had malaria according to microscopy.
- Children living in households with natural roofing (19%) have a higher prevalence of malaria than children living in households with finished roofing (6%).

Figure 4.7 Malaria prevalence in children by subnational unit

Percentage of children age 0-59 months who tested positive for malaria by microscopy



- Children living in households with natural and rudimentary walls (19% and 11%, respectively) have a higher prevalence of malaria according to microscopy compared with children living in households with finished walls (6%).
- Malaria prevalence according to microscopy decreases with increasing wealth quintile, from 17% in the lowest wealth quintile to 1% in the highest wealth quintile.

List of Tables

For detailed information on malaria, see the following tables:

Table 4.1 Prevalence, diagnosis, and prompt treatment of children with fever

Percentage of children under age 5 with fever in the 2 weeks preceding the survey; and among children under age 5 with fever, the percentage for whom advice or treatment was sought, percentage for whom advice or treatment was sought the same or next day following the onset of fever, and percentage who had blood taken from a finger or heel for testing, according to background characteristics, Uganda MIS 2018-19

	Children under age 5		Children under age 5 with fever			
Background characteristic	Percentage with fever in the 2 weeks preceding the survey	Number of children	Percentage for whom advice or treatment was sought[1]	Percentage for whom advice or treatment was sought the same or next day[1]	Percentage who had blood taken from a finger or heel for testing	Number of children
Age in months						
< 6	20.1	720	84.0	61.9	34.2	145
6-11	32.2	627	86.7	56.2	52.0	202
12-23	32.9	1,190	91.2	56.7	53.4	392
24-35	27.8	1,169	86.4	56.0	54.4	325
36-47	23.2	1,177	84.0	58.3	54.3	273
48-59	21.4	1,126	86.4	54.5	45.9	241
Sex						
Male	26.9	3,062	87.1	56.1	52.0	822
Female	25.7	2,946	86.9	57.8	49.3	756
Residence						
Urban	16.7	1,372	88.8	58.1	58.4	230
Rural	29.1	4,636	86.7	56.7	49.4	1,349
Region						
South Buganda	11.5	836	97.1	48.6	57.9	96
North Buganda	24.9	948	89.2	46.6	59.9	236
Kampala	9.5	175	*	*	*	17
Busoga	48.2	557	88.4	67.2	36.6	269
Bukedi	30.2	316	80.8	54.6	31.8	95
Bugisu	20.1	378	84.8	62.0	44.9	76
Teso	36.9	356	81.4	42.0	50.5	131
Karamoja	23.7	206	84.7	65.5	48.9	49
Lango	31.0	318	95.3	74.3	68.5	99
Acholi	45.5	232	87.4	62.7	71.3	106
West Nile	44.8	410	85.6	70.0	49.6	184
Bunyoro	23.8	281	85.2	52.8	43.0	67
Tooro	24.0	366	79.3	50.1	48.3	88
Kigezi	12.6	258	(87.5)	(36.3)	(36.9)	32
Ankole	9.1	370	(91.4)	(23.8)	(69.7)	34
Mother's education						
No education	31.4	875	87.9	60.7	44.0	275
Primary	28.8	3,477	86.2	57.4	52.3	1,000
Secondary	19.6	1,372	88.4	51.4	50.6	269
More than secondary	12.3	285	(90.7)	(55.0)	(58.9)	35
Wealth quintile						
Lowest	31.5	1,420	84.8	57.5	52.0	447
Second	27.9	1,305	86.0	55.4	48.0	364
Middle	32.9	1,209	89.2	57.6	49.5	398
Fourth	23.0	1,035	86.0	55.3	43.4	238
Highest	12.7	1,039	92.3	59.7	70.3	132
Total	26.3	6,008	87.0	56.9	50.7	1,578
Refugee settlements	29.6	627	84.6	61.0	58.7	186

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

[1] Includes advice or treatment from the following sources: public sector, private medical sector, shop, market, and hawker/itinerant drug seller. Excludes advice or treatment from a traditional practitioner,

Table 4.2.1 Source of advice or treatment for children with fever

Among children under age 5 with fever in the 2 weeks preceding the survey for whom advice or treatment was sought, percentage for whom advice or treatment was sought from specific sources, Uganda MIS 2018-19

Source	Percentage for whom advice or treatment was sought from each source
Public sector	42.8
Government hospital	9.7
Government health centre	23.4
Mobile clinic/outreach	2.5
CHW/VHT	8.4
Private sector	58.9
Private hospital/clinic	44.2
Pharmacy/drug shop	13.8
Private doctor	0.3
Mobile clinic	1.1
Fieldworker	0.1
Other private sector	0.6
Shop	0.3
Traditional practitioner	0.3
Other	0.5
Number of children with fever for whom advice or treatment was sought	1,375

CHW = community health worker
VHT = village health team

Table 4.2.2 Source of advice or treatment for children with fever – Refugee settlements

Among children under age 5 and with fever in refugee settlements in the 2 weeks preceding the survey for whom advice or treatment was sought, percentage for whom advice or treatment was sought from specific sources, Uganda MIS 2018-19

Source	Percentage for whom advice or treatment was sought from each source
Public sector	61.2
Government hospital	13.5
Government health centre	44.3
Mobile clinic/outreach	0.9
CHW/VHT	2.3
Other public sector	0.3
Private sector	41.6
Private hospital/clinic	21.0
Pharmacy/drug shop	18.4
Private doctor	0.7
Mobile clinic	3.0
Other private medical sector	0.3
Other private sector	0.3
Traditional practitioner	0.3
Number of children with fever for whom advice or treatment was sought	158

CHW = community health worker
VHT = village health team

Table 4.3 Reasons for not seeking care for children with fever

Among children under age 5 with fever in the 2 weeks preceding the survey for whom advice or treatment was not sought, the percentage by reason for which advice or treatment was not sought, according to residence, Uganda MIS 2018-19

Reason	Residence		Total	Refugee settlements
	Urban	Rural		
Reason for not seeking advice or treatment[1]				
Child just fell ill	(3.8)	4.7	4.6	(20.1)
Child not very ill	(20.5)	13.7	14.6	(7.4)
Clinic too far	(1.1)	8.5	7.6	(8.3)
Have no money	(27.7)	25.2	25.5	(33.8)
Waiting for child's father	(5.4)	1.5	2.0	(0.0)
Don't know what to do	(9.1)	3.6	4.3	(1.8)
Already had medicine at home	(24.9)	36.2	34.7	(13.8)
Other	(11.2)	10.4	10.5	(17.5)
Number of children	26	177	203	28

Note: Figures in parentheses are based on 25-49 unweighted cases.
[1] Respondents may have mentioned more than one reason.

Table 4.4 Community workers

Percentage of households with a community health worker (CHW),, community medicine distributor (CMD), or a village health team (VHT) member in the village/community, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage of households with a CHW, CMD, or VHT member in the village/ community	Number of households
Residence		
Urban	34.5	2,204
Rural	57.8	6,147
Region		
South Buganda	45.3	1,377
North Buganda	39.1	1,487
Kampala	11.7	354
Busoga	45.6	679
Bukedi	39.6	404
Bugisu	54.4	512
Teso	69.3	365
Karamoja	86.2	196
Lango	80.8	441
Acholi	82.8	279
West Nile	86.0	487
Bunyoro	75.6	313
Tooro	72.8	439
Kigezi	25.1	351
Ankole	36.7	667
Total	51.6	8,351
Refugee settlements	34.6	606

Table 4.5 Type of antimalarial drugs used

Among children under age 5 with fever in the 2 weeks preceding the survey who took any antimalarial medication, percentage who took specific antimalarial drugs, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Percentage of children who took:									Number of children with fever who took antimalarial drug
	Any ACT	SP/ Fansidar	Chloroquine	Amodia-quine	Quinine pills	Quinine injection/IV	Artesunate rectal	Artesunate injection/IV	Other anti-malarial	
Age in months										
< 6	61.4	7.5	10.4	1.1	11.4	14.7	0.0	3.5	1.0	47
6-11	91.0	0.0	1.3	0.3	5.5	5.0	0.0	3.4	0.8	107
12-23	90.9	1.5	0.9	0.7	2.9	3.7	1.2	3.0	2.4	255
24-35	90.0	3.6	1.0	1.4	1.6	1.3	2.2	2.3	0.7	221
36-47	81.6	2.8	2.2	0.8	2.7	3.0	0.0	6.5	4.1	187
48-59	91.7	0.4	3.0	0.8	1.6	2.5	0.5	6.2	0.6	169
Sex										
Male	87.7	1.6	1.9	1.0	3.0	3.4	0.8	5.8	2.3	518
Female	87.6	2.8	2.2	0.7	3.1	3.6	1.0	2.3	1.2	468
Residence										
Urban	84.6	0.4	0.6	1.4	2.1	5.5	3.9	5.1	1.5	138
Rural	88.2	2.4	2.2	0.8	3.2	3.2	0.4	4.0	1.8	848
Region										
South Buganda	(84.7)	(0.0)	(0.0)	(1.0)	(5.9)	(6.9)	(4.0)	(11.9)	(6.7)	75
North Buganda	76.2	1.6	2.4	1.4	6.3	4.4	2.6	5.5	5.0	158
Kampala	*	*	*	*	*	*	*	*	*	8
Busoga	79.8	11.4	8.4	0.0	0.0	0.0	0.0	1.6	0.0	116
Bukedi	(89.2)	(2.7)	(2.7)	(2.2)	(5.3)	(0.0)	(0.0)	(0.0)	(0.0)	31
Bugisu	92.7	1.5	1.4	0.0	1.5	6.6	0.0	2.9	0.0	51
Teso	92.0	0.0	0.0	0.7	2.9	2.4	0.0	4.2	3.4	93
Karamoja	91.2	1.9	0.0	4.9	3.5	0.7	2.2	1.7	0.0	28
Lango	91.1	0.0	2.4	0.8	1.9	3.8	0.8	5.2	1.3	83
Acholi	94.0	0.8	0.6	0.8	1.8	5.6	0.0	1.9	0.6	77
West Nile	93.3	0.9	0.9	0.0	2.5	1.9	0.6	4.7	0.0	120
Bunyoro	97.6	0.0	0.0	0.0	3.3	2.4	0.0	0.8	0.0	49
Tooro	93.3	0.0	2.3	2.1	0.0	2.5	0.0	2.2	0.0	56
Kigezi	*	*	*	*	*	*	*	*	*	15
Ankole	*	*	*	*	*	*	*	*	*	25
Mother's education										
No education	96.2	1.1	1.8	0.9	0.8	3.2	0.4	1.5	0.0	157
Primary	86.4	3.0	1.8	0.7	3.8	3.4	1.2	3.3	2.1	639
Secondary	85.4	0.0	3.1	1.4	2.8	3.8	0.4	8.3	1.9	165
More than secondary	(82.4)	(1.5)	(1.8)	(1.5)	(0.0)	(4.4)	(0.0)	(13.5)	(4.2)	25
Wealth quintile										
Lowest	94.2	0.2	1.0	1.0	1.7	2.8	0.2	1.5	0.8	292
Second	90.9	3.0	0.0	0.5	3.6	3.4	1.7	3.5	0.0	213
Middle	82.6	5.3	4.9	0.8	3.7	2.8	0.0	2.9	5.2	242
Fourth	81.3	1.0	3.1	1.1	2.6	4.9	1.1	9.5	0.7	162
Highest	83.2	0.0	0.0	0.9	5.1	5.8	3.9	8.5	1.8	78
Total	87.7	2.2	2.0	0.8	3.0	3.5	0.9	4.1	1.8	986
Refugee settlements	94.9	0.0	0.0	0.0	1.3	2.8	0.0	3.1	1.6	128

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
ACT = artemisinin-based combination therapy
IV = intravenous therapy

Table 4.6 Coverage of testing for anaemia and malaria in children

Percentage of eligible children age 0-59 months who were tested for anaemia and for malaria, according to background characteristics (unweighted), Uganda MIS 2018-19

Background characteristic	Percentage tested for: Anaemia	Malaria with RDT	Malaria by microscopy	Number of children
Age in months				
<6	95.3	95.2	95.2	771
6-8	97.1	97.1	97.1	345
9-11	96.3	96.3	96.0	353
12-17	97.3	97.2	97.2	713
18-23	97.4	97.4	97.4	687
24-35	96.8	96.8	96.8	1,453
36-47	98.0	98.0	98.0	1,487
48-59	96.7	96.7	96.7	1,502
Sex				
Male	96.8	96.8	96.7	3,738
Female	97.1	97.1	97.1	3,573
Mother's interview status				
Interviewed	97.9	97.8	97.8	5,969
Not interviewed[1]	93.0	93.0	93.0	1,342
Residence				
Urban	95.1	95.1	95.1	1,554
Rural	97.5	97.4	97.4	5,757
Roofing material				
No roof	*	*	*	5
Natural[2]	97.3	97.3	97.3	2,712
Rudimentary[3]	*	*	*	7
Finished[4]	96.7	96.7	96.7	4,587
Wall material				
Natural[5]	93.0	93.0	93.0	142
Rudimentary[6]	97.7	97.7	97.7	4,875
Finished[7]	95.5	95.5	95.5	2,290
Other	*	*	*	4
Region				
South Buganda	93.7	93.7	93.7	555
North Buganda	96.7	96.7	96.7	426
Kampala	91.8	91.8	91.8	294
Busoga	97.4	97.4	97.1	453
Bukedi	97.0	96.8	96.8	438
Bugisu	97.1	97.1	97.1	411
Teso	96.6	96.6	96.6	533
Karamoja	95.9	95.9	95.9	532
Lango	98.7	98.7	98.7	536
Acholi	97.0	97.0	97.0	677
West Nile	98.4	98.4	98.4	507
Bunyoro	97.7	97.7	97.7	653
Tooro	97.1	97.1	97.1	590
Kigezi	99.5	99.2	99.2	379
Ankole	99.1	99.1	99.1	327
Special areas				
Current IRS districts[8]	98.4	98.4	98.4	859
Former IRS districts[9]	97.3	97.3	97.3	943
Mother's education[10]				
No education	98.6	98.5	98.5	1,106
Primary	98.4	98.4	98.4	3,479
Secondary	96.2	96.2	96.2	1,141
More than secondary	94.2	94.2	94.2	243

Continued...

Table 4.6—*Continued*

Background characteristic	Percentage tested for: Anaemia	Malaria with RDT	Malaria by microscopy	Number of children
Wealth quintile				
Lowest	97.3	97.3	97.3	2,287
Second	97.9	97.8	97.8	1,624
Middle	98.0	98.0	97.9	1,255
Fourth	97.3	97.3	97.3	1,093
Highest	93.1	93.1	93.1	1,052
Total 0-59	97.0	96.9	96.9	7,311
Total 6-59	97.2	97.1	97.1	6,540
Refugee settlements 0-59	97.4	97.4	97.4	691
Refugee settlements 6-59	97.4	97.4	97.4	612

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
RDT = rapid diagnostic test (SD Bioline Ag P.f)
IRS = indoor residual spraying
[1] Includes children whose mothers are deceased
[2] Includes thatch/palm leaf and mud
[3] Includes rustic mat, wood planks, cardboard, and tarpaulin
[4] Includes iron sheets, wood, asbestos, tiles, concrete, and roofing shingles
[5] Includes thatched/straw and dirt
[6] Includes poles with mud, stone with mud, unburnt bricks with mud, plywood, cardboard, reused wood, unburnt bricks with plaster, and burnt bricks with mud
[7] Includes cement, stone with lime/cement, burnt bricks with cement, cement blocks, wood planks/shingles
[8] Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba, and Paliisa districts
[9] Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac, and Lamwo districts
[10] Excludes children whose mothers were not interviewed

Table 4.7 Haemoglobin <8.0 g/dl in children

Percentage of children age 0-59 months with haemoglobin lower than 8.0 g/dl, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Haemoglobin <8.0 g/dl	Number of children
Age in months		
<6	1.6	681
6-8	7.5	322
9-11	7.7	306
12-17	6.8	604
18-23	4.2	635
24-35	4.1	1,303
36-47	3.2	1,400
48-59	1.7	1,377
Sex		
Male	4.1	3,345
Female	3.3	3,284
Mother's interview status		
Interviewed	4.0	5,374
Not interviewed[1]	2.8	1,255
Residence		
Urban	2.8	1,510
Rural	4.0	5,118
Roofing material		
No roof	*	6
Natural[2]	5.2	1,735
Rudimentary[3]	*	10
Finished[4]	3.2	4,878
Wall material		
Natural[5]	5.5	101
Rudimentary[6]	4.1	3,816
Finished[7]	3.2	2,707
Other	*	4
Region		
South Buganda	1.0	948
North Buganda	3.9	1,069
Kampala	5.3	177
Busoga	8.1	648
Bukedi	3.4	356
Bugisu	3.3	422
Teso	3.2	382
Karamoja	13.1	208
Lango	2.8	335
Acholi	4.4	254
West Nile	5.1	459
Bunyoro	2.7	307
Tooro	1.2	380
Kigezi	1.6	271
Ankole	2.2	413
Special areas		
Current IRS districts[8]	2.9	724
Former IRS districts[9]	5.2	400
Mother's education[10]		
No education	5.4	806
Primary	4.5	3,118
Secondary	2.0	1,208
More than secondary	2.3	242

Continued...

Table 4.7—*Continued*

Background characteristic	Haemoglobin <8.0 g/dl	Number of children
Wealth quintile		
Lowest	5.3	1,560
Second	3.6	1,439
Middle	4.3	1,328
Fourth	3.0	1,214
Highest	1.9	1,087
Total 0-59	3.7	6,629
Total 6-59	4.0	5,947
Refugee settlements 0-59	2.6	667
Refugee settlements 6-59	2.9	598

Note: An asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.
IRS = Indoor residual spraying
Note: Haemoglobin levels are adjusted for altitude using CDC formulas (CDC 1998). Haemoglobin is measured in grams per deciliter (g/dl).
[1] Includes children whose mothers are deceased
[2] Includes thatch/palm leaf and mud
[3] Includes rustic mat, wood planks, cardboard, and tarpaulin
[4] Includes iron sheets, wood, asbestos, tiles, concrete, and roofing shingles
[5] Includes thatched/straw and dirt
[6] Includes poles with mud, stone with mud, unburnt bricks with mud, plywood, cardboard, reused wood, unburnt bricks with plaster, and burnt bricks with mud
[7] Includes cement, stone with lime/cement, burnt bricks with cement, cement blocks, wood planks/shingles
[8] Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba, and Paliisa districts
[9] Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac, and Lamwo districts
[10] Excludes children whose mothers are not interviewed

Table 4.8 Prevalence of malaria in children

Percentage of children age 0-59 months classified in two tests as having malaria, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Malaria prevalence according to RDT		Malaria prevalence according to microscopy	
	RDT positive	Number of children	Microscopy positive	Number of children
Age in months				
<6	5.3	680	2.9	680
6-8	11.1	322	3.3	322
9-11	11.0	306	4.5	305
12-17	16.0	604	5.5	604
18-23	16.0	635	7.8	635
24-35	20.3	1,303	11.4	1,303
36-47	20.7	1,400	11.7	1,400
48-59	19.1	1,377	12.0	1,377
Sex				
Male	17.3	3,344	9.0	3,343
Female	16.5	3,283	9.2	3,283
Mother's interview status				
Interviewed	16.4	5,372	8.6	5,371
Not interviewed[1]	19.2	1,255	11.4	1,255
Residence				
Urban	6.1	1,510	3.3	1,510
Rural	20.1	5,117	10.8	5,115
Roofing material				
No roof	*	6	*	6
Natural[2]	33.6	1,735	19.2	1,735
Rudimentary[3]	*	10	*	10
Finished[4]	11.0	4,877	5.5	4,875
Wall material				
Natural[5]	33.8	101	18.5	101
Rudimentary[6]	20.5	3,815	11.2	3,813
Finished[7]	11.2	2,707	5.9	2,707
Other	*	4	*	4
Region				
South Buganda	1.9	948	0.6	948
North Buganda	14.2	1,069	8.8	1,069
Kampala	1.6	177	0.2	177
Busoga	39.4	648	21.1	646
Bukedi	5.3	355	3.3	355
Bugisu	10.4	422	4.8	422
Teso	20.2	382	8.2	382
Karamoja	41.6	208	34.3	208
Lango	23.0	335	13.3	335
Acholi	28.9	254	11.9	254
West Nile	50.0	459	21.8	459
Bunyoro	15.2	307	9.2	307
Tooro	7.3	380	4.7	380
Kigezi	0.0	270	0.3	270
Ankole	2.9	413	2.6	413
Special areas				
Current IRS districts[8]	7.0	724	3.4	724
Former IRS districts[9]	37.7	400	18.8	400
Mother's education[10]				
No education	27.1	805	16.6	805
Primary	18.4	3,117	9.6	3,116
Secondary	6.5	1,208	2.2	1,208
More than secondary	3.4	242	0.5	242

Continued...

Table 4.8—*Continued*

Background characteristic	Malaria prevalence according to RDT: RDT positive	Malaria prevalence according to RDT: Number of children	Malaria prevalence according to microscopy: Microscopy positive	Malaria prevalence according to microscopy: Number of children
Wealth quintile				
Lowest	28.9	1,560	17.1	1,560
Second	19.0	1,438	9.3	1,438
Middle	18.1	1,328	9.5	1,326
Fourth	10.0	1,214	5.6	1,214
Highest	3.2	1,087	0.9	1,087
Total 0-59	16.9	6,627	9.1	6,626
Total 6-59	18.2	5,947	9.8	5,945
Refugee settlements 0-59	32.8	667	12.8	667
Refugee settlements 6-59	35.1	598	14.1	598

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
RDT = Rapid Diagnostic Test (SD Bioline Ag P.f)
IRS = Indoor residual spraying
[1] Includes children whose mothers are deceased
[2] Includes thatch/palm leaf and mud
[3] Includes rustic mat, wood planks, cardboard, and tarpaulin
[4] Includes iron sheets, wood, asbestos, tiles, concrete, and roofing shingles
[5] Includes thatched/straw and dirt
[6] Includes poles with mud, stone with mud, unburnt bricks with mud, plywood, cardboard, reused wood, unburnt bricks with plaster, and burnt bricks with mud
[7] Includes cement, stone with lime/cement, burnt bricks with cement, cement blocks, wood planks/shingles
[8] Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba, and Paliisa districts
[9] Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac, and Lamwo districts
[10] Excludes children whose mothers are not interviewed

Table 4.9 Malaria species

Among children age 0-59 months with malaria parasites, the percentage with specific species of Plasmodium and the percentage with mixed infections, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Species of Plasmodium[11]				Mixed infections[12]	Number of children with malaria parasites
	P. falciparum	*P. malariae*	*P. ovale*	*P. vivax*		
Age in months						
<6	(96.0)	(6.9)	(0.0)	(0.0)	(2.9)	20
6-8	*	*	*	*	*	11
9-11	*	*	*	*	*	14
12-17	(97.6)	(4.1)	(0.5)	(0.0)	(2.2)	33
18-23	96.9	3.7	1.0	0.0	1.7	49
24-35	96.8	10.5	2.3	0.0	9.5	148
36-47	97.8	9.7	3.8	0.0	11.3	164
48-59	95.5	14.2	0.1	0.0	9.7	165
Sex						
Male	97.0	12.2	1.4	0.0	10.6	301
Female	96.7	7.7	2.4	0.0	6.8	302
Mother's interview status						
Interviewed	97.1	9.2	2.1	0.0	8.4	460
Not interviewed[1]	96.1	12.3	1.2	0.0	9.7	143
Residence						
Urban	95.9	4.1	0.0	0.0	0.0	50
Rural	97.0	10.5	2.1	0.0	9.5	554
Roofing material						
Natural[2]	96.7	10.8	1.4	0.0	8.8	334
Rudimentary[3]	*	*	*	*	*	1
Finished[4]	97.1	8.9	2.5	0.0	8.5	269
Wall material						
Natural[5]	(98.1)	(10.7)	(0.0)	(0.0)	(8.9)	19
Rudimentary[6]	96.2	10.2	1.5	0.0	7.9	427
Finished[7]	98.6	9.1	3.0	0.0	10.7	158
Region						
South Buganda	*	*	*	*	*	5
North Buganda	(100.0)	(6.1)	(4.3)	(0.0)	(10.4)	94
Kampala	*	*	*	*	*	0
Busoga	100.0	7.4	0.0	0.0	7.4	137
Bukedi	*	*	*	*	*	12
Bugisu	*	*	*	*	*	20
Teso	(100.0)	(4.3)	(0.0)	(0.0)	(4.3)	31
Karamoja	92.5	19.6	4.8	0.0	16.7	71
Lango	96.2	7.2	1.7	0.0	5.1	45
Acholi	99.4	2.1	0.0	0.0	1.5	30
West Nile	97.0	13.5	1.0	0.0	11.5	100
Bunyoro	91.6	12.6	0.6	0.0	4.9	28
Tooro	(94.2)	(5.8)	(0.0)	(0.0)	(0.0)	18
Kigezi	*	*	*	*	*	1
Ankole	*	*	*	*	*	11
Special areas						
Current IRS districts[8]	*	*	*	*	*	24
Former IRS districts[9]	99.2	2.2	0.3	0.0	1.7	75
Mother's education[10]						
No education	94.8	12.5	2.1	0.0	9.3	134
Primary	98.1	8.6	2.0	0.0	8.8	299
Secondary	(97.2)	(0.0)	(2.8)	(0.0)	(0.0)	27
More than secondary	*	*	*	*	*	1
Total 0-59	96.9	9.9	1.9	0.0	8.7	604
Total 6-59	96.9	10.0	2.0	0.0	8.9	583
Refugee settlements 0-59	99.0	1.0	0.0	0.0	0.0	85
Refugee settlements 6-59	99.0	1.0	0.0	0.0	0.0	84

Notes: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.
IRS = indoor residual spraying
RDT = rapid diagnostic test (SD Bioline Ag P.f)
[1] Includes children whose mothers are deceased
[2] Includes thatch/palm leaf and mud
[3] Includes rustic mat, wood planks, cardboard, and tarpaulin
[4] Includes iron sheets, wood, asbestos, tiles, concrete, and roofing shingles
[5] Includes thatched/straw and dirt,
[6] Includes poles with mud, stone with mud, unburnt bricks with mud, plywood, cardboard, reused wood, unburnt bricks with plaster, and burnt bricks with mud
[7] Includes cement, stone with lime/cement, burnt bricks with cement, cement blocks, wood planks/shingles
[8] Bugiri, Kaberamaido, Koboko, Lira, Otuke, Serere, Tororo, Alebtong, Amolatar, Budaka, Butaleja, Dokolo, Namutumba and Paliisa districts
[9] Oyam, Kole, Nwoya, Amuru, Agago, Gulu, Kitgum, Pader, Omoro, Apac and Lamwo districts
[10] Excludes children whose mothers are not interviewed
[11] Includes cases with only parasites identified as that specific species, and cases with that specific species combined with other species
[12] Mixed infections include cases with two or more species identified.

MALARIA KNOWLEDGE, PRACTISE, EXPOSURE TO MESSAGES, AND BELIEFS 5

Key Findings

Knowledge of causes of malaria:

- 78% of women age 15-49 know that malaria is caused by mosquitoes or mosquito bites.

Knowledge of ways to avoid malaria:

- 94% of women know that there are ways to avoid getting malaria.
- Among women who know that there are ways to avoid getting malaria and who mentioned SP/Fansidar as a medication to be taken during pregnancy to avoid getting malaria, 54% indicated that SP/Fansidar should be taken three or more times.
- 73% of women age 15-19 who know that there are ways to avoid getting malaria stated that they don't know of any medication that can be given to a pregnant woman to help her avoid getting malaria.

Ideal timing of treatment for children with fever:

- 77% of women reported that children with fever need to be taken for treatment the day that the illness begins; 14% said that children with fever should be taken for treatment the next day.

Exposure to malaria messages:

- 39% of women had heard or seen a malaria message in the 6 months preceding the survey

Opinions and beliefs about malaria:

- 94% of women agree that they sleep under a bed net every night because it is the best way to avoid getting malaria.
- 96% agree that they take the entire course of malaria medicine to make sure the disease will be fully cured.

