TANZANIA

Malaria Indicator Survey 2017

United Republic of Tanzania

Tanzania
Malaria Indicator Survey
2017

Ministry of Health, Community Development, Gender, Elderly and Children
Dar es Salaam

Ministry of Health
Zanzibar

National Bureau of Statistics
Dar es Salaam

Office of Chief Government Statistician
Zanzibar

ICF
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The 2017 Tanzania Malaria Indicator Survey (2017 TMIS) was implemented by the National Bureau of Statistics (NBS) and Office of the Chief Government Statistician (OCGS), Zanzibar, in collaboration with the Ministry of Health, Community Development, Gender, Elderly and Children, Tanzania Mainland, and the Ministry of Health, Zanzibar. ICF provided technical assistance. The 2017 TMIS is part of the worldwide DHS Program, which assists countries in the collection of data to monitor and evaluate population, health, and nutrition programs. The survey was funded by the U.S President's Malaria Initiative (PMI) and The Global Fund.

Additional information about the 2017 TMIS may be obtained from the National Bureau of Statistics, Head Office, 18 Kivukoni Road, P.O. Box 796, 11992, Dar es Salaam, Tanzania. Telephone: 255-22-212-2722/3; fax: 255-22-213-0852; e-mail: dg@nbs.go.tz; internet: www.nbs.go.tz.

Information about The DHS Program can be obtained from ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA. Telephone: 301-407-6500; fax: 301-407-6501; e-mail: info@DHSprogram.com; internet: http://www.DHSprogram.com.

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School children receive free bed nets during a distribution at Buhigwe School, Tanzania. © 2017 Magali Rochat/VectorWorks, Courtesy of Photoshare

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Likewise, gratitude is expressed to the survey respondents and local leaders who generously contributed their time to enable the survey teams to gather crucial data for the development of our country.

It is hoped that this report will provide policymakers, programme managers, and other key stakeholders with the key information they need to effectively plan, implement, and track the progress of future interventions.

Dr. Albina Chuwa
Director General
National Bureau of Statistics

FOREWORD

This report presents the major findings of the 2017 Tanzania Malaria Indicator Survey (TMIS). The survey was undertaken by the National Bureau of Statistics (NBS) and the Office of Chief Government Statistician (OCGS) in close collaboration with the Ministry of Health, Community Development, Gender, Elderly and Children, Tanzania Mainland, and the Ministry of Health, Zanzibar.

The primary objective of the 2017 TMIS was to provide up-to-date information on the prevalence of malaria infection and anaemia among young children. The 2017 TMIS is a follow-up to the 2015-16 Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS). The TMIS also provides updated estimates of selected basic demographic and health indicators covered in previous surveys, including the 2007-08 Tanzania HIV/AIDS and Malaria Indicator Survey (2007-08 THMIS) and the 2011-12 Tanzania HIV/AIDS and Malaria Indicator Survey (2011-12 THMIS).

The survey covers both Tanzania Mainland and Zanzibar, and it was designed to provide representative results for each of the 26 regions in Tanzania Mainland and the 5 regions in Zanzibar, for a total of 31 survey regions.

This report contains information collected from the interviewed households. The tables and text cover the most important malaria indicators. They should be very useful to planners, policymakers, and programme managers who need up-to-date data for evaluating current activities and for planning future directions. Advantage should be taken of the availability of this information to inform the process of policy formulation, planning, monitoring, and evaluation of the malaria programmes in Tanzania. This report will also be useful to all malaria stakeholders, whether at the policy level, at the programme level, or in academia and research institutions.

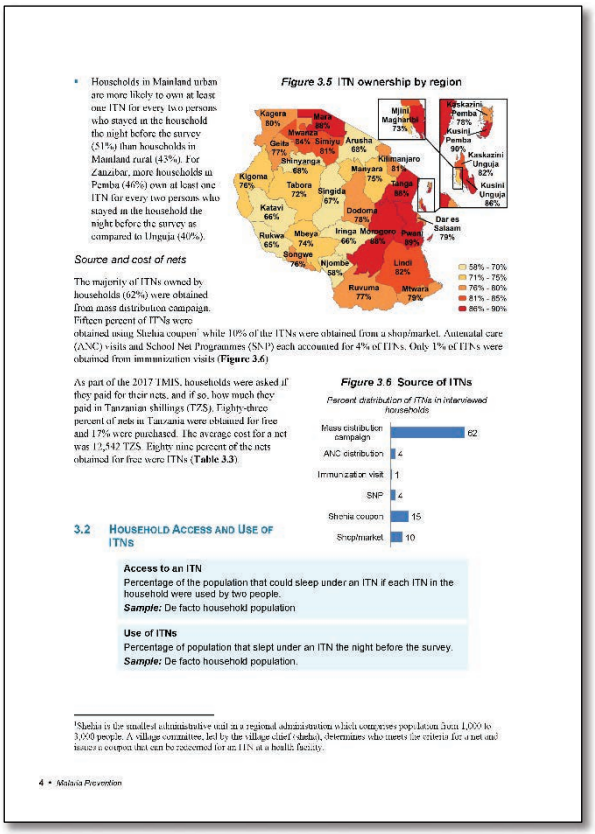
In this regard, the National Bureau of Statistics and the Office of Chief Government Statistician, together with the Ministry of Health, Community Development, Gender, Elderly and Children, Tanzania Mainland, and the Ministry of Health, Zanzibar, take pleasure in presenting the findings of the 2017 TMIS.

I, therefore, urge all data users and beneficiaries of this report to make use of it effectively and ultimately contribute to improving the health sector and responding to the needs of the government.

Hon. Ummy Mwalimu (MP)
Minister of Health, Community Development, Gender, Elderly and Children

READING AND UNDERSTANDING THE 2017 TANZANIA MALARIA INDICATOR SURVEY (TMIS)

The 2017 Tanzania Malaria Indicator Survey (TMIS) report is very similar in content to the 2011-12 Tanzania HIV/AIDS and Malaria Indicators Survey (THMIS) but is presented in a new format. The new style features more figures to highlight trends, regional patterns, and background characteristics. The text has been simplified to highlight key points in bullets and to clearly identify indicator definitions in boxes.



- Households in Mainland urban are more likely to own at least one ITN for every two persons who stayed in the household the night before the survey (51%) than households in Mainland rural (43%). For Zanzibar, more households in Pemba (46%) own at least one ITN for every two persons who stayed in the household the night before the survey as compared to Unguja (40%).

Figure 3.5 ITN ownership by region

Source and cost of nets

The majority of ITNs owned by households (62%) were obtained from mass distribution campaign. Fifteen percent of ITNs were obtained using Shehia coupon[1] while 10% of the ITNs were obtained from a shop/market. Antenatal care (ANC) visits and School Net Programmes (SNP) each accounted for 4% of ITNs. Only 1% of ITNs were obtained from immunization visits (**Figure 3.6**)

As part of the 2017 TMIS, households were asked if they paid for their nets, and if so, how much they paid in Tanzanian shillings (TZS). Eighty-three percent of nets in Tanzania were obtained for free and 17% were purchased. The average cost for a net was 12,542 TZS. Eighty nine percent of the nets obtained for free were ITNs (**Table 3.3**)

Figure 3.6 Source of ITNs

Percent distribution of ITNs in interviewed households

3.2 HOUSEHOLD ACCESS AND USE OF ITNS

Access to an ITN

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

[1]Shehia is the smallest administrative unit in a regional administration which comprises population from 1,000 to 3,000 people. A village committee, led by the village chief (shehe), determines who meets the criteria for a net and issues a coupon that can be redeemed for an ITN at a health facility.

4 • *Malaria Prevention*

The tables in this report are located at the end of each chapter instead of being embedded in the chapter text. This final report is based on approximately 35 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, TMIS data users should be comfortable reading and interpreting tables.

The following pages provide an introduction to the organization of TMIS 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 TMIS tables.

Example 1: Prevalence of Malaria in Children

A measure taken from all eligible respondents

Table 4.6 Prevalence of malaria in children (1)

Percentage of children age 6-59 months classified as having malaria, according to RDT, by background characteristics, Tanzania MIS 2017

Background characteristic (3)	Malaria prevalence according to RDT (2)	
	RDT positive	Number of children
Age in months		
6-8	2.6	357
9-11	4.6	376
12-17	4.5	764
18-23	5.9	728
24-35	7.4	1,455
36-47	10.3	1,505
48-59	8.2	1,522
Sex		
Male	7.5	3,368
Female	7.2	3,339
Mother's interview status		
Interviewed	7.0	5,841
Not interviewed	9.7	866
Residence		
Urban	2.1	1,781
Rural	9.2	4,926
Mainland/Zanzibar		
Mainland	7.5	6,527
Urban	2.2	1,738
Rural	9.5	4,789
Zanzibar	0.2	180
Unguja	0.4	100
Pemba	0.0	80
Zone		
Western	16.6	757
Northern	1.5	562
Central	1.1	712
Southern Highlands	4.9	329
Southern	13.6	244
South West Highlands	2.6	701
Lake	10.6	2,207
Eastern	4.6	1,015
Zanzibar	0.2	180
Region		
Dodoma	0.6	261
Arusha	0.0	173
Kilimanjaro	0.0	128
Tanga	3.1	261
Morogoro	9.5	343
Pwani	5.3	159
Dar es Salaam	1.1	513
Lindi	11.7	95
Mtwara	14.8	150
Ruvuma	11.8	118
Iringa	2.0	118
Mbeya	4.0	199
Singida	2.3	266
Tabora	11.7	465
Rukwa	1.8	269
Kigoma	24.4	292
Shinyanga	6.1	232
Kagera	15.4	313
Mwanza	8.1	638
Mara	11.2	360
Manyara	0.0	185
Njombe	0.0	93
Katavi	7.1	73
Simiyu	6.0	305
Geita	17.3	358
Songwe	0.0	159
Kaskazini Unguja	0.0	21
Kusini Unguja	0.0	14
Mjini Magharibi	0.6	65
Kaskazini Pemba	0.0	47
Kusini Pemba	0.0	34

(5)

(Continued…)

Table 4.6—Continued

Background characteristic	Malaria prevalence according to RDT: RDT positive	Malaria prevalence according to RDT: Number of children
Mother's education[1]		
No education	11.1	1,304
Primary incomplete	9.0	800
Primary complete	5.5	2,916
Secondary+	2.9	817
Wealth quintile		
Lowest	14.2	1,586
Second	9.5	1,443
Middle	6.3	1,275
Fourth	3.2	1,273
Highest	0.6	1,130
Total	7.3	6,707

RDT = Rapid Diagnostic Test (SD BIOLINE Malaria Ag P.f)
[1] Excludes children whose mothers were not interviewed

Step 1: Read the title and subtitle. They tell you the topic and the specific population group being described. In this case, the table is about children age 6-59 months who were tested for malaria by a rapid diagnostic test or RDT.

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 children who tested positive for malaria according to the RDT. The second column lists the number of children age 6-59 months who were tested for malaria using an RDT 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 in months, sex, mother's interview status, Mainland/Zanzibar urban-rural residence, zone, region, mother's educational level, and wealth quintile.

Step 4: Look at the row at the bottom of the table highlighted in red. This percentage represents the total of children age 6-59 months who tested positive for malaria according to RDT. In this case, 7.3%* of children age 6-59 months tested positive for malaria according to RDT.

Step 5: To find out what percentage of children age 6-59 months in Lindi region tested positive for malaria according to RDT, draw two imaginary lines, as shown on the table. This shows that 11.7% of children age 6-59 months in Lindi region tested positive for malaria according to RDT.

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

*In 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.

Practice: Use the table in Example 1 to answer the following questions about malaria prevalence by RDT:

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 zone?
d) What are the lowest and highest percentages (range) of malaria prevalence by region?
e) Is there a clear pattern in malaria prevalence by mother's education level?
f) Is there a clear pattern in malaria prevalence by wealth quintile?

Answers:
a) There is nearly no difference in malaria prevalence by RDT between boys (7.5%) and girls (7.2%).
b) Yes, malaria prevalence generally increases with age from 2.6% among children age 6-8 months to 10.3% among children age 36-47 months before declining to 8.2% among children age 48-59 months.
c) Malaria prevalence is lowest in Zanzibar zone (0.2%) and highest in Western zone (16.6%).
d) Malaria prevalence varies from a low of 0.0% in Arusha, Kilimanjaro, Manyara, Njombe, Songwe, Kaskanzini Unguja, Kusini Unguja, Kaskazini Pemba, and Kusini Pemba regions to a high of 24.4% in Kigoma region.
e) Yes, malaria prevalence decreases as mother's level of education increases; malaria prevalence is highest among children whose mothers have no education (11.1%) and lowest among children whose mothers have secondary+ education (2.9%).
f) Yes, malaria prevalence decreases as household wealth increases; malaria prevalence is highest among children living in households in the lowest wealth quintile (14.2%) and is lowest among children in households in the highest wealth quintile (0.6%).

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

A Question Asked of 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 2 weeks preceding the survey; and among children under age 5 with fever, the percentage for whom advice or treatment was sought, the percentage for whom advice or treatment was sought the same or next day following the onset of fever, and the percentage who had blood taken from a finger or heel, by background characteristics, Tanzania MIS 2017

	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 2	Percentage for whom advice or treatment was sought	Percentage for whom advice or treatment was sought the same or next day	Percentage who had blood taken from a finger or heel for testing	Number of children
Age in months						
<12	20.9	1,532	80.6	43.9	36.0	320
12-23	26.5	1,471	81.2	48.9	46.4	390
24-35	21.1	1,402	72.8	39.4	39.2	296
36-47	18.7	1,411	65.9	38.2	47.3	264
48-59	14.6	1,402	72.3	43.0	47.8	205
Sex						
Male	19.6	3,623	75.2	42.2	41.9	710
Female	21.2	3,595	75.6	44.1	44.2	764
Residence						
Urban	19.8	1,915	77.6	44.2	56.0	380
Rural	20.6	5,303	74.6	42.8	38.6	1,094
Mainland/Zanzibar						
Mainland	20.6	7,018	75.3	43.0	43.4	1,442
Urban	20.1	1,865	77.3	43.8	56.0	374
Rural	20.7	5,154	74.5	42.7	38.9	1,068
Zanzibar	15.8	200	81.9	52.7	30.9	32
Unguja	9.7	110	(90.0)	(72.1)	(50.4)	11
Pemba	23.3	90	77.9	42.8	21.0	21
Zone						
Western	23.9	786	71.9	43.6	35.2	188
Northern	19.9	625	74.0	40.4	49.8	125
Central	18.1	773	68.6	39.1	27.0	140
Southern Highlands	15.5	342	81.7	51.5	41.7	53
Southern	26.4	270	81.4	52.8	67.3	71
South West Highlands	19.9	822	84.9	56.8	41.0	164
Lake	20.9	2,311	72.8	35.6	38.2	484
Eastern	20.1	1,089	77.7	47.0	62.7	219
Zanzibar	15.8	200	81.9	52.7	30.9	32
Region						
Dodoma	12.0	270	*	*	*	32
Arusha	20.4	189	*	*	*	39
Kilimanjaro	19.0	144	*	*	*	27
Tanga	20.1	293	(88.2)	(45.1)	(74.0)	59
Morogoro	18.9	376	79.8	42.8	44.9	71
Pwani	16.4	159	(90.6)	(47.4)	(80.6)	26
Dar es Salaam	22.0	553	(73.7)	(49.3)	(69.3)	122
Lindi	24.0	100	86.3	51.9	73.2	24
Mtwara	27.9	169	79.0	53.3	64.3	47
Ruvuma	22.0	121	(79.8)	(57.6)	(60.2)	27
Iringa	13.3	121	*	*	*	16
Mbeya	16.2	219	*	*	*	35
Singida	20.3	294	74.4	33.6	14.9	60
Tabora	25.0	469	70.5	36.7	34.0	117
Rukwa	26.7	332	(84.7)	(64.9)	(54.6)	89
Kigoma	22.3	317	74.3	55.1	37.4	71
Shinyanga	20.9	228	83.2	54.3	22.2	48
Kagera	18.4	341	(62.3)	(19.3)	(55.2)	63
Mwanza	18.9	667	85.5	51.3	51.1	126
Mara	29.2	371	61.6	22.8	32.7	108
Manyara	22.8	210	(72.2)	(46.7)	(33.4)	48
Njombe	10.2	100	*	*	*	10
Katavi	18.2	86	81.1	28.9	36.9	16
Simiyu	23.8	319	76.2	32.2	22.3	76
Geita	16.4	386	65.3	32.9	36.6	63
Songwe	12.9	185	*	*	*	24
Kaskazini Unguja	5.6	24	*	*	*	1
Kusini Unguja	8.5	15	*	*	*	1
Mjini Magharibi	11.3	71	*	*	*	8
Kaskazini Pemba	16.0	53	(68.7)	(44.9)	(19.8)	9
Kusini Pemba	33.8	37	(84.2)	(41.4)	(21.8)	12
Mother's education						
No education	18.9	1,563	67.2	32.0	33.0	295
Primary incomplete	23.8	1,027	74.3	44.9	40.9	245
Primary complete	20.7	3,580	78.6	44.2	46.0	742
Secondary+	18.4	1,048	77.2	54.2	50.0	193

(Continued…)

Table 4.1—*Continued*

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, the percentage for whom advice or treatment was sought the same or next day following the onset of fever, and the percentage who had blood taken from a finger or heel, by background characteristics, Tanzania MIS 2017

	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	Percentage for whom advice or treatment was sought the same or next day	Percentage who had blood taken from a finger or heel for testing	Number of children
Wealth quintile						
Lowest	21.1	1,682	68.4	36.6	32.3	354
Second	19.3	1,524	77.0	38.1	33.9	295
Middle	21.5	1,380	75.0	42.7	39.3	297
Fourth	21.6	1,386	81.9	51.9	60.2	300
Highest	18.3	1,246	76.3	49.1	54.2	228
Total	20.4	7,218	75.4	43.2	43.1	1,474

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.

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 20.4%. 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 1,474 children or 20.4% of the 7,218 children under 5 (with rounding). The second panel is a subset of the first panel.