This chapter assesses the extent to which malaria communication messages reach women age 15-49, the channels through which women receive such messages, and the extent to which the messages lead to action. The chapter also provides data on women's basic knowledge about causes, symptoms, treatment, prevention, and beliefs of malaria.

5.1 KNOWLEDGE OF CAUSES OF MALARIA

Perceptions, beliefs, and attitudes about the causes of malaria, how to identify symptoms, and ways to prevent the illness are often overlooked in malaria control efforts. Yet such understanding is necessary to identify and target vulnerable populations and ensure the success of malaria control. In Uganda, the

majority of women age 15-49 know that malaria is caused by mosquitoes/mosquito bites (78%). Another cause of malaria, mentioned by 15% of the women, is not sleeping under a mosquito net, and 14% note the presence of standing water/ a breeding environment. In the refugee settlements, knowledge of mosquitoes/ mosquito bites (82%) was higher than the national average of 78% (**Table 5.1**).

Trends: The percentage of women age 15-49 who know that malaria is caused by mosquitoes/mosquito bites increased from 87% in 2009 to 91% in 2014-15 but then dropped to 78% in 2018-19. The percentage of women who stated that they do not know any causes of malaria decreased from 7% in 2009 to 5% in 2014-15 and then dropped to 4% in 2018-19.

Patterns by background characteristics

- Among women age 15-49, knowledge of the causes of malaria, such as mosquitoes/mosquito bites and not sleeping under a mosquito net, grows with an increase in the woman's level of education.
- The percentage of women who do not know any cause of malaria ranges from 1% in Kampala to 11% in Bunyoro. In the refugee settlements, 9% of women do not know any cause of malaria, which is more than double the national average of 4%.
- The percentage of women who mentioned not sleeping under a mosquito net as a cause of malaria ranges from 2% in West Nile to 27% in Kampala. Only 7% of women in the refugee settlements know that not sleeping under a mosquito net is a cause of malaria.

5.2 Knowledge of Ways to Avoid Malaria

Knowledge of ways to avoid malaria

Percentage of women age 15-49 who report that there are ways to avoid getting malaria

Sample: Women age 15-49

Women were also asked if they know of ways to avoid getting malaria. Those who said there are ways to avoid getting malaria were further asked to state specific ways to avoid malaria. The most common ways stated to avoid getting malaria were sleeping under a mosquito net or ITN (91%); followed by ensuring good hygiene/keeping clean the environment and destroying mosquito breeding sites (22% respectively) (**Table 5.2**).

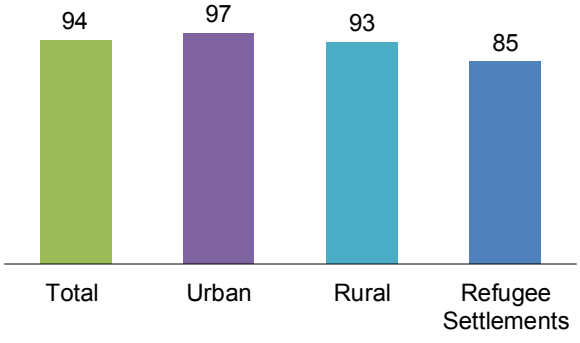
Trends: Overall, the percentage of women who say there are ways to avoid getting malaria increased from 86% in 2009, to 95% in 2014-15, and remained the same 2018-19 at 94%.

Patterns by background characteristics

- Knowledge that there are ways to avoid getting malaria is high with 97% of women in urban areas and 93% of women in rural areas stating that there are ways to avoid getting malaria. In the refugee settlements, 85% of women age 15-49 believe there are ways to avoid getting malaria (**Figure 5.1**).
- By region, the percentage of women who state that there are ways to avoid getting malaria ranges from 97% in Kampala, Bukedi, Bugisu, and Teso (respectively) to 89% in Karamoja, West Nile, and Kigezi (respectively).

Figure 5.1 **Knowledge of ways to avoid malaria**

Percentage of women age 15-49 who stated there are ways to avoid getting malaria



5.3 KNOWLEDGE OF MEDICINES GIVEN TO AVOID GETTING MALARIA DURING PREGNANCY

Women who reported that there are ways to avoid getting malaria were asked what medicines may be given to pregnant women to avoid getting malaria. Among women who reported that there are ways to avoid getting malaria, only 49% cited SP/Fansidar as a medicine used by pregnant women to avoid getting malaria, 14% mentioned Coartem/ACT, while 38% did not know any medicine that is given to women during pregnancy to avoid getting malaria (**Table 5.3**).

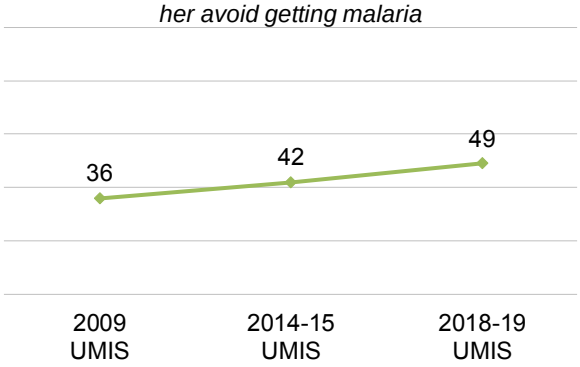
Women who cited SP/Fansidar as a medicine given to pregnant women to avoid getting malaria were further asked about the number of times a pregnant woman should take SP/Fansidar. Overall, 54% of women indicated that SP/Fansidar should be taken three or more times, 18% said it should be taken twice, while 7% said it should be taken once. Twenty-two percent of the women age 15-49 who reported there are ways to avoid getting malaria and mentioned SP/Fansidar as a medication that can be given to pregnant women do not know how many times pregnant women should take SP/Fansidar to avoid getting malaria.

Among women in refugee settlements, 25% of women who reported that there are ways to avoid getting malaria and mentioned SP/Fansidar as a medication that can be taken during pregnancy do not know how many times pregnant women should take SP/Fansidar to avoid getting malaria (**Table 5.3**).

Trends: The proportion of women age 15-49 who believe there are ways to avoid getting malaria and who reported that SP/Fansidar can be given to a pregnant woman to help her avoid getting malaria notably increased from 36% in 2009 to 42% in 2014-15 and 49% in 2018-19 (**Figure 5.2**).

Figure 5.2 **Trends in knowledge of medicines to avoid getting malaria during pregnancy**

Among women age 15-49 who state there are ways to avoid getting malaria, percentage who report that SP/Fansidar can be given to a pregnant woman to help her avoid getting malaria



Patterns by background characteristics

- Knowledge about SP/Fansidar as medication that may be given to a pregnant woman to help her avoid getting malaria was highest among women age 30 – 34 (69%), those in urban areas (54%), women with more than secondary education (62%) and those in the highest wealth quintile (54%).
- Among women report that there are ways to prevent malaria but who stated that they don't know of any medication to take during pregnancy to avoid getting malaria, the highest percentage was among women age 15-19 (73%).
- Among regions, Bugisu (64%) had the highest percentage of women with knowledge of SP/Fansidar as a medication that may be given to a pregnant woman to help her avoid getting malaria, while West Nile (26%) had the lowest percentage. Only 29% of women in the refugee settlements were knowledgeable about SP/Fansidar as medication that may be given to a pregnant woman to help her avoid getting malaria.
- Kigezi had the highest percentage of women that mentioned that SP/Fansidar should be taken three or more times by pregnant women (68%) while Karamoja (30%) had the lowest. Over half (53%) of the women in the refugee settlements indicated that SP/Fansidar should be taken three or more times during pregnancy.

5.4 Ideal Timing of Treatment for Children With Fever

In the 2018-19 UMIS, women were asked about the ideal timing of treatment for children with fever. Overall, 77% of women reported that children with fever needed to go for treatment the same day that the illness begins, and 14% said that children with fever should be taken for treatment the next day (**Table 5.4**).

Trends: The proportion of women that think the ideal time of treatment for children with fever is the same day the illness begins has consistently increased, from 66% in 2009 to 75% in 2014-15 and to 77% in 2018-19.

Patterns by background characteristics

- Slightly more women age 25-29 (80%) were knowledgeable about treatment for fever in children the same day the illness begins compared with women in other age categories.
- Knowledge on treatment of children with fever on the same day increases with a woman's level of education from 69% among women with no education to 91% among women with more than secondary education.
- Among women age 15-49, knowledge about treatment for fever in children on the same day the illness begins ranges from a low of 55% in Kigezi to a high of 86% in West Nile.

5.5 Malaria Knowledge and Behaviour

It has been shown that as knowledge of and attitudes toward malaria behaviours, products, and services improve, the practise of healthy malaria behaviours increases. One of the core objectives of the UMRSP is that, by 2020, at least 85% of the population will practise correct malaria prevention and measurement measures. Among women in a household with at least one ITN who know that sleeping under a mosquito net or ITN is a way to avoid malaria, 77% had actually slept under an ITN the night preceding the survey (**Table 5.5**). In addition, among women age 15-49 with a live birth in the 2 years preceding the survey who say that malaria can be prevented and know that there is preventive medication to avoid getting malaria during pregnancy, 95% took SP/Fansidar at least once during their most recent pregnancy (**Table 5.5**).

Furthermore, among children under age 5 who had fever in the past 2 weeks and whose mothers stated children with fever should be taken for treatment the same or next day, 60% had treatment for fever sought the same or next day.

Patterns by background characteristics

- Among women in a household with at least one ITN who know that sleeping under a mosquito net or ITN is a way of avoiding malaria, the actual practise of sleeping under an ITN the night before the survey ranges from 66% in Karamoja to 86% in Bugisu.
- Among children under age 5 who had fever in the past 2 weeks whose mothers stated children with fever should be taken for treatment the same or next day, those who sought treatment for fever the same or next day was highest among children of mothers age 15-19 years (73%), women with no education (64%), and those in Lango (77%).

5.6 Exposure to Malaria Messages

A crucial element in the fight to eliminate malaria is the ability to reach the population with information and educational materials on the causes and ways to avoid getting it. Exposure to information is the critical first step to increasing knowledge of the products, practises, and services that may influence an individual

to adopt or change a behaviour. The target population's ability to recall messages about malaria is an indicator of how widely communication activities have penetrated the target audience.

To assess the coverage of malaria communication programmes, women were asked if they had seen or heard any messages about malaria prevention in the 6 months preceding the survey. Women who had heard or seen messages were further asked about the source of the messages. It should be noted that the survey timing of the 2014-15 UMIS was soon after the 2014 ITN mass distribution campaign. The 2014 ITN mass distribution campaign included a comprehensive communication campaign regarding net usage.

Regardless of the source, overall, 39% of women had heard or seen a malaria message in the 6 months preceding the survey. Twenty-eight percent heard a message on the radio, 16% heard a message through interpersonal communication, 13% heard a message from a community health worker, 11% saw a message on TV, 8% heard a message at a community event, 7% saw a message on a poster or billboard, and 6% heard a message through social mobilisation. Only 4% saw a message through flyers, 3% through social media, and 6% by a message from elsewhere (**Table 5.6**).

Among all women who were exposed to malaria messages in the 6 months preceding the survey, 71% slept under an ITN the night before the survey. Furthermore, among all children under age 5 who had fever in the past 2 weeks and whose mothers were exposed to malaria messages, 61% had advice or treatment sought the same or next day following onset of fever, 58% had blood taken from a finger or heel for testing, while 53% took any ACT for the fever (**Table 5.7**).

Patterns by background characteristics

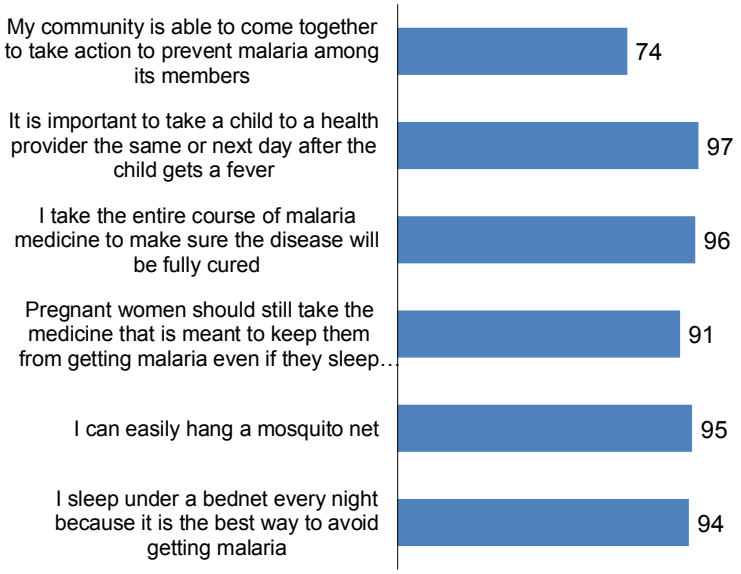
- Exposure to malaria messages from any source was higher in urban areas (43%) than in rural areas (38%).
- Exposure to malaria messages increases with level of education from 27% among women with no education to 58% among women with more than secondary education.
- Exposure to malaria messages from a community health worker ranges from 5% in South Buganda to 32% in Acholi.

5.7 OPINIONS AND BELIEFS ABOUT MALARIA

During the survey, a series of statements were read to women to assess their opinions and beliefs about malaria. Overall, 94% of women agree that they sleep under a bed net every night because it is the best way to avoid getting malaria; 95% agree they can easily hang a net; 91% agree that pregnant women should still take the medicine meant to keep them from getting malaria even if they sleep under nets every night; 97% agree that it is important to take a child to a health provider the same or next day after the child gets a fever; and 96% agree that they should take the entire course of malaria medicine to make sure the disease will be fully cured. However, only 74% agree that their community is able to come together to take action to prevent malaria among its members (**Figure 5.3, Table 5.8**).

Figure 5.3 **Opinions and beliefs about malaria**

Percentage of women age 15-49 who agree with specific statements about malaria



Patterns by background characteristics

- The percentage of women who agree that they should sleep under a bed net every night because it is the best way to avoid getting malaria ranges from 87% in Karamoja to 99% in Tooro.
- The percentage of women who agree with the statement "*Pregnant women should still take the medicine that is meant to keep them from getting malaria even if they sleep under nets every night*" ranges from 86% in Kampala to 95% in Teso.
- Close to all women in Bugisu, Teso, and West Nile (99% each) agree that they take the entire course of malaria medicine to make sure the disease will be fully cured compared to women in Bunyoro (86%).
- The percentage of women that agree with the statement "*My community is able to come together to take action to prevent malaria among its members*" increases with the age of the woman from 70% among women age 15-19 to 80% for women age 45-49.

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- **Table 5.5 Malaria knowledge and behaviour**
- **Table 5.6 Media exposure to malaria messages**
- **Table 5.7 Exposure to malaria messages and behaviour**
- **Table 5.8 Opinions and beliefs about malaria**

Table 5.1 Knowledge of causes of malaria

Percentage of women age 15-49 reporting specific causes of malaria, according to background characteristics, 2018-19 Uganda MIS

Background characteristic	Mosquito bites	Mosqui-toes	Mosqui-toes/ mosquito bites	Not sleeping under a mosquito net	Standing water/ breeding environ-ments	Poor hygiene/ dirty environ-ment	Parasites	Eating maize	Eating mangoes	Eating dirty food	Drinking unboiled water	Getting soaked with rain	Cold/ changing weather	Witchcraft	Contact with infected person	Germ	Other	Don't know/ missing	Number of women
Age																			
15-19	35.8	43.5	76.2	17.1	17.0	12.5	1.1	1.1	2.4	5.5	11.2	2.0	6.3	0.1	0.1	1.6	2.6	3.3	1,884
20-24	34.4	44.3	75.7	17.2	14.1	10.9	2.1	1.7	2.6	6.2	13.2	1.7	7.4	0.0	0.2	1.3	2.9	4.1	1,586
25-29	39.2	42.4	78.4	16.1	13.3	9.7	0.9	1.4	1.1	4.1	15.6	2.1	7.4	0.0	0.1	1.0	1.9	4.2	1,372
30-34	40.0	43.3	80.3	15.0	11.2	9.4	0.6	0.9	1.9	4.4	13.8	2.7	7.7	0.0	0.2	0.4	2.3	4.5	1,172
35-39	33.4	49.1	78.5	11.9	12.6	8.1	0.6	2.3	2.3	5.3	16.2	1.9	6.7	0.0	0.0	0.7	3.1	4.8	941
40-44	38.0	44.6	80.1	9.2	12.9	8.7	1.3	1.4	2.3	3.9	16.6	2.3	5.5	0.0	0.0	3.2	2.5	5.5	750
45-49	35.9	45.1	78.3	10.8	10.2	9.0	0.3	1.0	1.3	4.7	14.4	2.4	8.1	0.0	0.1	1.8	3.0	4.7	526
Residence																			
Urban	39.6	41.0	76.3	21.8	20.9	13.0	1.7	0.6	1.4	4.6	14.4	1.7	4.6	0.0	0.1	1.4	1.9	2.6	2,364
Rural	35.4	45.6	78.4	12.2	10.8	9.1	0.8	1.7	2.3	5.2	13.8	2.3	7.9	0.0	0.1	1.3	2.8	4.9	5,867
Region																			
South Buganda	36.3	39.2	71.1	24.6	22.1	10.8	1.2	1.4	1.5	2.8	15.7	1.1	1.8	0.0	0.1	1.2	1.9	3.9	1,409
North Buganda	43.1	31.8	72.4	20.2	21.4	15.9	1.0	2.6	3.2	3.5	18.5	2.9	1.0	0.0	0.0	2.2	2.8	2.8	1,198
Kampala	39.4	36.5	70.0	26.5	26.1	15.5	1.8	0.4	1.3	5.2	16.4	1.6	2.8	0.1	0.3	3.7	3.9	1.0	394
Busoga	37.8	52.6	85.6	12.3	8.1	6.0	0.6	1.4	2.0	6.7	8.0	1.4	0.3	0.0	0.0	1.2	1.2	3.2	656
Bukedi	42.1	49.4	90.5	2.9	3.7	3.8	0.2	1.6	0.4	5.9	8.6	2.0	1.5	0.0	0.0	0.8	0.4	2.7	354
Bugisu	44.4	40.2	82.4	8.9	6.9	3.9	2.1	1.2	4.1	8.9	15.7	4.6	6.6	0.0	0.3	1.0	0.9	5.2	523
Teso	35.2	52.3	87.0	12.9	5.7	5.9	1.9	0.0	0.4	2.2	1.7	0.6	8.9	0.0	0.1	1.0	1.2	2.5	434
Karamoja	27.2	44.3	70.6	7.1	1.9	14.7	0.0	0.1	0.8	5.5	2.1	1.5	21.6	0.0	0.0	2.2	6.7	5.0	169
Lango	51.1	38.1	83.8	5.3	9.0	9.3	2.7	0.0	0.6	6.9	1.7	1.7	34.7	0.0	0.2	0.7	3.2	2.7	462
Acholi	32.8	54.2	84.0	12.4	13.7	10.4	1.4	0.1	1.6	6.4	4.0	2.1	18.0	0.0	0.8	1.3	7.8	5.6	325
West Nile	31.1	59.4	83.0	1.6	5.5	8.2	0.4	0.3	0.3	4.5	6.0	2.1	22.2	0.0	0.2	1.0	5.6	8.9	539
Bunyoro	30.7	35.0	64.8	17.7	11.7	7.0	0.7	0.3	1.1	4.7	12.0	1.7	2.8	0.2	0.0	0.7	2.6	10.5	335
Tooro	32.8	47.5	80.0	12.4	5.9	8.4	0.4	6.2	5.1	3.5	25.4	2.1	1.7	0.0	0.1	1.0	0.8	4.4	438
Kigezi	17.6	56.8	73.8	12.4	11.5	11.4	0.4	0.5	0.6	5.8	23.9	5.4	10.0	0.0	0.0	0.1	3.3	8.7	345
Ankole	28.8	52.6	80.2	15.8	16.0	14.1	0.9	1.4	4.3	8.2	27.6	2.0	2.7	0.0	0.0	1.2	1.5	2.5	648
Education																			
No education	32.5	44.3	74.5	9.2	6.0	5.4	0.4	1.4	2.3	5.4	9.9	3.6	11.1	0.0	0.2	0.6	4.2	9.8	972
Primary	33.7	45.8	76.8	11.5	9.1	9.1	0.8	2.0	2.6	5.4	14.3	1.9	7.9	0.0	0.1	1.4	3.3	5.2	4,290
Secondary	41.5	42.2	79.9	22.0	22.1	12.9	1.3	0.6	1.3	5.1	15.8	2.1	4.4	0.0	0.1	1.6	1.0	1.2	2,392
More than secondary	45.0	41.6	82.3	21.3	26.2	15.7	3.8	0.7	0.7	1.5	10.9	1.4	4.0	0.0	0.3	1.0	0.9	0.2	577
Wealth quintile																			
Lowest	32.2	49.3	79.2	5.5	7.5	0.3	1.0	1.0	5.3	5.3	1.7	17.2	0.0	0.3	1.3	4.2	6.1	1,448	5.5
Second	35.7	44.2	77.6	9.4	7.5	0.7	1.3	1.4	4.6	12.8	2.1	7.2	0.0	0.1	0.9	2.5	7.2	1,545	9.4
Middle	33.7	47.0	77.7	11.4	8.3	1.2	3.1	3.9	5.4	15.3	3.4	4.6	0.1	0.0	1.5	1.9	4.2	1,505	11.4
Fourth	39.8	41.7	78.7	16.2	13.3	1.3	1.6	2.8	5.8	19.8	1.8	3.6	0.0	0.1	1.3	2.8	2.9	1,647	16.2
Highest	39.9	40.9	76.4	22.3	13.1	1.7	0.3	1.4	4.2	15.3	1.8	4.0	0.0	0.1	1.5	1.9	1.8	2,086	22.3
Total	36.6	44.3	77.8	14.9	13.7	10.2	1.1	1.4	2.1	5.0	14.0	2.1	7.0	0.0	0.1	1.3	2.6	4.2	8,231
Refugee settlements	23.1	60.6	81.5	7.0	6.3	10.9	0.3	1.6	2.5	3.9	11.9	1.1	7.9	0.0	0.3	1.0	4.4	9.2	637

Note: Percentages may add to more than 100 since multiple responses were allowed.

Table 5.2 Knowledge of ways to avoid malaria

Percentage of women age 15-49 who state there are ways to avoid getting malaria, and among women who state there are ways to avoid getting malaria, the percentage reporting specific ways of avoiding malaria, according to background characteristics, 2018-19 Uganda MIS

Background characteristic	State there are ways to avoid getting malaria	Number of women	Ways to avoid getting malaria: Sleep under mosquito net or ITN	Taking preventative medication	Use mosquito repellent	Spraying house with insecticide	Using mosquito coils	Destroy mosquito breeding sites	Boil water	Good hygiene/ keeping clean environment	Other	Don't know	Number of women who state there are ways to avoid getting malaria
Age													
15-19	93.8	1,884	89.6	4.6	1.2	8.1	0.8	28.2	13.8	26.3	6.8	0.1	1,767
20-24	94.9	1,586	92.6	6.8	1.5	7.3	1.2	22.9	15.3	21.5	6.5	0.2	1,506
25-29	95.4	1,372	92.3	5.2	0.7	7.3	1.1	19.4	15.0	21.0	8.4	1.1	1,308
30-34	93.5	1,172	93.1	5.2	1.2	7.2	0.2	19.6	15.9	20.8	6.8	0.5	1,095
35-39	92.6	941	91.3	5.3	0.5	5.2	0.7	18.7	18.3	19.0	5.8	0.3	871
40-44	95.2	750	89.8	7.2	0.6	6.1	1.5	19.7	18.8	17.7	9.2	0.0	714
45-49	94.6	526	88.8	6.5	0.5	5.8	0.0	16.4	16.4	23.0	5.4	0.6	498
Residence													
Urban	96.7	2,364	94.2	5.2	2.2	10.7	0.9	31.0	14.1	23.0	6.8	0.2	2,286
Rural	93.3	5,867	90.0	5.8	0.5	5.5	0.8	18.1	16.4	21.4	7.1	0.5	5,473
Region													
South Buganda	96.3	1,409	95.1	1.4	1.2	7.9	0.6	26.9	15.7	20.8	4.7	0.5	1,357
North Buganda	94.4	1,198	91.4	2.9	0.7	5.3	1.0	26.4	22.6	23.4	7.0	0.4	1,130
Kampala	97.3	394	90.6	5.0	2.4	10.0	0.6	33.5	9.8	22.2	9.9	0.1	383
Busoga	93.7	656	92.3	8.7	0.9	4.7	0.6	16.9	6.3	13.5	1.7	0.0	615
Bukedi	97.0	354	92.6	7.6	0.9	11.2	2.2	12.2	10.8	18.9	1.6	0.0	343
Bugisu	97.3	523	88.7	13.5	2.4	16.5	1.7	19.3	18.3	20.1	7.1	0.4	509
Teso	97.0	434	93.3	6.1	0.9	11.0	1.3	26.5	3.5	18.9	4.7	0.0	421
Karamoja	89.2	169	72.0	13.0	0.3	0.4	0.8	2.2	0.9	33.8	9.3	1.0	151
Lango	93.2	462	90.7	13.2	1.6	14.2	0.0	17.5	2.5	19.0	12.9	0.2	431
Acholi	93.7	325	87.2	13.7	1.5	8.5	0.5	26.6	4.8	38.3	19.8	0.9	305
West Nile	89.4	539	89.0	9.0	0.5	1.7	0.3	11.2	4.4	19.9	17.0	0.5	482
Bunyoro	91.2	335	86.7	2.1	0.4	2.7	0.4	18.6	17.8	17.4	5.5	1.5	305
Tooro	92.7	438	93.3	2.4	0.3	4.0	0.6	20.5	32.7	24.8	2.6	0.3	406
Kigezi	88.7	345	90.0	1.1	0.5	3.3	0.0	19.9	30.9	22.4	7.6	0.3	307
Ankole	94.8	648	92.6	2.1	0.2	1.8	1.6	22.0	32.9	27.2	5.2	0.3	615
Education													
No education	85.8	972	84.8	7.8	0.2	2.7	0.7	6.7	11.7	16.1	8.3	0.9	834
Primary	93.3	4,290	89.9	5.4	0.2	3.5	0.7	14.2	17.0	17.7	7.9	0.5	4,004
Secondary	98.1	2,392	94.8	4.8	1.4	11.9	0.9	34.0	16.1	26.7	4.9	0.1	2,346
More than secondary	99.6	577	95.5	7.9	5.7	18.1	2.0	48.0	11.3	39.6	8.1	0.1	575
Wealth quintile													
Lowest	90.8	1,448	87.1	8.6	0.3	3.9	0.4	11.0	6.1	19.4	11.3	0.5	1,315
Second	92.5	1,545	88.8	6.3	0.5	5.2	1.5	13.8	17.6	16.5	7.5	0.7	1,429
Middle	93.8	1,505	92.4	4.1	0.2	4.2	0.7	17.2	19.1	21.8	5.6	0.5	1,411
Fourth	95.6	1,647	91.5	4.5	1.0	7.3	0.8	25.5	20.9	26.0	4.6	0.3	1,575
Highest	97.3	2,086	94.8	5.3	2.2	12.1	0.9	35.0	14.4	24.1	6.9	0.1	2,030
Total	94.3	8,231	91.3	5.7	1.0	7.0	0.8	21.9	15.7	21.9	7.0	0.4	7,759
Refugee settlements	84.9	637	92.5	3.3	0.5	1.2	0.1	10.8	13.3	23.4	7.1	0.7	541

Note: Percentages may add to more than 100 since multiple responses were allowed.

Table 5.3 Knowledge of medicines to avoid malaria during pregnancy

Among women age 15-49 who believe there are ways to avoid getting malaria, percentage who report specific medications that can be given to a pregnant woman to help her avoid getting malaria, and among women who report SP/Fansidar, percent distribution by number of times that it should be taken during pregnancy, according to background characteristics, Uganda MIS 2018-19

	Medications that may be given to a pregnant woman to help her avoid getting malaria							Number of times SP/Fansidar should be taken during pregnancy					
Background characteristic	SP/Fansinesdar	Chloroquine	Chloroquine with Fansidar	Coartem/ ACT	Other	Don't know of any medication	Number of women who say there are ways to avoid getting malaria	1 time	2 times	3 or more times	Don't know/ missing	Total	Number of women who report SP/Fansidar as a medication to avoid malaria during pregnancy
Age													
15-19	14.7	0.3	0.2	11.6	3.0	73.0	1,767	6.9	14.2	44.1	34.8	100.0	259
20-24	46.9	0.4	0.4	13.5	6.4	39.2	1,506	5.4	13.2	58.5	22.9	100.0	707
25-29	66.2	0.5	0.5	13.3	5.5	21.3	1,308	5.8	16.1	57.8	20.3	100.0	866
30-34	68.5	0.5	0.7	14.9	4.7	18.2	1,095	5.0	19.6	53.5	21.9	100.0	751
35-39	66.7	0.6	0.6	12.5	4.6	22.1	871	9.3	21.1	52.7	17.0	100.0	581
40-44	54.6	0.4	0.3	15.6	5.3	30.0	714	8.1	19.7	47.5	24.7	100.0	390
45-49	47.7	2.1	1.2	20.4	6.1	30.9	498	13.1	20.9	47.1	18.8	100.0	237
Residence													
Urban	53.5	0.4	0.2	10.1	4.6	38.0	2,286	9.3	15.6	55.1	20.0	100.0	1,223
Rural	46.9	0.6	0.6	15.3	5.1	37.5	5,473	5.7	18.5	52.9	22.9	100.0	2,568
Region													
South Buganda	52.6	0.0	0.0	7.0	2.3	41.3	1,357	8.3	14.0	47.1	30.6	100.0	713
North Buganda	50.9	0.6	0.1	22.5	4.7	28.7	1,130	7.3	13.0	61.2	18.5	100.0	575
Kampala	50.0	0.6	0.3	10.4	6.6	41.9	383	18.7	12.1	47.6	21.6	100.0	192
Busoga	39.4	0.5	0.5	19.2	3.4	42.4	615	4.7	29.9	49.8	15.5	100.0	243
Bukedi	35.4	0.4	2.5	21.0	4.7	39.5	343	2.9	31.7	60.3	5.1	100.0	122
Bugisu	63.9	0.0	0.0	9.7	8.4	26.3	509	4.3	11.5	46.8	37.3	100.0	325
Teso	51.8	0.7	0.2	9.9	3.5	38.1	421	3.9	28.7	56.4	10.9	100.0	218
Karamoja	58.5	2.0	2.6	15.3	10.3	24.9	151	7.0	35.1	30.0	27.9	100.0	88
Lango	41.3	0.3	0.9	18.8	4.7	41.8	431	5.9	16.3	63.9	13.9	100.0	178
Acholi	29.4	1.2	1.2	21.3	13.6	43.5	305	9.5	27.2	42.0	21.2	100.0	89
West Nile	26.0	1.4	0.0	21.4	10.6	52.0	482	3.9	11.3	62.3	22.5	100.0	125
Bunyoro	61.8	0.0	0.7	6.3	3.7	31.2	305	3.7	16.9	54.1	25.3	100.0	189
Tooro	62.6	1.4	1.6	15.5	2.1	23.8	406	7.9	19.3	52.8	20.0	100.0	254
Kigezi	49.6	0.6	0.1	2.7	3.9	45.3	307	0.9	10.0	67.6	21.5	100.0	152
Ankole	53.4	0.7	0.5	5.7	3.2	40.9	615	8.5	19.0	57.6	14.9	100.0	328
Education													
No education	44.4	1.3	0.7	19.1	5.5	35.8	834	4.9	22.8	51.6	20.7	100.0	370
Primary	48.2	0.6	0.5	14.3	5.8	37.2	4,004	7.1	18.0	53.0	21.9	100.0	1,929
Secondary	48.4	0.1	0.3	11.8	3.7	41.1	2,346	7.4	14.1	55.4	23.2	100.0	1,135
More than secondary	62.1	1.3	0.7	9.9	2.9	28.7	575	6.3	20.9	53.4	19.4	100.0	357
Wealth quintile													
Lowest	40.7	0.9	1.0	20.3	7.1	37.8	1,315	6.6	23.8	51.1	18.5	100.0	535
Second	45.5	0.5	0.8	12.1	5.3	40.0	1,429	5.0	19.9	45.7	29.4	100.0	650
Middle	49.0	0.6	0.3	13.5	4.9	36.9	1,411	6.3	18.6	53.7	21.4	100.0	691
Fourth	52.7	0.6	0.3	12.7	4.0	36.5	1,575	6.7	15.3	59.2	18.7	100.0	830
Highest	53.5	0.3	0.2	11.8	4.0	37.2	2,030	8.7	14.1	55.2	21.9	100.0	1,086
Total	48.9	0.6	0.5	13.8	4.9	37.6	7,759	6.9	17.6	53.6	21.9	100.0	3,792
Refugee settlements	28.5	0.2	0.0	13.8	6.9	54.3	541	5.1	17.3	52.8	24.7	100.0	154

Table 5.4 Ideal timing of treatment for children with fever

Percent distribution of women age 15-49 by time after the illness begins that a child with fever should be taken for treatment, according to background characteristics, Uganda MIS 2018-19

Background characteristic	Same day	Next day	Two days after onset of fever	Three or more days after onset of fever	Treatment for fever is not necessary	Depends on how serious fever is	Other	Don't know	Total	Number of women
Age										
15-19	76.1	12.6	2.6	2.0	0.0	2.4	0.1	4.1	100.0	1,884
20-24	78.2	14.0	3.4	0.9	0.0	2.7	0.2	0.6	100.0	1,586
25-29	79.5	13.9	2.3	1.0	0.0	2.9	0.2	0.3	100.0	1,372
30-34	75.4	15.1	4.8	1.0	0.3	2.6	0.3	0.5	100.0	1,172
35-39	78.4	13.7	3.0	0.9	0.2	3.5	0.1	0.2	100.0	941
40-44	76.8	14.0	2.9	0.9	0.0	4.9	0.1	0.4	100.0	750
45-49	76.4	14.6	4.3	0.9	0.0	3.8	0.0	0.0	100.0	526
Residence										
Urban	79.5	12.2	2.3	1.1	0.1	4.0	0.1	0.7	100.0	2,364
Rural	76.4	14.5	3.6	1.2	0.1	2.6	0.2	1.4	100.0	5,867
Region										
South Buganda	79.7	9.9	3.5	1.0	0.0	5.2	0.0	0.7	100.0	1,409
North Buganda	73.8	17.1	4.2	0.7	0.2	3.2	0.0	0.8	100.0	1,198
Kampala	77.8	10.8	2.5	2.3	0.4	4.8	0.3	1.1	100.0	394
Busoga	81.3	12.1	1.8	1.3	0.3	1.7	0.0	1.4	100.0	656
Bukedi	80.7	15.6	2.7	0.3	0.0	0.7	0.0	0.0	100.0	354
Bugisu	81.4	10.8	3.0	1.1	0.0	2.7	0.2	0.9	100.0	523
Teso	81.0	10.2	2.2	0.8	0.0	5.2	0.2	0.4	100.0	434
Karamoja	70.5	23.1	3.2	1.5	0.0	0.7	0.0	1.0	100.0	169
Lango	74.6	15.4	2.8	1.4	0.1	1.4	0.4	3.8	100.0	462
Acholi	78.7	15.4	1.9	0.3	0.0	1.3	0.2	2.1	100.0	325
West Nile	86.1	7.6	2.1	1.6	0.0	1.0	0.2	1.4	100.0	539
Bunyoro	74.4	13.3	3.5	1.8	0.0	5.4	0.5	1.1	100.0	335
Tooro	77.9	13.4	5.1	0.6	0.0	1.6	0.7	0.7	100.0	438
Kigezi	54.7	31.1	4.3	3.1	0.2	2.3	0.0	4.4	100.0	345
Ankole	75.4	16.0	3.7	1.6	0.0	2.5	0.0	0.8	100.0	648
Education										
No education	69.3	19.3	5.5	1.1	0.3	3.2	0.2	1.1	100.0	972
Primary	75.5	14.7	3.4	1.4	0.1	3.2	0.2	1.5	100.0	4,290
Secondary	80.4	12.2	2.4	1.0	0.0	2.7	0.1	1.1	100.0	2,392
More than secondary	91.3	4.7	0.9	0.7	0.0	2.3	0.0	0.1	100.0	577
Wealth quintile										
Lowest	73.0	17.1	4.2	1.4	0.0	2.5	0.3	1.4	100.0	1,448
Second	73.1	16.5	3.1	1.6	0.3	3.8	0.1	1.4	100.0	1,545
Middle	78.0	14.1	3.8	0.6	0.0	2.3	0.1	1.2	100.0	1,505
Fourth	78.4	13.1	3.2	1.3	0.0	2.7	0.1	1.1	100.0	1,647
Highest	82.0	9.9	2.2	1.1	0.1	3.5	0.1	1.1	100.0	2,086
Total	77.3	13.8	3.2	1.2	0.1	3.0	0.1	1.2	100.0	8,231
Refugee settlements	78.7	16.7	1.9	1.0	0.0	0.9	0.0	0.8	100.0	637

Table 5.5 Malaria knowledge and behaviour

Among women age 15-49 in a household with at least 1 insecticide-treated net (ITN) who know that sleeping under a mosquito net or sleeping under an ITN are ways to avoid getting malaria, percentage who slept under an ITN the night before the survey; among women with a live birth in the 2 years preceding the survey who know there is preventive medication to avoid getting malaria, percentage who took SP/Fansidar at least once during their most recent pregnancy; and among children under age 5 who had fever in the past 2 weeks whose mothers stated children with fever should be taken for treatment the same or next day, percentage for whom advice or treatment was sought the same or next day following the onset of fever, according to background characteristics, Uganda MIS 2018-19

	Among women age 15-49 in a household with at least 1 ITN[1] who know that sleeping under a mosquito net or sleeping under an ITN are ways to avoid getting malaria		Among women age 15-49 with a live birth in the 2 years preceding the survey who know there is preventive medication to avoid getting malaria		Among children under age 5 who had fever in the past 2 weeks whose mothers stated children with fever should be taken for treatment the same or next day	
Background characteristic	Percentage who slept under an ITN last night	Number of women	Percentage who took SP/Fansidar at least once during their most recent pregnancy	Number of women	Percentage for whom advice or treatment was sought the same or next day[2]	Number of children
Age						
15-19	66.7	1,396	*	15	73.0	90
20-24	77.2	1,203	(97.6)	39	62.0	396
25-29	78.9	1,042	(96.1)	23	58.2	378
30-34	81.7	878	(96.1)	22	60.9	302
35-39	83.5	699	*	18	57.8	176
40-44	80.2	586	*	2	40.7	82
45-49	83.8	387	*	1	(66.5)	19
Residence						
Urban	77.9	1,846	(100.2)	28	60.2	210
Rural	76.8	4,346	93.0	93	59.7	1,233
Region						
South Buganda	74.7	1,109	*	5	49.3	83
North Buganda	72.6	871	*	9	49.2	206
Kampala	79.9	274	*	3	*	14
Busoga	72.1	489	*	13	69.6	255
Bukedi	76.4	288	*	11	56.5	89
Bugisu	85.5	395	*	18	62.0	76
Teso	80.5	370	*	7	41.7	123
Karamoja	65.9	66	*	9	70.0	44
Lango	79.2	334	(80.4)	17	76.9	95
Acholi	75.0	223	(90.1)	10	64.9	99
West Nile	79.3	410	*	8	73.7	171
Bunyoro	81.7	245	*	2	54.3	61
Tooro	83.3	344	*	1	54.8	72
Kigezi	76.1	249	*	1	(43.0)	26
Ankole	78.7	525	*	6	*	27
Education						
No education	78.6	575	(81.2)	23	63.9	254
Primary	78.1	3,202	96.6	64	59.6	915
Secondary	74.5	1,939	(100.0)	26	56.8	240
More than secondary	79.7	477	*	8	(56.4)	34
Wealth quintile						
Lowest	78.7	938	89.8	44	60.8	415
Second	78.6	1,104	(92.4)	25	56.8	335
Middle	75.1	1,167	*	14	60.3	360
Fourth	76.6	1,342	*	18	60.7	206
Highest	77.2	1,640	*	20	61.3	126
Total	77.2	6,192	94.6	121	59.8	1,443
Refugee settlements	88.7	413	*	7	60.6	181

Notes: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).

[2] Includes advice or treatment from the following sources: public sector, private medical sector, shop, market, and hawker/itinerant drug seller. Excludes advice or treatment from a traditional practitioner.

Table 5.6 Media exposure to malaria messages

Percentage of women age 15-49 who have seen or heard a message about malaria in the past 6 months through specific sources of media, according to background characteristics, Uganda MIS 2018-19

	Source of exposure to malaria messages in the past 6 months											
Background characteristic	Radio	Television	Poster/ billboard	Community health worker	Community event	Inter-personal commu-nication	Flyers	Social mobili-sation	Social media	Elsewhere	Any source	Number of women
Age												
15-19	22.5	11.0	6.1	7.8	4.0	11.3	3.6	3.5	2.7	5.8	33.4	1,884
20-24	26.0	10.4	6.6	12.7	7.4	14.3	3.5	4.5	4.5	6.1	37.8	1,586
25-29	30.2	12.9	7.9	14.9	8.9	17.0	4.8	7.4	3.9	6.0	43.5	1,372
30-34	25.6	11.0	5.6	16.0	8.6	16.8	3.7	6.8	2.8	5.7	40.4	1,172
35-39	30.0	9.1	6.2	13.6	7.9	18.2	3.7	9.3	4.7	3.9	39.4	941
40-44	34.9	9.2	7.0	12.5	9.7	19.6	3.5	6.9	2.3	9.1	44.9	750
45-49	34.8	7.4	5.6	15.6	9.7	15.9	4.5	8.6	2.6	5.0	43.6	526
Residence												
Urban	30.2	23.6	11.4	12.0	7.2	14.7	6.0	7.0	6.6	7.0	43.2	2,364
Rural	26.7	5.3	4.5	13.0	7.6	15.8	3.0	5.7	2.1	5.4	37.7	5,867
Region												
South Buganda	22.1	18.2	6.4	5.1	2.5	8.8	2.5	4.3	3.9	3.6	33.7	1,409
North Buganda	31.2	14.3	5.5	10.3	5.3	10.7	2.7	6.9	2.0	5.0	40.8	1,198
Kampala	28.2	34.9	13.6	11.9	6.8	14.4	7.5	6.6	7.5	9.1	44.0	394
Busoga	31.7	12.4	8.9	16.3	13.8	22.5	10.5	11.5	10.4	10.2	41.3	656
Bukedi	24.8	4.1	5.2	10.8	10.0	21.6	3.9	2.5	2.1	4.7	39.7	354
Bugisu	40.3	13.2	7.0	13.9	7.4	24.3	5.2	3.1	7.8	13.0	49.9	523
Teso	37.0	6.8	5.4	17.7	4.1	38.0	5.7	2.5	3.0	16.7	53.2	434
Karamoja	14.4	0.9	1.1	31.1	14.8	24.8	1.4	8.4	5.1	7.1	42.8	169
Lango	20.8	2.5	8.1	19.8	12.7	21.2	2.0	9.2	2.3	4.8	37.8	462
Acholi	27.0	4.2	10.4	31.7	22.0	20.4	4.0	10.2	2.2	12.6	52.5	325
West Nile	26.9	3.4	2.0	18.8	6.6	16.5	3.5	6.2	0.7	4.2	41.1	539
Bunyoro	29.9	3.8	6.7	12.6	9.2	8.2	0.8	5.9	0.6	0.6	38.7	335
Tooro	25.5	2.2	3.5	8.6	6.5	5.3	1.1	3.0	0.6	0.2	29.5	438
Kigezi	29.7	2.2	5.6	8.0	6.0	14.3	2.5	9.4	1.9	1.2	34.8	345
Ankole	22.7	5.7	7.2	7.8	5.5	8.2	4.2	5.1	0.5	1.2	27.1	648
Education												
No education	15.4	1.4	2.3	11.8	8.3	12.6	1.1	4.3	1.4	2.8	27.3	972
Primary	26.8	4.6	4.1	13.0	8.0	15.4	3.2	6.0	1.9	6.3	37.1	4,290
Secondary	29.8	19.6	9.5	11.6	5.9	15.3	4.5	5.7	4.6	6.0	43.5	2,392
More than secondary	46.4	33.5	19.2	16.3	8.7	21.0	10.7	11.6	13.4	7.4	58.4	577
Wealth quintile												
Lowest	17.5	0.6	3.6	17.2	10.0	20.5	1.7	5.1	0.9	6.6	37.0	1,448
Second	25.7	3.1	3.3	12.4	7.1	13.9	3.2	4.6	2.0	6.8	35.0	1,545
Middle	28.5	2.0	4.4	10.1	8.7	14.6	3.3	5.6	1.9	4.4	35.7	1,505
Fourth	33.5	7.6	5.7	12.2	6.4	14.8	3.5	7.6	3.7	4.1	39.8	1,647
Highest	31.1	31.7	12.9	12.0	5.9	14.3	6.5	7.0	7.2	7.2	46.3	2,086
Total	27.7	10.6	6.5	12.7	7.5	15.5	3.9	6.1	3.4	5.9	39.3	8,231
Refugee settlements	6.0	0.0	0.2	5.0	4.3	5.3	0.0	1.9	0.0	3.1	15.5	637

Note: Percentages may add to more than 100 since multiple responses were allowed.

Table 5.7 Exposure to malaria messages and behaviour

Among women age 15-49 who were exposed to malaria messages in the past 6 months, percentage who slept under an insecticide-treated net (ITN) the night before the survey, and among children under age 5 who had fever in the 2 weeks preceding the survey whose mothers were exposed to malaria messages in the past 6 months, percentage for whom advice or treatment was sought the same or next day following the onset of fever, percentage who had blood taken from a finger or heel for testing, and percentage who took any artemisinin-based combination therapy (ACT), according to source of exposure, Uganda MIS 2018-19

			Among children under age 5 who had fever in the past 2 weeks whose mothers were exposed to malaria messages:			
Source or exposure to malaria messages in the past 6 months	Percentage who slept under an ITN[1] last night	Number of women	Percentage for whom advice or treatment was sought the same or next day[2]	Percentage who had blood taken from a finger or heel for testing	Percentage who took any ACT	Number of children
Source of exposure to malaria messages in the past 6 months						
Radio	73.4	2,279	62.3	56.8	49.2	411
Television	71.6	872	63.7	73.0	45.4	90
Poster/ billboard	71.9	533	65.4	78.0	57.1	94
Community health worker	72.1	1,044	61.6	60.8	54.2	299
Community event	71.7	615	61.9	67.1	50.8	181
Interpersonal communication	70.9	1,272	62.7	61.5	54.3	328
Flyers	75.0	318	74.1	87.6	37.8	82
Social mobilisation	75.9	501	68.4	80.2	50.9	126
Social media	71.4	283	81.6	83.7	21.1	65
Elsewhere	80.6	485	71.6	71.7	37.7	143
Total exposed to malaria messages	71.4	3,235	60.7	57.7	52.6	652
All women	66.3	8,231	na	na	na	na
All children with fever in the past 2 weeks	na	na	56.9	50.7	54.8	1,578
Refugee settlements (women exposed to malaria messages)	71.2	99	(76.6)	(77.7)	(55.7)	30
Refugee settlements (all women)	72.2	637	na	na	na	na
Refugee settlements (all children with fever in the past 2 weeks)	na	na	61.0	58.7	65.2	186

Notes: An asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.
na = Not applicable
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2014-15 UMIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Includes advice or treatment from the following sources: public sector, private medical sector, shop, market, and hawker/itinerant drug seller. Excludes advice or treatment from a traditional practitioner.

Table 5.8 Opinions and beliefs about malaria

Percentage of women age 15-49 who agree with specific statements about malaria, according to background characteristics, Uganda MIS 2018-19

Background characteristic	I sleep under a bed net every night because it is the best way to avoid getting malaria	I can easily hang a mosquito net	Pregnant women should still take the medicine that is meant to keep them from getting malaria even if they sleep under nets every night	I take the entire course of malaria medicine to make sure the disease will be fully cured	It is important to take a child to a health provider the same or next day after the child gets a fever	My community is able to come together to take action to prevent malaria among its members	Number of women
Age							
15-19	91.6	93.5	78.5	94.8	94.5	70.2	1,884
20-24	95.4	94.7	93.4	95.7	96.5	74.4	1,586
25-29	95.8	95.7	95.3	96.3	97.3	74.4	1,372
30-34	94.8	96.0	95.7	96.7	97.6	74.5	1,172
35-39	95.8	94.6	95.8	96.0	97.8	75.2	941
40-44	92.5	95.7	95.9	97.5	97.3	79.5	750
45-49	94.8	95.8	94.5	97.1	96.0	80.0	526
Residence							
Urban	94.9	94.8	91.2	96.4	98.1	75.6	2,364
Rural	94.0	95.0	91.2	95.9	95.9	73.9	5,867
Region							
South Buganda	92.4	96.2	92.2	97.1	98.8	78.5	1,409
North Buganda	96.7	95.8	92.6	97.6	97.0	72.9	1,198
Kampala	93.3	93.4	86.0	94.7	96.2	70.5	394
Busoga	91.9	95.7	92.2	97.5	96.9	65.0	656
Bukedi	90.7	95.9	87.5	89.4	95.2	70.3	354
Bugisu	91.8	93.1	89.7	98.5	93.7	58.7	523
Teso	98.3	98.5	94.6	98.6	97.7	74.4	434
Karamoja	86.9	94.8	87.2	89.1	93.9	64.3	169
Lango	93.4	83.2	90.1	93.9	97.6	78.7	462
Acholi	94.4	94.5	91.0	95.7	95.4	78.5	325
West Nile	93.5	96.0	89.6	98.6	98.4	75.3	539
Bunyoro	95.6	96.6	88.3	86.0	86.5	65.9	335
Tooro	98.6	97.9	92.2	98.2	96.5	77.6	438
Kigezi	95.6	94.7	93.5	94.8	94.5	83.7	345
Ankole	96.6	94.3	92.6	95.5	98.1	88.7	648
Education							
No education	91.1	93.0	90.6	94.0	95.4	73.1	972
Primary	94.1	94.7	91.7	95.8	96.0	72.7	4,290
Secondary	95.3	95.7	90.2	96.8	97.4	78.0	2,392
More than secondary	97.0	96.4	92.8	98.0	98.8	73.9	577
Wealth quintile							
Lowest	91.6	93.6	91.1	94.5	95.7	71.6	1,448
Second	94.1	95.0	92.1	95.6	94.9	69.3	1,545
Middle	94.6	95.4	90.9	96.7	97.3	74.3	1,505
Fourth	95.7	95.6	91.6	96.5	96.3	77.8	1,647
Highest	94.9	94.9	90.6	96.5	97.9	77.4	2,086
Total	94.3	94.9	91.2	96.0	96.5	74.4	8,231
Refugee settlements	95.1	97.6	92.8	98.5	98.0	71.4	637

REFERENCES

Doolan, D. L., C. Dobano, and J. K. Baird. 2009. "Acquired Immunity to Malaria." *Clinical Microbiology Reviews* 22: 13-3. https://doi: 10.1128/CMR.00025-06.

Korenromp, E. L., J. Armstrong-Schellenberg, B. Williams, B. Nahlen, and R. W. Snow. 2004. "Impact of Malaria Control on Childhood Anemia in Africa – A Quantitative Review." *Tropical Medicine & International Health* 9(10): 1050-1065. https://doi.org/10.1111/j.1365-3156.2004.01317.x.

Moody, A. 2002. "Rapid Diagnostic Tests for Malaria Parasites." *Clinical Microbiology Reviews* 15(1): 66-78. https://doi: 10.1128/CMR.15.1.66-78.2002.

Roll Back Malaria Partnership. 2003. Monitoring and Evaluation Reference Group Anemia Task Force Meeting Minutes. Presented at World Health Organization (WHO) Headquarters, Geneva, October 27-28, 2003.

Shulman, C. E., and E. K. Dorman. 2003. "Importance and Prevention of Malaria in Pregnancy." *Transactions of the Royal Society of Tropical Medicine & Hygiene* 97(1):30–55. https://doi.org/10.1016/S0035-9203(03)90012-5.

The Republic of Uganda, 2011. Uganda National Malaria Control Policy. Kampala, Uganda. https://www.severemalaria.org/sites/mmv-smo/files/content/attachments/2017-02-28/Uganda%20NATIONAL%20MALARIA%20CONTROL%20POLICY%20-%202011.pdf

The Republic of Uganda. 2015. Second National Development Plan (NDPII) 2015/16-2019/20. Kampala, Uganda. http://npa.go.ug/wp-content/uploads/NDPII-Final.pdf

The Republic of Uganda, 2017/18. Annual Health Sector Performance Report (AHSPR). Kampala, Uganda. http://library.health.go.ug/publications/performance-management/annual-health-sector-performance-report-201718

World Health Organization. 2012a. WHO Evidence Review Group: Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp) with Sulfadoxine-Pyrimethamine (SP). WHO Headquarters, Geneva, 9-11 July 2012. Meeting report. Geneva: World Health Organization. http://www.who.int/malaria/mpac/sep2012/iptp_sp_erg_meeting_report_july2012.pdf.

World Health Organization. 2012b. Global Malaria Programme. Updated WHO Policy Recommendation (October 2012). Intermittent Preventive Treatment of Malaria in Pregnancy Using Sulfadoxine-Pyrimethamine (IPTp-SP). http://who.int/malaria/iptp_sp_updated_policy_recommendation_en_102012.pdf?ua=1.

World Health Organization. 2017. Malaria in Pregnant Women. https://www.who.int/malaria/areas/high_risk_groups/pregnancy/en/.

SAMPLE DESIGN

Appendix A

A.1 INTRODUCTION

The 2018-19 Uganda Malaria Indicator Survey (UMIS) is the third MIS conducted in Uganda after the 2009 UMIS and 2014-15 UMIS. The 2018-19 UMIS used a nationally representative sample of 320 clusters and about 8,960 households. The survey is designed to provide information on key malaria control indicators such as the proportion of households having at least one mosquito bed net and at least one insecticide-treated net (ITN); the proportion of children under age 5 who slept under a net the previous night and the proportion who slept under an ITN; the proportion of pregnant women who slept under a bet night the previous night, and the proportion of pregnant women who received intermittent preventive treatment (IPT) for malaria during their most recent pregnancy in the last 2 years; and the prevalence of anaemia and malaria parasitemia among children under age 5.

The survey is designed to provide estimates of key malaria indicators for the country as a whole, urban and rural areas separately, each of the 15 regions, and refugee settlements.

A.2 SAMPLE FRAME

The sampling frame used for the 2018-19 UMIS is the 2014 Uganda Population and Housing Census (PHC 2014) conducted in August 2014, provided by the Uganda Bureau of Statistics (UBOS), the implementing agency for the 2018-19 UMIS. The sampling frame is a complete list of census Enumeration Areas (EA) created for the census covering the whole country, consisting of 78,093 EAs. An EA is a natural village in rural areas and a city block in urban areas. Uganda is divided into 128 administrative districts, each district is sub-divided into sub-districts, and each sub-district into parishes, and each parish into villages. The frame file contains the administrative information for each EA and its estimated number of households at the time of the census cartographic operation. Each EA has also a designated residence type: urban or rural. A separate frame for refugee settlements was constructed during a mapping exercise conducted by UBOS in 2018, based on satellite images provided by the United Nations High Commission for Refugees (UNHCR). The imagery was used to delineate blocks and create EAs within settlements.

Table A.1 presents the household distribution by region and residence type. The size of the regions in number of households varies from 2.2% in Karamoja, to 14.7% in South Buganda. The urbanisation of the regions also varies greatly from the predominantly urban Kampala to Teso, where only 10.4% of households live in urban areas. In Uganda as a whole, 27.9% of households live in urban areas.