Step 4: Only 20.4% 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 Tanga region? It's 88.2%. 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 Dodoma region? There is no number in this cell—only an asterisk. This is because fewer than 25 children under 5 with fever in Dodoma region 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 TMIS Tables

A sample is a group of people who have been selected for a survey. In the 2017 TMIS, 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 2017 TMIS, the survey sample is representative of the country as a whole, by residence, for Tanzania Mainland and Zanzibar, for 9 geographic zones, and for 31 regions.

Table 2.8 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, Tanzania MIS 2017

Background characteristic	Women		
	Weighted percent	Weighted number	Unweighted number
Region			
Dodoma	3.6	364	190
Arusha	3.8	376	210
Kilimanjaro	3.3	330	194
Tanga	4.4	444	199
Morogoro	5.9	591	419
Pwani	2.7	267	426
Dar es Salaam	11.4	1,144	335
Lindi	1.9	189	386
Mtwara	3.3	331	394
Ruvuma	2.3	228	386
Iringa	1.7	172	179
Mbeya	3.1	315	204
Singida	2.6	262	228
Tabora	4.8	480	485
Rukwa	3.9	395	203
Kigoma	3.7	375	463
Shinyanga	3.0	299	505
Kagera	4.9	490	396
Mwanza	8.2	823	512
Mara	4.0	402	460
Manyara	2.3	229	198
Njombe	1.7	167	166
Katavi	0.9	93	530
Simiyu	3.2	321	626
Geita	3.8	382	516
Songwe	2.4	241	179
Kaskazini Unguja	0.4	38	194
Kusini Unguja	0.3	26	146
Mjini Magharibi	1.3	132	282
Kaskazini Pemba	0.6	62	212
Kusini Pemba	0.5	49	195
Total 15-49	100.0	10,018	10,018

To generate statistics that are representative of the country as a whole and the 31 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 for analysis. To solve this problem, regions with small populations are oversampled. For example, let's say that you have enough money to interview 10,018 women and want to produce results that are representative of Tanzania as a whole and its regions (as in Table 2.8). However, the total population of Tanzania is not evenly distributed among the regions: some regions, such as Dar es Salaam, are heavily populated while others, such as Kusini Unguja, are not. Thus, Kusini Unguja 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 146 in Kusini Unguja to 626 in Simiyu region. 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 Dar es Salaam is about 11% of the population in Tanzania, while Kusini Unguja's population is less than 1% of the population in Tanzania. But as the blue column shows, the number of women interviewed in Dar es Salaam accounts for only about 3.3% of the total sample of women interviewed (335/10,018) and the number of women interviewed in Kusini Unguja region accounts for 1.5% of the total sample of women interviewed (146/10,018). This unweighted distribution of women does not accurately represent the population.

In order to get statistics that are representative of Tanzania, the distribution of the women in the sample needs to be weighted (or mathematically adjusted) so that it resembles the true distribution in the country. Women from a small region, Kusini Unguja, should only contribute a small amount to the national total. Women from a large region, like Dar es Salaam, should contribute much more. Therefore, DHS statisticians mathematically calculate a "weight" that 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 region level. The total national sample size of 10,018 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 **red column (3)** to the actual population distribution of Tanzania, 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 Dar es Salaam and the proportion of women who live in Kusini Unguja.

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 TMIS tables, so don't be surprised if these numbers seem low: they may actually represent a larger number of women interviewed.

TANZANIA


N
UGANDA
KENYA
RWANDA
BURUNDI
DEM. REP. OF THE CONGO
ZAMBIA
MALAWI
MOZAMBIQUE
Kagera
Lake
Mara
Mwanza
Geita
Simiyu
Shinyanga
Northern
Arusha
Kilimanjaro
Kigoma
Western
Tabora
Manyara
Central
Singida
Dodoma
Tanga
Katavi
South West Highlands
Rukwa
Mbeya
Songwe
Eastern
Dar es Salaam
Pwani
Iringa
Morogoro
Njombe
Southern Highlands
Ruvuma
Lindi
Southern
Mtwara
Kaskazini Pemba
Kusini Pemba
Zanzibar
Kaskazini Unguja
Mjini Magharibi
Kusini Unguja
0 75 150 300
Kilometres

INTRODUCTION AND SURVEY METHODOLOGY 1

The 2017 Tanzania Malaria Indicator Survey (2017 TMIS) was implemented by the National Bureau of Statistics (NBS) and Office of Chief Government Statistician (OCGS), Zanzibar, in close collaboration with the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), Tanzania Mainland, and the Ministry of Health (MoH), Zanzibar. ICF provided technical assistance. Other agencies and organizations that facilitated the successful implementation of the survey through technical or financial support were the Government of the United Republic of Tanzania, USAID, U.S. President's Malaria Initiative (PMI), and The Global Fund.

1.1 SURVEY OBJECTIVES

The primary objective of the 2017 TMIS is to provide up-to-date estimates of basic demographic and health indicators related to malaria. Specifically, the survey collected information on vector control interventions such as mosquito nets, intermittent preventive treatment of malaria in pregnant women, and care seeking and treatment of fever in children. Young children were also tested for anaemia and for malaria infection.

Overall, the key aims of the 2017 TMIS are to:

- Measure the level of ownership and use of mosquito nets
- Assess coverage of intermittent preventive treatment for pregnant women
- Identify health care seeking behaviours and treatment practices, including the use of specific antimalarial medications to treat malaria among children under age 5
- Identify diagnostic trends prior to administration of antimalarial medications for treatment of fever and other malaria-like symptoms
- Measure the prevalence of malaria and anaemia among children age 6-59 months
- Assess malaria knowledge, attitudes, and practices among women age 15-49
- Assess housing conditions
- Assess the cost of malaria-related services

The information collected through the 2017 TMIS is intended to assist policymakers and program managers in evaluating and designing programs and strategies for improving the health of the country's population.

1.2 SAMPLE DESIGN

The sampling frame used for the 2017 TMIS is the same as that used for the 2015-16 TDHS-MIS, which was developed by NBS after the 2012 Population and Housing Census (PHC). The sample excluded nomadic and institutional populations, such as persons staying in hotels, barracks, and prisons. The 2017 TMIS two-stage sample design was intended to allow estimates for the entire country, urban and rural areas, Tanzania Mainland, and Zanzibar. The sample was also designed to provide regionally representative key indicator results for the 26 Tanzania Mainland regions and the 5 Zanzibar regions (a total of 31 survey regions). The first stage involved selecting sample points (clusters) consisting of enumeration areas (EAs) delineated for the 2012 PHC. A total of 442 clusters were selected with probability proportional to EA population size and with independent selection in each sampling stratum. Of these clusters, 127 were in urban areas and 315 in rural areas. With the aim of obtaining representative results for most of TMIS indicators at regional level, the total sample size was fixed and therefore an equal size allocation was adopted with adjustment. All regions in Tanzania Mainland with a malaria prevalence below 10% in the 2015-16 TDHS-MIS were allocated 10 clusters except for Dar es Salaam, which was

allocated 15 clusters; all regions in Tanzania Mainland with a malaria prevalence above 10% in the 2015-16 TDHS-MIS were allocated 20 clusters; and the five regions in Zanzibar were allocated 7 or 8 clusters each because of their small population size.

The second stage of sampling involved systematic selection of households. A household listing operation was undertaken in all selected EAs in July 2017, and households to be included in the survey were randomly selected. A fixed number of 22 households per cluster were selected. In total, 9,724 households were selected for the 2017 TMIS, 2,793 in urban areas and 6,931 in rural areas.

To facilitate estimation of geographic differentials for certain demographic and health indicators, Tanzania was divided into nine geographic zones. Although these zones are not official administrative areas, this classification system is also used by the Reproductive and Child Health Section of the MoHCDGEC. Grouping the regions into zones allowed a relatively large number of people in the denominator and a reduced sampling error. Note that the zones, defined below, differ slightly from the zones used in surveys conducted before 2015. For instance, Tanzania Mainland's administrative units were reformed in 2012; the reforms increased the number of regions from 21 in the 2002 PHC to 25 in the 2012 PHC. On the other hand, at the end of 2016, a new region—Songwe—was formed, increasing the total number of Tanzania Mainland regions to 26. Therefore, comparisons across the zones and from survey to survey should be made with caution. The zones in the 2017 TMIS are as follows:

- Western zone: Tabora and Kigoma
- Northern zone: Kilimanjaro, Tanga, and Arusha
- Central zone: Dodoma, Singida, and Manyara
- Southern Highlands zone: Iringa, Njombe, and Ruvuma
- Southern zone: Lindi and Mtwara
- South West Highlands zone: Mbeya, Rukwa, Katavi, and Songwe
- Lake zone: Kagera, Mwanza, Geita, Mara, Simiyu, and Shinyanga
- Eastern zone: Dar es Salaam, Pwani, and Morogoro
- Zanzibar: Kaskazini Unguja, Kusini Unguja, Mjini Magharibi, Kaskazini Pemba, and Kusini Pemba

All women age 15-49 who were either permanent residents of selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. With the parent's or guardian's consent, all children age 6-59 months were tested for anaemia and for malaria infection.

1.3 QUESTIONNAIRES

Three questionnaires—the Household Questionnaire, the Woman's Questionnaire, and the Biomarker Questionnaire—were used for the 2017 TMIS. Core questionnaires available from the Roll Back Malaria Monitoring & Evaluation Reference Group (RBM-MERG) were adapted to reflect the population and health issues relevant to Tanzania. The modifications were decided upon at a series of meetings with various stakeholders from the National Malaria Control Programme (NMCP), the Zanzibar Malaria Elimination Programme (ZAMEP), and other government ministries and agencies, nongovernmental organisations, and international donors. The questionnaires were initially prepared in English, later translated to Kiswahili, and then programmed onto tablet computers, enabling use of computer-assisted personal interviewing (CAPI) for the survey.

The Household Questionnaire was used to list all usual members of and visitors to selected households. Basic information was collected on the characteristics of each person listed in the household, including his or her age, sex, and relationship to the head of the household. The data on age and sex of household members obtained from the Household Questionnaire were used to identify women eligible for an individual interview and children age 6-59 months eligible for anaemia and malaria testing. Additionally, the Household Questionnaire captured information on characteristics of the household's dwelling unit,

such as source of water, type of toilet facilities, materials used for the floor, ownership of various durable goods, 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, education, and literacy)
- Reproductive history during the last 6 years
- Prenatal care and preventive malaria treatment for the most recent birth
- Prevalence and treatment of fever among children under age 5
- Cost of malaria-related services
- Knowledge about malaria (symptoms, causes, how to prevent malaria, and types of antimalarial medications)
- Sources of media messages about malaria

The Biomarker Questionnaire was used to record anaemia and malaria test results for children age 6-59 months as well as the signature of the fieldworker who conducted the biomarker measurements.

Consent statements were developed for each questionnaire (Household, Woman's, and Biomarker). Further consent statements were formulated for malaria testing, anaemia testing, and treatment of children with positive results on malaria rapid diagnostic tests (RDTs). Signatures were obtained for each consent statement on a separate paper form and were confirmed on the digital form with the interviewer's signature at each point of consent.

Additionally, the 2017 TMIS included a Fieldworker Questionnaire. This questionnaire was created to serve as a tool in conducting analyses of data quality. The questionnaire was distributed and collected by NBS after the final selection of fieldworkers, just before they started fieldwork. Fieldworkers were required to fill out a two-page self-administered questionnaire on their general background characteristics.

1.4 ANAEMIA AND MALARIA TESTING

Anaemia testing. Due to the strong correlation between malaria infection and anaemia, the 2017 TMIS included anaemia testing for children age 6-59 months to ascertain anaemia prevalence. Blood samples were drawn using a single-use, retractable, spring-loaded, sterile lancet to make a finger or heel prick. Nurses collected blood in a microcuvette from the finger or heel prick. Haemoglobin analysis was carried out on site using a battery-operated portable HemoCue® analyser, which produces results 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 the nearest health facility for follow-up care. Results of the anaemia test were recorded on the Biomarker Questionnaire and on a brochure that also contained information on causes and prevention of anaemia. The brochure was left in the household.

Malaria testing using a rapid diagnostic test (RDT). The other major objective of the 2017 TMIS was to provide information about the extent of malaria infection among children age 6-59 months. Using the same finger (or heel) prick that was used for anaemia testing, a drop of blood was tested using the Tanzania-approved SD BIOLINE Malaria Ag Pf/Pan rapid diagnostic test (RDT). This qualitative test, manufactured by Standard Diagnostics Inc., detects histidine-rich protein II antigens of *Plasmodium falciparum* and other *Plasmodium* species in human whole blood. *Plasmodium falciparum* is the predominant cause of malaria in Tanzania. The test includes a disposable sample applicator that comes in a standard package. A tiny volume of blood is captured on an applicator and placed in the well of the testing device. All field nurses were trained to perform the RDT in the field, in accordance with the manufacturer's instructions. The nurse read, interpreted, and recorded RDT results after 15 minutes. RDT results were recorded as either positive or negative, with faint test lines considered positive. As was the case with anaemia testing, malaria RDT results were provided to the child's parent or guardian in oral and written form and were recorded on

the Biomarker Questionnaire. In Tanzania Mainland, children who tested positive for malaria using the RDT were offered a full course of treatment according to Tanzania Mainland's national malaria treatment guidelines, provided they were not currently on treatment with artemisinin-based combination therapy (ACT) and had not completed a full course of ACT during the 2 weeks preceding the interview date. To ascertain the correct dose, nurses on each field team were provided with treatment guidance charts and were trained to ask about signs of severe malaria and about any medications the child might already be taking. The nurses then provided the age-appropriate dose of ACT along with instructions on how to administer the medicine to the child. In Zanzibar, children who tested positive for malaria using the RDT were referred to the nearest health facility for care in accordance with the ZAMEP malaria management guidelines. This is mandated since all malaria infections in Zanzibar must be documented by the health facility.

Diagnosis and Treatment Algorithm

NMCP has a policy of expanding the use of RDTs for malaria diagnosis in conjunction with the use of artemether + lumefantrine (ALu combination therapy) as the drug of choice for the treatment of uncomplicated malaria. The table below outlines the proposed treatment guidelines for children testing positive for parasites. During the survey, children who tested positive for malaria were given dosing based on their weight and/or approximate age.

Weight (in kg)/approximate age	Dosage*
5 to less than 15/under 3 years	1 tablet ALu twice daily for 3 days
15 to less than 25/3 to 8 years	2 tablets ALu twice daily for 3 days

* ALu = arthemeter 20 mg + lumefantrine 120 mg (Coartem). 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).

1.5 TRAINING OF FIELD STAFF

The main training of the 2017 TMIS interviewers and supervisors took place at the Moshi Co-operative University (MoCU) in Kilimanjaro region from September 18 to October 6, 2017. NBS recruited 110 people to attend the 3 weeks of training for interviewers and supervisors. Out of 110 trainees, 96 were selected (80 interviewers and 16 supervisors).

Candidates for the various field staff positions participated in an approximately 3-week training program devoted to various aspects of the survey. Trainees were divided in four different classes to facilitate the training. This allowed different simultaneous training sessions that ensured standardization while enabling smaller class sizes for increased concentration and participation. The trainers were drawn from NBS, OCGS, and The DHS Program, with assistance from the MoHCDGEC and other appropriate organizations.

Training consisted of classroom lectures, mock interviews, and field practice interviews. Each interviewer completed 10 interviews during the field practice component of the training.

Special biomarker training sessions were arranged for anaemia and malaria testing. The biomarker collection training was conducted over a span of 3 days. Training emphasised the procedures to be employed in obtaining respondents' voluntary consent for anaemia and malaria testing, the techniques involved in using the HemoCue device for anaemia testing and RDTs for malaria testing, malaria treatment of children with positive rapid test results, and the procedures for referring respondents who needed follow-up care for anaemia and malaria.

During the training course, 1 day was set aside for training supervisors on their supervision role in observing interviews in the field, checking completed questionnaires, filling out field forms, and submitting completed work to the central office.

1.6 FIELDWORK

Sixteen teams (2 for Zanzibar and 14 for Tanzania Mainland) were formed for field data collection. Each team consisted of a supervisor (team leader), four female interviewers, one male interviewer, and a driver. Every interviewer was trained in biomarker collection.

NBS arranged for printing of manuals, brochures, other field forms, and backup questionnaires and organised field supplies such as backpacks and identification cards. NBS and OCGS coordinated the fieldwork logistics.

Field data collection for the 2017 TMIS took place from October 9 to December 20, 2017.

To ensure data quality, all 16 teams were visited at least three times by NBS and OCGS staff as well as staff from NMCP and ZAMEP.

1.7 DATA PROCESSING

Data for the 2017 TMIS were collected through questionnaires programmed onto the CAPI application. The CAPI application was programmed by ICF in collaboration with NBS and OCGS and loaded with the Household and Woman's Questionnaires. The Biomarker Questionnaire measurements were entered on a hard copy and later transferred to the CAPI application. Using a secure internet file streaming system (IFSS), the field supervisors transferred data to a server located at NBS headquarters in Dar es Salaam on a daily basis. To facilitate communication and monitoring, each field worker was assigned a unique identification number.

At NBS headquarters, data received from the field teams' CAPI applications were registered and checked for inconsistencies and outliers. Data editing and cleaning included an extensive range of structural and internal consistency checks. Any anomalies were communicated to the teams so that, together with the data processing teams, they could resolve data discrepancies. The corrected results were maintained in master Census and Survey Processing System (CSPro) data files at NBS and were used in producing tables for analysis and report writing. ICF provided technical assistance in processing the data using CSPro for data editing, cleaning, weighting, and tabulation.

1.8 ETHICAL CONSIDERATION

The protocol for the 2017 TMIS was approved by institutional review boards of both the Medical Research Council of Tanzania and ICF. All data and other information collected were kept confidential. Respondents' names and identification numbers were removed from the electronic database during analysis. 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 to be part of the survey.