Table A.1 Households

Distribution of residential households in the sampling frame by region and residence, Uganda MIS 2018-19

Region	Number of residential households			Percentage region contributes to the total households	Percentage of region that is urban
	Urban	Rural	Total		
South Buganda	509,291	551,205	1,060,496	14.7	48.0
North Buganda	220,612	580,007	800,619	11.1	27.6
Kampala	407,075	0	407,075	5.6	100.0
Busoga	117,708	587,721	705,429	9.8	16.7
Bukedi	51,615	297,694	349,309	4.8	14.8
Bugisu	67,181	296,275	363,456	5.0	18.5
Teso	33,215	286,439	319,654	4.4	10.4
Karamoja	2,310	137,173	159,483	2.2	14.0
Lango	57,482	358,540	416,022	5.8	13.8
Acholi	66,578	225,490	292,068	4.0	22.8
West Nile	55,702	412,943	468,645	6.5	11.9
Bunyoro	73,387	347,225	420,612	5.8	17.4
Tooro	113,396	425,407	538,803	7.5	21.0
Kigezi	52,672	251,901	304,573	4.2	17.3
Ankole	164,655	449,783	614,438	8.5	26.8
Uganda	2,012,879	5,207,803	7,220,682	100	27.9
Refugee settlements	na	na	197,971	na	na

na = Not applicable
Source:
Uganda: The 2014 Uganda Population and Housing Census provided by the Uganda Bureau of Statistics (UBOS).
Refugee settlements: 2018 mapping exercise conducted by the Uganda Bureau of Statistics (UBOS).

Table A.2 provides the distribution of EAs and their average size in number of households by region and type of residence. There are a total 78,876 EAs, with 17,142 in urban areas and 61,734 in rural areas. The average EA size is 92 households. The urban EAs have a larger size, with an average of 117 households per EA, while the rural EAs are smaller with an average of 84 households per EA. The EA size is adequate for the primary sampling unit (PSU) with a sample take of 28 households per EA.

Table A.2 Enumeration areas

Distribution of the enumeration areas in the sampling frame and average number of residential households per enumeration area, by region and residence, Uganda MIS 2018-19

Region	Number of enumeration areas in frame			Average number of residential households in enumeration area		
	Urban	Rural	Total	Urban	Rural	Total
South Buganda	3,537	5,371	8,908	144	103	119
North Buganda	1,866	5,939	7,805	118	98	103
Kampala	3,184	0	3,184	128	0	128
Busoga	961	5,901	6,862	122	100	103
Bukedi	459	3,236	3,695	112	92	95
Bugisu	973	6,971	7,944	69	43	46
Teso	352	3,257	3,609	94	88	89
Karamoja	288	2,069	2,357	77	66	68
Lango	536	4,882	5,418	107	73	77
Acholi	706	3,212	3,918	94	70	75
West Nile	533	5,088	5,621	105	81	83
Bunyoro	626	3,092	3,718	117	112	113
Tooro	1,026	4,361	5,387	111	98	100
Kigezi	519	3,150	3,669	101	80	83
Ankole	1,576	5,205	6,781	104	86	91
Uganda	17,142	61,734	78,876	117	84	92
Refugee settlements	na	na	1,120	na	na	177

na = Not applicable
Source:
Uganda: The 2014 Uganda Population and Housing Census provided by the Uganda Bureau of Statistics (UBOS).
Refugee settlements: 2018 mapping exercise conducted by the Uganda Bureau of Statistics (UBOS).

A.3 SAMPLE ALLOCATION AND SAMPLING PROCEDURES

The samples for Uganda as a whole and for the refugee settlements were drawn separately from their respective sampling frames. For Uganda as a whole, the 2018-19 UMIS is a stratified sample selected in two stages from the sampling frame. Stratification is achieved by separating each region into urban and rural areas. In total, 29 sampling strata are created. Samples are selected independently in each sampling stratum, by a two-stage selection. In the first stage, 320 EAs are selected with probability proportional to size (PPS) selection procedure according to the sample allocation given in **Table A.3**. The EA size is the number of residential households in the EA according to the 2014 PHC. Implicit stratification with proportional allocation is achieved at each of the lower administrative unit levels by sorting the EA frame before the sample selection according to the units, within each of the explicit stratum, and by using a probability proportional to size selection procedure. A separate sample of 22 EAs in refugee settlements was selected from the refugee settlements frame.

Table A.3 Sample allocation of clusters and households

Number of clusters and households allocated by region according to residence, Uganda MIS 2018-19

	Number of clusters allocated			Number of households allocated		
Region	Urban	Rural	Total	Urban	Rural	Total
South Buganda	15	12	27	420	336	756
North Buganda	6	15	21	168	420	588
Kampala	19	0	19	532	0	532
Busoga	4	13	17	112	364	476
Bukedi	3	16	19	84	448	532
Bugisu	5	14	19	140	392	532
Teso	3	16	19	84	448	532
Karamoja	1	17	18	28	476	504
Lango	4	22	26	112	616	728
Acholi	6	21	27	168	588	756
West Nile	1	19	20	28	532	560
Bunyoro	4	22	26	112	616	728
Tooro	4	22	26	112	616	728
Kigezi	4	14	18	112	392	504
Ankole	5	13	18	140	364	504
Uganda	84	236	320	2,352	6,608	8,960
Refugee settlements	na	na	22	na	na	616

na = Not applicable

After the selection of EAs and before the main survey, a household listing operation was conducted in all of the selected EAs. The household listing operation consists of visiting each of the 342 selected EAs; drawing a location map and a detailed sketch map; and recording on the household listing forms all occupied residential households found in the EA with the address and the name of the head of the household. The resulting list of households served as sampling frame for the selection of households in the second stage.

In the second stage of selection, a fixed number of 28 households was selected in each cluster, by an equal probability systematic sampling based on the newly updated household listing. A spreadsheet that indicated the selected household numbers for each cluster was prepared. The survey interviewers interviewed only the pre-selected households. No replacements and no changes of the pre-selected households were allowed in the implementing stages in order to prevent bias. For the EAs selected from the 2014 UPHC, listing was conducted in a separate exercise before fieldwork began. For the EAs in refugee settlements, listing was conducted immediately before fieldwork.

The sample allocation of EAs and households, in **Table A.3**, were converted to women age 15-49 and children under age 5 allocations by taking into account non-response and the average number of women age 15-49 and children under 5 per household. **Table A.4** shows the sample allocation of expected number of women age 15-49 interviews and expected number of children under age 5 included in the survey. The sample allocation features a power allocation with a small adjustment because a proportional allocation would result in a very small sample size for the less populous regions such as Karamoja and Acholi.

Table A.4 Sample allocation of expected number of women age 15-49 and expected number of children under age 5

Sample allocation of number of women age 15-49 expected to be interviewed and expected number of children under age 5 by region according to residence, Uganda MIS 2018-19

	Number of women expected to be interviewed			Expected number of children under age 5		
Region	Urban	Rural	Total	Urban	Rural	Total
South Buganda	399	305	704	262	315	577
North Buganda	160	381	541	105	394	499
Kampala	506	0	506	332	0	332
Busoga	106	331	437	70	341	411
Bukedi	80	407	487	52	420	472
Bugisu	133	356	489	87	367	454
Teso	80	407	487	52	420	472
Karamoja	27	432	459	17	446	463
Lango	106	560	666	70	577	647
Acholi	160	534	694	105	551	656
West Nile	27	483	510	17	498	515
Bunyoro	106	560	666	70	577	647
Tooro	106	560	666	70	577	647
Kigezi	106	356	462	70	367	437
Ankole	133	331	464	87	341	428
Uganda	2235	6003	8238	1466	6191	7657
Refugee settlements	na	na	565	na	na	536

na = Not applicable

The parameters used in the sample calculation came from the 2014-15 UMIS, where there were an average of 1.03 women age 15-49 per household and women's response rate was 97%. The household completion rate was 92%. On average, there were 0.95 children under 5 per household.

A.4 SAMPLE PROBABILITIES AND SAMPLING WEIGHTS

Because of the nonproportional allocation of the sample to the different reporting domains, sampling weights are required for any analysis using the 2018-19 UMIS data to ensure the actual representativity of the sample. Because the 2018-19 UMIS sample for Uganda as a whole is a two-stage stratified cluster sample, sampling weights were calculated based on sampling probabilities, which were calculated separately for each sampling stage and for each cluster. We use the following notations:

P_{1hi}: first stage's sampling probability of the i^{th} cluster in stratum h
P_{2hi}: second-stage's sampling probability within the i^{th} cluster (households)
P_{hi}: overall sampling probability of any households of the i^{th} cluster in stratum h

Let a_h be the number of clusters selected in stratum h, M_{hi} the number of households according to the sampling frame in the i^{th} cluster, and $\sum M_{hi}$ the total number of households in the stratum h. The probability of selecting the i^{th} cluster in stratum h is calculated as follows:

$$P_{1hi} = \frac{a_h M_{hi}}{\sum M_{hi}}$$

Let L_{hi} be the number of households listed in the household listing operation in cluster i in stratum h, let g_{hi} be the number of households selected in the cluster. The second stage's selection probability for each household in the cluster is calculated as follows:

$$P_{2hi} = \frac{g_{hi}}{L_{hi}}$$

The overall selection probability of each household in cluster *i* of stratum *h* is therefore the product of the two stages of selection probabilities:

$$P_{hi} = P_{1hi} \times P_{2hi}$$

The sampling weight for each household in cluster *i* of stratum *h* is the inverse of its overall selection probability:

$$W_{hi} = 1 / P_{hi}$$

A spreadsheet containing all sampling parameters and selection probabilities was constructed to facilitate the calculation of sampling weights. Household sampling weights and individual sampling weights were calculated by adjusting the previous calculated weight to compensate household nonresponse and individual nonresponse, respectively. These weights were further normalised at the national level to produce unweighted cases equal to weighted cases for both households and individuals at the national level. The normalised weights are valid for estimation of proportions and means at any aggregation levels, but not valid for estimation of totals.

Table A.5 Sample implementation: Women

Percent distribution of households and eligible women by results of the household and individual interviews, and household, eligible women and overall women response rates, according to residence and region (unweighted), Uganda MIS 2018-19

	Residence		Region																
Result	Urban	Rural	South Buganda	North Buganda	Kampala	Busoga	Bukedi	Bugisu	Teso	Karamoja	Lango	Acholi	West Nile	Bunyoro	Tooro	Kigezi	Ankole	Total	Refugee settle-ments
Selected households																			
Completed (C)	91.7	94.9	94.4	91.0	90.4	95.8	93.6	94.6	93.4	96.0	95.1	93.0	94.8	94.4	92.8	96.4	96.2	94.1	98.4
Household present but no competent respondent at home (HP)	1.0	0.6	1.1	1.7	2.4	0.4	0.9	0.2	0.0	0.4	0.4	0.7	0.2	0.4	0.7	0.8	0.2	0.7	0.3
Refused (R)	0.5	0.2	0.7	0.3	0.9	0.0	0.2	0.0	0.0	0.0	0.4	0.1	0.0	0.6	0.1	0.0	0.0	0.2	0.2
Dwelling not found (DNF)	0.3	0.1	0.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.0	0.1	0.0
Household absent (HA)	4.5	2.8	2.5	3.9	3.9	2.3	3.9	2.3	4.9	2.4	3.3	4.5	4.5	2.9	2.8	2.2	1.4	3.2	1.0
Dwelling vacant/address not a dwelling (DV)	1.9	1.4	1.1	2.9	1.5	1.5	1.3	2.9	1.1	1.2	0.6	1.6	0.5	1.4	3.2	0.6	1.4	1.5	0.2
Dwelling destroyed (DD)	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.8	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of sampled households	2,343	6,535	756	588	532	476	532	517	532	504	700	756	560	700	718	504	503	8,878	616
Household response rate (HRR)[1]	98.1	99.1	97.9	97.8	95.6	99.6	98.8	99.8	100.0	99.6	99.0	99.0	99.8	98.7	98.8	99.2	99.8	98.9	99.5
Eligible women																			
Completed (EWC)	98.0	98.1	99.3	99.6	98.1	99.5	99.3	97.1	99.1	97.8	98.5	97.5	98.4	96.7	96.8	96.6	98.1	98.1	99.1
Not at home (EWNH)	1.4	1.4	0.6	0.0	1.3	0.5	0.5	2.7	0.3	2.0	1.2	1.8	1.0	2.0	2.3	2.3	1.4	1.4	0.5
Postponed (EWP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Refused (EWR)	0.3	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.4	0.2	0.9	0.0	0.2	0.0
Incapacitated (EWI)	0.3	0.3	0.0	0.2	0.4	0.0	0.2	0.2	0.2	0.0	0.1	0.5	0.5	0.9	0.8	0.2	0.2	0.3	0.5
Other (EWO)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	2,198	6,191	709	471	522	424	424	479	579	406	686	815	574	691	655	469	485	8,389	643
Eligible women response rate (EWRR)[2]	98.0	98.1	99.3	99.6	98.1	99.5	99.3	97.1	99.1	97.8	98.5	97.5	98.4	96.7	96.8	96.6	98.1	98.1	99.1
Overall women response rate (OWRR)[3]	96.2	97.3	97.3	97.4	93.8	99.1	98.1	96.9	99.1	97.4	97.5	96.6	98.2	95.4	95.6	95.8	97.9	97.0	98.6

[1] Using the number of households falling into specific response categories, the household response rate (HRR) is calculated as:

$$\frac{100 * C}{C + HP + P + R + DNF}$$

[2] The eligible women response rate (EWRR) is equivalent to the percentage of interviews completed (EWC)
[3] The overall women response rate (OWRR) is calculated as:
OWRR = HRR * EWRR/100

ESTIMATES OF SAMPLING ERRORS — Appendix B

The estimates from a sample survey are affected by two types of errors: non-sampling errors and sampling errors. Non-sampling errors are the results of mistakes made in implementing data collection and data processing, such as failure to locate and interview the correct household, misunderstanding of the questions on the part of either the interviewer or the respondent, and data entry errors. Although numerous efforts were made during the implementation of the 2018-19 Uganda Malaria Indicator Survey (UMIS) to minimise this type of error, non-sampling errors are impossible to avoid and difficult to evaluate statistically.

Sampling errors, on the other hand, can be evaluated statistically. The sample of respondents selected in the 2018-19 UMIS is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

Sampling error is usually measured in terms of the *standard error* for a particular statistic (mean, percentage, etc.), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95 percent of all possible samples of identical size and design.

If the sample of respondents had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the 2018-19 UMIS sample is the result of a multi-stage stratified design, and consequently it was necessary to use more complex formulae. Sampling errors are computed in SAS, using programmes developed by ICF Macro. These programmes use the Taylor linearization method of variance estimation for survey estimates that are means, proportions, or ratios.

The Taylor linearization method treats any percentage or average as a ratio estimate, $r = y/x$, where y represents the total sample value for variable y, and x represents the total number of cases in the group or subgroup under consideration. The variance of r is computed using the formula given below, with the standard error being the square root of the variance:

$$SE^2(r) = var(r) = \frac{1-f}{x^2}\sum_{h=1}^{H}\left[\frac{m_h}{m_h-1}\left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h}\right)\right]$$

in which

$$z_{hi} = y_{hi} - rx_{hi}\text{, and } z_h = y_h - rx_h$$

where
- h represents the stratum which varies from 1 to H,
- m_h is the total number of clusters selected in the h^{th} stratum,
- y_{hi} is the sum of the weighted values of variable y in the i^{th} cluster in the h^{th} stratum,
- x_{hi} is the sum of the weighted number of cases in the i^{th} cluster in the h^{th} stratum, and
- f is the overall sampling fraction, which is so small that it is ignored.

In addition to the standard error, the design effect (DEFT) for each estimate is also calculated. The design effect is defined as the ratio between the standard error using the given sample design and the standard error that would result if a simple random sample had been used. A DEFT value of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. Relative standard errors and confidence limits for the estimates are also calculated.

Sampling errors for the 2018-19 UMIS are calculated for selected variables considered to be of primary interest. The results are presented in this appendix for the country as a whole, for urban and rural areas, for each of the 15 regions and for the refugee settlements. For each variable, the type of statistic (mean, proportion, or rate) and the base population are given in Table B.1. Tables B.2 through B.20 present the value of the statistic (R), its standard error (SE), the number of un-weighted (N) and weighted (WN) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits (R±2SE) for each variable. The DEFT is considered undefined when the standard error considering a simple random sample is zero (when the estimate is close to 0 or 1).

The confidence interval (e.g., as calculated for the indicator 'child has fever in last two weeks') can be interpreted as follows: the overall average from the national sample is 0.263, and its standard error is 0.015. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e., $0.263 \pm 2 \times 0.015$. There is a high probability (95 percent) that the true proportion of children with fever in the last 2 weeks is between 0.234 and 0.292.

For the total sample, the value of the DEFT, averaged over all variables, is 2.08. This means that, due to multi-stage clustering of the sample, the average standard error is increased by a factor of 2.08 over that in an equivalent simple random sample.

Table B.1 List of selected variables for sampling errors, Uganda MIS 2018-19

Variable	Estimate	Base population
HOUSEHOLDS		
Ownership of at least one mosquito net	Proportion	Households
Average number of mosquito nets per household	Mean	Households
Ownership of at least one ITN	Proportion	Households
Average number of ITNs per household	Mean	Households
Ownership of at least one ITN for every two persons	Proportion	Households
IRS in the past 12 months	Proportion	Households
WOMEN		
No education	Proportion	All women age 15-49
Secondary education or higher	Proportion	All women age 15-49
Literacy	Proportion	All women age 15-49
CHILDREN		
Child slept under any mosquito net last night	Proportion	Children under 5 in households
Child slept under an ITN last night	Proportion	Children under 5 in households
Child slept under an ITN last night in households with at least one ITN	Proportion	Children under 5 in households with at least one ITN
Child has fever in last 2 weeks	Proportion	Child under 5 in women's birth history
Child sought care/treatment from a public or private health facility, shop, market, and/or hawker/itinerant drug seller	Proportion	Child under 5 with fever in last 2 weeks
Child took ACT	Proportion	Child under 5 with fever in last 2 weeks who received any antimalarial drugs
Child has anaemia (haemoglobin <8.0 g/dl)	Proportion	Child 0-59 months tested for anaemia
Child has malaria (based on rapid test)	Proportion	Children 0-59 months tested (rapid test) for malaria
Child has malaria (based on microscopy test)	Proportion	Children 0-59 months tested (on microscopy) for malaria
PREGNANT WOMEN		
Pregnant women slept under any mosquito net last night	Proportion	All pregnant women age 15-49 in households
Pregnant women slept under an ITN last night	Proportion	All pregnant women age 15-49 in households
Pregnant women slept under an ITN last night in households with at least one ITN	Proportion	Pregnant women age 15-49 in households with at least one ITN
Received 1+ doses of SP/Fansidar	Proportion	Last birth of women age 15-49 with live births last 2 years
Received 2+ doses of SP/Fansidar	Proportion	Last birth of women age 15-49 with live births last 2 years
Received 3+ doses of SP/Fansidar	Proportion	Last birth of women age 15-49 with live births last 2 years

Table B.2 Sampling errors for national sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.850	0.013	8351	8351	3.394	0.016	0.823	0.876
Average number of mosquito nets per household	2.277	0.048	8351	8351	2.673	0.021	2.181	2.374
Ownership of at least one ITN	0.830	0.013	8351	8351	3.078	0.015	0.805	0.855
Average number of ITNs per household	2.209	0.044	8351	8351	2.442	0.020	2.121	2.297
Ownership of at least one ITN for every two persons	0.539	0.009	8334	8336	1.656	0.017	0.521	0.557
IRS in the past 12 months	0.101	0.012	8351	8351	3.631	0.119	0.077	0.125
WOMEN								
No education	0.118	0.006	8231	8231	1.587	0.048	0.107	0.129
Secondary education or higher	0.361	0.018	8231	8231	3.441	0.051	0.324	0.397
Literacy	0.701	0.013	8231	8231	2.599	0.019	0.675	0.728
CHILDREN								
Child slept under any mosquito net last night	0.621	0.012	7318	6836	1.669	0.019	0.597	0.645
Child slept under an ITN last night	0.603	0.011	7318	6836	1.592	0.019	0.580	0.626
Child slept under an ITN last night in households with at least one ITN	0.687	0.010	6329	5998	1.428	0.015	0.667	0.707
Child has fever in last 2 weeks	0.263	0.015	6299	6008	2.305	0.055	0.234	0.292
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.870	0.011	1797	1578	1.213	0.012	0.848	0.892
Child took ACT	0.877	0.018	1166	986	1.648	0.021	0.840	0.914
Child has anaemia (haemoglobin <8.0 g/dl)	0.037	0.003	7089	6629	1.457	0.092	0.031	0.044
Child has malaria (based on rapid test)	0.169	0.014	7087	6627	2.628	0.085	0.140	0.198
Child has malaria (based on microscopy test)	0.091	0.009	7086	6626	2.251	0.099	0.073	0.109
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.675	0.032	686	633	1.680	0.047	0.611	0.739
Pregnant women slept under an ITN last night	0.654	0.030	686	633	1.580	0.047	0.593	0.715
Pregnant women slept under an ITN last night in households with at least one ITN	0.775	0.038	570	534	2.005	0.049	0.699	0.850
Received 1+ doses of SP/Fansidar	0.890	0.009	2635	2481	1.418	0.010	0.873	0.908
Received 2+ doses of SP/Fansidar	0.721	0.013	2635	2481	1.463	0.018	0.695	0.747
Received 3+ doses of SP/Fansidar	0.410	0.013	2635	2481	1.276	0.031	0.385	0.435

Table B.3 Sampling errors for Urban sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.877	0.012	2149	2204	1.622	0.013	0.853	0.900
Average number of mosquito nets per household	2.420	0.065	2149	2204	1.717	0.027	2.290	2.550
Ownership of at least one ITN	0.822	0.012	2149	2204	1.453	0.015	0.798	0.846
Average number of ITNs per household	2.262	0.060	2149	2204	1.588	0.027	2.142	2.383
Ownership of at least one ITN for every two persons	0.593	0.012	2143	2196	1.122	0.020	0.569	0.617
IRS in the past 12 months	0.072	0.015	2149	2204	2.728	0.211	0.042	0.103
WOMEN								
No education	0.877	0.012	2149	2204	1.622	0.013	0.853	0.900
Secondary education or higher	2.420	0.065	2149	2204	1.717	0.027	2.290	2.550
Literacy	0.822	0.012	2149	2204	1.453	0.015	0.798	0.846
CHILDREN								
Child slept under any mosquito net last night	0.682	0.016	1554	1592	1.095	0.023	0.651	0.713
Child slept under an ITN last night	0.630	0.017	1554	1592	1.162	0.027	0.596	0.664
Child slept under an ITN last night in households with at least one ITN	0.726	0.016	1363	1382	1.138	0.022	0.693	0.758
Child has fever in last 2 weeks	0.167	0.020	1306	1372	1.718	0.117	0.128	0.206
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.888	0.020	260	230	0.845	0.022	0.849	0.928
Child took ACT	0.846	0.042	155	138	1.205	0.049	0.763	0.930
Child has anaemia (haemoglobin <8.0 g/dl)	0.028	0.006	1478	1510	1.318	0.203	0.017	0.039
Child has malaria (based on rapid test)	0.061	0.016	1478	1510	2.159	0.267	0.028	0.093
Child has malaria (based on microscopy test)	0.033	0.012	1478	1510	2.090	0.359	0.009	0.056
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.752	0.053	128	140	1.423	0.070	0.647	0.858
Pregnant women slept under an ITN last night	0.679	0.042	128	140	1.043	0.061	0.596	0.763
Pregnant women slept under an ITN last night in households with at least one ITN	0.803	0.054	110	118	1.454	0.067	0.695	0.911
Received 1+ doses of SP/Fansidar	0.910	0.014	548	577	1.082	0.015	0.883	0.937
Received 2+ doses of SP/Fansidar	0.748	0.019	548	577	1.008	0.026	0.709	0.786
Received 3+ doses of SP/Fansidar	0.406	0.023	548	577	1.067	0.056	0.361	0.452

Table B.4 Sampling errors for Rural sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.840	0.017	6202	6147	3.686	0.020	0.806	0.875
Average number of mosquito nets per household	2.226	0.058	6202	6147	2.849	0.026	2.110	2.343
Ownership of at least one ITN	0.833	0.017	6202	6147	3.561	0.020	0.799	0.867
Average number of ITNs per household	2.190	0.055	6202	6147	2.691	0.025	2.081	2.300
Ownership of at least one ITN for every two persons	0.520	0.011	6191	6140	1.760	0.021	0.497	0.542
IRS in the past 12 months	0.111	0.015	6202	6147	3.825	0.138	0.080	0.142
WOMEN								
No education	0.139	0.007	6076	5867	1.566	0.050	0.125	0.153
Secondary education or higher	0.267	0.015	6076	5867	2.598	0.055	0.238	0.297
Literacy	0.640	0.014	6076	5867	2.298	0.022	0.612	0.668
CHILDREN								
Child slept under any mosquito net last night	0.602	0.014	5764	5243	1.712	0.023	0.574	0.630
Child slept under an ITN last night	0.595	0.014	5764	5243	1.676	0.023	0.567	0.622
Child slept under an ITN last night in households with at least one ITN	0.675	0.012	4966	4616	1.433	0.017	0.652	0.699
Child has fever in last 2 weeks	0.291	0.017	4993	4636	2.384	0.060	0.256	0.326
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.867	0.012	1537	1349	1.280	0.014	0.842	0.891
Child took ACT	0.882	0.020	1011	848	1.751	0.023	0.841	0.922
Child has anaemia (haemoglobin <8.0 g/dl)	0.040	0.004	5611	5118	1.467	0.102	0.032	0.048
Child has malaria (based on rapid test)	0.201	0.018	5609	5117	2.718	0.089	0.165	0.237
Child has malaria (based on microscopy test)	0.108	0.011	5608	5115	2.276	0.102	0.086	0.131
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.653	0.037	558	494	1.684	0.056	0.580	0.727
Pregnant women slept under an ITN last night	0.647	0.037	558	494	1.672	0.057	0.573	0.720
Pregnant women slept under an ITN last night in households with at least one ITN	0.767	0.046	460	416	2.108	0.060	0.675	0.858
Received 1+ doses of SP/Fansidar	0.885	0.011	2087	1904	1.487	0.012	0.863	0.906
Received 2+ doses of SP/Fansidar	0.713	0.016	2087	1904	1.522	0.022	0.682	0.744
Received 3+ doses of SP/Fansidar	0.411	0.015	2087	1904	1.360	0.037	0.381	0.441

Table B.5 Sampling errors for South Buganda sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.889	0.028	714	1377	2.382	0.032	0.833	0.945
Average number of mosquito nets per household	2.402	0.125	714	1377	1.985	0.052	2.152	2.652
Ownership of at least one ITN	0.832	0.030	714	1377	2.113	0.036	0.772	0.891
Average number of ITNs per household	2.230	0.109	714	1377	1.740	0.049	2.012	2.448
Ownership of at least one ITN for every two persons	0.586	0.028	713	1372	1.527	0.048	0.529	0.642
IRS in the past 12 months	0.013	0.005	714	1377	1.174	0.388	0.003	0.022
WOMEN								
No education	0.068	0.010	704	1409	1.028	0.144	0.048	0.087
Secondary education or higher	0.550	0.061	704	1409	3.235	0.111	0.428	0.672
Literacy	0.882	0.024	704	1409	1.927	0.027	0.834	0.929
CHILDREN								
Child slept under any mosquito net last night	0.648	0.027	555	1004	1.130	0.042	0.594	0.702
Child slept under an ITN last night	0.585	0.020	555	1004	0.803	0.034	0.546	0.625
Child slept under an ITN last night in households with at least one ITN	0.675	0.035	481	870	1.430	0.051	0.606	0.744
Child has fever in last 2 weeks	0.115	0.025	446	836	1.586	0.220	0.065	0.166
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.971	0.020	59	96	0.812	0.020	0.931	1.010
Child has anaemia (haemoglobin <8.0 g/dl)	0.010	0.006	520	948	1.326	0.608	0.000	0.021
Child has malaria (based on rapid test)	0.019	0.007	520	948	1.172	0.381	0.005	0.033
Child has malaria (based on microscopy test)	0.006	0.003	520	948	0.824	0.496	0.000	0.011
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.867	0.031	194	349	1.200	0.036	0.805	0.929
Received 2+ doses of SP/Fansidar	0.657	0.058	194	349	1.607	0.088	0.541	0.773
Received 3+ doses of SP/Fansidar	0.363	0.029	194	349	0.785	0.079	0.306	0.420