1.9 RESPONSE RATES

Table 1.1 shows that of the 9,724 households selected for the sample, 9,390 were occupied at the time of fieldwork. Of the occupied households, 9,330 were successfully interviewed, yielding a total household response rate of 99%. In the interviewed households, 10,136 eligible women were identified for individual interviews and 10,018 were successfully interviewed, yielding a response rate of 99%.

Table 1.1 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence (unweighted), Tanzania MIS 2017

	Residence			Mainland			Zanzibar		
Result	Urban	Rural	Total	Urban	Rural	Total	Unguja	Pemba	Total
Household interviews									
Households selected	2,793	6,931	9,724	2,529	6,381	8,910	506	308	814
Households occupied	2,671	6,719	9,390	2,411	6,173	8,584	503	303	806
Households interviewed	2,643	6,687	9,330	2,386	6,148	8,534	493	303	796
Household response rate[1]	99.0	99.5	99.4	99.0	99.6	99.4	98.0	100.0	98.8
Interviews with women age 15-49									
Number of eligible women	2,986	7,150	10,136	2,627	6,477	9,104	624	408	1,032
Number of eligible women interviewed	2,957	7,061	10,018	2,599	6,390	8,989	622	407	1,029
Eligible women response rate[2]	99.0	98.8	98.8	98.9	98.7	98.7	99.7	99.8	99.7

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

CHARACTERISTICS OF HOUSEHOLDS AND WOMEN

2

Key Findings

- ***Drinking water:*** Six in 10 households have access to an improved source of drinking water. In Mainland Tanzania, 87% of urban households and 50% of rural households have access to an improved source of water. In Zanzibar, 99% of households in Unguja and 95% of households in Pemba have access to an improved source of drinking water.
- ***Sanitation:*** Overall, only 23% of Tanzanian households use improved sanitation (35% of households in Mainland urban, 15% in Mainland rural, 76% in Unguja, and 50% in Pemba). Twenty-eight percent of households in Pemba have no toilet facility.
- ***Electricity:*** Around one-fourth (26%) of households in Tanzania have electricity, including 59% in Mainland urban and 8% in Mainland rural. In Zanzibar, 56% of households in Unguja and 27% of households in Pemba have electricity.
- ***Household population and composition:*** Overall, the population in Tanzania is young, with 46% of the entire population under age 15.
- ***Education:*** In Tanzania, 47% of women age 15-49 have completed primary school, and 23% have a secondary or higher education; 16% of women have no education.
- ***Median years of schooling:*** In Tanzania, women age 15-49 have completed a median of 6.4 years of education.
- ***Literacy:*** Around 3 in 4 women (76%) age 15-49 in Tanzania are literate.

Information on the socioeconomic characteristics of the household population in the 2017 TMIS provides a context to interpret demographic and health indicators and can furnish an approximate indication of the 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, housing and dwelling characteristics, ownership of durable goods, and composition of the household population. In addition, the chapter presents characteristics of the survey respondents such as age, education, and literacy. Socioeconomic characteristics are useful for understanding 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, springs, and rainwater. Households using bottled water for drinking are classified as using an improved water source only if the water they use for cooking and hand washing is from an improved source.

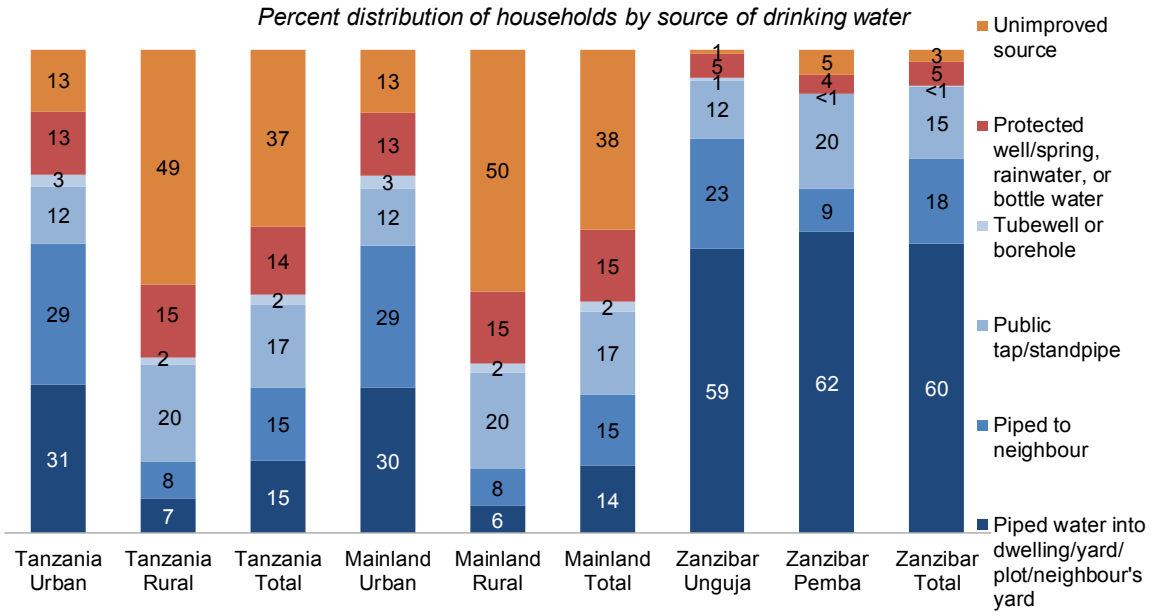
Sample: Households

Improved sources of water protect against outside contamination so that water is more likely to be safe to drink. In Tanzania, 63% of households have access to an improved source of drinking water (**Table 2.1**). Households in urban areas are more likely to have access to an improved source of drinking water than households in rural areas (87% and 51%, respectively). Sixty-three percent of households in Tanzania Mainland and 98% of households in Zanzibar have access to improved water sources. Additionally, nearly all households in Unguja (99%) and Pemba (95%) obtain their drinking water from an improved source.

Households in Tanzania rely on different sources of drinking water. The most common source of improved drinking water is a public tap/standpipe (17%). The other two common sources are water piped into a dwelling/yard plot and water piped to a neighbour (15% each) (**Figure 2.1**).

Based on the source of drinking water used by the household, fetching water has proved to be an additional chore depending on time spent travelling to obtain water. About 4 in 10 households (36%) spend 30 minutes or longer to fetch drinking water. Households in Mainland rural areas are three times more likely to spend 30 minutes or longer in obtaining drinking water than households in Mainland urban areas (48% and 14%, respectively), whereas households in Pemba are twice as likely to spend 30 minutes or longer in obtaining water as households in Unguja (4% and 2%, respectively).

Figure 2.1 **Household drinking water by residence**



Trends: The proportion of households obtaining water from improved sources has increased over time, from 52% in the 2004-05 TDHS to 56% in the 2007-08 THMIS, 61% in the 2015-16 TDHS-MIS, and 63% in the 2017 TMIS.

2.2 SANITATION

Improved toilet facilities

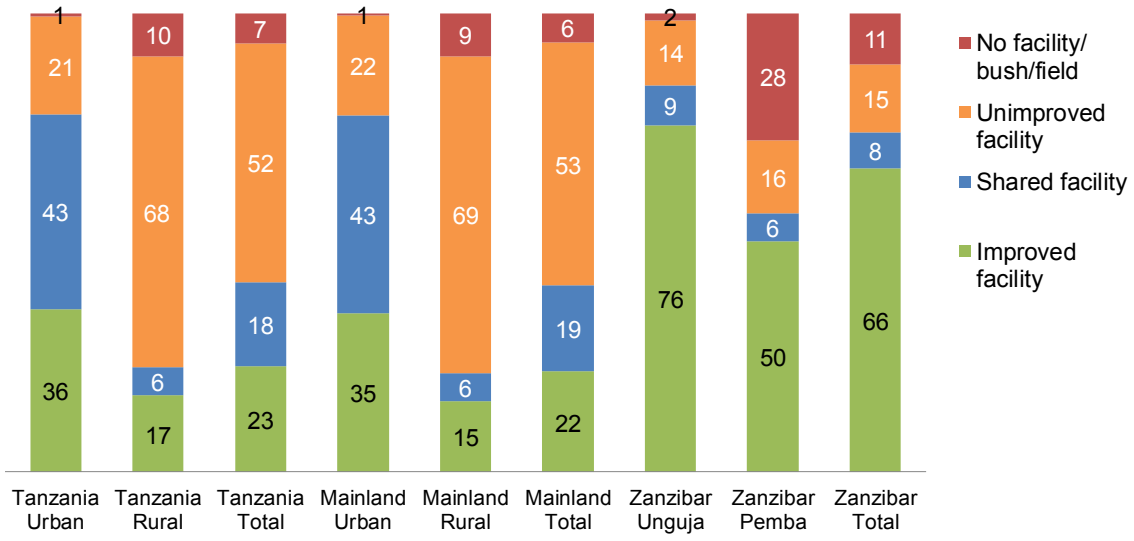
Include any non-shared toilet facility of the following types: flush/pour flush toilets to piped sewer systems, septic tanks, and pit latrines; ventilated improved pit (VIP) latrines; pit latrines with slabs; and composting toilets.

Sample: Households

Only 23% of households in Tanzania use an improved toilet facility, defined as a non-shared facility constructed to prevent contact with human waste and thus reduce the transmission of cholera, typhoid, and other diseases (**Table 2.2**). Households in urban areas are more likely to use improved toilet facilities (36%) than rural households (17%). Seven percent of households in Tanzania do not have any toilet facility. Eighteen percent of households have a toilet facility that would be classified as improved if it were not shared with other households. Eighty-five percent of Mainland rural households use unimproved facilities, as compared with 65% of Mainland urban households. In Zanzibar, 50% of households in Pemba use unimproved facilities, compared with 25% of households in Unguja. Close to 3 in 10 households (28%) in Pemba have no toilet facility (**Figure 2.2**).

Figure 2.2 **Household toilet facilities by residence**

Percent distribution of households by type of toilet facilities



Trends: The proportion of households with improved toilet facilities has increased over the past decade, from 2% in the 2004-05 TDHS to 19% in the 2015-16 TDHS-MIS and 23% in the 2017 TMIS. The percentage of households with no toilet facility has decreased by 3 percentage points in less than 2 years, from 10% in the 2015-16 TDHS-MIS to 7% in the 2017 TMIS.

2.3 HOUSING CHARACTERISTICS

The 2017 TMIS collected data on household features such as access to electricity, flooring material, number of rooms for sleeping, 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.

Exposure to cooking smoke produced from solid fuels (charcoal and wood) is potentially harmful to health. Overall, 93% of households in Tanzania use solid fuel for cooking (93% of households in Tanzania Mainland and 96% of households in Zanzibar). As expected, use of solid fuels for cooking is higher in

rural areas (97%) than in urban areas (84%). Charcoal and wood account for the highest percentage of solid fuel used for cooking. More than 6 in 10 households in Tanzania (65%) use wood for cooking, and 28% use charcoal. Households in Mainland rural areas are more likely to use wood for cooking than households in Mainland urban areas (87% and 21%, respectively). In Zanzibar, 87% of households in Pemba use wood for cooking, as compared with 57% of households in Unguja. Four percent of households in Tanzania using clean fuel (electricity, natural gas, or biogas) for cooking (**Table 2.3.1**).

Overall, 26% of households in Tanzania have access to electricity. Six in 10 (59%) households in urban areas and 8% of households in rural areas of Tanzania Mainland have access to electricity. In Zanzibar, households in Unguja are more likely to have electricity than households in Pemba (56% and 27%, respectively). The percentage of households with access to electricity has increased over time, from 15% in the 2010 TDHS to 23% in the 2015-16 TDHS-MIS and 26% in the 2017 TMIS.

Earth and sand are the most common types of flooring material (51%) in Tanzania, followed by cement (40%). Earth or sand flooring is more common in Mainland rural households (69%) than in Mainland urban households (19%). In Zanzibar, 36% of households in Pemba have earth or sand floors, as compared with 15% of households in Unguja (**Table 2.3.1**).

The number of rooms a household uses for sleeping is an indicator of socioeconomic level and household crowding, the latter of which can be instrumental in the spread of disease. Nationally, 33% of households use three or more rooms for sleeping, 34% use two rooms, and 33% use only one room (**Table 2.3.1**). Forty-two percent of Mainland urban households use one room for sleeping, as compared with 29% of Mainland rural households. In Zanzibar, 21% of households in Unguja use one room for sleeping, compared with 13% of households in Pemba.

2.4 DWELLING CHARACTERISTICS

Improved housing characteristics such as closed household eaves and screened windows contribute to malaria control and elimination by reducing house entry by malaria vectors and thus exposure to biting. As part of the 2017 TMIS, interviewers were instructed to observe if the eaves of households were open, closed, or partially closed. They also gathered information on window characteristics such as window materials, whether or not the windows were screened, and type of screening.

Overall, 59% of households have all eaves closed, while 26% have all eaves open. One-third of households in Tanzania have all windows screened. Households in urban areas are nearly three times more likely to have all windows screened than households in rural areas (59% and 20%, respectively). Wire mesh (34%) is the most common type of material used for screening of external windows. Households in urban areas are three times as likely as households in rural areas to use wire mesh for screening of external windows (63% versus 19%) (**Table 2.3.2**).

2.5 HOUSEHOLD DURABLE GOODS

Possession of durable goods is an indicator of a household's socioeconomic status. Moreover, each particular item has specific benefits. For instance, having access to a radio or a television exposes household members to innovative ideas, a refrigerator prolongs the wholesomeness of food, and a means of transport allows greater access to services away from the local area.

Data from the 2017 TMIS show that more than 8 in 10 households (82%) have a mobile phone. Possession of a mobile phone is much higher in urban areas (93%) than in rural areas (76%). About half (49%) of households own a radio, and more than 2 in 10 households (23%) own a television. Only 8% of households own a refrigerator and 3% own a computer. Sixty-two percent of households in Tanzania own agricultural land. As expected, households in rural areas are more likely to own agricultural land (79%) than households in urban areas (30%). Similarly, more than half of households in Tanzania (56%) own farm animals. Households in rural areas are more likely than households in urban areas to own farm animals

(69% versus 31%). Thirty-nine percent of households in Tanzania own a bicycle, 11% own a motorcycle or scooter, and 3% own a car or an animal-drawn cart (**Table 2.4**).

2.6 HOUSEHOLD WEALTH

Wealth index

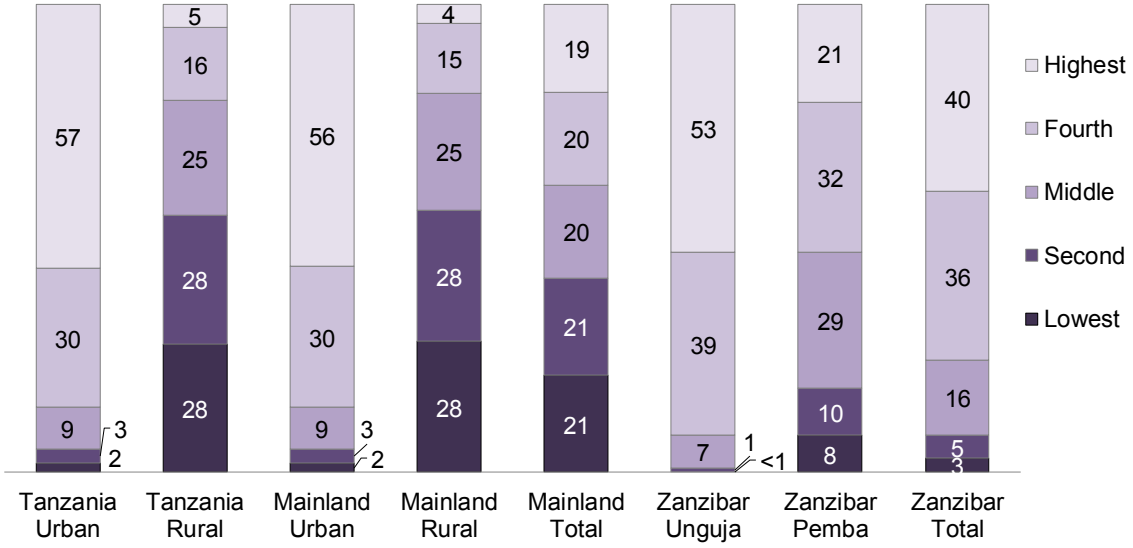
Households are given scores based on the number and kinds of durable goods they own, ranging from a television to a bicycle or car, and housing characteristics such as source of drinking water, toilet facilities, and flooring materials. These scores are derived using principal component analysis. National 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 comprising 20% of the population.

Sample: Households

By definition, 20% of the total household population falls in each wealth quintile. However, the population distributions are unequal when stratifying by urban and rural areas (**Table 2.5**). Fifty six percent of the population in Mainland urban is in the highest quintile, as compared with only 4% of the population in Mainland rural. On the other hand, only 2% of the Mainland urban population falls in the lowest wealth quintile, compared with 28% of the Mainland rural population. In Zanzibar, 53% of the population in Unguja and 21% in Pemba are in the highest quintile, while less than 1% of the population in Unguja and 8% in Pemba are in the lowest wealth quintile (**Figure 2.3**).

Figure 2.3 **Household wealth by residence**

Percent distribution of de jure population by wealth quintiles



There are substantial differences in the wealth quintile distribution across regions in Tanzania. The proportion of the population in the lowest wealth quintile is highest in the Tabora region (47%), while the proportion in the highest quintile is highest in Dar es Salaam (77%) and Mjini Magharibi (67%) (**Table 2.5**).

2.7 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 otherwise specified.

Age and sex are important demographic variables and are the basis of demographic classification. Needs and services for a given population depend largely on the population's age and sex structure. Age and sex have a strong effect on a population's fertility, mortality, and nuptiality patterns.

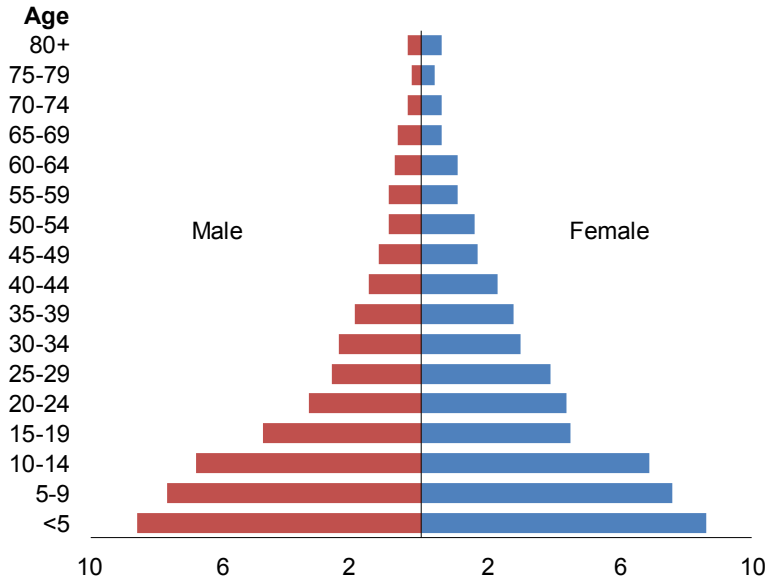
Table 2.6 shows the distribution of the de facto household population in the 2017 TMIS by 5-year age groups, according to sex and residence.

In the 2017 TMIS, 43,510 persons stayed overnight in the 9,330 households interviewed. The overall sex ratio is 93 males per 100 females (86 males per 100 females in urban areas and 96 males per 100 females in rural areas). Almost half of the population is under age 15 (46%), while 49% of residents are age 15-64; only 4% of the population is age 65 or older (**Table 2.6**).

The population pyramid in **Figure 2.4** shows the population distribution by sex and by 5-year age groups. The wide base of the pyramid reflects the young age structure of the Tanzanian population. The pattern is similar to the one observed in the 2012 Population and Housing Census (PHC).

Figure 2.4 **Population pyramid**

Percent distribution of the household population



In Tanzania, the average household size is 4.7 persons. Rural households are larger (5.0 persons per household) than urban households (4.2 persons per household). Mean household sizes are 4.7 persons in Mainland Tanzania and 5.6 persons in Zanzibar (5.9 persons per household in Pemba and 5.4 persons per household in Unguja) (**Table 2.7**). Seventy-five percent of households are

headed by men. The proportion of households headed by women is almost the same in urban and rural areas (26% and 25%, respectively).

2.8 Background Characteristics of Women Respondents

The purpose of this section is to describe the demographic and socioeconomic profile of women in Tanzania. **Table 2.8** shows the weighted and unweighted numbers and the weighted percent distributions of women interviewed in the 2017 TMIS by background characteristics. The unweighted numbers reflect the actual observations during enumeration, whereas the weighted numbers reflect figures that have been adjusted according to the probability of selection of the respondents.

A total of 10,018 women age 15-49 were interviewed in the survey. The proportion in each age group declines with increasing age, reflecting the young age structure of the population. Fifty-seven percent of the respondents are under age 30, and 64% live in rural areas.

In general, the majority of women in Tanzania (84%) have some formal education, with 23% having a secondary or higher education. However, 16% of women have never attended school.

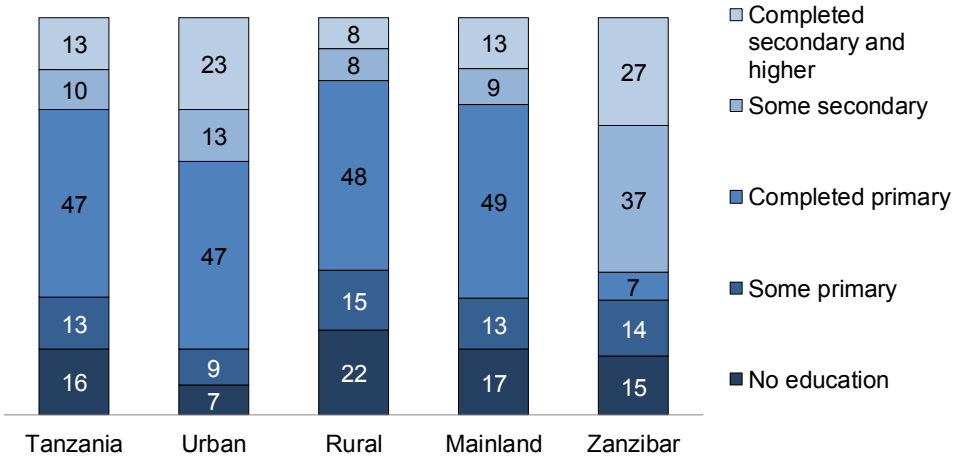
2.9 Educational Attainment of Women

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.

Table 2.9 presents the percent distribution of women age 15-49 by highest level of schooling attended or completed, and median years completed, according to background characteristics. The results show that 70% of women have a primary school education or higher (**Figure 2.5**). Overall, women have completed a median of 6.4 years of education.

Figure 2.5 **Education of survey respondents by residence**

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



Trends: The percentage of women with no formal education decreased from 19% in the 2010 TDHS to 16% in the 2017 TMIS. Median years of schooling remained nearly the same between the two surveys (6.3 years in the 2010 TDHS and 6.4 years in the 2017 TMIS).

Patterns by background characteristics

- Women in Mainland rural areas are more disadvantaged in terms of educational attainment than women in Mainland urban areas; three times as many rural women as urban women have no education

(22% and 7%, respectively). In Pemba, 27% of women have no education, as compared with 8% of women in Unguja. Seventeen percent of women in Mainland Tanzania have no education, compared with 15% in Zanzibar.

- Across regions in Mainland Tanzania, Tabora has the highest percentage of women with no education (36%), while Kilimanjaro has the lowest percentage (2%). In Zanzibar, the percentage of women with no education is highest in Kaskazini Pemba (36%) and lowest in Kusini Unguja (3%).
- The percentage of women with no education decreases with increasing wealth, from 36% among those in the lowest quintile to only 4% among those in the highest quintile.

2.10 LITERACY OF WOMEN

Literacy

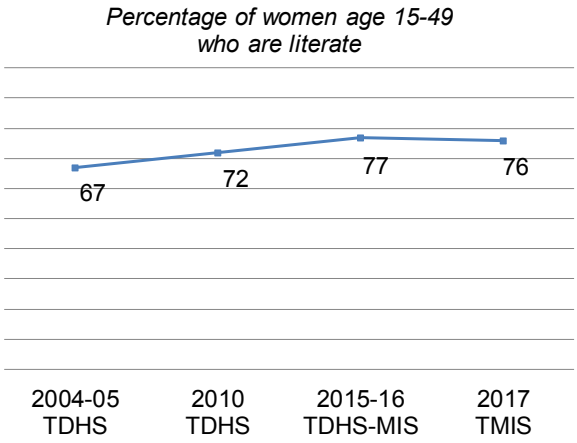
Respondents who had attended schooling at higher than the secondary level were assumed to be literate. All other respondents were given a sentence to read, and they were considered literate if they could read all or part of the sentence.

Sample: Women age 15-49

Knowing the level and distribution of literacy in the population is an important factor in the design and delivery of health messages and interventions. The 2017 TMIS results show that, overall, 76% of women age 15-49 are literate (**Table 2.10**).

Trends: The level of literacy has increased over time, from 67% in the 2004-05 TDHS to 72% in the 2010 TDHS and 76% in the 2017 TMIS (**Figure 2.6**).

Figure 2.6 **Trends in literacy among women age 15-49**



Patterns by background characteristics

- Literacy varies by place of residence; in Mainland Tanzania, about 9 in 10 (89%) women in urban areas are literate, as compared with about 7 in 10 (68%) rural women. In Zanzibar, 91% of women in Unguja are literate, compared with 71% of women in Pemba (**Table 2.10**).
- The percentage of women who are literate is highest among those age 15-24 (82%) and decreases steadily with age to 66% among those age 45-49.
- There are notable regional differences in literacy. In Mainland Tanzania, literacy is highest among women in Kilimanjaro and Dar es Salaam (93% each) and lowest among women in Tabora (54%). The percentage of women in Zanzibar who are literate ranges from 62% among those in Kaskazini Pemba to 96% among those in Kusini Unguja.

LIST OF TABLES

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

- **Table 2.1 Household drinking water**
- **Table 2.2 Household sanitation facilities**
- **Table 2.3.1 Household characteristics**
- **Table 2.3.2 Dwelling characteristics**
- **Table 2.4 Household possessions**
- **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 of interviewed women**
- **Table 2.10 Literacy of interviewed women**

Table 2.1 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 using various methods to treat drinking water, and percentage using an appropriate treatment method, according to residence, Tanzania MIS 2017

	Households									Population								
Characteristic	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total
Source of drinking water																		
Improved source	87.1	51.2	63.3	86.8	50.0	62.5	99.1	94.8	97.5	86.6	49.3	60.4	86.2	47.9	59.3	99.2	96.5	98.1
Piped into dwelling/yard plot	30.7	7.1	15.0	30.0	5.7	13.9	58.7	62.0	59.9	31.5	6.6	14.0	30.4	5.1	12.6	61.3	62.8	61.9
Piped to neighbour	29.2	7.7	15.0	29.4	7.5	14.9	22.7	8.9	17.6	27.8	6.4	12.7	28.0	6.1	12.6	20.9	10.1	16.6
Public tap/standpipe	11.7	20.0	17.2	11.8	20.0	17.2	12.0	19.6	14.8	12.0	19.3	17.1	12.2	19.4	17.2	12.5	18.5	14.9
Tube well or borehole	2.5	1.6	1.9	2.6	1.7	2.0	0.5	0.0	0.3	2.2	1.8	1.9	2.3	1.9	2.0	0.3	0.0	0.2
Protected dug well	7.7	9.5	8.9	7.8	9.6	9.0	2.4	4.0	3.0	8.4	10.0	9.5	8.6	10.2	9.7	2.2	4.3	3.0
Protected spring	2.0	2.3	2.2	2.1	2.4	2.3	0.0	0.4	0.1	2.4	2.6	2.6	2.5	2.7	2.6	0.0	0.6	0.2
Rainwater	1.5	2.9	2.4	1.5	2.9	2.5	0.0	0.0	0.0	1.3	2.5	2.1	1.4	2.5	2.2	0.0	0.0	0.0
Bottled water, improved source for cooking/hand washing[1]	1.8	0.3	0.8	1.7	0.2	0.7	2.7	0.0	1.7	0.9	0.1	0.4	0.9	0.1	0.3	2.1	0.0	1.3
Unimproved source	12.9	48.8	36.7	13.2	50.0	37.5	0.9	5.2	2.5	13.4	50.7	39.6	13.8	52.1	40.7	0.8	3.5	1.9
Unprotected dug well	4.3	24.2	17.5	4.4	24.8	17.9	0.7	2.3	1.3	4.2	26.3	19.7	4.3	27.0	20.3	0.5	1.7	1.0
Unprotected spring	2.0	9.2	6.7	2.0	9.4	6.9	0.0	0.8	0.3	2.1	9.7	7.5	2.2	10.0	7.7	0.0	0.4	0.2
Tanker truck/cart with small tank	3.1	1.2	1.8	3.2	1.2	1.9	0.0	0.0	0.0	3.2	0.8	1.5	3.3	0.9	1.6	0.0	0.0	0.0
Surface water	3.1	13.9	10.3	3.2	14.2	10.5	0.0	2.1	0.8	3.6	13.6	10.6	3.7	14.0	10.9	0.0	1.5	0.6
Bottled water, unimproved source for cooking/hand washing[1]	0.4	0.3	0.3	0.4	0.3	0.4	0.3	0.0	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.0	0.1
Other	0.0	0.0	0.0	0.0	0.0	0.0	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	100.0	100.0	100.0	100.0	100.0	100.0
Time to obtain drinking water (round trip)																		
Water on premises[2]	70.5	25.2	40.5	70.0	23.6	39.3	93.3	82.0	89.1	69.4	23.4	37.0	68.6	21.5	35.5	93.0	83.9	89.4
Less than 30 minutes	15.6	27.5	23.5	15.8	28.0	23.9	4.8	14.1	8.2	15.3	26.7	23.3	15.6	27.2	23.8	4.5	12.1	7.5
30 minutes or longer	13.7	46.9	35.7	13.9	48.1	36.5	1.9	3.9	2.7	15.1	49.7	39.4	15.5	51.0	40.4	2.5	4.0	3.1
Don't know/missing	0.3	0.4	0.3	0.3	0.4	0.4	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	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	100.0	100.0	100.0	100.0	100.0	100.0
Number	3,145	6,185	9,330	3,086	6,021	9,107	140	82	223	13,074	30,920	43,994	12,710	30,039	42,748	757	489	1,245

[1] Households using bottled water for drinking are classified as using an improved or unimproved source according to their water source for cooking and hand washing.
[2] Includes water piped to a neighbour

Table 2.2 Household sanitation facilities

Percent distribution of households and de jure population by type of toilet/latrine facilities and percent distribution of households and de jure population with a toilet/latrine facility by location of the facility, according to residence, Tanzania MIS 2017

Type and location of toilet/latrine facility	Households									Population								
	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total
Improved sanitation	35.5	16.7	23.0	34.6	15.4	21.9	75.5	50.2	66.1	42.4	16.0	23.8	41.3	14.7	22.6	76.7	51.6	66.9
Flush/pour flush to piped sewer system	1.5	0.3	0.7	1.1	0.2	0.5	12.6	0.4	8.1	1.8	0.3	0.7	1.2	0.2	0.5	15.8	0.6	9.8
Flush/pour flush to septic tank	12.8	3.7	6.8	12.9	3.7	6.8	7.8	0.3	5.0	15.7	3.2	6.9	15.8	3.2	7.0	8.8	0.6	5.6
Flush/pour flush to pit latrine	11.4	4.4	6.8	11.0	3.8	6.2	29.6	27.7	28.9	13.5	4.5	7.1	13.0	3.8	6.5	28.7	27.3	28.1
Ventilated improved pit (VIP) latrine	2.6	1.2	1.6	2.6	1.1	1.6	4.8	0.7	3.3	3.6	1.3	2.0	3.6	1.2	1.9	4.4	0.7	2.9
Pit latrine with slab	7.0	5.9	6.3	6.8	5.4	5.9	20.7	21.1	20.8	7.5	5.4	6.0	7.3	4.9	5.6	19.0	22.4	20.3
Composting toilet	0.2	1.2	0.9	0.2	1.2	0.9	0.0	0.0	0.0	0.3	1.3	1.0	0.3	1.3	1.0	0.0	0.0	0.0
Unimproved sanitation	64.5	83.3	77.0	65.4	84.6	78.1	24.5	49.8	33.9	57.6	84.0	76.2	58.7	85.3	77.4	23.3	48.4	33.1
Shared facility[1]	42.5	6.2	18.4	43.1	6.1	18.7	8.8	6.1	7.8	34.5	4.5	13.4	35.3	4.4	13.6	6.7	6.3	6.6
Flush/pour flush to piped sewer system	0.7	0.2	0.3	0.7	0.1	0.3	1.3	0.7	1.1	0.5	0.1	0.2	0.5	0.1	0.2	0.9	0.6	0.8
Flush/pour flush to septic tank	14.5	1.3	5.8	14.7	1.4	5.9	2.3	0.3	1.5	11.9	0.8	4.1	12.2	0.8	4.2	1.7	0.5	1.3
Flush/pour flush to pit latrine	13.0	1.6	5.5	13.1	1.6	5.5	2.3	2.0	2.2	10.7	1.2	4.0	11.0	1.2	4.1	1.6	2.0	1.7
Ventilated improved pit (VIP) latrine	3.0	0.3	1.2	3.1	0.3	1.2	0.1	0.2	0.2	2.7	0.2	0.9	2.8	0.2	1.0	0.1	0.1	0.1
Pit latrine with slab	11.3	2.1	5.2	11.5	2.0	5.2	2.8	2.8	2.8	8.5	1.4	3.5	8.7	1.4	3.6	2.4	3.1	2.7
Composting toilet	0.1	0.7	0.5	0.1	0.7	0.5	0.0	0.0	0.0	0.1	0.7	0.5	0.1	0.7	0.5	0.0	0.0	0.0
Unimproved facility	21.4	67.7	52.1	21.7	69.1	53.0	14.2	15.9	14.8	22.5	69.8	55.8	22.9	71.3	56.9	15.9	15.8	15.9
Flush/pour flush not to sewer/septic tank/pit latrine	3.2	0.7	1.5	3.2	0.6	1.5	4.7	5.4	5.0	3.0	0.7	1.4	2.9	0.6	1.3	5.9	5.5	5.7
Pit latrine with slab (non-washable)	8.7	26.5	20.5	8.8	27.1	20.9	3.9	5.3	4.4	9.6	28.1	22.6	9.8	28.8	23.1	4.3	5.3	4.7
Pit latrine without slab/open pit	9.5	39.8	29.6	9.7	40.7	30.2	5.0	5.0	5.0	9.9	40.5	31.4	10.2	41.5	32.2	5.2	4.9	5.1
Bucket	0.0	0.1	0.1	0.0	0.1	0.1	0.4	0.0	0.3	0.0	0.1	0.1	0.0	0.1	0.0	0.4	0.0	0.3
Hanging toilet/hanging latrine	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1
Other	0.0	0.5	0.3	0.0	0.5	0.3	0.2	0.0	0.1	0.0	0.3	0.2	0.0	0.3	0.2	0.1	0.0	0.1
Open defecation (no facility/bush/field)	0.6	9.5	6.5	0.5	9.3	6.4	1.5	27.7	11.2	0.6	9.7	7.0	0.6	9.6	6.9	0.6	26.3	10.7
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
Number of households/population	3,145	6,185	9,330	3,086	6,021	9,107	140	82	223	13,074	30,920	43,994	12,710	30,039	42,748	757	489	1,245

[1] Facilities that would be considered improved if they were not shared by two or more households

Table 2.3.1 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, Tanzania MIS 2017