Table B.6 Sampling errors for North Buganda sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.774	0.050	535	1487	2.765	0.065	0.673	0.875
Average number of mosquito nets per household	2.036	0.170	535	1487	2.359	0.084	1.696	2.377
Ownership of at least one ITN	0.767	0.049	535	1487	2.689	0.064	0.669	0.866
Average number of ITNs per household	1.977	0.151	535	1487	2.134	0.077	1.674	2.280
Ownership of at least one ITN for every two persons	0.498	0.017	535	1487	0.766	0.033	0.465	0.531
IRS in the past 12 months	0.002	0.002	535	1487	0.811	0.817	0.000	0.005
WOMEN								
No education	0.087	0.014	469	1198	1.071	0.160	0.059	0.115
Secondary education or higher	0.381	0.049	469	1198	2.156	0.128	0.284	0.478
Literacy	0.715	0.043	469	1198	2.050	0.060	0.629	0.801
CHILDREN								
Child slept under any mosquito net last night	0.534	0.036	427	1088	1.145	0.068	0.462	0.607
Child slept under an ITN last night	0.524	0.034	427	1088	1.077	0.065	0.456	0.593
Child slept under an ITN last night in households with at least one ITN	0.604	0.021	375	944	0.617	0.034	0.563	0.645
Child has fever in last 2 weeks	0.249	0.065	375	948	2.544	0.260	0.120	0.379
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.892	0.032	98	236	0.978	0.036	0.828	0.955
Child took ACT	0.762	0.067	68	158	1.188	0.088	0.628	0.896
Child has anaemia (haemoglobin <8.0 g/dl)	0.039	0.013	412	1069	1.379	0.347	0.012	0.066
Child has malaria (based on rapid test)	0.142	0.048	412	1069	2.349	0.336	0.046	0.237
Child has malaria (based on microscopy test)	0.088	0.034	412	1069	2.058	0.387	0.020	0.156
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.871	0.031	159	376	1.119	0.036	0.809	0.933
Received 2+ doses of SP/Fansidar	0.710	0.041	159	376	1.090	0.058	0.628	0.791
Received 3+ doses of SP/Fansidar	0.415	0.041	159	376	1.014	0.099	0.333	0.498

Table B.7 Sampling errors for Kampala sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.821	0.028	481	354	1.577	0.034	0.766	0.877
Average number of mosquito nets per household	2.173	0.128	481	354	1.609	0.059	1.917	2.429
Ownership of at least one ITN	0.739	0.034	481	354	1.706	0.046	0.671	0.808
Average number of ITNs per household	1.956	0.132	481	354	1.660	0.067	1.692	2.220
Ownership of at least one ITN for every two persons	0.592	0.031	481	354	1.382	0.052	0.530	0.654
IRS in the past 12 months	0.034	0.011	481	354	1.310	0.319	0.012	0.056
WOMEN								
No education	0.025	0.009	512	394	1.238	0.343	0.008	0.042
Secondary education or higher	0.727	0.019	512	394	0.978	0.027	0.688	0.765
Literacy	0.934	0.017	512	394	1.535	0.018	0.900	0.967
CHILDREN								
Child slept under any mosquito net last night	0.713	0.036	294	201	1.115	0.051	0.641	0.785
Child slept under an ITN last night	0.617	0.042	294	201	1.233	0.069	0.532	0.701
Child slept under an ITN last night in households with at least one ITN	0.747	0.035	245	166	1.122	0.047	0.677	0.817
Child has fever in last 2 weeks	0.095	0.027	250	175	1.284	0.289	0.040	0.150
Child has anaemia (haemoglobin <8.0 g/dl)	0.053	0.012	270	177	0.865	0.232	0.028	0.077
Child has malaria (based on rapid test)	0.016	0.012	270	177	1.107	0.761	0.000	0.040
Child has malaria (based on microscopy test)	0.002	0.002	270	177	0.708	1.022	0.000	0.006
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.888	0.026	102	73	0.810	0.030	0.835	0.941
Received 2+ doses of SP/Fansidar	0.632	0.060	102	73	1.204	0.095	0.513	0.752
Received 3+ doses of SP/Fansidar	0.386	0.069	102	73	1.371	0.178	0.249	0.524

Table B.8 Sampling errors for Busoga sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.851	0.022	456	679	1.319	0.026	0.806	0.895
Average number of mosquito nets per household	2.204	0.119	456	679	1.671	0.054	1.967	2.442
Ownership of at least one ITN	0.841	0.022	456	679	1.273	0.026	0.798	0.885
Average number of ITNs per household	2.178	0.118	456	679	1.670	0.054	1.941	2.415
Ownership of at least one ITN for every two persons	0.508	0.035	455	677	1.496	0.069	0.438	0.578
IRS in the past 12 months	0.116	0.061	456	679	3.994	0.525	0.000	0.239
WOMEN								
No education	0.143	0.021	422	656	1.239	0.148	0.101	0.185
Secondary education or higher	0.304	0.063	422	656	2.792	0.207	0.178	0.431
Literacy	0.602	0.045	422	656	1.891	0.075	0.512	0.693
CHILDREN								
Child slept under any mosquito net last night	0.576	0.035	454	667	1.203	0.061	0.505	0.646
Child slept under an ITN last night	0.573	0.036	454	667	1.226	0.062	0.502	0.645
Child slept under an ITN last night in households with at least one ITN	0.651	0.027	402	587	0.925	0.041	0.598	0.704
Child has fever in last 2 weeks	0.482	0.037	375	557	1.204	0.077	0.408	0.556
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.884	0.027	176	269	1.133	0.031	0.829	0.939
Child took ACT	0.798	0.081	79	116	1.419	0.101	0.636	0.960
Child has anaemia (haemoglobin <8.0 g/dl)	0.081	0.016	441	648	1.167	0.198	0.049	0.113
Child has malaria (based on rapid test)	0.394	0.065	441	648	2.384	0.165	0.264	0.525
Child has malaria (based on microscopy test)	0.211	0.047	440	646	2.070	0.224	0.117	0.306
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.856	0.032	150	218	1.064	0.037	0.792	0.919
Received 2+ doses of SP/Fansidar	0.724	0.032	150	218	0.848	0.044	0.660	0.788
Received 3+ doses of SP/Fansidar	0.363	0.034	150	218	0.837	0.094	0.295	0.431

Table B.9 Sampling errors for Bukedi sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.832	0.028	498	404	1.674	0.034	0.775	0.888
Average number of mosquito nets per household	1.988	0.084	498	404	1.284	0.042	1.821	2.156
Ownership of at least one ITN	0.827	0.029	498	404	1.678	0.035	0.770	0.884
Average number of ITNs per household	1.974	0.084	498	404	1.297	0.043	1.805	2.143
Ownership of at least one ITN for every two persons	0.473	0.039	498	404	1.738	0.082	0.395	0.551
IRS in the past 12 months	0.600	0.074	498	404	3.331	0.123	0.452	0.748
WOMEN								
No education	0.110	0.024	421	354	1.569	0.218	0.062	0.158
Secondary education or higher	0.224	0.039	421	354	1.915	0.174	0.146	0.303
Literacy	0.578	0.040	421	354	1.652	0.069	0.498	0.658
CHILDREN								
Child slept under any mosquito net last night	0.615	0.053	438	364	1.782	0.086	0.509	0.722
Child slept under an ITN last night	0.613	0.053	438	364	1.762	0.086	0.508	0.718
Child slept under an ITN last night in households with at least one ITN	0.699	0.049	379	319	1.640	0.070	0.601	0.797
Child has fever in last 2 weeks	0.302	0.026	375	316	0.939	0.086	0.250	0.354
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.808	0.043	119	95	1.013	0.053	0.722	0.894
Child has anaemia (haemoglobin <8.0 g/dl)	0.034	0.011	425	356	1.294	0.327	0.012	0.057
Child has malaria (based on rapid test)	0.053	0.029	424	355	2.337	0.539	0.000	0.111
Child has malaria (based on microscopy test)	0.033	0.017	424	355	1.690	0.499	0.000	0.066
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.866	0.029	157	134	1.079	0.034	0.808	0.924
Received 2+ doses of SP/Fansidar	0.774	0.031	157	134	0.938	0.040	0.712	0.837
Received 3+ doses of SP/Fansidar	0.402	0.055	157	134	1.407	0.136	0.293	0.512

Table B.10 Sampling errors for Bugisu sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.866	0.018	489	512	1.146	0.020	0.830	0.901
Average number of mosquito nets per household	2.355	0.113	489	512	1.479	0.048	2.129	2.581
Ownership of at least one ITN	0.860	0.017	489	512	1.072	0.020	0.826	0.894
Average number of ITNs per household	2.342	0.113	489	512	1.473	0.048	2.116	2.567
Ownership of at least one ITN for every two persons	0.577	0.033	489	512	1.487	0.058	0.511	0.644
IRS in the past 12 months	0.061	0.050	489	512	4.519	0.816	0.000	0.162
WOMEN								
No education	0.049	0.012	465	523	1.172	0.240	0.025	0.072
Secondary education or higher	0.417	0.067	465	523	2.918	0.161	0.282	0.552
Literacy	0.729	0.049	465	523	2.342	0.067	0.632	0.826
CHILDREN								
Child slept under any mosquito net last night	0.744	0.032	411	435	1.240	0.043	0.680	0.809
Child slept under an ITN last night	0.744	0.032	411	435	1.240	0.043	0.680	0.809
Child slept under an ITN last night in households with at least one ITN	0.815	0.028	371	397	1.188	0.034	0.759	0.871
Child has fever in last 2 weeks	0.201	0.047	340	378	1.955	0.232	0.108	0.294
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.848	0.032	81	76	0.735	0.038	0.783	0.913
Child took ACT	0.927	0.045	59	51	1.170	0.049	0.837	1.017
Child has anaemia (haemoglobin <8.0 g/dl)	0.033	0.010	399	422	1.073	0.298	0.013	0.053
Child has malaria (based on rapid test)	0.104	0.049	399	422	2.615	0.469	0.007	0.201
Child has malaria (based on microscopy test)	0.048	0.024	399	422	2.140	0.492	0.001	0.096
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.948	0.024	142	162	1.271	0.025	0.901	0.995
Received 2+ doses of SP/Fansidar	0.739	0.050	142	162	1.357	0.067	0.640	0.839
Received 3+ doses of SP/Fansidar	0.436	0.075	142	162	1.808	0.172	0.286	0.585

Table B.11 Sampling errors for Teso sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.913	0.024	497	365	1.862	0.026	0.866	0.960
Average number of mosquito nets per household	2.646	0.155	497	365	2.038	0.059	2.337	2.956
Ownership of at least one ITN	0.901	0.024	497	365	1.781	0.027	0.854	0.949
Average number of ITNs per household	2.596	0.146	497	365	1.920	0.056	2.305	2.887
Ownership of at least one ITN for every two persons	0.523	0.042	494	364	1.865	0.080	0.439	0.607
IRS in the past 12 months	0.391	0.115	497	365	5.131	0.295	0.160	0.622
WOMEN								
No education	0.080	0.017	574	434	1.469	0.209	0.047	0.113
Secondary education or higher	0.305	0.061	574	434	3.164	0.201	0.182	0.427
Literacy	0.662	0.040	574	434	2.003	0.060	0.583	0.741
CHILDREN								
Child slept under any mosquito net last night	0.726	0.033	533	395	1.348	0.045	0.661	0.792
Child slept under an ITN last night	0.719	0.034	533	395	1.403	0.048	0.651	0.788
Child slept under an ITN last night in households with at least one ITN	0.766	0.028	498	371	1.187	0.037	0.709	0.823
Child has fever in last 2 weeks	0.369	0.032	473	356	1.343	0.088	0.304	0.434
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.814	0.051	182	131	1.548	0.063	0.711	0.916
Child took ACT	0.920	0.030	128	93	1.219	0.033	0.860	0.980
Child has anaemia (haemoglobin <8.0 g/dl)	0.032	0.006	515	382	0.793	0.185	0.020	0.044
Child has malaria (based on rapid test)	0.202	0.065	515	382	3.060	0.320	0.073	0.331
Child has malaria (based on microscopy test)	0.082	0.028	515	382	2.022	0.339	0.027	0.138
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.960	0.021	208	153	1.538	0.022	0.918	1.003
Received 2+ doses of SP/Fansidar	0.861	0.030	208	153	1.226	0.035	0.801	0.921
Received 3+ doses of SP/Fansidar	0.482	0.045	208	153	1.266	0.092	0.393	0.571

Table B.12 Sampling errors for Karamoja sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.583	0.052	484	196	2.301	0.089	0.480	0.687
Average number of mosquito nets per household	1.191	0.174	484	196	2.819	0.146	0.843	1.538
Ownership of at least one ITN	0.581	0.051	484	196	2.282	0.089	0.478	0.684
Average number of ITNs per household	1.188	0.174	484	196	2.812	0.146	0.841	1.535
Ownership of at least one ITN for every two persons	0.250	0.029	482	196	1.466	0.116	0.192	0.308
IRS in the past 12 months	0.007	0.004	484	196	1.036	0.548	0.000	0.015
WOMEN								
No education	0.730	0.039	397	169	1.726	0.053	0.652	0.807
Secondary education or higher	0.041	0.018	397	169	1.745	0.423	0.006	0.076
Literacy	0.121	0.033	397	169	2.013	0.274	0.055	0.187
CHILDREN								
Child slept under any mosquito net last night	0.350	0.049	534	219	1.797	0.139	0.252	0.447
Child slept under an ITN last night	0.350	0.049	534	219	1.797	0.139	0.252	0.447
Child slept under an ITN last night in households with at least one ITN	0.574	0.035	327	133	0.996	0.061	0.504	0.644
Child has fever in last 2 weeks	0.237	0.039	485	206	1.726	0.164	0.159	0.315
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.847	0.031	108	49	0.902	0.037	0.785	0.909
Child took ACT	0.912	0.034	59	28	0.879	0.037	0.844	0.980
Child has anaemia (haemoglobin <8.0 g/dl)	0.131	0.019	510	208	1.203	0.143	0.093	0.168
Child has malaria (based on rapid test)	0.416	0.058	510	208	2.321	0.140	0.300	0.533
Child has malaria (based on microscopy test)	0.343	0.047	510	208	2.045	0.138	0.248	0.437
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.368	0.077	59	23	1.200	0.209	0.215	0.522
Pregnant women slept under an ITN last night	0.368	0.077	59	23	1.200	0.209	0.215	0.522
Received 1+ doses of SP/Fansidar	0.897	0.025	200	83	1.130	0.027	0.847	0.946
Received 2+ doses of SP/Fansidar	0.709	0.048	200	83	1.475	0.068	0.613	0.805
Received 3+ doses of SP/Fansidar	0.427	0.047	200	83	1.324	0.110	0.333	0.520

Table B.13 Sampling errors for Lango sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.845	0.023	666	441	1.606	0.027	0.800	0.890
Average number of mosquito nets per household	2.130	0.105	666	441	1.670	0.049	1.919	2.340
Ownership of at least one ITN	0.825	0.022	666	441	1.504	0.027	0.781	0.870
Average number of ITNs per household	2.066	0.105	666	441	1.663	0.051	1.856	2.277
Ownership of at least one ITN for every two persons	0.499	0.029	665	441	1.508	0.059	0.441	0.558
IRS in the past 12 months	0.572	0.076	666	441	3.909	0.133	0.420	0.723
WOMEN								
No education	0.145	0.018	676	462	1.362	0.127	0.108	0.182
Secondary education or higher	0.219	0.045	676	462	2.787	0.203	0.130	0.309
Literacy	0.657	0.038	676	462	2.095	0.058	0.580	0.734
CHILDREN								
Child slept under any mosquito net last night	0.623	0.047	536	340	1.847	0.076	0.528	0.718
Child slept under an ITN last night	0.611	0.048	536	340	1.873	0.079	0.515	0.708
Child slept under an ITN last night in households with at least one ITN	0.747	0.033	433	278	1.384	0.044	0.681	0.814
Child has fever in last 2 weeks	0.310	0.039	474	318	1.697	0.126	0.232	0.388
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.953	0.020	160	99	1.160	0.021	0.913	0.994
Child took ACT	0.911	0.039	134	83	1.494	0.042	0.834	0.989
Child has anaemia (haemoglobin <8.0 g/dl)	0.028	0.009	529	335	1.188	0.306	0.011	0.046
Child has malaria (based on rapid test)	0.230	0.066	529	335	2.918	0.288	0.097	0.362
Child has malaria (based on microscopy test)	0.133	0.035	529	335	2.111	0.265	0.063	0.204
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.737	0.053	57	36	0.883	0.071	0.632	0.842
Pregnant women slept under an ITN last night	0.737	0.053	57	36	0.883	0.071	0.632	0.842
Received 1+ doses of SP/Fansidar	0.839	0.042	216	144	1.650	0.050	0.755	0.923
Received 2+ doses of SP/Fansidar	0.656	0.053	216	144	1.624	0.081	0.549	0.763
Received 3+ doses of SP/Fansidar	0.389	0.035	216	144	1.049	0.091	0.319	0.460

Table B.14 Sampling errors for Acholi sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.854	0.021	703	279	1.570	0.024	0.813	0.896
Average number of mosquito nets per household	2.101	0.096	703	279	1.589	0.045	1.910	2.292
Ownership of at least one ITN	0.830	0.020	703	279	1.380	0.024	0.791	0.869
Average number of ITNs per household	2.037	0.085	703	279	1.403	0.042	1.867	2.207
Ownership of at least one ITN for every two persons	0.455	0.028	702	278	1.465	0.061	0.400	0.511
IRS in the past 12 months	0.144	0.016	703	279	1.205	0.111	0.112	0.176
WOMEN								
No education	0.161	0.024	795	325	1.864	0.151	0.112	0.210
Secondary education or higher	0.232	0.030	795	325	1.971	0.128	0.173	0.291
Literacy	0.560	0.037	795	325	2.117	0.067	0.485	0.634
CHILDREN								
Child slept under any mosquito net last night	0.603	0.037	678	264	1.559	0.061	0.530	0.676
Child slept under an ITN last night	0.586	0.037	678	264	1.604	0.064	0.511	0.661
Child slept under an ITN last night in households with at least one ITN	0.691	0.035	576	224	1.502	0.051	0.621	0.762
Child has fever in last 2 weeks	0.455	0.035	571	232	1.560	0.077	0.385	0.525
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.874	0.032	263	106	1.498	0.037	0.810	0.939
Child took ACT	0.940	0.019	198	77	1.082	0.020	0.903	0.977
Child has anaemia (haemoglobin <8.0 g/dl)	0.044	0.011	657	254	1.249	0.256	0.021	0.066
Child has malaria (based on rapid test)	0.289	0.044	657	254	2.058	0.153	0.201	0.377
Child has malaria (based on microscopy test)	0.119	0.021	657	254	1.567	0.181	0.076	0.162
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.668	0.073	62	24	1.173	0.109	0.522	0.814
Pregnant women slept under an ITN last night	0.656	0.071	62	24	1.129	0.108	0.514	0.797
Received 1+ doses of SP/Fansidar	0.883	0.027	245	101	1.305	0.030	0.829	0.936
Received 2+ doses of SP/Fansidar	0.660	0.032	245	101	1.075	0.049	0.595	0.725
Received 3+ doses of SP/Fansidar	0.391	0.027	245	101	0.876	0.069	0.337	0.445

Table B.15 Sampling errors for West Nile sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.928	0.013	531	487	1.158	0.014	0.901	0.954
Average number of mosquito nets per household	2.806	0.121	531	487	1.566	0.043	2.564	3.049
Ownership of at least one ITN	0.924	0.014	531	487	1.233	0.015	0.895	0.952
Average number of ITNs per household	2.766	0.120	531	487	1.553	0.043	2.527	3.006
Ownership of at least one ITN for every two persons	0.559	0.032	528	484	1.474	0.057	0.496	0.623
IRS in the past 12 months	0.007	0.004	531	487	1.088	0.574	0.000	0.014
WOMEN								
No education	0.197	0.027	565	539	1.599	0.136	0.143	0.251
Secondary education or higher	0.141	0.022	565	539	1.505	0.157	0.097	0.185
Literacy	0.434	0.035	565	539	1.696	0.082	0.363	0.505
CHILDREN								
Child slept under any mosquito net last night	0.652	0.044	508	467	1.658	0.067	0.565	0.739
Child slept under an ITN last night	0.642	0.043	508	467	1.644	0.067	0.556	0.728
Child slept under an ITN last night in households with at least one ITN	0.689	0.040	469	435	1.553	0.057	0.610	0.769
Child has fever in last 2 weeks	0.448	0.035	434	410	1.371	0.078	0.378	0.518
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.856	0.038	194	184	1.317	0.045	0.779	0.933
Child took ACT	0.933	0.030	126	120	1.338	0.032	0.873	0.992
Child has anaemia (haemoglobin <8.0 g/dl)	0.051	0.010	499	459	1.025	0.190	0.031	0.070
Child has malaria (based on rapid test)	0.500	0.049	499	459	1.998	0.098	0.402	0.597
Child has malaria (based on microscopy test)	0.218	0.025	499	459	1.273	0.116	0.168	0.269
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.820	0.044	65	60	0.950	0.053	0.732	0.907
Pregnant women slept under an ITN last night	0.811	0.046	65	60	0.969	0.056	0.720	0.902
Pregnant women slept under an ITN last night in households with at least one ITN	0.866	0.036	60	56	0.868	0.042	0.793	0.939
Received 1+ doses of SP/Fansidar	0.928	0.019	192	184	1.022	0.021	0.890	0.966
Received 2+ doses of SP/Fansidar	0.780	0.038	192	184	1.277	0.049	0.704	0.857
Received 3+ doses of SP/Fansidar	0.457	0.051	192	184	1.415	0.111	0.355	0.559

Table B.16 Sampling errors for Bunyoro sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.891	0.018	661	313	1.467	0.020	0.856	0.927
Average number of mosquito nets per household	2.507	0.081	661	313	1.275	0.032	2.345	2.668
Ownership of at least one ITN	0.876	0.021	661	313	1.621	0.024	0.834	0.917
Average number of ITNs per household	2.442	0.081	661	313	1.293	0.033	2.279	2.605
Ownership of at least one ITN for every two persons	0.548	0.033	657	311	1.715	0.061	0.481	0.615
IRS in the past 12 months	0.002	0.002	661	313	0.887	0.723	0.000	0.006
WOMEN								
No education	0.131	0.026	668	335	2.010	0.201	0.079	0.184
Secondary education or higher	0.289	0.034	668	335	1.906	0.116	0.222	0.356
Literacy	0.658	0.042	668	335	2.281	0.064	0.574	0.742
CHILDREN								
Child slept under any mosquito net last night	0.684	0.026	654	314	1.192	0.039	0.631	0.737
Child slept under an ITN last night	0.670	0.027	654	314	1.209	0.040	0.616	0.724
Child slept under an ITN last night in households with at least one ITN	0.739	0.024	588	285	1.130	0.033	0.690	0.788
Child has fever in last 2 weeks	0.238	0.026	554	281	1.426	0.108	0.186	0.289
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.852	0.033	139	67	1.013	0.038	0.787	0.918
Child took ACT	0.976	0.017	101	49	0.967	0.017	0.943	1.010
Child has anaemia (haemoglobin <8.0 g/dl)	0.027	0.007	638	307	1.049	0.245	0.014	0.041
Child has malaria (based on rapid test)	0.152	0.036	638	307	2.266	0.234	0.081	0.223
Child has malaria (based on microscopy test)	0.092	0.022	638	307	1.789	0.237	0.048	0.136
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.801	0.051	66	31	1.051	0.063	0.700	0.902
Pregnant women slept under an ITN last night	0.801	0.051	66	31	1.051	0.063	0.700	0.902
Pregnant women slept under an ITN last night in households with at least one ITN	0.896	0.037	59	28	0.963	0.042	0.821	0.970
Received 1+ doses of SP/Fansidar	0.911	0.026	229	115	1.391	0.029	0.858	0.963
Received 2+ doses of SP/Fansidar	0.708	0.040	229	115	1.322	0.056	0.628	0.787
Received 3+ doses of SP/Fansidar	0.415	0.034	229	115	1.036	0.081	0.348	0.483

Table B.17 Sampling errors for Tooro sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.887	0.016	666	439	1.284	0.018	0.856	0.919
Average number of mosquito nets per household	2.464	0.101	666	439	1.677	0.041	2.262	2.666
Ownership of at least one ITN	0.884	0.016	666	439	1.265	0.018	0.853	0.916
Average number of ITNs per household	2.451	0.103	666	439	1.700	0.042	2.245	2.656
Ownership of at least one ITN for every two persons	0.575	0.027	666	439	1.392	0.046	0.522	0.628
IRS in the past 12 months	0.018	0.012	666	439	2.378	0.676	0.000	0.043
WOMEN								
No education	0.117	0.015	634	438	1.206	0.131	0.087	0.148
Secondary education or higher	0.284	0.021	634	438	1.150	0.073	0.243	0.326
Literacy	0.747	0.032	634	438	1.877	0.043	0.682	0.812
CHILDREN								
Child slept under any mosquito net last night	0.690	0.031	590	390	1.407	0.045	0.628	0.751
Child slept under an ITN last night	0.683	0.032	590	390	1.426	0.046	0.620	0.747
Child slept under an ITN last night in households with at least one ITN	0.741	0.029	541	360	1.337	0.039	0.684	0.799
Child has fever in last 2 weeks	0.240	0.037	527	366	1.856	0.156	0.165	0.315
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.793	0.032	125	88	0.860	0.040	0.729	0.856
Child took ACT	0.933	0.027	81	56	0.980	0.029	0.878	0.987
Child has anaemia (haemoglobin <8.0 g/dl)	0.012	0.005	573	380	1.017	0.381	0.003	0.021
Child has malaria (based on rapid test)	0.073	0.020	573	380	1.726	0.272	0.033	0.112
Child has malaria (based on microscopy test)	0.047	0.014	573	380	1.566	0.301	0.019	0.076
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.847	0.052	58	37	1.035	0.062	0.742	0.952
Pregnant women slept under an ITN last night	0.847	0.052	58	37	1.035	0.062	0.742	0.952
Pregnant women slept under an ITN last night in households with at least one ITN	0.948	0.028	51	33	0.913	0.030	0.891	1.005
Received 1+ doses of SP/Fansidar	0.954	0.021	210	150	1.441	0.022	0.913	0.995
Received 2+ doses of SP/Fansidar	0.730	0.047	210	150	1.568	0.065	0.635	0.824
Received 3+ doses of SP/Fansidar	0.403	0.054	210	150	1.619	0.134	0.295	0.511

Table B.18 Sampling errors for Ankole sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.875	0.018	484	667	1.189	0.021	0.839	0.910
Average number of mosquito nets per household	2.431	0.129	484	667	1.728	0.053	2.173	2.690
Ownership of at least one ITN	0.862	0.020	484	667	1.277	0.023	0.822	0.902
Average number of ITNs per household	2.392	0.132	484	667	1.763	0.055	2.128	2.655
Ownership of at least one ITN for every two persons	0.620	0.027	484	667	1.223	0.044	0.566	0.674
IRS in the past 12 months	0.007	0.005	484	667	1.284	0.717	0.000	0.016
WOMEN								
No education	0.118	0.024	476	648	1.591	0.199	0.071	0.166
Secondary education or higher	0.397	0.052	476	648	2.288	0.130	0.294	0.500
Literacy	0.769	0.040	476	648	2.085	0.053	0.688	0.850
CHILDREN								
Child slept under any mosquito net last night	0.632	0.037	327	417	1.162	0.059	0.557	0.706
Child slept under an ITN last night	0.623	0.039	327	417	1.216	0.063	0.545	0.702
Child slept under an ITN last night in households with at least one ITN	0.670	0.041	307	387	1.266	0.061	0.589	0.752
Child has fever in last 2 weeks	0.091	0.013	277	370	0.755	0.142	0.065	0.116
Child has anaemia (haemoglobin <8.0 g/dl)	0.022	0.008	324	413	0.945	0.353	0.006	0.038
Child has malaria (based on rapid test)	0.029	0.017	324	413	1.589	0.577	0.000	0.063
Child has malaria (based on microscopy test)	0.026	0.019	324	413	1.853	0.717	0.000	0.063
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.871	0.034	99	139	1.038	0.040	0.802	0.940
Received 2+ doses of SP/Fansidar	0.706	0.027	99	139	0.589	0.038	0.653	0.760
Received 3+ doses of SP/Fansidar	0.378	0.049	99	139	1.019	0.130	0.280	0.476