	Households									Population								
Housing characteristic	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total
Electricity																		
Yes	58.9	9.0	25.8	58.7	8.3	25.4	55.6	26.5	44.8	57.1	8.4	22.8	56.7	7.5	22.1	60.9	28.5	48.2
No	41.1	91.0	74.2	41.3	91.7	74.6	44.4	73.5	55.2	42.9	91.6	77.2	43.3	92.5	77.9	39.1	71.5	51.8
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
Flooring material																		
Earth, sand	18.4	68.2	51.4	18.5	69.4	52.1	14.7	35.5	22.4	20.1	69.8	55.0	20.3	71.2	56.1	12.6	32.5	20.4
Dung, wood, planks, palm, bamboo	1.1	3.8	2.9	1.1	3.9	3.0	0.1	0.0	0.1	1.2	4.1	3.2	1.2	4.2	3.3	0.1	0.0	0.1
Parquet, polished wood, vinyl, asphalt strips	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.0	0.2
Ceramic tiles	10.2	1.3	4.3	10.0	1.1	4.1	14.4	3.1	10.2	12.6	1.3	4.6	12.2	1.1	4.4	18.2	3.8	12.5
Cement	67.8	26.3	40.3	67.9	25.2	39.7	68.4	59.0	64.9	64.4	24.5	36.4	64.5	23.3	35.6	66.4	61.1	64.3
Carpet	2.4	0.3	1.0	2.4	0.3	1.0	2.0	2.4	2.2	1.7	0.2	0.7	1.6	0.2	0.6	2.3	2.7	2.5
Other	0.0	0.0	0.0	0.0	0.0	0.0	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	100.0	100.0	100.0	100.0	100.0	100.0
Rooms used for sleeping																		
One	41.1	28.6	32.8	41.6	28.9	33.2	21.4	13.3	18.4	24.3	15.7	18.2	24.7	15.8	18.5	11.9	6.4	9.7
Two	27.9	37.4	34.2	28.0	37.4	34.2	33.7	34.4	34.0	30.5	36.0	34.4	30.8	36.0	34.5	30.2	32.8	31.2
Three or more	31.0	34.0	33.0	30.4	33.7	32.6	44.9	52.3	47.6	45.2	48.3	47.4	44.5	48.2	47.1	57.9	60.7	59.0
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
Cooking fuel																		
Electricity	0.3	0.1	0.1	0.3	0.1	0.1	0.8	0.5	0.7	0.2	0.1	0.1	0.2	0.1	0.1	0.7	0.4	0.6
LPG/natural gas/biogas	9.8	1.2	4.1	9.8	1.2	4.1	4.5	0.0	2.9	7.0	0.7	2.6	7.0	0.7	2.6	4.9	0.0	2.9
Kerosene	3.6	0.7	1.7	3.7	0.8	1.7	1.1	0.0	0.7	1.8	0.4	0.8	1.8	0.4	0.8	0.3	0.0	0.2
Charcoal	62.3	10.4	27.9	62.6	10.1	27.9	36.1	12.0	27.2	64.6	8.1	24.9	65.1	7.7	24.8	37.3	11.0	27.0
Wood	21.5	86.8	64.8	21.1	87.0	64.7	57.3	87.2	68.4	25.5	90.5	71.2	25.0	90.8	71.3	56.7	88.6	69.2
Coal/lignite, straw/shrubs/grass, agricultural crop, animal dung	0.3	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.3	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No food cooked in household	2.2	0.8	1.2	2.2	0.8	1.3	0.2	0.2	0.2	0.6	0.2	0.3	0.6	0.2	0.3	0.1	0.0	0.1
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
Percentage using solid fuel for cooking[1]	84.1	97.2	92.8	84.0	97.2	92.7	93.4	99.3	95.6	90.4	98.6	96.2	90.4	98.6	96.2	94.0	99.6	96.2
Percentage using clean fuel for cooking[2]	10.1	1.3	4.2	10.1	1.3	4.3	5.3	0.5	3.5	7.2	0.8	2.7	7.2	0.8	2.7	5.6	0.4	3.6
Number of households/population	3,145	6,185	9,330	3,086	6,021	9,107	140	82	223	13,074	30,920	43,994	12,710	30,039	42,748	757	489	1,245

LPG = Liquefied petroleum gas

[1] Includes coal/lignite, charcoal, wood, straw/shrubs/grass, agricultural crops, and animal dung

[2] Includes electricity and LPG/natural gas/biogas

Table 2.3.2 Dwelling characteristics

Percent distribution of households and de jure population by dwelling characteristics, according to residence, Tanzania MIS 2017

	Households									Population								
Dwelling characteristic	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total	Tanzania Urban	Tanzania Rural	Tanzania Total	Mainland Urban	Mainland Rural	Mainland Total	Zanzibar Unguja	Zanzibar Pemba	Zanzibar Total
Eaves																		
All eaves closed	74.7	50.9	58.9	75.0	51.4	59.4	48.7	24.7	39.8	74.7	51.8	58.6	75.1	52.4	59.1	51.4	23.4	40.4
All eaves open	15.7	31.3	26.0	15.5	31.0	25.7	32.6	47.0	37.9	15.4	31.2	26.5	15.2	30.8	26.2	29.3	50.0	37.4
Partially closed	9.6	17.8	15.0	9.5	17.6	14.8	18.7	28.2	22.2	9.9	17.0	14.9	9.7	16.8	14.7	19.3	26.6	22.2
Material on external windows																		
Glass	15.0	7.2	9.8	15.1	7.3	9.9	5.3	0.2	3.4	15.5	6.3	9.0	15.6	6.4	9.2	6.6	0.2	4.1
Bags	1.9	5.9	4.6	1.9	6.1	4.7	0.9	0.9	0.9	2.0	5.8	4.6	2.0	5.9	4.8	1.0	0.8	0.9
Wood	54.5	54.3	54.4	54.3	54.2	54.2	67.1	51.4	61.3	52.0	55.6	54.5	51.6	55.5	54.3	67.1	52.5	61.3
Iron/metal	61.0	25.2	37.3	61.7	25.3	37.6	22.8	24.1	23.3	59.3	25.1	35.2	60.2	25.1	35.5	25.4	25.7	25.5
Screens	36.2	14.6	21.8	36.6	14.4	21.9	27.6	7.0	20.0	35.3	15.1	21.1	36.0	15.0	21.2	26.0	7.1	18.6
No windows	2.6	14.7	10.6	2.5	14.8	10.6	1.8	27.4	11.3	2.8	14.7	11.2	2.7	14.7	11.2	2.2	25.8	11.5
Other	3.1	8.6	6.7	3.1	8.6	6.8	3.1	8.9	5.3	3.3	8.1	6.7	3.3	8.2	6.7	3.0	9.0	5.4
Screening of external windows																		
All windows screened	58.5	20.4	33.2	58.4	19.8	32.9	57.3	32.3	48.0	57.5	20.5	31.5	57.3	19.9	31.0	58.6	31.4	48.0
No windows screened	33.9	73.9	60.4	34.1	74.9	61.1	25.9	41.9	31.9	34.0	73.4	61.7	34.4	74.5	62.5	26.1	43.6	32.9
Some windows screened	7.6	5.7	6.4	7.5	5.3	6.0	16.7	25.8	20.1	8.5	6.1	6.8	8.3	5.7	6.4	15.3	25.0	19.1
Type of screening on external windows																		
Wire mesh	62.8	19.1	33.9	62.6	18.2	33.3	70.9	35.9	57.9	62.5	19.7	32.4	62.1	18.8	31.7	70.7	37.2	57.6
Old bednet	1.2	2.2	1.8	1.2	2.1	1.8	1.0	7.6	3.5	1.3	2.1	1.8	1.2	2.0	1.8	0.7	6.8	3.1
No windows screened	33.9	73.9	60.4	34.1	74.9	61.1	25.9	41.9	31.9	34.0	73.4	61.7	34.4	74.5	62.5	26.1	43.6	32.9
No windows	0.9	1.4	1.2	0.9	1.2	1.1	0.9	11.1	4.7	0.8	1.2	1.1	0.8	1.1	1.0	0.8	8.6	3.9
Other	1.2	3.5	2.7	1.2	3.5	2.7	1.3	3.4	2.1	1.5	3.6	3.0	1.4	3.6	3.0	1.8	3.7	2.5
Number of households/ population	3,145	6,185	9,330	3,086	6,021	9,107	140	82	223	13,074	30,920	43,994	12,710	30,039	42,748	757	489	1,245

Table 2.4 Household possessions

Percentage of households possessing various household effects, means of transportation, agricultural land, and livestock/farm animals, by residence, Tanzania MIS 2017

	Residence			Mainland			Zanzibar		
Possession	Urban	Rural	Total	Urban	Rural	Total	Unguja	Pemba	Total
Household effects									
Radio	65.5	40.8	49.1	65.6	40.7	49.1	61.6	26.7	48.7
Television	49.2	9.6	23.0	49.0	9.2	22.7	45.9	16.7	35.1
Mobile phone	93.0	75.7	81.5	92.9	75.4	81.3	92.7	87.3	90.7
Computer	6.9	1.1	3.1	6.8	1.1	3.0	9.1	1.4	6.3
Non-mobile telephone	1.7	0.3	0.8	1.7	0.3	0.8	1.3	0.7	1.1
Refrigerator	19.5	2.0	7.9	19.0	1.5	7.4	35.9	13.8	27.7
Battery	6.9	12.6	10.7	7.0	12.9	10.9	1.3	0.4	0.9
Iron	45.4	18.8	27.8	45.1	18.5	27.5	47.4	17.0	36.1
Means of transport									
Bicycle	25.0	45.9	38.8	24.7	45.8	38.7	46.1	45.1	45.7
Animal-drawn cart	1.2	4.4	3.3	1.2	4.5	3.4	2.2	1.1	1.8
Motorcycle/scooter	11.5	11.1	11.2	11.2	11.0	11.0	21.7	11.2	17.8
Car/truck	5.9	1.4	2.9	5.7	1.4	2.8	10.4	3.2	7.8
Boat with a motor	0.3	0.5	0.4	0.3	0.5	0.4	0.5	1.0	0.7
Ownership of agricultural land	29.5	78.5	62.0	29.7	79.6	62.7	25.0	47.5	33.3
Ownership of farm animals[1]	30.8	68.8	56.0	30.8	69.4	56.4	30.6	61.3	42.0
Number	3,145	6,185	9,330	3,086	6,021	9,107	140	82	223

[1] Cows, bulls, other cattle, horses, donkeys, goats, sheep, chickens, or other poultry

Table 2.5 Wealth quintiles

Percent distribution of the de jure population by wealth quintiles, and the Gini coefficient, according to residence and region, Tanzania MIS 2017

Residence/region	Wealth quintile					Total	Number of persons	Gini coefficient
	Lowest	Second	Middle	Fourth	Highest			
Residence								
Urban	2.3	2.5	9.2	29.5	56.5	100.0	13,074	0.16
Rural	27.5	27.5	24.5	16.0	4.6	100.0	30,920	0.39
Mainland/Zanzibar								
Mainland	20.5	20.5	20.1	19.5	19.4	100.0	42,748	0.44
Urban	2.3	2.6	9.3	29.6	56.2	100.0	12,710	0.16
Rural	28.2	28.1	24.6	15.3	3.8	100.0	30,039	0.38
Zanzibar	3.3	5.0	15.7	36.1	40.0	100.0	1,245	0.27
Unguja	0.3	1.4	7.0	38.8	52.5	100.0	757	0.19
Pemba	7.9	10.4	29.2	31.8	20.7	100.0	489	0.33
Zone								
Western	33.6	22.6	25.0	11.4	7.5	100.0	4,265	0.45
Northern	13.9	12.1	16.3	28.0	29.6	100.0	4,673	0.37
Central	30.7	30.9	21.6	12.1	4.7	100.0	4,528	0.29
Southern Highlands	13.6	23.1	28.6	20.7	14.1	100.0	2,567	0.42
Southern	24.0	23.0	22.6	17.1	13.2	100.0	2,033	0.33
South West Highlands	18.5	20.5	28.7	20.8	11.5	100.0	4,684	0.40
Lake	23.6	24.8	19.8	19.8	12.0	100.0	12,755	0.44
Eastern	7.9	9.0	9.8	22.5	50.8	100.0	7,244	0.25
Zanzibar	3.3	5.0	15.7	36.1	40.0	100.0	1,245	0.27
Region								
Dodoma	27.5	32.2	21.1	13.5	5.7	100.0	1,964	0.45
Arusha	10.4	2.6	8.0	34.0	45.0	100.0	1,399	0.28
Kilimanjaro	0.5	5.2	20.8	34.8	38.7	100.0	1,283	0.32
Tanga	25.0	23.3	19.2	19.5	13.0	100.0	1,991	0.47
Morogoro	16.3	21.3	20.5	21.0	20.9	100.0	2,431	0.39
Pwani	16.4	12.2	16.6	26.0	28.9	100.0	1,087	0.38
Dar es Salaam	0.0	0.0	0.9	22.4	76.7	100.0	3,726	0.10
Lindi	22.3	25.7	18.5	15.9	17.6	100.0	749	0.48
Mtwara	25.0	21.5	25.0	17.9	10.6	100.0	1,284	0.29
Ruvuma	18.9	21.4	24.5	20.4	14.8	100.0	1,009	0.48
Iringa	12.7	22.3	24.2	19.2	21.6	100.0	804	0.43
Mbeya	22.7	16.6	21.2	23.2	16.4	100.0	1,360	0.38
Singida	34.2	37.5	14.9	10.4	3.0	100.0	1,333	0.38
Tabora	46.7	19.0	15.2	10.1	9.0	100.0	2,474	0.52
Rukwa	18.2	24.0	35.3	17.1	5.5	100.0	1,775	0.42
Kigoma	15.5	27.5	38.5	13.2	5.4	100.0	1,790	0.36
Shinyanga	26.8	23.1	22.5	14.1	13.5	100.0	1,367	0.52
Kagera	14.6	31.1	26.1	20.7	7.5	100.0	2,188	0.46
Mwanza	17.9	17.0	18.6	25.2	21.3	100.0	3,739	0.44
Mara	28.8	17.4	20.8	22.9	10.1	100.0	1,980	0.48
Manyara	31.9	21.8	29.7	11.6	5.0	100.0	1,231	0.29
Njombe	7.2	26.1	38.7	22.6	5.3	100.0	755	0.35
Katavi	15.8	22.9	30.0	20.1	11.1	100.0	438	0.44
Simiyu	41.6	38.9	7.9	7.7	3.9	100.0	1,560	0.43
Geita	22.6	30.1	21.7	19.0	6.7	100.0	1,921	0.47
Songwe	14.8	18.7	27.0	24.2	15.3	100.0	1,111	0.41
Kaskazini Unguja	0.7	1.5	14.2	60.6	22.9	100.0	162	0.20
Kusini Unguja	0.9	5.0	16.6	43.5	34.0	100.0	110	0.26
Mjini Magharibi	0.0	0.6	2.3	30.4	66.7	100.0	484	0.18
Kaskazini Pemba	12.7	13.4	28.9	31.9	13.1	100.0	276	0.32
Kusini Pemba	1.6	6.5	29.7	31.7	30.5	100.0	213	0.34
Total	20.0	20.0	20.0	20.0	20.0	100.0	43,994	0.34

Table 2.6 Household population by age, sex, and residence

Percent distribution of the de facto household population by age groups, according to sex and residence, Tanzania MIS 2017

	Urban			Rural			Tanzania		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	15.9	14.8	15.3	18.7	17.5	18.1	17.9	16.6	17.3
5-9	14.2	12.8	13.4	16.7	15.4	16.0	16.0	14.6	15.3
10-14	11.2	12.1	11.7	15.4	13.8	14.6	14.2	13.2	13.7
15-19	9.9	10.0	10.0	10.0	8.1	9.0	10.0	8.7	9.3
20-24	9.1	11.0	10.1	6.2	7.4	6.8	7.0	8.5	7.8
25-29	7.8	9.3	8.6	5.5	6.6	6.1	6.1	7.5	6.8
30-34	7.0	6.6	6.8	5.0	5.5	5.2	5.5	5.8	5.7
35-39	6.7	6.0	6.3	4.6	5.0	4.8	5.2	5.3	5.2
40-44	4.8	4.8	4.8	3.8	4.3	4.1	4.1	4.4	4.3
45-49	3.5	3.3	3.4	3.3	3.4	3.4	3.4	3.4	3.4
50-54	3.1	2.9	3.0	2.4	3.1	2.7	2.6	3.0	2.8
55-59	2.2	1.8	2.0	2.1	2.2	2.2	2.1	2.1	2.1
60-64	1.6	1.9	1.8	1.8	2.3	2.0	1.7	2.2	2.0
65-69	1.0	0.7	0.8	1.6	1.5	1.5	1.4	1.2	1.3
70-74	0.8	0.8	0.8	0.9	1.3	1.1	0.9	1.2	1.0
75-79	0.5	0.5	0.5	0.8	0.9	0.8	0.7	0.8	0.7
80+	0.5	0.6	0.6	1.0	1.5	1.3	0.9	1.2	1.1
Don't know/missing	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Dependency age groups									
0-14	41.3	39.7	40.4	50.8	46.7	48.7	48.1	44.5	46.2
15-64	55.7	57.7	56.7	44.6	47.8	46.3	47.8	50.8	49.4
65+	2.8	2.6	2.7	4.3	5.2	4.8	3.9	4.4	4.2
Don't know/missing	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Child and adult populations									
0-17	47.8	46.0	46.8	57.3	51.7	54.4	54.6	49.9	52.2
18+	52.1	53.9	53.1	42.4	48.0	45.3	45.2	49.8	47.6
Don't know/missing	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Adolescents 10-19	21.2	22.1	21.6	25.4	21.9	23.6	24.2	21.9	23.0
Number of persons	5,989	6,963	12,952	14,940	15,617	30,557	20,930	22,580	43,510

Table 2.7 Household composition

Percent distribution of households by sex of head of household and by household size, mean size of household, and percentage of households with orphans and foster children under age 18 years, according to residence, Tanzania MIS 2017

	Residence			Mainland			Zanzibar		
Characteristic	Urban	Rural	Total	Urban	Rural	Total	Unguja	Pemba	Total
Household headship									
Male	74.4	74.6	74.6	74.3	74.5	74.4	79.8	78.5	79.4
Female	25.6	25.4	25.4	25.7	25.5	25.6	20.2	21.5	20.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of usual members									
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	14.7	8.8	10.8	14.9	8.9	10.9	5.8	3.4	4.9
2	12.7	11.0	11.6	12.8	11.0	11.6	9.5	8.6	9.2
3	14.9	13.6	14.1	15.1	13.7	14.2	10.3	8.7	9.7
4	18.5	15.1	16.2	18.6	15.1	16.3	16.1	8.7	13.4
5	12.8	14.3	13.8	12.8	14.4	13.8	13.6	12.8	13.3
6	11.0	12.1	11.7	11.0	12.1	11.7	12.0	15.8	13.4
7	6.8	8.8	8.1	6.7	8.6	8.0	10.3	16.3	12.5
8	4.0	6.1	5.4	3.8	6.0	5.3	10.1	9.2	9.8
9+	4.6	10.1	8.3	4.3	10.1	8.1	12.3	16.4	13.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean size of households	4.2	5.0	4.7	4.1	5.0	4.7	5.4	5.9	5.6
Number of households	3,145	6,185	9,330	3,086	6,021	9,107	140	82	223

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, Tanzania MIS 2017

Background characteristic	Women		
	Weighted percent	Weighted number	Unweighted number
Age			
15-19	19.8	1,988	2,132
20-24	19.5	1,956	1,906
25-29	17.2	1,720	1,657
30-34	13.3	1,335	1,323
35-39	12.1	1,213	1,210
40-44	10.3	1,033	1,013
45-49	7.7	775	777
Education			
No education	16.4	1,645	1,827
Primary incomplete	13.2	1,323	1,459
Primary complete	47.4	4,753	4,396
Secondary+	22.9	2,296	2,336
Residence			
Urban	36.1	3,616	2,957
Rural	63.9	6,402	7,061
Mainland/Zanzibar			
Mainland	96.9	9,711	8,989
Urban	35.1	3,520	2,599
Rural	61.8	6,192	6,390
Zanzibar	3.1	307	1,029
Unguja	2.0	196	622
Pemba	1.1	111	407
Zone			
Western	8.5	855	948
Northern	11.5	1,150	603
Central	8.5	856	616
Southern Highlands	5.7	568	731
Southern	5.2	520	780
South West Highlands	10.4	1,044	1,116
Lake	27.1	2,717	3,015
Eastern	20.0	2,002	1,180
Zanzibar	3.1	307	1,029
Region			
Dodoma	3.6	364	190
Arusha	3.8	376	210
Kilimanjaro	3.3	330	194
Tanga	4.4	444	199
Morogoro	5.9	591	419
Pwani	2.7	267	426
Dar es Salaam	11.4	1,144	335
Lindi	1.9	189	386
Mtwara	3.3	331	394
Ruvuma	2.3	228	386
Iringa	1.7	172	179
Mbeya	3.1	315	204
Singida	2.6	262	228
Tabora	4.8	480	485
Rukwa	3.9	395	203
Kigoma	3.7	375	463
Shinyanga	3.0	299	505
Kagera	4.9	490	396
Mwanza	8.2	823	512
Mara	4.0	402	460
Manyara	2.3	229	198
Njombe	1.7	167	166
Katavi	0.9	93	530
Simiyu	3.2	321	626
Geita	3.8	382	516
Songwe	2.4	241	179
Kaskazini Unguja	0.4	38	194
Kusini Unguja	0.3	26	146
Mjini Magharibi	1.3	132	282
Kaskazini Pemba	0.6	62	212
Kusini Pemba	0.5	49	195

(Continued…)

Table 2.8—*Continued*

Background characteristic	Women		
	Weighted percent	Weighted number	Unweighted number
Wealth quintile			
Lowest	16.5	1,652	1,808
Second	17.1	1,714	1,852
Middle	18.7	1,874	1,972
Fourth	21.5	2,152	2,202
Highest	26.2	2,626	2,184
Total 15-49	100.0	10,018	10,018

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

Table 2.9 Educational attainment of interviewed women

Percent distribution of women age 15-49 by highest level of schooling attended or completed, and median years completed, according to background characteristics, Tanzania MIS 2017

Background characteristic	Education					Total	Median years completed	Number of women
	No education	Some primary	Completed primary[1]	Some secondary	Completed secondary or higher[2]			
Age								
15-24	9.9	13.8	40.6	18.9	17.0	100.0	6.6	3,944
15-19	9.3	16.2	36.7	27.1	10.7	100.0	6.6	1,988
20-24	10.4	11.2	44.5	10.5	23.4	100.0	6.6	1,956
25-29	18.8	11.3	42.9	7.0	20.0	100.0	6.5	1,720
30-34	23.9	13.5	49.0	4.2	9.4	100.0	6.3	1,335
35-39	19.7	13.3	58.7	2.6	5.7	100.0	6.3	1,213
40-44	19.5	14.7	57.3	1.9	6.7	100.0	6.3	1,033
45-49	22.3	12.1	59.3	1.5	4.8	100.0	6.3	775
Residence								
Urban	7.4	9.3	47.1	13.2	22.9	100.0	6.7	3,616
Rural	21.5	15.4	47.6	7.9	7.6	100.0	6.3	6,402
Mainland/Zanzibar								
Mainland	16.5	13.2	48.7	9.0	12.7	100.0	6.4	9,711
Urban	7.3	9.2	48.3	12.5	22.7	100.0	6.7	3,520
Rural	21.7	15.4	49.0	6.9	7.0	100.0	6.3	6,192
Zanzibar	14.6	13.8	7.4	37.1	27.1	100.0	8.2	307
Unguja	7.9	12.6	9.2	38.3	31.9	100.0	8.5	196
Pemba	26.5	15.9	4.1	34.9	18.6	100.0	7.3	111
Zone								
Western	31.1	14.7	43.1	5.1	6.1	100.0	6.1	855
Northern	9.5	8.5	48.2	12.3	21.4	100.0	6.7	1,150
Central	22.8	11.3	49.1	8.7	8.0	100.0	6.3	856
Southern Highlands	13.8	10.5	52.9	8.6	14.2	100.0	6.5	568
Southern	19.5	14.7	52.1	6.9	6.8	100.0	6.3	520
South West Highlands	18.7	17.2	48.3	8.3	7.5	100.0	6.3	1,044
Lake	16.7	17.1	48.2	9.2	8.8	100.0	6.3	2,717
Eastern	10.0	9.1	50.1	9.4	21.4	100.0	6.6	2,002
Zanzibar	14.6	13.8	7.4	37.1	27.1	100.0	8.2	307
Region								
Dodoma	25.1	6.9	50.1	10.1	7.9	100.0	6.4	364
Arusha	7.0	3.6	50.5	8.2	30.7	100.0	6.8	376
Kilimanjaro	2.0	9.0	45.4	20.6	23.0	100.0	6.9	330
Tanga	17.3	12.3	48.4	9.6	12.4	100.0	6.4	444
Morogoro	15.0	10.9	52.8	7.0	14.4	100.0	6.5	591
Pwani	21.0	8.5	50.0	8.6	11.9	100.0	6.4	267
Dar es Salaam	4.9	8.3	48.8	10.8	27.2	100.0	6.8	1,144
Lindi	19.7	15.4	49.4	4.4	11.1	100.0	6.3	189
Mtwara	19.3	14.3	53.6	8.3	4.4	100.0	6.3	331
Ruvuma	10.5	10.2	54.6	9.4	15.3	100.0	6.5	228
Iringa	11.5	9.8	58.9	4.6	15.2	100.0	6.5	172
Mbeya	17.2	10.9	53.8	8.8	9.3	100.0	6.4	315
Singida	27.2	12.4	49.3	5.1	5.9	100.0	6.2	262
Tabora	35.8	16.7	36.7	4.9	5.8	100.0	4.8	480
Rukwa	22.3	23.6	40.9	8.3	5.0	100.0	6.1	395
Kigoma	24.9	12.2	51.2	5.3	6.4	100.0	6.2	375
Shinyanga	20.4	17.3	47.3	8.3	6.7	100.0	6.3	299
Kagera	16.3	18.4	48.4	7.6	9.3	100.0	6.3	490
Mwanza	11.1	14.0	49.9	13.0	12.0	100.0	6.5	823
Mara	10.8	18.9	53.4	8.6	8.4	100.0	6.4	402
Manyara	14.2	17.0	47.4	10.7	10.7	100.0	6.4	229
Njombe	20.7	11.8	44.2	11.4	11.9	100.0	6.4	167
Katavi	23.6	28.3	35.6	6.3	6.1	100.0	5.5	93
Simiyu	23.9	17.9	48.7	4.5	5.1	100.0	6.2	321
Geita	26.9	19.1	38.9	8.2	6.8	100.0	6.1	382
Songwe	12.9	10.5	58.2	8.6	9.9	100.0	6.5	241
Kaskazini Unguja	12.1	9.5	9.9	39.3	29.2	100.0	8.6	38
Kusini Unguja	2.5	14.5	16.8	43.3	22.8	100.0	8.5	26
Mjini Magharibi	7.8	13.1	7.6	37.1	34.4	100.0	8.5	132
Kaskazini Pemba	35.6	19.5	3.0	26.9	15.0	100.0	4.6	62
Kusini Pemba	14.9	11.3	5.6	45.2	23.0	100.0	8.1	49
Wealth quintile								
Lowest	36.2	19.3	40.5	2.6	1.3	100.0	4.5	1,652
Second	24.4	17.2	51.0	4.8	2.6	100.0	6.2	1,714
Middle	17.4	16.2	50.6	9.5	6.3	100.0	6.3	1,874
Fourth	9.6	11.3	52.2	14.1	12.8	100.0	6.6	2,152
Highest	3.7	6.2	43.3	14.3	32.5	100.0	6.9	2,626
Total	16.4	13.2	47.4	9.8	13.1	100.0	6.4	10,018

[1] Completed grade 7 at the primary level
[2] Completed grade 4 at the secondary level or went on to higher education

Table 2.10 Literacy of interviewed women

Percent distribution of women age 15-49 by level of schooling attended and level of literacy, and percentage literate, according to background characteristics, Tanzania MIS 2017

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	Blind/visually impaired	Total	Percentage literate[1]	Number of women
Age								
15-24	1.2	74.6	5.8	18.3	0.1	100.0	81.6	3,944
15-19	0.1	76.4	5.2	18.3	0.0	100.0	81.6	1,988
20-24	2.4	72.8	6.4	18.3	0.1	100.0	81.6	1,956
25-29	2.2	65.7	6.8	25.3	0.0	100.0	74.7	1,720
30-34	2.2	63.4	5.6	28.7	0.0	100.0	71.2	1,335
35-39	0.5	63.9	7.7	27.8	0.1	100.0	72.1	1,213
40-44	1.6	61.9	7.1	29.3	0.1	100.0	70.5	1,033
45-49	0.3	55.7	10.4	33.1	0.5	100.0	66.4	775
Residence								
Urban	3.0	79.8	5.7	11.5	0.0	100.0	88.5	3,616
Rural	0.5	60.6	7.2	31.6	0.1	100.0	68.3	6,402
Mainland/Zanzibar								
Mainland	1.3	67.4	6.6	24.6	0.1	100.0	75.3	9,711
Urban	2.9	79.8	5.8	11.5	0.0	100.0	88.5	3,520
Rural	0.4	60.3	7.1	32.0	0.1	100.0	67.8	6,192
Zanzibar	4.4	72.3	7.2	16.0	0.0	100.0	84.0	307
Unguja	5.8	80.1	5.3	8.9	0.0	100.0	91.1	196
Pemba	1.9	58.7	10.7	28.8	0.0	100.0	71.2	111
Zone								
Western	0.5	52.0	7.5	39.9	0.2	100.0	59.9	855
Northern	3.2	78.1	3.3	15.4	0.0	100.0	84.6	1,150
Central	0.5	62.8	7.0	29.4	0.4	100.0	70.3	856
Southern Highlands	1.2	69.7	8.9	20.3	0.0	100.0	79.7	568
Southern	0.5	62.6	6.7	30.1	0.2	100.0	69.8	520
Southern West Highlands	0.3	62.1	10.3	27.3	0.0	100.0	72.7	1,044
Lake	0.6	64.8	5.7	28.9	0.0	100.0	71.1	2,717
Eastern	2.7	76.5	6.8	13.8	0.2	100.0	86.0	2,002
Zanzibar	4.4	72.3	7.2	16.0	0.0	100.0	84.0	307
Region								
Dodoma	0.2	63.7	7.3	27.9	0.8	100.0	71.2	364
Arusha	6.4	76.0	4.4	13.2	0.0	100.0	86.8	376
Kilimanjaro	2.2	86.9	3.4	7.4	0.0	100.0	92.6	330
Tanga	1.1	73.4	2.4	23.1	0.0	100.0	76.9	444
Morogoro	3.1	66.8	7.0	22.7	0.4	100.0	76.9	591
Pwani	1.0	71.2	5.7	21.8	0.2	100.0	77.9	267
Dar es Salaam	2.9	82.8	6.9	7.4	0.0	100.0	92.6	1,144
Lindi	0.6	65.5	5.9	27.9	0.0	100.0	72.1	189
Mtwara	0.5	60.9	7.1	31.3	0.3	100.0	68.4	331
Ruvuma	1.0	71.2	6.7	21.2	0.0	100.0	78.8	228
Iringa	2.5	65.1	16.2	16.3	0.0	100.0	83.7	172
Mbeya	0.0	67.9	8.9	23.2	0.0	100.0	76.8	315
Singida	0.9	58.5	3.4	37.3	0.0	100.0	62.7	262
Tabora	0.7	45.6	7.9	45.6	0.2	100.0	54.2	480
Rukwa	0.8	56.7	12.4	30.2	0.0	100.0	69.8	395
Kigoma	0.2	60.1	6.8	32.5	0.3	100.0	67.2	375
Shinyanga	0.4	61.5	6.5	31.4	0.2	100.0	68.3	299
Kagera	0.6	65.2	4.6	29.5	0.0	100.0	70.5	490
Mwanza	1.1	76.0	4.5	18.5	0.0	100.0	81.5	823
Mara	0.6	63.4	3.8	32.2	0.0	100.0	67.8	402
Manyara	0.4	66.5	10.5	22.6	0.0	100.0	77.4	229
Njombe	0.1	72.3	4.4	23.2	0.0	100.0	76.8	167
Katavi	0.6	56.7	6.8	35.9	0.0	100.0	64.1	93
Simiyu	0.1	54.4	7.2	38.3	0.0	100.0	61.7	321
Geita	0.2	52.8	9.8	37.3	0.0	100.0	62.7	382
Songwe	0.0	65.7	9.9	24.4	0.0	100.0	75.6	241
Kaskazini Unguja	4.0	78.1	6.4	11.4	0.0	100.0	88.6	38
Kusini Unguja	0.8	90.3	4.8	4.0	0.0	100.0	96.0	26
Mjini Magharibi	7.3	78.6	5.0	9.1	0.0	100.0	90.9	132
Kaskazini Pemba	1.6	46.6	13.5	38.2	0.0	100.0	61.8	62
Kusini Pemba	2.1	74.0	7.0	16.8	0.0	100.0	83.2	49
Wealth quintile								
Lowest	0.0	41.2	8.7	49.8	0.3	100.0	49.9	1,652
Second	0.0	56.3	8.7	34.9	0.0	100.0	65.1	1,714
Middle	0.2	65.2	7.4	27.1	0.0	100.0	72.9	1,874
Fourth	0.4	77.7	5.9	15.8	0.2	100.0	84.0	2,152
Highest	4.9	84.6	4.1	6.5	0.0	100.0	93.5	2,626
Total	1.4	67.5	6.6	24.3	0.1	100.0	75.6	10,018

[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):

- About 3 in 4 households (78%) in Tanzania own at least 1 ITN.
- Forty-five percent of households have at least one ITN for every 2 people.

Sources of ITNs:

- More than half (62%) of ITNs owned by households were obtained from mass distribution campaigns, 15% from Shehia coupons, 10% from a shop/market, 4% from the School Net Programme (SNP), 4% from antenatal care visits, and 1% from routine immunisation visits.

Access to an ITN:

- Six in 10 people (63%) have access to an ITN. This means that 63% of Tanzania's population could sleep under an ITN if every ITN in a household were used by 2 people.

Use of ITNs:

- Fifty-two percent of the household population, 55% of children under age 5, and 51% of pregnant women slept under an ITN the night before the survey.
- In households with at least one ITN, 65% of the household population, 68% of children under age 5, and 68% of pregnant women slept under an ITN the night before the survey.

Intermittent preventive therapy (IPTp):

- To prevent malaria during pregnancy, 56% of pregnant women received at least 2 doses of SP/Fansidar and 26% received at least 3 doses.

This chapter describes population coverage rates for some of the key malaria control interventions in Tanzania, including ownership and use of insecticide-treated nets (ITNs) and intermittent preventive treatment during pregnancy (IPTp). Malaria control efforts focus on scaling up these interventions.

Mainland Tanzania and Zanzibar malaria strategic plans envisage universal coverage of the population with ITNs through routine distribution and mass campaigns in order to reduce the burden of malaria. The malaria plan for Mainland Tanzania is the National Malaria Control Programme (NMCP) Strategic Plan for Malaria 2015-2020, while the plan for Zanzibar is the Zanzibar Malaria Elimination Programme

(ZAMEP) Strategic Plan 2018/19-2022/23. Both programs support universal coverage campaigns and the use of continuous distribution channels, including delivery through antenatal care (ANC) and vaccination clinics, to maintain high coverage.

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 (long-lasting insecticidal net or LLIN).

Sample: Households

Full household ITN coverage

Percentage of households with at least one ITN for every 2 people.