Table B.19 Sampling errors for Kigezi sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.889	0.019	486	351	1.349	0.022	0.850	0.927
Average number of mosquito nets per household	2.365	0.106	486	351	1.543	0.045	2.153	2.577
Ownership of at least one ITN	0.889	0.019	486	351	1.349	0.022	0.850	0.927
Average number of ITNs per household	2.363	0.105	486	351	1.530	0.045	2.152	2.573
Ownership of at least one ITN for every two persons	0.617	0.033	485	350	1.470	0.053	0.552	0.682
IRS in the past 12 months	0.012	0.010	486	351	1.952	0.810	0.000	0.031
WOMEN								
No education	0.138	0.024	453	345	1.477	0.174	0.090	0.186
Secondary education or higher	0.240	0.039	453	345	1.910	0.160	0.163	0.317
Literacy	0.727	0.044	453	345	2.079	0.060	0.640	0.815
CHILDREN								
Child slept under any mosquito net last night	0.557	0.042	379	272	1.461	0.076	0.473	0.641
Child slept under an ITN last night	0.551	0.041	379	272	1.431	0.075	0.469	0.634
Child slept under an ITN last night in households with at least one ITN	0.621	0.040	337	242	1.368	0.064	0.541	0.700
Child has fever in last 2 weeks	0.126	0.024	343	258	1.266	0.190	0.078	0.173
Child has anaemia (haemoglobin <8.0 g/dl)	0.016	0.006	377	271	0.908	0.369	0.004	0.027
Child has malaria (based on rapid test)	0.000	0.000	376	270	na	na	na	na
Child has malaria (based on microscopy test)	0.003	0.003	376	270	1.007	0.993	0.000	0.008
PREGNANT WOMEN								
Received 1+ doses of SP/Fansidar	0.872	0.038	132	100	1.297	0.043	0.796	0.948
Received 2+ doses of SP/Fansidar	0.811	0.034	132	100	0.980	0.041	0.744	0.878
Received 3+ doses of SP/Fansidar	0.522	0.046	132	100	1.055	0.088	0.430	0.614

na = Not applicable

Table B.20 Sampling errors for Refugee settlements sample, Uganda MIS 2018-19

Variable	Value (R)	Standard error (SE)	Number of cases: Un-weighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: Lower (R-2SE)	Confidence limits: Upper (R+2SE)
HOUSEHOLDS								
Ownership of at least one mosquito net	0.793	0.046	606	606	2.794	0.058	0.701	0.886
Average number of mosquito nets per household	1.975	0.215	606	606	3.256	0.109	1.545	2.404
Ownership of at least one ITN	0.785	0.050	606	606	2.977	0.064	0.685	0.885
Average number of ITNs per household	1.962	0.216	606	606	3.260	0.110	1.530	2.394
Ownership of at least one ITN for every two persons	0.376	0.037	606	606	1.875	0.099	0.302	0.450
IRS in the past 12 months	0.000	0.000	606	606	na	na	na	na
WOMEN								
No education	0.424	0.034	637	637	1.750	0.081	0.355	0.493
Secondary education or higher	0.115	0.017	637	637	1.335	0.147	0.081	0.149
Literacy	0.275	0.026	637	637	1.451	0.094	0.223	0.326
CHILDREN								
Child slept under any mosquito net last night	0.635	0.057	691	682	2.378	0.089	0.521	0.748
Child slept under an ITN last night	0.634	0.057	691	682	2.377	0.089	0.520	0.747
Child slept under an ITN last night in households with at least one ITN	0.784	0.023	582	551	1.130	0.029	0.738	0.830
Child has fever in last 2 weeks	0.296	0.030	643	627	1.606	0.101	0.236	0.356
Child sought care/treatment from public or private health facility, shop, market, and/or hawker/itinerant drug seller	0.846	0.045	176	186	1.660	0.053	0.757	0.935
Child took ACT	0.949	0.023	114	128	1.226	0.025	0.902	0.996
Child has anaemia (haemoglobin <8.0 g/dl)	0.026	0.011	673	667	1.468	0.405	0.005	0.047
Child has malaria (based on rapid test)	0.328	0.058	673	667	2.795	0.176	0.212	0.443
Child has malaria (based on microscopy test)	0.128	0.024	673	667	1.705	0.190	0.079	0.176
PREGNANT WOMEN								
Pregnant women slept under any mosquito net last night	0.632	0.125	56	66	2.076	0.198	0.381	0.882
Pregnant women slept under an ITN last night	0.632	0.125	56	66	2.076	0.198	0.381	0.882
Received 1+ doses of SP/Fansidar	0.900	0.027	259	258	1.440	0.030	0.846	0.954
Received 2+ doses of SP/Fansidar	0.743	0.037	259	258	1.352	0.050	0.670	0.817
Received 3+ doses of SP/Fansidar	0.481	0.036	259	258	1.143	0.074	0.410	0.553

na = Not applicable

DATA QUALITY TABLES

Appendix C

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), Uganda MIS 2018-19

	Female		Male			Female		Male	
Age	Number	Percent	Number	Percent	Age	Number	Percent	Number	Percent
0	667	3.0	760	3.6	36	191	0.9	178	0.8
1	699	3.2	671	3.1	37	161	0.7	127	0.6
2	700	3.2	736	3.4	38	246	1.1	248	1.2
3	763	3.5	788	3.7	39	137	0.6	96	0.5
4	837	3.8	827	3.9	40	317	1.4	329	1.5
5	740	3.4	836	3.9	41	104	0.5	76	0.4
6	840	3.8	798	3.7	42	138	0.6	178	0.8
7	746	3.4	846	4.0	43	128	0.6	121	0.6
8	816	3.7	751	3.5	44	95	0.4	89	0.4
9	600	2.7	668	3.1	45	183	0.8	277	1.3
10	848	3.8	846	4.0	46	93	0.4	109	0.5
11	536	2.4	530	2.5	47	84	0.4	114	0.5
12	829	3.8	740	3.5	48	105	0.5	127	0.6
13	687	3.1	638	3.0	49	77	0.3	85	0.4
14	700	3.2	593	2.8	50	310	1.4	187	0.9
15	430	2.0	542	2.5	51	108	0.5	53	0.2
16	407	1.8	563	2.6	52	135	0.6	104	0.5
17	367	1.7	466	2.2	53	102	0.5	57	0.3
18	480	2.2	581	2.7	54	91	0.4	116	0.5
19	335	1.5	324	1.5	55	108	0.5	115	0.5
20	440	2.0	420	2.0	56	108	0.5	105	0.5
21	227	1.0	190	0.9	57	44	0.2	58	0.3
22	323	1.5	286	1.3	58	81	0.4	80	0.4
23	336	1.5	273	1.3	59	41	0.2	39	0.2
24	316	1.4	240	1.1	60	179	0.8	151	0.7
25	369	1.7	323	1.5	61	25	0.1	34	0.2
26	295	1.3	180	0.8	62	61	0.3	38	0.2
27	253	1.1	217	1.0	63	53	0.2	34	0.2
28	346	1.6	254	1.2	64	47	0.2	30	0.1
29	228	1.0	162	0.8	65	94	0.4	80	0.4
30	445	2.0	394	1.8	66	30	0.1	22	0.1
31	141	0.6	111	0.5	67	40	0.2	42	0.2
32	322	1.5	255	1.2	68	50	0.2	33	0.2
33	146	0.7	141	0.7	69	21	0.1	24	0.1
34	175	0.8	144	0.7	70+	575	2.6	392	1.8
35	279	1.3	320	1.5	Don't know	5	0.0	2	0.0
					Total	22,031	100.0	21,363	100.0

Note: The de facto population includes all residents and nonresidents who stayed in the household the night before the interview.

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10-54, number and percent distribution of interviewed women age 15-49, and percentage of eligible women who were interviewed (weighted), by 5-year age groups, Uganda MIS 2018-19

	Household population of women age 10-54	Interviewed women age 15-49		Percentage of eligible women interviewed
Age group		Number	Percentage	
10-14	3,599	na	na	na
15-19	2,018	1,986	23.1	98.4
20-24	1,642	1,617	18.8	98.5
25-29	1,491	1,473	17.1	98.8
30-34	1,229	1,217	14.2	99.0
35-39	1,014	988	11.5	97.4
40-44	782	773	9.0	98.8
45-49	541	537	6.3	99.3
50-54	746	na	na	na
15-49	8,718	8,591	100.0	98.5

Note: The de facto population includes all residents and nonresidents who stayed in the household the night before the interview. Weights for both household population of women and interviewed women are household weights. Age is based on the Household Questionnaire.
na = Not applicable

Table C.3 Completeness of reporting

Percentage of observations missing information for selected demographic and health questions (weighted), Uganda MIS 2018-19

Subject	Reference group	Percentage with information missing	Number of cases
Birth date	Births in the 5 years preceding the survey		
Day only		2.30	6,797
Day and month		1.87	6,797
Day, month, and year		0.00	6,797
Respondent's education	All women age 15-49	0.00	8,868
Anaemia	Living children age 0-59 months from the Biomarker Questionnaire	2.85	7,509

Table C.4 Births by calendar years

Number of births, percentage with complete birth date, sex ratio at birth, and calendar year ratio by calendar year, according to living (L), dead (D), and total (T) children (weighted), Uganda MIS 2018-19

	Number of births			Percentage with year and month of birth given			Sex ratio at birth[1]			Calendar year ratio[2]		
Calendar year	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total
2019	21	0	21	100.0	na	100.0	57.8	na	57.8	na	na	na
2018	1,477	31	1,508	99.9	99.4	99.9	113.8	97.1	113.5	na	na	na
2017	1,326	28	1,354	99.7	94.5	99.6	98.7	118.8	99.0	95.9	64.5	94.9
2016	1,290	55	1,345	97.0	84.6	96.5	109.5	182.5	111.8	97.9	210.9	100.1
2015	1,310	25	1,335	97.1	84.9	96.9	103.8	85.4	103.4	103.6	64.6	102.5
2014	1,238	21	1,259	97.6	85.3	97.4	94.7	139.9	95.3	97.7	64.6	96.8
2013	1,226	40	1,266	94.4	76.7	93.8	135.0	107.2	134.0	198.0	383.6	201.1
2015-2019	5,425	138	5,564	98.5	89.9	98.3	106.2	126.4	106.7	na	na	na
2013-2014	2,465	61	2,525	96.0	79.6	95.6	112.9	117.4	113.0	na	na	na
All	7,890	199	8,089	97.7	86.8	97.5	108.3	123.5	108.6	-	-	-

na = Not applicable
[1] (Bm/Bf)x100, where Bm and Bf are the numbers of male and female births, respectively
[2] [2Bx/(Bx-1+Bx+1)]x100, where Bx is the number of births in calendar year x

Table C.5 Number of enumeration areas completed by month and region

During the period of fieldwork, the number of enumeration areas completed by month, according to region, Uganda MIS 2018-19

	Month			
	December	January	February	Total
Region				
South Buganda	12	15	0	27
North Buganda	12	9	0	21
Kampala	6	12	0	18
Busoga	6	11	0	17
Bukedi	6	13	0	19
Bugisu	6	13	0	19
Teso	6	13	0	19
Karamoja	5	13	0	18
Lango	10	15	0	25
Acholi	12	15	0	27
West Nile	9	11	0	20
Bunyoro	12	13	0	25
Tooro	10	16	0	26
Kigezi	10	8	0	18
Ankole	7	11	0	18
Refugee settlements	0	20	2	22
Percent	37.9	61.5	0.6	100.0
Total	129	209	2	340

Note: Enumeration areas are classified by month according to the date by which the last biomarker questionnaire in the enumeration area was completed.

Table C.6 Positive rapid diagnostic test (RDT) results by month and region

Percentage of children age 0-59 months classified as having malaria according to RDT, by month and region, Uganda MIS 2018-19

	Month		
	December	January	Total
Region			
South Buganda	2.5	1.7	1.9
North Buganda	19.9	7.2	14.2
Kampala	0.0	2.1	1.6
Busoga	27.3	46.3	39.4
Bukedi	15.7	2.4	5.3
Bugisu	1.4	13.2	10.4
Teso	17.3	21.3	20.2
Karamoja	57.8	32.9	41.6
Lango	42.6	13.7	23.0
Acholi	14.1	38.7	28.9
West Nile	54.3	48.0	50.0
Bunyoro	23.3	8.7	15.2
Tooro	12.5	4.8	7.3
Ankole	5.8	0.2	2.9
Total	18.6	15.9	16.9
Refugee settlements	*	32.8	32.8

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases or that there were no children tested for malaria in the region for the month.

PERSONS INVOLVED IN THE 2018-19 UGANDA MALARIA INDICATOR SURVEY

Appendix D

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QUESTIONNAIRES

Appendix E

FORMATTING DATE: 1 Dec 2018
ENGLISH LANGUAGE: 10 Dec 2018

2018-19 UGANDA MALARIA INDICATOR SURVEY
HOUSEHOLD QUESTIONNAIRE

Uganda
NMCP/UBOS

IDENTIFICATION

EA NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . | | | | |

HOUSEHOLD NUMBER . . . . . | | | | |

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY / MONTH / YEAR
INTERVIEWER'S NAME				INT. NO.
RESULT*				RESULT*
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS
TIME				

*RESULT CODES:

1 COMPLETED
2 NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4 POSTPONED
5 REFUSED
6 DWELLING VACANT OR ADDRESS NOT A DWELLING
7 DWELLING DESTROYED
8 DWELLING NOT FOUND
9 OTHER _____ (SPECIFY)

TOTAL PERSONS IN HOUSEHOLD | |

TOTAL ELIGIBLE WOMEN | |

TOTAL ELIGIBLE CHILDREN | |

LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE | |

LANGUAGE OF QUESTIONNAIRE** 0 1

LANGUAGE OF INTERVIEW** | |

NATIVE LANGUAGE OF RESPONDENT** | |

TRANSLATOR USED (YES = 1, NO = 2) |

LANGUAGE OF QUESTIONNAIRE** **ENGLISH**

**LANGUAGE CODES:

01 ENGLISH
02 LUGANDA
03 LUO
04 LUGBARA
05 ATESO
06 RUNYANKOLE/RUKIGA
07 RUNYORO/RUTORO
96 OTHER _____ SPECIFY

SUPERVISOR

_____ NAME

NUMBER

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INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with the Ministry of Health/UBOS. We are conducting a survey about malaria all over Uganda. The information we collect will help the government to plan health services. Your household was selected for the survey. I would like to ask you some questions about your household. The questions usually take about 15 to 20 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time. In case you need more information about the survey, you may contact the person listed on this card.

GIVE CARD WITH CONTACT INFORMATION

Do you have any questions?
May I begin the interview now?

SIGNATURE OF INTERVIEWER _____ DATE _____

RESPONDENT AGREES TO BE INTERVIEWED . . 1 ↓

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . . 2 → END

100	RECORD THE TIME.	HOURS . . . . . MINUTES . . . . .

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBILITY	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-9 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5
01			M F 1 2	Y N 1 2	Y N 1 2	IN YEARS	01	01
02			1 2	1 2	1 2		02	02
03			1 2	1 2	1 2		03	03
04			1 2	1 2	1 2		04	04
05			1 2	1 2	1 2		05	05
06			1 2	1 2	1 2		06	06
07			1 2	1 2	1 2		07	07
08			1 2	1 2	1 2		08	08
09			1 2	1 2	1 2		09	09
10			1 2	1 2	1 2		10	10

2A)	Just to make sure that I have a complete listing: are there any other people such as small children or infants that we have not listed?	YES ☐ →	ADD TO TABLE	NO ☐
2B)	Are there any other people who may not be members of your family, such as domestic servants, lodgers, or friends who usually live here?	YES ☐ →	ADD TO TABLE	NO ☐
2C)	Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed?	YES ☐ →	ADD TO TABLE	NO ☐

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

01 = HEAD
02 = WIFE OR HUSBAND
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = OTHER RELATIVE
10 = ADOPTED/FOSTER/ STEPCHILD
11 = NOT RELATED
98 = DON'T KNOW

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBILITY	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-9 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5
			M F	Y N	Y N	IN YEARS		
11			1 2	1 2	1 2		11	11
12			1 2	1 2	1 2		12	12
13			1 2	1 2	1 2		13	13
14			1 2	1 2	1 2		14	14
15			1 2	1 2	1 2		15	15
16			1 2	1 2	1 2		16	16
17			1 2	1 2	1 2		17	17
18			1 2	1 2	1 2		18	18
19			1 2	1 2	1 2		19	19
20			1 2	1 2	1 2		20	20

TICK HERE IF CONTINUATION SHEET USED ☐

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

01 = HEAD
02 = WIFE OR HUSBAND
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = OTHER RELATIVE
10 = ADOPTED/FOSTER/ STEPCHILD
11 = NOT RELATED
98 = DON'T KNOW

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	What is the main source of drinking water for members of your household?	**PIPED WATER** PIPED INTO DWELLING . . . . . 11 PIPED TO YARD/PLOT . . . . . 12 PIPED TO NEIGHBOR . . . . . 13 PUBLIC TAP/STANDPIPE . . . . . 14 TUBE WELL OR BOREHOLE . . . . . 21 **DUG WELL** PROTECTED WELL . . . . . 31 UNPROTECTED WELL . . . . . 32 **WATER FROM SPRING** PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 RAINWATER . . . . . 51 TANKER TRUCK . . . . . 61 BICYCLE WITH JERRYCANS . . . . . 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) . . . . . 81 BOTTLED WATER . . . . . 91 SACHET WATER . . . . . 92 OTHER _____ 96 (SPECIFY)	→ 105 → 103 → 103
102	What is the main source of water used by your household for other purposes such as cooking and handwashing?	**PIPED WATER** PIPED INTO DWELLING . . . . . 11 PIPED TO YARD/PLOT . . . . . 12 PIPED TO NEIGHBOR . . . . . 13 PUBLIC TAP/STANDPIPE . . . . . 14 TUBE WELL OR BOREHOLE . . . . . 21 **DUG WELL** PROTECTED WELL . . . . . 31 UNPROTECTED WELL . . . . . 32 **WATER FROM SPRING** PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 RAINWATER . . . . . 51 TANKER TRUCK . . . . . 61 BICYCLE WITH JERRYCANS . . . . . 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) . . . . . 81 OTHER _____ 96 (SPECIFY)	→ 105
103	Where is that water source located?	IN OWN DWELLING . . . . . 1 IN OWN YARD/PLOT . . . . . 2 ELSEWHERE 3	→ 105
104	How long does it take to go there, get water, and come back?	MINUTES . . . . . ☐☐☐ DON'T KNOW 998	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
105	What kind of toilet facility do members of your household usually use? IF NOT POSSIBLE TO DETERMINE, ASK PERMISSION TO OBSERVE THE FACILITY.	**FLUSH OR POUR FLUSH TOILET** FLUSH TO PIPED SEWER SYSTEM . . . . . 11 FLUSH TO SEPTIC TANK . . . . . 12 FLUSH TO PIT LATRINE . . . . . 13 FLUSH TO SOMEWHERE ELSE . . . . . 14 FLUSH, DON'T KNOW WHERE . . . . . 15 **PIT LATRINE** VENTILATED IMPROVED PIT LATRINE . . . . . 21 PIT LATRINE WITH SLAB . . . . . 22 PIT LATRINE WITHOUT SLAB/OPEN PIT . . 23 COMPOSTING TOILET . . . . . 31 BUCKET TOILET . . . . . 41 HANGING TOILET/HANGING LATRINE . . . . . 51 NO FACILITY/BUSH/FIELD . . . . . 61 OTHER _____ 96 (SPECIFY)	→ 108
106	Do you share this toilet facility with other households?	YES . . . . . 1 NO 2	→ 108
107	Including your own household, how many households use this toilet facility?	NO. OF HOUSEHOLDS IF LESS THAN 10 . . . . . 0 10 OR MORE HOUSEHOLDS . . . . . 95 DON'T KNOW 98	
108	What type of fuel does your household mainly use for cooking?	ELECTRICITY . . . . . 01 LPG/CYLINDER GAS . . . . . 02 BIOGAS . . . . . 04 KEROSENE . . . . . 05 CHARCOAL . . . . . 07 WOOD . . . . . 08 STRAW/SHRUBS/GRASS . . . . . 09 AGRICULTURAL CROP RESIDUE . . . . . 10 ANIMAL DUNG . . . . . 11 NO FOOD COOKED IN HOUSEHOLD . . . . . 95 OTHER _____ 96 (SPECIFY)	
109	How many rooms in this household are used for sleeping?	ROOMS	
110	Does this household own any livestock, herds, other farm animals, or poultry?	YES . . . . . 1 NO 2	→ 112

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
111	How many of the following animals does this household own? IF NONE, RECORD '00'. IF 95 OR MORE, RECORD '95'. IF UNKNOWN, RECORD '98'.		
	a) Local cattle?	a) LOCAL CATTLE	
	b) Exotic/cross-breed cattle?	b) EXOTIC CATTLE	
	c) Horses, donkeys, or mules?	c) HORSES/DONKEYS/MULES	
	d) Goats?	d) GOATS	
	e) Sheep?	e) SHEEP	
	f) Chickens or other poultry?	f) CHICKENS/POULTRY	
	g) Pigs?	g) PIGS	
112	Does any member of this household own any agricultural land?	YES . . . . . 1 NO 2	→ 114
113	How many acres of agricultural land do members of this household own?	HECTARES . . . . . 1 ACRES . . . . . 2 POLES 3	
	IF 95 OR MORE HECTARES, CIRCLE '950'. IF 95 OR MORE ACRES, RECORD IN HECTARES IF 95 OR MORE POLES, RECORD IN ACRES	95 OR MORE HECTARES . . . . . 950 DON'T KNOW 998	
114	Does your household have:	NO	
	a) Electricity?	a) ELECTRICITY 1 2	
	b) A radio?	b) RADIO 1 2	
	c) A television?	c) TELEVISION 1 2	
	d) A non-mobile telephone?	d) NON-MOBILE TELEPHONE . . 1 2	
	e) A computer?	e) COMPUTER 1 2	
	f) A refrigerator?	f) REFRIGERATOR 1 2	
	g) A cassette/CD/DVD player?	g) PLAYER 1 2	
	h) A table?	h) TABLE 1 2	
	i) A chair?	i) CHAIR 1 2	
	j) A sofa set?	j) SOFA SET 1 2	
	k) A bed?	k) BED 1 2	
	l) A cupboard?	l) CUPBOARD 1 2	
	m) A clock?	m) CLOCK 1 2	
115	Does any member of this household own:	YES NO	
	a) A watch?	a) WATCH 1 2	
	b) A mobile phone?	b) MOBILE PHONE 1 2	
	c) A bicycle?	c) BICYCLE 1 2	
	d) A motorcycle or motor scooter?	d) MOTORCYCLE/SCOOTER 1 2	
	e) An animal-drawn cart?	e) ANIMAL-DRAWN CART 1 2	
	f) A car or truck?	f) CAR/TRUCK 1 2	
	g) A boat with a motor?	g) BOAT WITH MOTOR 1 2	
	h) A boat without a motor?	h) BOAT WITHOUT MOTOR 1 2	
116	Does any member of this household have a bank account?	YES . . . . . 1 NO 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
117	At any time in the past 12 months, has anyone come into your dwelling to spray the interior walls against mosquitoes?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 118
117A	How many months ago was the dwelling last sprayed? IF LESS THAN 1 MONTH, RECORD '00'	MONTHS AGO . . . . . [ ][ ]	
117B	Who sprayed the dwelling?	GOVERNMENT WORKER/PROGRAM . . . . . A PRIVATE COMPANY . . . . . B NONGOVERNMENTAL ORGANIZATION (NGO) . . C OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
117C	Did you pay for your dwelling to be sprayed?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
118	Is there a community worker, community medicine distributer (CMD), or a village health team (VHT) member who distributes malaria medicines in your village or community?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 119
118A	Does the community health worker currently have malaria medicines available?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
119	Does your household have any mosquito nets?	YES . . . . . 1 NO 2	→ 131
120	How many mosquito nets does your household have? IF 7 OR MORE NETS, RECORD '7'.	NUMBER OF NETS . . . . . [ ]	

MOSQUITO NETS

		NET #1	NET #2	NET #3
121	ASK THE RESPONDENT TO SHOW YOU ALL THE NETS IN THE HOUSEHOLD. IF MORE THAN 3 NETS, USE ADDITIONAL QUESTIONNAIRE(S)	OBSERVED . . . . . 1 NOT OBSERVED 2	OBSERVED . . . . . 1 NOT OBSERVED 2	OBSERVED . . . . . 1 NOT OBSERVED 2
122	How many months ago did your household get the mosquito net? IF LESS THAN ONE MONTH AGO, RECORD '00'.	MONTHS AGO . . . . [ ][ ] MORE THAN 36 MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO . . . . . [ ][ ] MORE THAN 36 MONTHS AGO . . . . . 95 NOT SURE 98	MONTHS AGO . . . . . [ ][ ] MORE THAN 36 MONTHS AGO . . . . . 95 NOT SURE 98
123	OBSERVE OR ASK BRAND/TYPE OF MOSQUITO NET. IF BRAND IS UNKNOWN AND YOU CANNOT OBSERVE THE NET, SHOW PICTURES OF TYPICAL NET TYPES/BRANDS TO RESPONDENT.	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PERMANET 2.0 . . . . 11 PERMANET 3.0 . . . . 12 DURANET . . . . . 13 INTERCEPTOR . . . . 14 NETPROTECT . . . . 15 OLYSET . . . . . 16 OLYSET PLUS . . . . 17 DAWA PLUS . . . . 18 ICONLIFE . . . . . 19 YORKOOL . . . . . 20 MAGNET . . . . . 21 LLIN DK BRAND . . 22 OTHER LLIN 23 _____ (SPECIFY) OTHER BRAND . . . . . 96 DK BRAND 98	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PERMANET 2.0 . . . . . 11 PERMANET 3.0 . . . . . 12 DURANET . . . . . 13 INTERCEPTOR . . . . . 14 NETPROTECT . . . . . 15 OLYSET . . . . . 16 OLYSET PLUS . . . . . 17 DAWA PLUS . . . . . 18 ICONLIFE . . . . . 19 YORKOOL . . . . . 20 MAGNET . . . . . 21 LLIN DK BRAND . . . . . 22 OTHER LLIN 23 _____ (SPECIFY) OTHER BRAND . . . . . 96 DK BRAND 98	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PERMANET 2.0 . . . . . 11 PERMANET 3.0 . . . . . 12 DURANET . . . . . 13 INTERCEPTOR . . . . . 14 NETPROTECT . . . . . 15 OLYSET . . . . . 16 OLYSET PLUS . . . . . 17 DAWA PLUS . . . . . 18 ICONLIFE . . . . . 19 YORKOOL . . . . . 20 MAGNET . . . . . 21 LLIN DK BRAND . . . . . 22 OTHER LLIN 23 _____ (SPECIFY) OTHER BRAND . . . . . 96 DK BRAND 98
126	Did you get the net through a mass distribution, during an antenatal care visit, or during an immunization visit?	YES, MASS DISTRIBUTION 1 YES, ANC . . . . . 2 YES, IMMUNIZATION VISIT . . . . . 3 (SKIP TO 128) NO 4	YES, MASS DISTRIBUTION 1 YES, ANC . . . . . 2 YES, IMMUNIZATION VISIT . . . . . 3 (SKIP TO 128) NO 4	YES, MASS DISTRIBUTION 1 YES, ANC . . . . . 2 YES, IMMUNIZATION VISIT . . . . . 3 (SKIP TO 128) NO 4
127	Where did you get the net?	**PUBLIC SECTOR** GOVT. HOSPITAL . . 11 GOVT. HEALTH FACILITY . . . . . 12 **PNFP/NGO** HOSPITAL . . . . . 21 HEALTH FACILITY . . 22 **PRIVATE SECTOR** PRIVATE HOSPITAL/ CLINIC . . . . . 31 PHARMACY . . . . . 32 **OTHER SOURCE** SHOP/MARKET . . . . 41 HAWKER . . . . . 42 CHW . . . . . 43 RELIGIOUS INSTITUTION . . 44 OTHER . . . . . 96 DON'T KNOW 98	**PUBLIC SECTOR** GOVT. HOSPITAL . . 11 GOVT. HEALTH FACILITY . . . . . 12 **PNFP/NGO** HOSPITAL . . . . . 21 HEALTH FACILITY . . 22 **PRIVATE SECTOR** PRIVATE HOSPITAL/ CLINIC . . . . . 31 PHARMACY . . . . . 32 **OTHER SOURCE** SHOP/MARKET . . . . . 41 HAWKER . . . . . 42 CHW . . . . . 43 RELIGIOUS INSTITUTION . . 44 OTHER . . . . . 96 DON'T KNOW 98	**PUBLIC SECTOR** GOVT. HOSPITAL . . 11 GOVT. HEALTH FACILITY . . . . . 12 **PNFP/NGO** HOSPITAL . . . . . 21 HEALTH FACILITY . . 22 **PRIVATE SECTOR** PRIVATE HOSPITAL/ CLINIC . . . . . 31 PHARMACY . . . . . 32 **OTHER SOURCE** SHOP/MARKET . . . . . 41 HAWKER . . . . . 42 CHW . . . . . 43 RELIGIOUS INSTITUTION . . 44 OTHER . . . . . 96 DON'T KNOW 98