Sample: Households

An ITN is defined as a factory-treated net that does not require any further treatment. In the 2015-16 TDHS-MIS, the definition of an ITN included nets that had been soaked with insecticides within the past 12 months. In the most recent questionnaire, The DHS Program dropped questions on retreatment of nets. This was done because bed nets that require annual retreatment and the products used for retreatment are no longer distributed, and the distinction between ITNs and long-lasting insecticide-treated nets (LLINs) is no longer meaningful. What are defined as ITNs in the 2017 TMIS were previously known as LLINs in the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS.

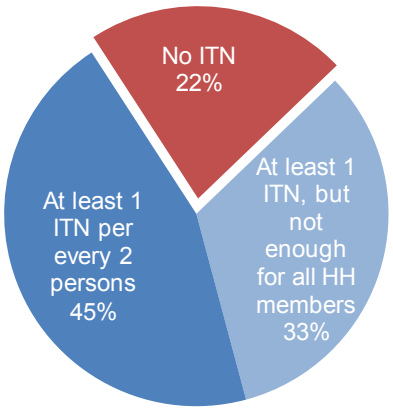
It is well understood that proper use of ITNs protects households and the entire local community from malaria. The distribution and use of ITNs is one of the central interventions for preventing malaria infection in Tanzania. In addition to reaching all households across the country with ITN distribution, the national strategy for both Mainland Tanzania and Zanzibar aims to provide enough ITNs to cover all household residents. This indicator is operationalised as one ITN for every 2 household members.

One of the NMCP's priorities is to increase ownership of at least one ITN for every 2 people to 85% by 2020 (NMCP 2014a). Similarly, ZAMEP prioritises increasing ownership of at least one ITN for every 2 people to 100% by 2022/2023 (ZAMEP 2017).

The 2017 TMIS revealed that 78% of households in Mainland Tanzania own at least one insecticide-treated net (ITN) (**Table 3.1**). Only 45% of households have one ITN for every 2 people who stayed in the household the night prior to the survey. Thus, to meet strategic goals, the scope of distribution needs to expand to reach the 22% of households that do not own an ITN. In addition, the quantity of ITNs distributed needs to be increased to provide sufficient ITNs for the 33% of households that own at least one ITN but have an insufficient supply for the number of household members (**Figure 3.1**).

Figure 3.1 **Household ownership of ITNs—Mainland Tanzania**

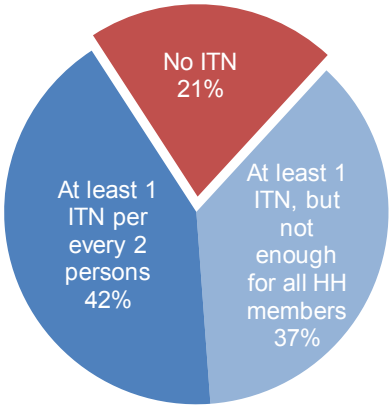
Percent distribution of households



In Zanzibar, 79% of households own at least one insecticide-treated net (ITN), with 42% having one ITN for every 2 people who stayed in the household the night prior to the survey. To meet strategic goals, the scope of distribution needs to expand to reach the 21% of households that do not own any ITNs. Also, the quantity of ITNs distributed needs to be increased to provide sufficient ITNs for the 37% of households that own at least one ITN but have an insufficient supply for the number of household members (**Figure 3.2**).

Figure 3.2 Household ownership of ITNs—Zanzibar

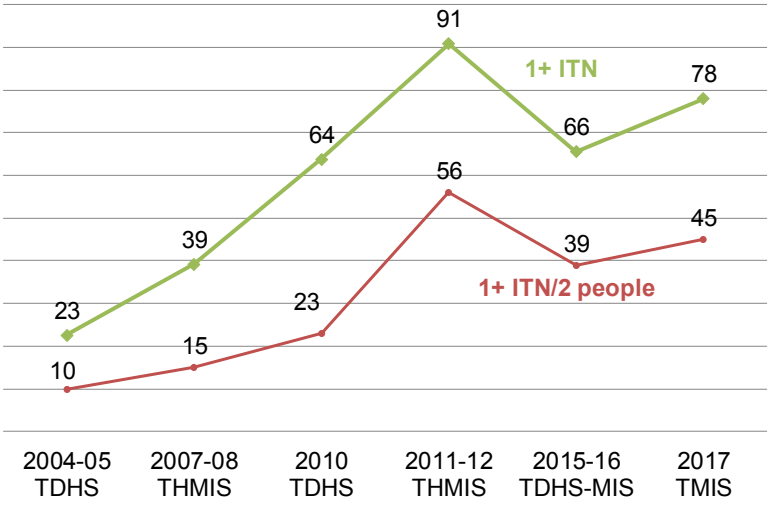
Percent distribution of households



Trends: Household ownership of at least one ITN increased substantially from 23% in the 2004-05 TDHS to 91% in the 2011-12 THMIS, declined to 66% in the 2015-16 TDHS-MIS, and then increased to 78% in the 2017 TMIS (**Figure 3.3**). The percentage of households with at least one ITN for every 2 persons who stayed in the household the night before the survey increased from 10% in the 2004-05 TDHS to 45% in the 2017 TMIS.

Figure 3.3 Trends in household ownership of ITNs

Percentage of households owning at least one insecticide-treated net (ITN) and percentage of households with at least one net for every two persons



Note: The definition of an ITN in surveys conducted prior to 2017 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 increases as household wealth increases, from 69% in the lowest wealth quintile to 83% in the fourth quintile (**Figure 3.4**).
- Across regions in Mainland Tanzania, the percentage of households with at least one ITN is highest in Pwani (89%) and lowest in Njombe (58%). In Zanzibar, Kusini Pemba has the highest percentage of households with at least one ITN (90%), and Mjini Magharibi has the lowest percentage (73%) (**Figure 3.5**).
- Households in Mainland urban are more likely to own at least one ITN for every 2 persons who stayed in the household the night before the survey (51%) than households in Mainland rural (43%). In Zanzibar, more households in Pemba (46%) than Unguja (40%) own at least one ITN for every 2 persons who stayed in the household the night before the survey.

Figure 3.4 **ITN ownership by household wealth**

Percentage of households with at least one ITN

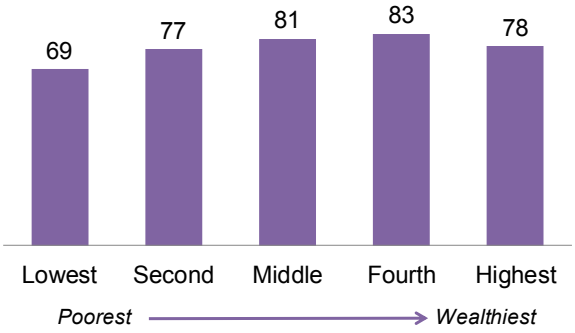
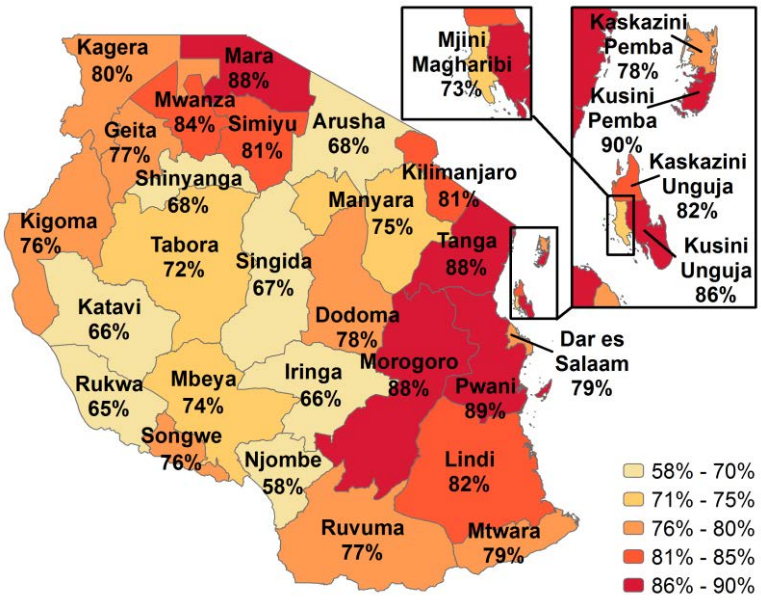


Figure 3.5 **ITN ownership by region**

Percentage of households with at least one ITN



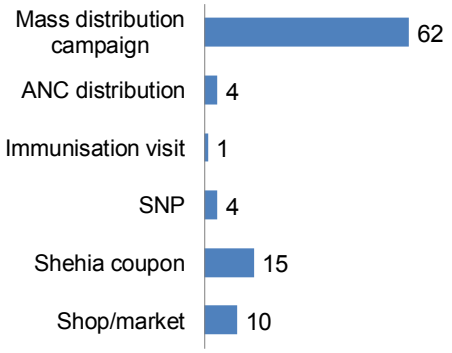
Source and Cost of Nets

The majority of ITNs owned by households (62%) were obtained through a mass distribution campaign (**Table 3.2**). Fifteen percent of ITNs were obtained using a Shehia coupon,[1] while 10% were obtained from a shop/market. Antenatal care (ANC) visits and the School Net Programm (SNP) each accounted for 4% of ITNs. Only 1% of ITNs were obtained during immunisation visits (**Figure 3.6**).

As part of the 2017 TMIS, households were asked if they paid for their nets and, if so, how much they paid in Tanzanian shillings (TSh). Eighty-three percent of nets in Tanzania were obtained for free, and 17% were purchased. The average cost for a net was 12,542 TSh. Eighty-nine percent of the nets obtained for free were ITNs (**Table 3.3**).

***Figure 3.6* Source of ITNs**

Percent distribution of ITNs in interviewed households



3.2 HOUSEHOLD ACCESS TO AND USE OF INSECTICIDE-TREATED NETS

Access to an ITN

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

Sample: De facto household population

Use of ITNs

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

Sample: De facto household population

ITNs act as a physical as well as a chemical barrier against mosquitoes. By reducing the vector population, ITNs may help to decrease malaria risk at both the community level and the individual level.

Access to an ITN is measured by the proportion of the population that could sleep under an ITN if each ITN in a household were used by 2 people. Comparing ITN access and ITN use indicators can help programmes identify behavioural gaps in which available ITNs are not being used. If the difference between these indicators is substantial, the programme may need to focus on behaviour change and how to identify the main drivers of or barriers to ITN use to design appropriate interventions. This analysis helps ITN programmes determine whether they need to achieve higher ITN coverage, promote ITN use, or both.

[1] A Shehia, the smallest administrative unit in a regional administration, comprises a population ranging from 1,000 to 3,000 people. A village committee, led by the village chief (sheha), determines who meets the criteria for a net and issues a coupon that can be redeemed for an ITN at a health facility.

Sixty-three percent of the population in Tanzania has access to an ITN (**Table 3.4.1** and **Table 3.4.2**), whereas 52% percent of the population reported having slept under an ITN the night before the survey (**Table 3.5**). Comparing these 2 population-level indicators, it is evident that there is a gap between ITN access and ITN use at the population level. The gap between access to and use of ITNs is largest in Mainland rural (14 percentage points) and smallest in Pemba (2 percentage points) (**Figure 3.7**).

Trends: The percentage of the household population with access to an ITN increased from 16% in the 2004-05 TDHS to 75% in the 2011-12 THMIS, dropped to 56% in the 2015-16 TDHS-MIS, and then rose to 63% in the 2017 TMIS**.** The percentage of the population that slept under an ITN the night before the survey increased from 15% in the 2004-05 TDHS to 68% in the 2011-12 THMIS, fell to 49% in the 2015-16 TDHS-MIS, and increased to 52% in the 2017 TMIS (**Figure 3.8**).

In households with at least one ITN, only 65% of household members slept under an ITN the previous night (**Table 3.5**). Overall, 67% of all existing ITNs were used the night before the survey (**Table 3.6**). The major reasons why mosquito nets were not used the night before the survey were that the net was being saved for later (40%) and that there were no mosquitoes (30%) (**Table 3.7**).

Figure 3.7 **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

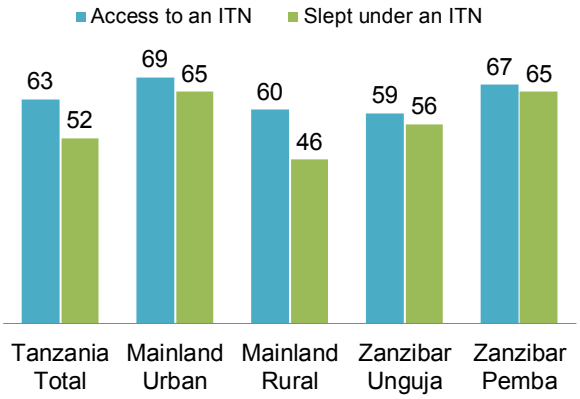
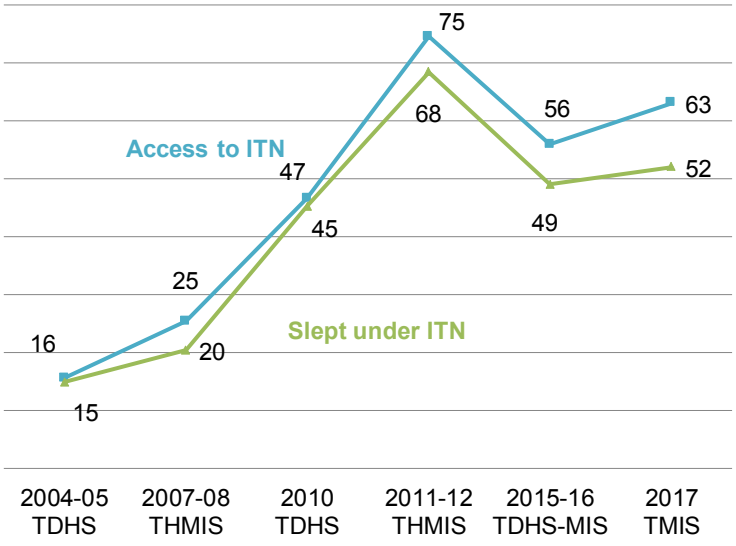


Figure 3.8 **Trends in ITN access and use**

Percentage of the household population with 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 2017 included nets that had been soaked with insecticides within the past 12 months.

Patterns by background characteristics

- The percentage of the population with access to an ITN generally increases with increasing household wealth, from 50% in the lowest wealth quintile to 71% in the fourth quintile.
- Across regions in Mainland Tanzania, the percentage of the population with access to an ITN ranges from 42% in Singida to 77% in Pwani. In Zanzibar, ITN access ranges from 52% in Mjini Magharibi to 77% in Kusini Pemba (**Figure 3.9**).

- In Mainland Tanzania, the percentage of the household population that slept under an ITN the previous night ranges from 16% in Njombe to 78% in Pwani. In Zanzibar, ITN use ranges from 50% in Mjini Magharibi to 73% in Kusini Unguja (**Figure 3.10**).

3.3 USE OF INSECTICIDE-TREATED NETS BY CHILDREN AND PREGNANT WOMEN

Children and pregnant women are more vulnerable to malaria infection than other population groups. Children under age 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 is gradually lost when the child starts to develop his/her own immunity to malaria. Age is an important factor in determining levels of acquired immunity to malaria, as acquired immunity does not prevent infection but rather protects against the severity of the disease and death. The pace at which immunity develops depends on the extent of exposure to malarial infection, and in highly malaria-endemic areas children are likely to attain a high level of immunity by their fifth birthday. Such children may experience episodes of malaria illness but usually do not suffer from severe, life-threatening symptoms.

Figure 3.9 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

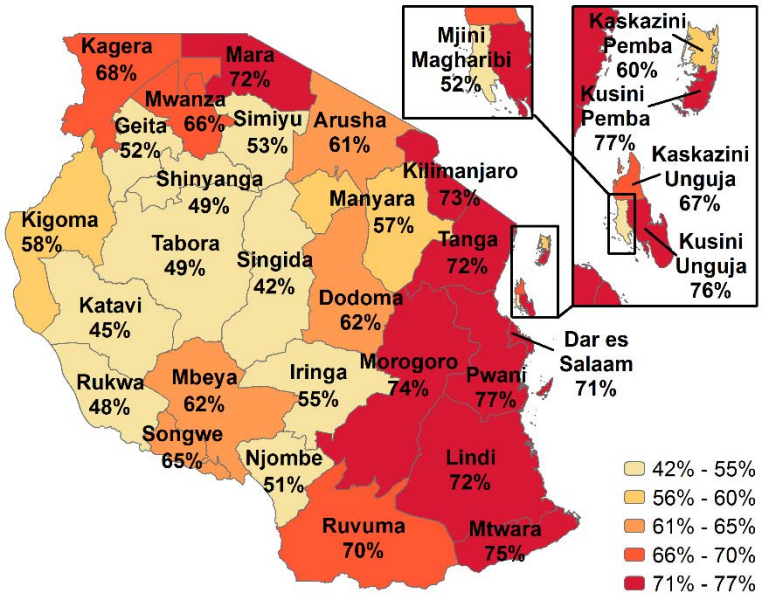
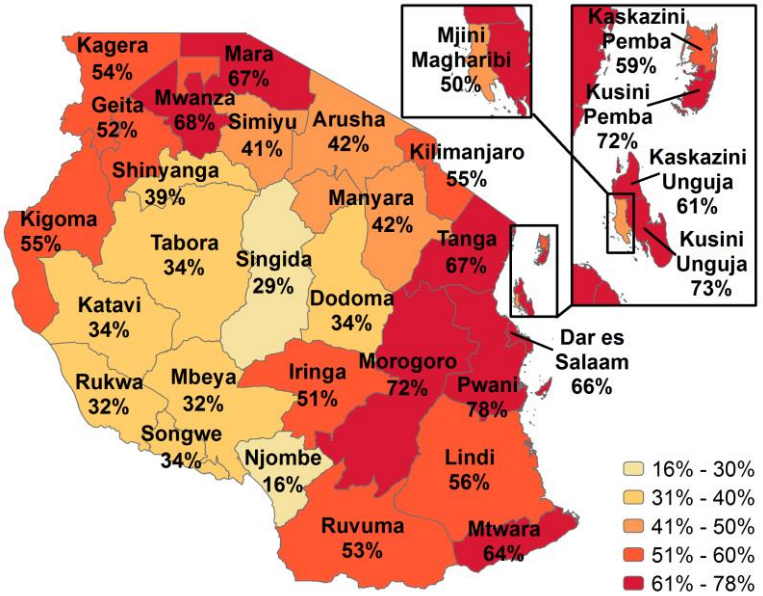


Figure 3.10 ITN use in the household population by region

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



Malaria transmission in Tanzania 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-foetus exchange and can lead to low birth weight infants, placental parasitaemia, foetal death, abortion, stillbirth, and prematurity (Shulman and Dorman 2003).