MOSQUITO NETS

		NET #1	NET #2	NET #3
128	Did anyone sleep under this mosquito net last night?	YES . . . . . 1 (SKIP TO 129) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 130)	YES . . . . . 1 (SKIP TO 129) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 130)	YES . . . . . 1 (SKIP TO 129) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 130)
128A	What are some of the reasons why this net was not used? RECORD ALL MENTIONED	TOO HOT . . . . . A DON'T LIKE SMELL . . . . B NO MOSQUITOES . . . . C NET TOO OLD/ MANY HOLES . . . . D UNABLE TO HANG . . . . E NO PLACE TO HANG . . F CHEMICALS IN NET NOT SAFE . . . . . G SAVING FOR RAINY SEASON . . . . . H SAVING TO REPLACE OTHER NET . . . . . I MATERIAL TOO HARD/ ROUGH . . . . . J USUAL USER DIDN'T SLEEP HERE . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 130)	TOO HOT . . . . . A DON'T LIKE SMELL . . . . . B NO MOSQUITOES . . . . . C NET TOO OLD/ MANY HOLES . . . . . D UNABLE TO HANG . . . . . E NO PLACE TO HANG . . F CHEMICALS IN NET NOT SAFE . . . . . G SAVING FOR RAINY SEASON . . . . . H SAVING TO REPLACE OTHER NET . . . . . I MATERIAL TOO HARD/ ROUGH . . . . . J USUAL USER DIDN'T SLEEP HERE . . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 130)	TOO HOT . . . . . A DON'T LIKE SMELL . . . . . B NO MOSQUITOES . . . . . C NET TOO OLD/ MANY HOLES . . . . . D UNABLE TO HANG . . . . . E NO PLACE TO HANG . . F CHEMICALS IN NET NOT SAFE . . . . . G SAVING FOR RAINY SEASON . . . . . H SAVING TO REPLACE OTHER NET . . . . . I MATERIAL TOO HARD/ ROUGH . . . . . J USUAL USER DIDN'T SLEEP HERE . . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 130)
129	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM HOUSEHOLD SCHEDULE.	NAME _____ LINE NO.	NAME _____ LINE NO.	NAME _____ LINE NO. . . . .
		NAME _____ LINE NO.	NAME _____ LINE NO.	NAME _____ LINE NO. . . . .
		NAME _____ LINE NO.	NAME _____ LINE NO.	NAME _____ LINE NO. . . . .
		NAME _____ LINE NO.	NAME _____ LINE NO.	NAME _____ LINE NO. . . . .
130		GO BACK TO 121 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.	GO BACK TO 121 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.	GO TO 121 IN FIRST COLUMN OF A NEW QUESTIONNAIRE; OR, IF NO MORE NETS, GO TO 131.

ADDITIONAL HOUSEHOLD CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
131	OBSERVE MAIN MATERIAL OF THE FLOOR OF THE DWELLING. RECORD OBSERVATION.	**NATURAL FLOOR** EARTH/SAND . . . . . 11 DUNG . . . . . 12 **RUDIMENTARY FLOOR** WOOD PLANKS . . . . . 21 PALM/BAMBOO . . . . . 22 **FINISHED FLOOR** PARQUET OR POLISHED WOOD . . . . . 31 CONCRETE . . . . . 32 CERAMIC TILES . . . . . 33 CEMENT . . . . . 34 CARPET . . . . . 35 STONES . . . . . 36 BRICKS . . . . . 37 OTHER _____ 96 (SPECIFY)	
132	OBSERVE MAIN MATERIAL OF THE ROOF OF THE DWELLING. RECORD OBSERVATION.	**NATURAL ROOFING** NO ROOF . . . . . 11 THATCH/PALM LEAF . . . . . 12 MUD . . . . . 13 **RUDIMENTARY ROOFING** RUSTIC MAT . . . . . 21 TINS . . . . . 22 WOOD PLANKS . . . . . 23 CARDBOARD . . . . . 24 TARPAULIN . . . . . 25 **FINISHED ROOFING** IRON SHEETS . . . . . 31 WOOD . . . . . 32 ASBESTOS . . . . . 33 TILES . . . . . 34 CONCRETE . . . . . 35 ROOFING SHINGLES . . . . . 36 OTHER _____ 96 (SPECIFY)	
133	OBSERVE MAIN MATERIAL OF THE EXTERIOR WALLS OF THE DWELLING. RECORD OBSERVATION.	**NATURAL WALLS** NO WALLS . . . . . 11 THATCHED/STRAW . . . . . 12 DIRT . . . . . 13 **RUDIMENTARY WALLS** POLES WITH MUD . . . . . 21 STONE WITH MUD . . . . . 22 UNBURNT BRICKS WITH MUD . . . . . 23 PLYWOOD . . . . . 24 CARDBOARD . . . . . 25 REUSED WOOD . . . . . 26 UNBURNT BRICKS WITH PLASTER . . . . . 27 BURNT BRICKS WITH MUD . . . . . 28 **FINISHED WALLS** CEMENT . . . . . 31 STONE WITH LIME/CEMENT . . . . . 32 BURNT BRICKS WITH CEMENT . . . . . 33 CEMENT BLOCKS . . . . . 34 UNBURNT BRICKS WITH CEMENT . . . . . 35 WOOD PLANKS/SHINGLES . . . . . 36 OTHER _____ 96 (SPECIFY)	
134	RECORD THE TIME.	HOURS . . . . .  MINUTES	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT INTERVIEW:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

FORMATTING DATE: 1 Dec 2018
ENGLISH LANGUAGE: 17 Aug 2018

2018-19 UGANDA MALARIA INDICATOR SURVEY
BIOMARKER QUESTIONNAIRE

Uganda
NMCP/UBOS

IDENTIFICATION

EA NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . | | | | |

HOUSEHOLD NUMBER . . . . . | | | | |

HEALTH TECHNICIAN VISITS

	1	2	3	FINAL VISIT
DATE				DAY
				MONTH
HEALTH TECHNICIAN'S NAME				YEAR
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS
TIME				

NOTES:

TOTAL ELIGIBLE CHILDREN

LANGUAGE OF QUESTIONNAIRE** 0 1

LANGUAGE OF INTERVIEW** | |

NATIVE LANGUAGE OF RESPONDENT** | |

TRANSLATOR (YES = 1, NO = 2) |

LANGUAGE OF QUESTIONNAIRE** **ENGLISH**

**LANGUAGE CODES:

01 ENGLISH	06 RUNYANKOLE/RUKIGA
02 LUGANDA	07 RUNYORO/RUTORO
03 LUO	96 OTHER
04 LUGBARA	
05 ATESO	

_____ (SPECIFY)

HOUSEHOLD INTERVIEWER

_____
NAME

SUPERVISOR

_____ | | | | |
NAME NUMBER

101	**INTERVIEWER:** USE THE INTERVIEWER'S MENU AND SELECT THE APPROPRIATE OPTION TO LIST ALL CHILDREN AGE 0-5 ELIGIBLE FOR BIOMARKER TESTING. RECORD THE COMPLETE NAME, AGE, AND LINE NUMBER AS THEY APPEAR IN THE REPORT ON YOUR TABLET. LIST EACH CHILD IN THE SAME ORDER SHOWN IN THE REPORT. IF MORE THAN THREE CHILDREN, USE ADDITIONAL QUESTIONNAIRE(S). WRITE THE NAME OF EACH ELIGIBLE CHILD ON SUBSEQUENT PAGES.			
		CHILD 1	CHILD 2	CHILD 3
102	INTERVIEWER FOLLOW INSTRUCTIONS IN Q101 - FILL IN LINE NUMBER AND NAME OF EACH CHILD ON ALL PAGES.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
103	IF MOTHER INTERVIEWED: INTERVIEWER WILL COPY CHILD'S DATE OF BIRTH FROM BIRTH HISTORY. IF MOTHER NOT INTERVIEWED: HEALTH TECH WILL ASK: What is (NAME)'s date of birth?	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐
104	CHECK 103: CHILD BORN IN 2013 OR LATER?	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←
106	NAME OF PARENT/OTHER ADULT RESPONSIBLE FOR THE CHILD.	_____ NAME	_____ NAME	_____ NAME
107	ASK CONSENT FOR ANEMIA TEST FROM PARENT/OTHER ADULT.	As part of this survey, we are asking children all over the country to take an anemia test. Anemia is a serious health problem that usually results from poor nutrition, infection, or chronic disease. This survey will assist the government to develop programs to prevent and treat anemia. We ask that all children born in 2013 or later take part in anemia testing in this survey and give a few drops of blood from a finger or heel. The equipment used to take the blood is clean and completely safe. It has never been used before and will be thrown away after each test. The blood will be tested for anemia immediately, and the result will be told to you right away. The result will be kept strictly confidential and will not be shared with anyone other than members of our survey team. Do you have any questions? You can say yes or no. It is up to you to decide. Will you allow (NAME OF CHILD) to participate in the anemia test?		
108	CIRCLE THE CODE AND SIGN YOUR NAME.	GRANTED . . . . . 1 _____ ← (SIGN) REFUSED . . . . . 2 NOT PRESENT/OTHER . 3	GRANTED . . . . . 1 _____ ← (SIGN) REFUSED . . . . . 2 NOT PRESENT/OTHER . 3	GRANTED . . . . . 1 _____ ← (SIGN) REFUSED . . . . . 2 NOT PRESENT/OTHER . 3

		CHILD 1	CHILD 2	CHILD 3
	INTERVIEWER FOLLOW INSTRUCTIONS IN Q101 - FILL IN LINE NUMBER AND NAME OF EACH CHILD ON ALL PAGES.	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________

109	ASK CONSENT FOR MALARIA TEST FROM PARENT/OTHER ADULT.	As part of this survey, we are asking children all over the country to take a test to see if they have malaria. Malaria is a serious illness caused by a parasite transmitted by a mosquito bite. This survey will assist the government to develop programs to prevent malaria. We ask that all children born in 2013 or later take part in malaria testing in this survey and give a few drops of blood from a finger or heel. One blood drop will be tested for malaria immediately, and the result will be told to you right away. A few blood drops will be collected on slides and taken to a laboratory for testing. You will not be told the results of the laboratory testing. All results will be kept strictly confidential and will not be shared with anyone other than members of our survey team. Do you have any questions? You can say yes or no. It is up to you to decide. Will you allow (NAME OF CHILD) to participate in the malaria test?		
110	CIRCLE THE CODE, SIGN YOUR NAME, AND ENTER YOUR FIELDWORKER NUMBER.	GRANTED . . . . 1 REFUSED . . . . 2 ________ (SIGN AND ENTER YOUR FIELDWORKER NUMBER) [ ][ ][ ][ ] NOT PRESENT/OTHER . 3	GRANTED . . . . 1 REFUSED . . . . 2 ________ (SIGN AND ENTER YOUR FIELDWORKER NUMBER) [ ][ ][ ][ ] NOT PRESENT/OTHER . 3	GRANTED . . . . 1 REFUSED . . . . 2 ________ (SIGN AND ENTER YOUR FIELDWORKER NUMBER) [ ][ ][ ][ ] NOT PRESENT/OTHER . 3
111	PREPARE EQUIPMENT AND SUPPLIES ONLY FOR THE TEST(S) FOR WHICH CONSENT HAS BEEN OBTAINED AND PROCEED WITH THE TEST(S).			
112	PLACE BAR CODE LABEL FOR MALARIA LAB TEST.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT . . . 99994 REFUSED . . . . 99995 OTHER . . . . 99996 PUT THE 2ND BAR CODE LABEL ON THE THICK SMEAR SLIDE, THE 3RD ON THE THIN SMEAR SLIDE, AND THE 4TH ON THE TRANSMITTAL FORM.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT . . . 99994 REFUSED . . . . 99995 OTHER . . . . 99996 PUT THE 2ND BAR CODE LABEL ON THE THICK SMEAR SLIDE, THE 3RD ON THE THIN SMEAR SLIDE, AND THE 4TH ON THE TRANSMITTAL FORM.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT . . . 99994 REFUSED . . . . 99995 OTHER . . . . 99996 PUT THE 2ND BAR CODE LABEL ON THE THICK SMEAR SLIDE, THE 3RD ON THE THIN SMEAR SLIDE, AND THE 4TH ON THE TRANSMITTAL FORM.
113	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	G/DL . . . . . [ ][ ].[ ] NOT PRESENT . . . . . 994 REFUSED . . . . 995 OTHER 996	G/DL . . . . . [ ][ ].[ ] NOT PRESENT . . . . . 994 REFUSED . . . . 995 OTHER 996	G/DL . . . . . [ ][ ].[ ] NOT PRESENT . . . . . 994 REFUSED . . . . 995 OTHER 996

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	INTERVIEWER FOLLOW INSTRUCTIONS IN Q101 - FILL IN LINE NUMBER AND NAME OF EACH CHILD ON ALL PAGES.	LINE NUMBER . . . . . . ☐☐ NAME ________	LINE NUMBER . . . . . . ☐☐ NAME ________	LINE NUMBER . . . . . . ☐☐ NAME ________
114	CIRCLE THE CODE FOR THE MALARIA RDT.	TESTED . . . . 1 NOT PRESENT . . . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 116)	TESTED . . . . 1 NOT PRESENT . . . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 116)	TESTED . . . . 1 NOT PRESENT . . . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 116)
115	RECORD THE RESULT OF THE MALARIA RDT HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	POSITIVE 1 (SKIP TO 118) NEGATIVE . . . . 2 OTHER 6	POSITIVE 1 (SKIP TO 118) NEGATIVE . . . . 2 OTHER 6	POSITIVE 1 (SKIP TO 118) NEGATIVE . . . . 2 OTHER 6
116	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . . 3 REFUSED . . . . 4 OTHER . . . . 6 (SKIP TO 130)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . . 3 REFUSED . . . . 4 OTHER . . . . 6 (SKIP TO 130)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . . 3 REFUSED . . . . 4 OTHER . . . . 6 (SKIP TO 130)
117	**SEVERE ANEMIA REFERRAL** RECORD THE RESULT OF THE ANEMIA TEST ON THE REFERRAL FORM.	The anemia test shows that (NAME OF CHILD) has severe anemia. Your child is very ill and must be taken to a health facility immediately. (SKIP TO 130)		
118	Does (NAME) suffer from any of the following illnesses or symptoms: a) Extreme weakness? b) Heart problems? c) Loss of consciousness? d) Rapid or difficult breathing? e) Seizures? f) Abnormal bleeding? g) Jaundice or yellow skin? h) Dark urine?	YES NO a) EXTREME WEAKNESS 1 2 b) HEART PROBLEMS 1 2 c) LOSS OF CONSCIOUS. 1 2 d) RAPID BREATHING 1 2 e) SEIZURES 1 2 f) BLEEDING 1 2 g) JAUNDICE 1 2 h) DARK URINE 1 2	YES NO a) EXTREME WEAKNESS 1 2 b) HEART PROBLEMS 1 2 c) LOSS OF CONSCIOUS. 1 2 d) RAPID BREATHING 1 2 e) SEIZURES 1 2 f) BLEEDING 1 2 g) JAUNDICE 1 2 h) DARK URINE 1 2	YES NO a) EXTREME WEAKNESS 1 2 b) HEART PROBLEMS 1 2 c) LOSS OF CONSCIOUS. 1 2 d) RAPID BREATHING 1 2 e) SEIZURES 1 2 f) BLEEDING 1 2 g) JAUNDICE 1 2 h) DARK URINE 1 2
119	CHECK 118: ANY 'YES' CIRCLED?	NO ☐ YES ☐ (SKIP TO 122)	NO ☐ YES ☐ (SKIP TO 122)	NO ☐ YES ☐ (SKIP TO 122)
120	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . 1 (SKIP TO 122) 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . . 3 REFUSED . . . . 4 OTHER 6	BELOW 8.0 G/DL, SEVERE ANEMIA . . . 1 (SKIP TO 122) 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . . 3 REFUSED . . . . 4 OTHER 6	BELOW 8.0 G/DL, SEVERE ANEMIA . . . 1 (SKIP TO 122) 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . . 3 REFUSED . . . . 4 OTHER 6

		CHILD 1	CHILD 2	CHILD 3
	INTERVIEWER FOLLOW INSTRUCTIONS IN Q101 - FILL IN LINE NUMBER AND NAME OF EACH CHILD ON ALL PAGES.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
121	In the past two weeks has (NAME) taken or is taking Coartem/ACT given by a doctor or health center to treat the malaria? VERIFY BY ASKING TO SEE TREATMENT	YES . . . . . 1 → (SKIP TO 123) NO . . . . . 2 → (SKIP TO 123A)	YES . . . . . 1 → (SKIP TO 123) NO . . . . . 2 → (SKIP TO 123A)	YES . . . . . 1 → (SKIP TO 123) NO . . . . . 2 → (SKIP TO 123A)
122	**SEVERE MALARIA REFERRAL** RECORD THE RESULT OF THE MALARIA RDT ON THE REFERRAL FORM.	The malaria test shows that (NAME OF CHILD) has malaria. Your child also has symptoms of severe malaria. The malaria treatment I have will not help your child, and I cannot give you the medication. Your child is very ill and must be taken to a health facility right away. (SKIP TO 128)		
123	ALREADY TAKING COARTEM/ACT REFERRAL STATEMENT	You have told me that (NAME OF CHILD) had already received Coartem/ACT for malaria. Therefore, I cannot give you additional Coartem/ACT. However, the test shows that he/she has malaria. If your child has a fever for two days after the last dose of Coartem/ACT, you should take the child to the nearest health facility for further examination. (SKIP TO 130)		
123A	CHECK 103: IS CHILD AGE 0-3 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR THREE PREVIOUS MONTHS?	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 → (SKIP TO 124)	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 → (SKIP TO 124)	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 → (SKIP TO 124)
123B	**UNDER 4 MONTHS MALARIA REFERRAL** RECORD THE RESULT OF THE MALARIA RDT ON THE REFERRAL FORM.	The malaria test shows that (NAME OF CHILD) has malaria. Your child is also younger than 4 months old and therefore requires special treatment from a health facility. Your child is ill and must be taken to a health facility right away. (SKIP TO 130)		
124	READ INFORMATION FOR MALARIA TREATMENT AND CONSENT STATEMENT TO PARENT/OTHER	The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called LUMARTEM/ACT. LUMARTEM/ACT is very effective and in a few days it should get rid of the fever and other symptoms. You do not have to give the child the medicine. This is up to you. Please tell me whether you accept the medicine or not.		
125	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	ACCEPTED MEDICINE . 1 _____ (SIGN) REFUSED . . . . . 2 OTHER 6	ACCEPTED MEDICINE . 1 _____ (SIGN) REFUSED . . . . . 2 OTHER 6	ACCEPTED MEDICINE . 1 _____ (SIGN) REFUSED . . . . . 2 OTHER 6
126	CHECK 125: MEDICATION ACCEPTED	ACCEPTED MEDICINE . 1 REFUSED . . . . . 2 OTHER . . . . . 6 → (SKIP TO 130)	ACCEPTED MEDICINE . 1 REFUSED . . . . . 2 OTHER . . . . . 6 → (SKIP TO 130)	ACCEPTED MEDICINE . 1 REFUSED . . . . . 2 OTHER . . . . . 6 → (SKIP TO 130)

		CHILD 1	CHILD 2	CHILD 3
	INTERVIEWER FOLLOW INSTRUCTIONS IN Q101 - FILL IN LINE NUMBER AND NAME OF EACH CHILD ON ALL PAGES.	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________

127	READ INFORMATION FOR MALARIA TREATMENT AND CONSENT STATEMENT TO PARENT/OTHER ADULT.	TREATMENT WITH LUMARTEM/ACT **Weight (in Kg) – Approximate age** / **Dosage *** Under 4 months — Refer to health facility 5 kgs. to 14 kgs. (from 4 months up to 3 years) — 1 tablet twice daily for 3 days 15 kgs. to 24 kgs. (from 3 years up to 7 years) — 2 tablets twice daily for 3 days * Co-formulated tablets containing 20 mg Artemether and 120 mg Lumefantrine per tablet First day starts by taking first dose followed by the second one 8 hours later; on subsequent days the recommendation is simply "morning" and "evening" (usually around 12 hours apart).Take the medicine (crushed for smaller children) with high fat food or drinks like milk. Make sure that the FULL 3 days treatment is taken at the recommended times, otherwise the infection may return. If your child vomits within an hour of taking the medicine, you will need to get additional tablets and repeat the dose. ALSO TELL THE PARENT/ADULT RESPONSIBLE FOR THE CHILD: If [NAME] has a high fever, fast or difficult breathing, is not able to drink or breastfeed, gets sicker or does not get better in two days, you should take him/her to a health professional for treatment right away. (SKIP TO 130)		
128	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . 3 REFUSED . . . . 4 OTHER . . . . 6 (2, 3, 4, 6: SKIP TO 130)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . 3 REFUSED . . . . 4 OTHER . . . . 6 (2, 3, 4, 6: SKIP TO 130)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . 3 REFUSED . . . . 4 OTHER . . . . 6 (2, 3, 4, 6: SKIP TO 130)
129	**SEVERE ANEMIA REFERRAL** RECORD THE RESULT OF THE ANEMIA TEST ON THE REFERRAL FORM.	The anemia test shows that (NAME OF CHILD) has severe anemia. Your child is very ill and must be taken to a health facility immediately.		
130	GO BACK TO 103 IN NEXT COLUMN OF THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF THE NEXT PAGE; IF NO MORE CHILDREN, END INTERVIEW.			

HEALTH TECHNICIAN'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING BIOMARKERS

SUPERVISOR'S OBSERVATIONS

FORMATTING DATE: 10 Dec 2018
ENGLISH LANGUAGE: 10 Dec 2018

2018-19 UGANDA MALARIA INDICATOR SURVEY
WOMAN'S QUESTIONNAIRE

Uganda
NMCP/UBOS

IDENTIFICATION

EA NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . | | | | |

HOUSEHOLD NUMBER . . . . . | | | | |

NAME AND LINE NUMBER OF WOMAN _____ | | |

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY | | MONTH | | YEAR | | | |
INTERVIEWER'S NAME				INT. NO. | | | |
RESULT*				RESULT* | |
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS | |
TIME				

*RESULT CODES: 1 COMPLETED; 2 NOT AT HOME; 3 POSTPONED; 4 REFUSED; 5 PARTLY COMPLETED; 6 INCAPACITATED; 7 OTHER _____ SPECIFY

LANGUAGE OF QUESTIONNAIRE** 0 1 | LANGUAGE OF INTERVIEW** | | | NATIVE LANGUAGE OF RESPONDENT** | | | TRANSLATOR USED (YES = 1, NO = 2) |

LANGUAGE OF QUESTIONNAIRE** **ENGLISH**

**LANGUAGE CODES:
01 ENGLISH
02 LUGANDA
03 LUO
04 LUGBARA
05 ATESO
06 RUNYANKOLE/RUKIGA
07 RUNYORO/RUTORO
96 OTHER
_____ SPECIFY

SUPERVISOR

_____ NAME | | | | | NUMBER

INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with Ministry of Health/UBOS. We are conducting a survey about malaria all over Uganda. The information we collect will help the government to plan health services. Your household was selected for the survey. The questions usually take about 10 to 20 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time.

In case you need more information about the survey, you may contact the person listed on the card that has already been given to your household.

Do you have any questions?
May I begin the interview now?

SIGNATURE OF INTERVIEWER _____ DATE _____

RESPONDENT AGREES TO BE INTERVIEWED . . 1 ↓

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . . 2 → END

SECTION 1. RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOURS . . . . . ☐☐ MINUTES . . . . . ☐☐	
102	In what month and year were you born?	MONTH . . . . . ☐☐ DON'T KNOW MONTH . . . . . 98 YEAR . . . . . ☐☐☐☐ DON'T KNOW YEAR 9998	
103	How old were you at your last birthday? COMPARE AND CORRECT 102 AND/OR 103 IF INCONSISTENT.	AGE IN COMPLETED YEARS . . . . . ☐☐	
104	Have you ever attended school?	YES . . . . . 1 NO 2	→ 108
105	What is the highest level of school you attended: primary, "O" level, "A" level, tertiary or university?	PRIMARY . . . . . 1 "O" LEVEL . . . . . 2 "A" LEVEL . . . . . 3 TERTIARY . . . . . 4 UNIVERSITY 5	
106	What is the highest [CLASS/YEAR] you completed at that level? IF COMPLETED LESS THAN ONE YEAR AT THAT LEVEL, RECORD '00'.	[CLASS/YEAR] . . . . . ☐☐	
107	CHECK 105: PRIMARY OR "O" OR "A" LEVEL ☐ ↓ HIGHER ☐		→ 109

SECTION 1. RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
108	Now I would like you to read this sentence to me. SHOW CARD TO RESPONDENT. IF RESPONDENT CANNOT READ WHOLE SENTENCE, PROBE: Can you read any part of the sentence to me?	CANNOT READ AT ALL . . . . . 1 ABLE TO READ ONLY PART OF THE SENTENCE . . . . . 2 ABLE TO READ WHOLE SENTENCE . . . . . 3 NO CARD WITH REQUIRED LANGUAGE _____ 4 (SPECIFY LANGUAGE) BLIND/VISUALLY IMPAIRED 5	
109	What is your religion?	NO RELIGION . . . . . 10 ANGLICAN . . . . . 11 CATHOLIC . . . . . 12 MUSLIM . . . . . 13 SEVENTH DAY ADVENTIST . . . . . 14 ORTHODOX . . . . . 15 PENTECOSTAL/BORN AGAIN/EVANGELICAL 16 BAHA'I . . . . . 17 BAPTIST . . . . . 18 JEWISH . . . . . 19 PRESBYTERIAN . . . . . 20 MAMMON . . . . . 21 HINDU . . . . . 22 BUDDHIST . . . . . 23 JEHOVAH'S WITNESS . . . . . 24 SALVATION ARMY . . . . . 25 TRADITIONAL . . . . . 26 OTHER _____ 96 (SPECIFY)	
110	What is your tribe?	TRIBE CODE . . . . . [ ][ ][ ] OTHER _____ 996 (SPECIFY)	
111	In the past six months, have you seen or heard any messages about malaria?	YES . . . . . 1 NO 2	→ 201
112	Have you seen or heard these messages:	YES NO	
	a) On the radio?	RADIO 1 2	
	b) On the television?	TELEVISION 1 2	
	c) On a poster or billboard?	POSTER/BILLBOARD 1 2	
	d) From a community health worker?	COMMUNITY HEALTH WORKER 1 2	
	e) At a community event?	COMMUNITY EVENT 1 2	
	f) Interpersonal communication?	IPC 1 2	
	g) Flyers?	FLYERS 1 2	
	h) Social Mobilization?	SOCIAL MOBILIZATION 1 2	
	i) Social Media?	SOCIAL MEDIA 1 2	
	j) Anywhere else?	ANYWHERE ELSE 1 2	

SECTION 2. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Now I would like to ask about all the births you have had during your life. Have you ever given birth?	YES . . . . . 1 NO 2	→ 206
202	Do you have any sons or daughters to whom you have given birth who are now living with you?	YES . . . . . 1 NO 2	→ 204
203	a) How many sons live with you? b) And how many daughters live with you? IF NONE, RECORD '00'.	a) SONS AT HOME . . . . . [ ][ ] b) DAUGHTERS AT HOME . . . . . [ ][ ]	
204	Do you have any sons or daughters to whom you have given birth who are alive but do not live with you?	YES . . . . . 1 NO 2	→ 206
205	a) How many sons are alive but do not live with you? b) And how many daughters are alive but do not live with you? IF NONE, RECORD '00'.	a) SONS ELSEWHERE . . . . . [ ][ ] b) DAUGHTERS ELSEWHERE . . . . . [ ][ ]	
206	Have you ever given birth to a boy or girl who was born alive but later died? IF NO, PROBE: Any baby who cried, who made any movement, sound, or effort to breathe, or who showed any other signs of life even if for a very short time?	YES . . . . . 1 NO 2	→ 208
207	a) How many boys have died? b) And how many girls have died? IF NONE, RECORD '00'.	a) BOYS DEAD . . . . . [ ][ ] b) GIRLS DEAD . . . . . [ ][ ]	
208	SUM ANSWERS TO 203, 205, AND 207, AND ENTER TOTAL. IF NONE, RECORD '00'.	TOTAL BIRTHS . . . . . [ ][ ]	
209	CHECK 208: Just to make sure that I have this right: you have had in TOTAL _____ births during your life. Is that correct? YES ☐ NO ☐ → PROBE AND CORRECT 201-208 AS NECESSARY.		
210	CHECK 208: ONE OR MORE BIRTHS ☐ NO BIRTHS ☐		→ 225
211	Now I'd like to ask you about your more recent births. How many births have you had since 2013? RECORD NUMBER OF LIVE BIRTHS SINCE 2013	TOTAL SINCE 2013 . . . . . [ ][ ] NONE 00	→ 225

SECTION 2. REPRODUCTION

212 Now I would like to record the names of all your births since 2013, whether still alive or not, starting with the most recent one you had.
RECORD IN 213 THE NAMES OF ALL THE BIRTHS BORN SINCE 2013. RECORD TWINS AND TRIPLETS ON SEPARATE ROWS. IF THERE ARE MORE THAN 5 BIRTHS, USE AN ADDITIONAL QUESTIONNAIRE STARTING WITH THE SECOND ROW.

213 What name was given to your (most recent/ previous) baby? RECORD NAME. BIRTH HISTORY NUMBER.	214 Is (NAME) a boy or a girl?	215 Were any of these births twins?	216 On what day, month, and year was (NAME) born?	217 Is (NAME) still alive?	218 IF ALIVE: How old was (NAME) at (NAME)'s last birthday? RECORD AGE IN COMP-LETED YEARS.	219 IF ALIVE: Is (NAME) living with you?	220 IF ALIVE: RECORD HOUSEHOLD LINE NUMBER OF CHILD. RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD.	221 Were there any other live births between (NAME) and (NAME OF PREVIOUS BIRTH), including any children who died after birth?
01	BOY 1 GIRL 2	SING 1 MULT 2	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	YES 1 NO 2 → (NEXT BIRTH)	AGE IN YEARS ☐☐	YES 1 NO 2	HOUSEHOLD LINE NUMBER ☐☐ → (NEXT BIRTH)	
02	BOY 1 GIRL 2	SING 1 MULT 2	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	YES 1 NO 2 → (SKIP TO 221)	AGE IN YEARS ☐☐	YES 1 NO 2	HOUSEHOLD LINE NUMBER ☐☐	YES 1 (ADD BIRTH) ↵ NO 2 (NEXT BIRTH) ↵
03	BOY 1 GIRL 2	SING 1 MULT 2	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	YES 1 NO 2 → (SKIP TO 221)	AGE IN YEARS ☐☐	YES 1 NO 2	HOUSEHOLD LINE NUMBER ☐☐	YES 1 (ADD BIRTH) ↵ NO 2 (NEXT BIRTH) ↵
04	BOY 1 GIRL 2	SING 1 MULT 2	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	YES 1 NO 2 → (SKIP TO 221)	AGE IN YEARS ☐☐	YES 1 NO 2	HOUSEHOLD LINE NUMBER ☐☐	YES 1 (ADD BIRTH) ↵ NO . . . . . 2 (NEXT BIRTH) ↵
05	BOY 1 GIRL 2	SING 1 MULT 2	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	YES 1 NO 2 → (SKIP TO 221)	AGE IN YEARS ☐☐	YES 1 NO 2	HOUSEHOLD LINE NUMBER ☐☐	YES 1 (ADD BIRTH) ↵ NO . . . . . 2 (NEXT BIRTH) ↵

SECTION 2. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
222	Have you had any live births since the birth of (NAME OF MOST RECENT BIRTH)?	YES . . . . . 1 (RECORD BIRTH(S) IN TABLE) NO 2	
223	COMPARE 211 WITH NUMBER OF BIRTHS IN BIRTH HISTORY NUMBERS ARE SAME NUMBERS ARE DIFFERENT (PROBE AND RECONCILE)		
224	CHECK 216: ENTER THE NUMBER OF BIRTHS IN 2013-2018	NUMBER OF BIRTHS . . . . . [ ] NONE 0	
225	Are you pregnant now?	YES . . . . . 1 NO . . . . . 2 UNSURE 8	→ 227
226	How many months pregnant are you? RECORD NUMBER OF COMPLETED MONTHS.	MONTHS . . . . . [ ][ ]	
227	CHECK 224: ONE OR MORE BIRTHS SINCE 2013 (GO TO 301) NO BIRTHS SINCE 2013 Q. 224 IS BLANK		→ 501 → 501

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	RECORD THE NAME AND SURVIVAL STATUS OF THE MOST RECENT BIRTH FROM 213 AND 217, LINE 01:	MOST RECENT BIRTH NAME _____ LIVING ☐ DEAD ☐	
302	Now I would like to ask you some questions about your last pregnancy that resulted in a live birth. When you were pregnant with (NAME), did you see anyone for antenatal care for this pregnancy?	YES . . . . . 1 NO 2	→ 303
302A	What was the main reason why you did not see anyone for antenatal care?	FACILITY TOO FAR . . . . . 1 HAD NO MONEY . . . . . 2 HAD NO TIME . . . . . 3 NOT AWARE HAD TO ATTEND . . . . . 4 DID NOT WANT TO ATTEND . . . . . 5 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	→ 304
303	Whom did you see? Anyone else? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED.	**HEALTH PERSONNEL** DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B MEDICAL ASSISTANT/ CLINICAL OFFICER . . . . . C NURSING AIDE/ASST. . . . . D **OTHER PERSON** TRADITIONAL BIRTH ATTENDANT . . . . . E COMMUNITY/VILLAGE HEALTH WORKER . . F OTHER _____ X (SPECIFY)	
303A	Where did you receive antenatal care for this pregnancy? Anywhere else? PROBE TO IDENTIFY THE TYPE OF SOURCE. IF UNABLE TO DETERMINE IF PUBLIC OR PRIVATE SECTOR, WRITE THE NAME OF THE PLACE. _____ (NAME OF PLACE)	**HOME** HER HOME . . . . . A OTHER HOME . . . . . B **PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . C GOVERNMENT HEALTH CENTER . . . . . D OTHER PUBLIC SECTOR _____ E (SPECIFY) **PRIVATE MEDICAL SECTOR** PRIVATE HOSPITAL/ CLINIC . . . . . F OTHER PRIVATE MEDICAL SECTOR _____ G (SPECIFY) OTHER _____ X (SPECIFY)	

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
303B	How many months pregnant were you when you first received antenatal care for this pregnancy?	MONTHS . . . . . ☐☐ DON'T KNOW 98	
303C	How many times did you receive antenatal care during this pregnancy?	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
304	During this pregnancy, did you take SP/Fansidar to keep you from getting malaria?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 307
305	How many times did you take SP/Fansidar during this pregnancy?	TIMES . . . . . ☐☐	
305A	CHECK 305: TOOK SP ONLY 1 TIME DURING THIS PREGNANCY	CODE '01' TIMES ENTERED ☐ OTHER ☐	→ 306
305B	Why did you take (SP/Fansidar) only one time during this pregnancy? RECORD ALL MENTIONED.	FACILITY TOO FAR . . . . . A HAD NO MONEY . . . . . B SIDE EFFECTS . . . . . C NOT AWARE HAD TO TAKE MORE . . . . . D DID NOT WANT TO TAKE . . . . . E NOT GIVEN . . . . . F NOT AVAILABLE . . . . . G OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
306	Did you get the SP/Fansidar during any antenatal care visit, during another visit to a health facility or from another source? IF MORE THAN ONE SOURCE, RECORD THE HIGHEST SOURCE ON THE LIST.	ANTENATAL VISIT . . . . . 1 ANOTHER FACILITY VISIT . . . . . 2 OTHER SOURCE 6	
307	CHECK 216 AND 217:	ONE OR MORE LIVING CHILDREN BORN SINCE 2013 ☐ → (GO TO 401) NO LIVING CHILDREN BORN SINCE 2013 ☐	→ 501

SECTION 4. FEVER IN CHILDREN

401 CHECK 213: RECORD THE BIRTH HISTORY NUMBER IN 402 AND THE NAME AND SURVIVAL STATUS IN 403 FOR EACH BIRTH SINCE 2013. ASK THE QUESTIONS ABOUT ALL OF THESE BIRTHS. BEGIN WITH THE MOST RECENT BIRTH. IF THERE ARE MORE THAN 2 BIRTHS, USE ADDITIONAL QUESTIONNAIRE(S).

Now I would like to ask some questions about the health of your children born since January 2013. (We will talk about each separately.)

		MOST RECENT BIRTH	NEXT MOST RECENT BIRTH
402	BIRTH HISTORY NUMBER FROM 213 IN BIRTH HISTORY.	BIRTH HISTORY NUMBER	BIRTH HISTORY NUMBER . . . . .
403	FROM 213 AND 217:	NAME _____ LIVING / DEAD → (SKIP TO 428)	NAME _____ LIVING / DEAD → (SKIP TO 428)
404	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES . . . . . 1 NO . . . . . 2 → (SKIP TO 428) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (SKIP TO 428) DON'T KNOW 8
405	At any time during the illness, did (NAME) have blood taken from (NAME)'s finger or heel for testing?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8
406	Did you seek advice or treatment for the illness from any source?	YES . . . . . 1 → (SKIP TO 407) NO 2	YES . . . . . 1 → (SKIP TO 407) NO 2
406A	Why have you not sought advice or treatment from any source?	CHILD JUST FELL ILL . . . . . A CHILD NOT VERY ILL . . . . . B CLINIC TOO FAR . . . . . C HAVE NO MONEY . . . . . D WAITING FOR CHILD'S FATHER . . . . . E DON'T KNOW WHAT TO DO . . . . . F ALREADY HAD MEDICINE AT HOME . . . . . G OTHER _____ (SPECIFY) X SKIP TO 411]	CHILD JUST FELL ILL . . . . . A CHILD NOT VERY ILL . . . . . B CLINIC TOO FAR . . . . . C HAVE NO MONEY . . . . . D WAITING FOR CHILD'S FATHER . . . . . E DON'T KNOW WHAT TO DO . . . . . F ALREADY HAD MEDICINE AT HOME . . . . . G OTHER _____ (SPECIFY) X SKIP TO 411]

407	Where did you seek advice or treatment? Anywhere else? PROBE TO IDENTIFY THE TYPE OF SOURCE. IF UNABLE TO DETERMINE IF PUBLIC OR PRIVATE SECTOR, WRITE THE NAME OF THE PLACE(S). _____ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . A GOVERNMENT HEALTH CENTER . . . . . B MOBILE CLINIC/ OUTREACH . . . . . C COMMUNITY HEALTH WORKER/VHT . . . . . D OTHER PUBLIC SECTOR _____ E (SPECIFY) **PRIVATE MEDICAL SECTOR** PRIVATE HOSPITAL/ CLINIC . . . . . F PHARMACY/ DRUG SHOP . . . . . G PRIVATE DOCTOR . . . . . H MOBILE CLINIC . . . . . I FIELDWORKER . . . . . J OTHER PRIVATE MEDICAL SECTOR _____ K (SPECIFY) **OTHER SOURCE** SHOP . . . . . L TRADITIONAL PRACTITIONER . . . . . M MARKET . . . . . N HAWKER/ITINERANT DRUG SELLER . . . . . O OTHER _____ X (SPECIFY)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . A GOVERNMENT HEALTH CENTER . . . . . B MOBILE CLINIC/ OUTREACH . . . . . C COMMUNITY HEALTH WORKER/VHT . . . . . D OTHER PUBLIC SECTOR _____ E (SPECIFY) **PRIVATE MEDICAL SECTOR** PRIVATE HOSPITAL/ CLINIC . . . . . F PHARMACY/ DRUG SHOP . . . . . G PRIVATE DOCTOR . . . . . H MOBILE CLINIC . . . . . I FIELDWORKER . . . . . J OTHER PRIVATE MEDICAL SECTOR _____ K (SPECIFY) **OTHER SOURCE** SHOP . . . . . L TRADITIONAL PRACTITIONER . . . . . M MARKET . . . . . N HAWKER/ITINERANT DRUG SELLER . . . . . O OTHER _____ X (SPECIFY)

SECTION 4. FEVER IN CHILDREN

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	NEXT MOST RECENT BIRTH NAME _____
408	CHECK 407:	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ → (SKIP TO 410)	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ → (SKIP TO 410)
409	Where did you first seek advice or treatment? USE LETTER CODE FROM 407	FIRST PLACE . . . . . ☐	FIRST PLACE . . . . . ☐
410	How many days after the illness began did you first seek advice or treatment for (NAME)? IF THE SAME DAY RECORD '00'.	DAYS . . . . . ☐☐	DAYS . . . . . ☐☐
411	At any time during the illness, did (NAME) take any drugs for the illness?	YES . . . . . 1 NO . . . . . 2 → (SKIP TO 428) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (SKIP TO 428) DON'T KNOW 8
412	What drugs did (NAME) take? Any other drugs? RECORD ALL MENTIONED.	**ANTIMALARIAL DRUGS** ARTEMISININ COMBINATION THERAPY (ACT) . . . . . A SP/FANSIDAR . . . . . B CHLOROQUINE . . . . . C AMODIAQUINE . . . . . D QUININE PILLS . . . . . E INJECTION/IV . . . . . F ARTESUNATE RECTAL . . . . . G INJECTION/IV . . . . . H OTHER ANTIMALARIAL _____ I (SPECIFY) **ANTIBIOTIC DRUGS** PILL/SYRUP . . . . . J INJECTION/IV . . . . . K **OTHER DRUGS** ASPIRIN . . . . . L PANADOL/ ACETAMINOPHEN . . . . . M IBUPROFEN . . . . . N OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	**ANTIMALARIAL DRUGS** ARTEMISININ COMBINATION THERAPY (ACT) . . . . . A SP/FANSIDAR . . . . . B CHLOROQUINE . . . . . C AMODIAQUINE . . . . . D QUININE PILLS . . . . . E INJECTION/IV . . . . . F ARTESUNATE RECTAL . . . . . G INJECTION/IV . . . . . H OTHER ANTIMALARIAL _____ I (SPECIFY) **ANTIBIOTIC DRUGS** PILL/SYRUP . . . . . J INJECTION/IV . . . . . K **OTHER DRUGS** ASPIRIN . . . . . L PANADOL/ ACETAMINOPHEN . . . . . M IBUPROFEN . . . . . N OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z
413	CHECK 412: ANY CODE A-I CIRCLED?	YES ☐ NO ☐ → (SKIP TO 428)	YES ☐ NO ☐ → (SKIP TO 428)

SECTION 4. FEVER IN CHILDREN

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	NEXT MOST RECENT BIRTH NAME _____
414	CHECK 412: ARTEMISININ COMBINATION THERAPY ('A') GIVEN	CODE 'A' CIRCLED CODE 'A' NOT CIRCLED (SKIP TO 416)	CODE 'A' CIRCLED CODE 'A' NOT CIRCLED (SKIP TO 416)
415	How long after the fever started did (NAME) first take an artemisinin combination therapy?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8
416	CHECK 412: SP/FANSIDAR ('B') GIVEN	CODE 'B' CIRCLED CODE 'B' NOT CIRCLED (SKIP TO 418)	CODE 'B' CIRCLED CODE 'B' NOT CIRCLED (SKIP TO 418)
417	How long after the fever started did (NAME) first take SP/Fansidar?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8
418	CHECK 412: CHLOROQUINE ('C') GIVEN	CODE 'C' CIRCLED CODE 'C' NOT CIRCLED (SKIP TO 420)	CODE 'C' CIRCLED CODE 'C' NOT CIRCLED (SKIP TO 420)
419	How long after the fever started did (NAME) first take chloroquine?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8
420	CHECK 412: AMODIAQUINE ('D') GIVEN	CODE 'D' CIRCLED CODE 'D' NOT CIRCLED (SKIP TO 422)	CODE 'D' CIRCLED CODE 'D' NOT CIRCLED (SKIP TO 422)
421	How long after the fever started did (NAME) first take amodiaquine?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8

SECTION 4. FEVER IN CHILDREN

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	NEXT MOST RECENT BIRTH NAME _____
422	CHECK 412: QUININE ('E' OR 'F') GIVEN	CODE 'E' OR 'F' CIRCLED CODE 'E' OR 'F' NOT CIRCLED (SKIP TO 424)	CODE 'E' OR 'F' CIRCLED CODE 'E' OR 'F' NOT CIRCLED (SKIP TO 424)
423	How long after the fever started did (NAME) first take quinine?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8
424	CHECK 412: ARTESUNATE ('G' OR 'H') GIVEN	CODE 'G' OR 'H' CIRCLED CODE 'G' OR 'H' NOT CIRCLED (SKIP TO 426)	CODE 'G' OR 'H' CIRCLED CODE 'G' OR 'H' NOT CIRCLED (SKIP TO 426)
425	How long after the fever started did (NAME) first take artesunate?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8
426	CHECK 412: OTHER ANTIMALARIAL ('I') GIVEN	CODE 'I' CIRCLED CODE 'I' NOT CIRCLED (SKIP TO 428)	CODE 'I' CIRCLED CODE 'I' NOT CIRCLED (SKIP TO 428)
427	How long after the fever started did (NAME) first take (OTHER ANTIMALARIAL)?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . . . . 3 DON'T KNOW 8
428		GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501.	GO TO 403 IN FIRST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 501.

SECTION 5. KNOWLEDGE AND BELIEFS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	I would like to ask you a few questions about fever in children. When a child is sick with fever, how long after the fever begins should the child be taken for treatment?	SAME DAY . . . . . 01 NEXT DAY . . . . . 02 TWO DAYS AFTER ONSET OF FEVER . . . . . 03 THREE OR MORE DAYS AFTER ONSET OF FEVER . . . . . 04 FEVER IS NORMAL IN CHILDREN, NO TREATMENT NECESSARY . . . . . 05 DEPENDS ON HOW SERIOUS THE FEVER IS . . . . . 06 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	
502	In your opinion, what causes malaria? PROBE: Anything else? RECORD ALL MENTIONED	MOSQUITO BITES . . . . . A MOSQUITOES . . . . . B PARASITE . . . . . C EATING MAIZE . . . . . D EATING MANGOES . . . . . E EATING DIRTY FOOD . . . . . F DRINKING UNBOILED WATER . . . . . G GETTING SOAKED WITH RAIN . . . . . H COLD/CHANGING WEATHER . . . . . I WITCHCRAFT . . . . . J CONTACT WITH INFECTED PERSON . . . . . K GERM . . . . . L STANDING WATER/BREEDING ENVIRONMENT M POOR HYGIENE/DIRTY ENVIRONMENT . . . . . N NOT SLEEPING UNDER MOSQUITO NET . . . . . O OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
503	Are there ways to avoid getting malaria?	YES . . . . . 1 NO 2	→ 507
504	What are the ways to avoid getting malaria? PROBE: Anything else? RECORD ALL MENTIONED	SLEEP UNDER MOSQUITO NET . . . . . A SLEEP UNDER AN INSECTICIDE TREATED NET . . . . . B TAKING PREVENTIVE MEDICATION . . . . . C USE MOSQUITO REPELLANT . . . . . D SPRAYING HOUSE WITH INSECTICIDE . . . . . E USING MOSQUITO COILS . . . . . F DESTROY MOSQUITO BREEDING SITES . . . . . G BOIL WATER . . . . . H GOOD HYGIENE/ KEEPING CLEAN ENVIRONMENT . . . . . I OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
505	What medicine may be given to a pregnant woman to help her avoid getting malaria?	SP/FANSIDAR . . . . . A CHLOROQUINE . . . . . B CHLOROQUINE W/ FANSIDAR . . . . . C COARTEM/ACT . . . . . D OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
506	CHECK 505: SP/FANSIDAR MENTIONED	CODE 'A' ENTERED ☐ ↓ OTHER ☐ →	508

SECTION 5. KNOWLEDGE AND BELIEFS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
507	How many times does a woman need to take SP/FANSIDAR during her pregnancy to avoid getting malaria?	TIMES . . . . . ☐☐ DON'T KNOW 98	
508	Now I am going to read some statements and I would like you to tell me whether you agree or disagree with it. If you don't know, say, don't know. I sleep under a bed net every night because it is the best way to avoid getting malaria. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
509	I can easily hang a mosquito net. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
510	Pregnant women should still take the medicine that is meant to keep them from getting malaria even if they sleep under nets every night. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
511	I take the entire course of malaria medicine to make sure the disease will be fully cured. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
512	It is important to take a child to a health provider the same or next day after the child gets a fever. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
513	My community is able to come together to take action to prevent malaria among its members. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
514	RECORD THE TIME.	HOURS . . . . . ☐☐ MINUTES . . . . . ☐☐	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT INTERVIEW:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

2018-19 UGANDA MALARIA INDICATOR SURVEY
FIELDWORKER QUESTIONNAIRE

UGANDA
UBOS/NMCP

LANGUAGE OF QUESTIONNAIRE ENGLISH

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
100	What is your name?	NAME _____	
101	RECORD FIELDWORKER NUMBER	NUMBER . . . . . [ ][ ][ ][ ]	

INSTRUCTIONS

Information on all UMIS field workers is collected as part of the UMIS survey. Please fill out the questions below. The information you provide will be part of the survey data file; however, your name will be removed and will not be part of the data file. Thank you for providing the information needed.

102	In what district do you live?	DISTRICT CODE . . . . . [ ][ ][ ] OTHER _____ 996 (SPECIFY)	
103	Do you live in a city, town, or rural area?	CITY . . . . . 1 TOWN . . . . . 2 RURAL 3	
104	How old are you? RECORD AGE IN COMPLETED YEARS.	AGE . . . . . [ ][ ]	
105	Are you male or female?	MALE . . . . . 1 FEMALE 2	
106	What is your current marital status?	CURRENTLY MARRIED . . . . . 1 LIVING WITH A MAN/WOMAN . . . . . 2 WIDOWED . . . . . 3 DIVORCED . . . . . 4 SEPARATED . . . . . 5 NEVER MARRIED OR LIVED WITH A MAN/WOMAN 6	
107	How many living children do you have? INCLUDE ONLY CHILDREN WHO ARE YOUR BIOLOGICAL CHILDREN.	LIVING CHILDREN . . . . . [ ][ ]	
108	Have you ever had a child who died?	YES . . . . . 1 NO 2	
109	What is the highest level of school you attended: primary, "O" level, "A" level, tertiary, or university?	PRIMARY . . . . . 1 O LEVEL . . . . . 2 A LEVEL . . . . . 3 TERTIARY . . . . . 4 UNIVERSITY 5	
110	What is the highest [CLASS/YEAR] you completed at that level? IF COMPLETED LESS THAN ONE YEAR AT THAT LEVEL, RECORD '00'.	CLASS/YEAR . . . . . [ ][ ]	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
111	What is your religion?	NO RELIGION . . . . . 10 ANGLICAN . . . . . 11 CATHOLIC . . . . . 12 MUSLIM . . . . . 13 SEVENTH DAY ADVENTIST . . . . . 14 ORTHODOX . . . . . 15 PENTECOSTAL/BORN AGAIN/EVANGELICAL 16 BAHA'I . . . . . 17 BAPTIST . . . . . 18 JEWISH . . . . . 19 PRESBYTERIAN . . . . . 20 MAMMON . . . . . 21 HINDU . . . . . 22 BUDDHIST . . . . . 23 JEHOVAH'S WITNESS . . . . . 24 SALVATION ARMY . . . . . 25 TRADITIONAL . . . . . 26 OTHER _____ 96 (SPECIFY)	
112	What is your tribe?	TRIBE CODE . . . . . [ ][ ][ ] OTHER _____ 996 (SPECIFY)	
113	What languages can you speak? RECORD ALL LANGUAGES YOU CAN SPEAK.	ENGLISH . . . . . A LUGANDA . . . . . B LUO . . . . . C LUGBARA . . . . . D ATESO . . . . . E NGAKARIMOJONG . . . . . F RUNYANKOLE/RUKIGA . . . . . G RUNYORO/RUTORO . . . . . H LUSOGA . . . . . I OTHER _____ X (SPECIFY)	
114	What is your mother tongue/native language (language spoken at home growing up)?	ENGLISH . . . . . 10 LUGANDA . . . . . 11 LUO . . . . . 12 LUGBARA . . . . . 13 ATESO . . . . . 14 NGAKARIMOJONG . . . . . 15 RUNYANKOLE/RUKIGA . . . . . 16 RUNYORO/RUTORO . . . . . 17 LUSOGA . . . . . 18 OTHER _____ 96 (SPECIFY)	
115	Have you ever worked on a DHS survey prior to this one?	YES . . . . . 1 NO 2	
116	Have you ever worked on any other survey prior to this one (not a DHS or MIS)?	YES . . . . . 1 NO 2	
117	Were you already working for the Uganda Bureau of Statistics (UBOS) or the Ministry of Health (MOH) or the National Malaria Control Programme (NMCP)at the time you were employed to work on this DHS?	YES, UBOS . . . . . 1 YES, MOH . . . . . 2 YES, NMCP . . . . . 3 NO 4	→ 119

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
118	Are you a permanent or temporary employee of UBOS/MOH/NMCP?	PERMANENT . . . . . 1 TEMPORARY 2	
119	If you have comments, please write them here.		

ADDITIONAL DHS PROGRAM RESOURCES

The DHS Program Website – Download free DHS reports, standard documentation, key indicator data, and training tools, and view announcements.	DHSprogram.com	
STATcompiler – Build custom tables, graphs, and maps with data from 90 countries and thousands of indicators.	Statcompiler.com	
DHS Program Mobile App – Access key DHS indicators for 90 countries on your mobile device (Apple, Android, or Windows).	Search DHS Program in your iTunes or Google Play store	
DHS Program User Forum – Post questions about DHS data, and search our archive of FAQs.	userforum.DHSprogram.com	
Tutorial Videos – Watch interviews with experts and learn DHS basics, such as sampling and weighting, downloading datasets, and how to read DHS tables.	www.youtube.com/DHSProgram	
Datasets – Download DHS datasets for analysis.	DHSprogram.com/Data	
Spatial Data Repository – Download geographically-linked health and demographic data for mapping in a geographic information system (GIS).	spatialdata.DHSprogram.com	

Social Media – Follow The DHS Program and join the conversation. Stay up to date through:

Facebook www.facebook.com/DHSprogram		**LinkedIn** www.linkedin.com/company/dhs-program	
YouTube www.youtube.com/DHSprogram		**Blog** Blog.DHSprogram.com	
Twitter www.twitter.com/DHSprogram			