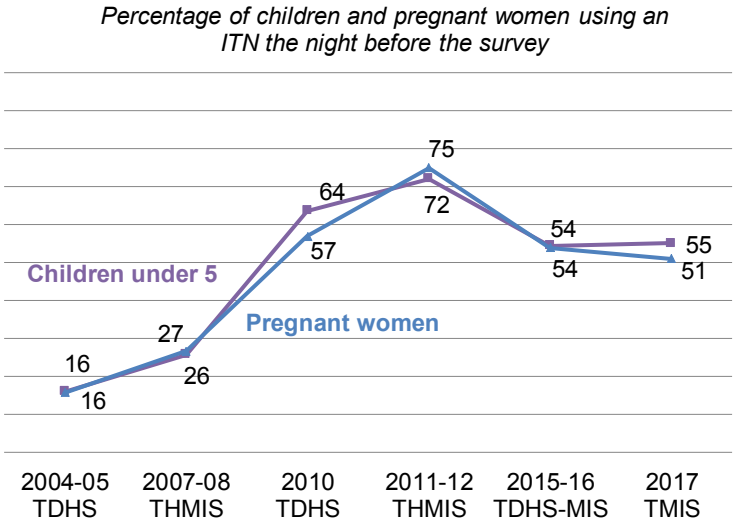
Both the NMCP and ZAMEP national strategic plans recommend that all children under age 5 and all pregnant women sleep under an ITN every night to prevent complications of malaria. **Table 3.8** and **Table**

3.9 show the percentage of children under age 5 and the percentage of pregnant women, respectively, who slept under an ITN the night before the survey. Overall, 55% of children under age 5 and 51% of pregnant women slept under an ITN the night before the survey.

Trends: The percentage of children under age 5 who slept under an ITN the night before the survey increased from 16% in the 2004-05 TDHS to 72% in the 2011-12 THMIS before decreasing to 55% in the 2017 TMIS (**Figure 3.11**).

Similarly, the percentage of pregnant women who slept under an ITN the night before the survey increased substantially from 16% in the 2004-05 TDHS to 75% in the 2011-12 THMIS and then fell to 51% in the 2017 TMIS.

Figure 3.11 **ITN use by children and pregnant women**



Note: The definition of an ITN in surveys conducted prior to 2017 included nets that had been soaked with insecticides within the past 12 months.

Patterns by background characteristics

- Sixty-seven percent of children under age 5 slept under an ITN in Mainland urban, as compared with 50% of children under age 5 in Mainland rural. In Zanzibar, 64% of children under age 5 in Unguja slept under an ITN, compared with 72% of children under age 5 in Pemba.
- Fifty-one percent of pregnant women in Mainland Tanzania and 63% of pregnant women in Zanzibar slept under an ITN the night before the survey.

3.4 MALARIA IN PREGNANCY

Intermittent preventive treatment (IPTp) during pregnancy (IPTp2+)
Percentage of women who took at least 2 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 3 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 public health problem in Tanzania, with substantial risks for the mother, her foetus, and the neonate. Intermittent preventive treatment (IPTp) of malaria in pregnancy is a full therapeutic course of antimalarial medicine (sulphadoxine/pyrimethamine [SP]) given to pregnant women at routine antenatal care visits to prevent malaria. Pregnant women, especially those pregnant for the first time, lose some degree of immunity and are susceptible to the disease. As noted, malaria in pregnancy is frequently associated with the development of anaemia. Moreover, malaria in pregnancy can become life threatening for the mother and child if not prevented early or appropriately treated.

Depending on treatment guidelines, preventive treatment during pregnancy such as use of sulphadoxine/pyrimethamine (more commonly known as Fansidar) is highly recommended. In Mainland Tanzania, it is recommended that all pregnant women attending ANC receive 3 or more doses of SP/Fansidar given as follows: one dose of SP/Fansidar at each ANC visit after the first trimester with at least a 1-month interval between doses (WHO 2012). Additionally, the NMCP has a policy of screening women via RDT at their first ANC visit and treating those who test positive according to national guidelines. If a woman is treated for malaria with an antimalarial at the ANC visit or received treatment in the preceding 4 weeks, it is not necessary to give her SP. Instead, she should be instructed to return in about a month for her next ANC visit, and IPTp-SP should be given at that time (NMCP 2014a).

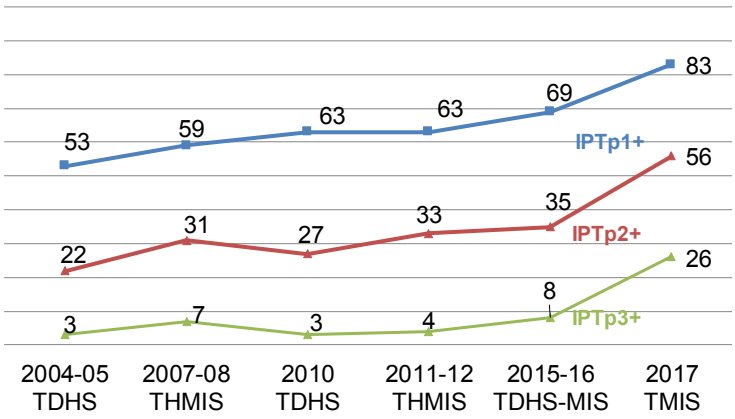
Zanzibar dropped the IPTp strategy in 2013 and has adopted a recommendation by partners to protect mothers using ITNs, screen all malaria-suspected pregnant mothers attending ANC, and treat confirmed cases according to national guidelines (ZAMEP 2017).

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 3 or more doses of SP/Fansidar to prevent malaria during their most recent pregnancy (IPTp3+).

Eighty-three percent of women age 15-49 with a live birth in the 2 years preceding the survey received one or more doses of SP/Fansidar to prevent malaria. Fifty-six percent of these women received 2 or more doses of SP/Fansidar, and 26% received 3 or more doses (**Table 3.10**).

Figure 3.12 **Trends in IPTp use by pregnant women**

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



Trends: The percentage of women receiving IPTp1+ increased from 53% in the 2004-05 TDHS to 83% in the 2017 TMIS, the percentage receiving IPTp2+ increased from 22% to 56% between these surveys, and the percentage receiving IPTp3+ increased from 3% to 26% between the 2 surveys. The most substantial increase in the percentage of women receiving IPTp3+ occurred between the 2015-16 TDHS-MIS and the 2017 TMIS (18 percentage points).

Patterns by background characteristics

- The use of IPTp3+ by women during pregnancy increases with increasing education, from 18% among those with no education to 31% among those with a secondary or higher education.
- In Mainland Tanzania, use of IPTp3+ ranges from 12% in Dodoma, Tabora, and Katavi to 47% in Mtwara.

List of Tables

For detailed information on malaria prevention, see the following tables:

- **Table 3.1 Household possession of mosquito nets**
- **Table 3.2 Source of mosquito nets**
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- **Table 3.4.2 Access to an insecticide-treated net by background characteristic**
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- **Table 3.6 Use of existing insecticide-treated nets**
- **Table 3.7 Reason for not using mosquito nets**
- **Table 3.8 Use of mosquito nets by children**
- **Table 3.9 Use of mosquito nets by pregnant women**
- **Table 3.10 Use of intermittent preventive treatment (IPTp) by women during pregnancy**

Table 3.1 Household possession of mosquito nets

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 2 persons who stayed in the household last night, according to background characteristics, Tanzania MIS 2017

Background characteristic	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 2 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	89.3	80.5	2.1	1.8	3,145	60.7	50.3	3,127
Rural	78.6	76.6	1.8	1.8	6,185	45.2	42.9	6,171
Mainland/Zanzibar								
Mainland	82.3	77.9	1.9	1.8	9,107	50.5	45.4	9,076
Urban	89.5	80.5	2.1	1.8	3,086	61.2	50.6	3,069
Rural	78.6	76.6	1.8	1.8	6,021	45.1	42.8	6,007
Zanzibar	81.1	79.4	2.1	2.0	223	44.5	42.4	222
Unguja	79.6	77.1	1.9	1.8	140	42.8	40.3	140
Pemba	83.6	83.2	2.3	2.2	82	47.4	46.0	82
Zone								
Western	75.2	73.7	1.8	1.7	730	33.8	31.5	729
Northern	84.5	80.0	2.0	1.8	1,125	57.7	52.9	1,124
Central	76.0	74.7	1.7	1.7	851	40.5	38.3	847
Southern Highlands	70.5	67.5	1.6	1.5	638	47.8	43.9	635
Southern	83.7	79.8	1.9	1.8	553	63.4	58.8	549
South West Highlands	74.9	70.6	1.5	1.4	1,075	45.5	41.8	1,071
Lake	85.0	80.8	2.1	2.0	2,327	43.5	38.9	2,322
Eastern	91.3	83.5	2.1	1.8	1,808	66.6	56.9	1,799
Zanzibar	81.1	79.4	2.1	2.0	223	44.5	42.4	222
Region								
Dodoma	79.5	78.4	1.9	1.8	394	50.4	47.6	392
Arusha	74.1	68.3	1.7	1.6	352	53.7	47.6	352
Kilimanjaro	88.5	81.3	2.2	2.0	323	69.8	61.8	322
Tanga	89.6	88.1	2.1	2.0	450	52.1	50.6	450
Morogoro	91.0	88.3	2.1	2.0	566	61.7	57.5	561
Pwani	93.6	88.8	2.2	2.1	251	68.0	61.8	251
Dar es Salaam	91.0	79.4	2.0	1.7	992	69.1	55.3	987
Lindi	83.9	81.5	1.8	1.8	206	63.2	60.2	204
Mtwara	83.6	78.8	2.0	1.8	347	63.5	58.0	345
Ruvuma	83.0	77.0	2.0	1.8	238	59.3	51.8	235
Iringa	67.9	65.8	1.4	1.4	196	38.9	36.8	196
Mbeya	77.7	73.5	1.7	1.6	324	53.0	47.7	324
Singida	69.4	67.4	1.4	1.4	226	27.6	25.2	226
Tabora	73.5	71.9	1.8	1.7	398	32.4	29.6	397
Rukwa	71.1	65.3	1.3	1.2	409	39.5	37.0	409
Kigoma	77.4	75.9	1.8	1.7	333	35.5	33.6	332
Shinyanga	75.9	68.2	1.8	1.6	231	37.6	28.0	230
Kagera	85.6	79.9	1.9	1.8	520	54.6	48.3	520

(Continued…)

Table 3.1—*Continued*

Background characteristic	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 2 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]	
Mwanza	88.5	83.5	2.3	2.1	688	43.9	38.9	688
Mara	91.5	88.4	2.4	2.3	366	50.1	46.9	362
Manyara	76.5	75.3	1.8	1.7	231	36.2	35.3	229
Njombe	58.5	58.1	1.3	1.3	204	42.9	41.7	203
Katavi	72.2	66.3	1.7	1.5	71	33.8	27.0	71
Simiyu	81.5	80.9	2.3	2.2	207	32.9	31.4	207
Geita	77.7	76.5	1.8	1.7	315	28.3	26.8	315
Songwe	78.1	76.4	1.7	1.7	270	48.7	45.7	267
Kaskazini Unguja	84.9	81.5	2.1	2.0	34	59.3	56.4	34
Kusini Unguja	86.2	86.2	2.0	2.0	26	55.2	55.2	25
Mjini Magharibi	75.2	72.5	1.8	1.7	81	32.0	28.8	81
Kaskazini Pemba	77.8	77.8	2.0	2.0	45	39.7	39.4	45
Kusini Pemba	90.6	89.6	2.6	2.5	37	56.7	53.9	37
Wealth quintile								
Lowest	69.8	69.0	1.5	1.5	1,673	34.2	33.4	1,666
Second	77.8	76.6	1.7	1.7	1,695	39.6	38.9	1,688
Middle	82.5	81.0	1.9	1.9	1,809	48.3	46.3	1,807
Fourth	88.3	83.1	2.1	1.9	2,040	59.3	54.3	2,033
Highest	89.7	78.4	2.2	1.8	2,113	64.9	50.6	2,104
Total	82.3	77.9	1.9	1.8	9,330	50.4	45.4	9,298

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, 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, Tanzania MIS 2017

Background characteristic	Mass distribution campaign	ANC visit	Immunisation visit	SNP	Shehia coupon	Government/ private health facility	Pharmacy	Shop/market	Other	Don't know/ missing	Total	Number of mosquito nets
Type of net												
ITN[1]	62.0	3.6	1.4	4.4	15.3	0.2	0.4	10.1	2.4	0.1	100.0	16,623
Other[2]	0.0	0.0	0.0	0.0	0.0	0.2	0.3	94.9	3.7	0.8	100.0	1,300
Residence												
Urban	46.2	2.1	0.8	2.5	15.2	0.1	0.5	30.1	2.2	0.3	100.0	6,511
Rural	64.0	4.1	1.6	5.1	13.7	0.3	0.3	8.3	2.7	0.0	100.0	11,413
Mainland/Zanzibar												
Mainland	57.3	3.4	1.3	4.2	14.1	0.2	0.4	16.4	2.6	0.1	100.0	17,465
Urban	46.1	2.1	0.8	2.5	15.1	0.1	0.5	30.3	2.2	0.3	100.0	6,387
Rural	63.8	4.1	1.6	5.2	13.5	0.3	0.3	8.4	2.8	0.0	100.0	11,078
Zanzibar	65.2	2.5	0.9	0.3	20.3	0.2	0.2	9.1	0.9	0.4	100.0	459
Unguja	62.9	3.1	1.4	0.5	17.5	0.2	0.2	12.8	0.9	0.6	100.0	270
Pemba	68.5	1.6	0.3	0.0	24.5	0.2	0.1	3.8	1.0	0.1	100.0	188
Zone												
Western	69.8	1.4	0.5	0.5	10.1	0.0	0.0	13.7	3.4	0.6	100.0	1,324
Northern	61.6	2.2	0.4	0.8	20.8	0.1	0.1	12.6	1.3	0.0	100.0	2,259
Central	66.9	1.8	0.4	0.3	21.2	0.0	0.0	9.0	0.4	0.1	100.0	1,479
Southern Highlands	45.5	5.6	1.3	18.9	13.0	0.7	0.0	12.6	2.4	0.0	100.0	1,020
Southern	18.9	7.2	3.1	21.5	3.9	0.1	0.1	30.7	14.2	0.3	100.0	1,067
South West Highlands	83.2	1.8	0.1	0.4	2.3	0.4	2.5	9.0	0.5	0.0	100.0	1,665
Lake	58.9	6.5	3.1	4.5	11.9	0.3	0.1	11.8	3.1	0.1	100.0	4,910
Eastern	47.2	0.5	0.1	1.6	20.0	0.0	0.4	29.0	0.9	0.2	100.0	3,741
Zanzibar	65.2	2.5	0.9	0.3	20.3	0.2	0.2	9.1	0.9	0.4	100.0	459
Region												
Dodoma	59.4	1.2	0.2	0.0	26.6	0.0	0.0	12.2	0.2	0.2	100.0	756
Arusha	60.8	1.7	0.0	0.3	19.0	0.2	0.0	16.6	1.3	0.0	100.0	612
Kilimanjaro	63.1	3.1	0.5	0.3	15.3	0.0	0.0	14.9	2.7	0.0	100.0	720
Tanga	61.1	1.9	0.6	1.6	26.3	0.0	0.2	8.1	0.2	0.0	100.0	927
Morogoro	71.0	0.7	0.0	1.6	10.2	0.1	0.1	15.2	1.0	0.1	100.0	1,202
Pwani	51.4	0.5	0.1	1.1	24.7	0.0	0.3	20.4	1.4	0.0	100.0	562
Dar es Salaam	31.6	0.3	0.2	1.7	24.6	0.0	0.7	39.9	0.7	0.3	100.0	1,976
Lindi	13.3	8.7	3.9	28.6	4.8	0.3	0.2	32.2	8.0	0.0	100.0	378
Mtwara	22.0	6.4	2.7	17.6	3.4	0.0	0.0	29.9	17.6	0.5	100.0	689
Ruvuma	24.6	9.3	1.3	38.7	2.9	0.0	0.0	18.3	4.8	0.0	100.0	483
Iringa	66.7	0.8	0.0	0.0	21.0	0.0	0.0	11.5	0.0	0.0	100.0	272
Mbeya	83.7	1.4	0.0	0.9	0.6	0.0	3.0	9.4	0.9	0.0	100.0	557
Singida	69.8	1.7	0.6	0.2	18.7	0.0	0.0	7.5	1.4	0.0	100.0	320
Tabora	57.7	0.8	0.5	0.9	18.2	0.0	0.0	17.3	3.6	0.9	100.0	735
Rukwa	82.7	2.4	0.0	0.0	0.4	0.0	4.5	10.0	0.0	0.0	100.0	522
Kigoma	84.9	2.1	0.5	0.0	0.0	0.0	0.1	9.1	3.0	0.2	100.0	589
Shinyanga	51.9	2.3	0.4	0.7	26.1	0.1	0.2	17.8	0.5	0.0	100.0	420
Kagera	71.6	7.6	2.6	3.6	0.9	1.4	0.1	7.2	5.2	0.0	100.0	990

(Continued…)

Table 3.2—*Continued*

Background characteristic	Mass distribution campaign	ANC visit	Immunization visit	SNP	Shehia coupon	Government/ private health facility	Pharmacy	Shop/market	Other	Don't know/ missing	Total	Number of mosquito nets
Mwanza	65.0	8.5	3.8	3.1	0.0	0.0	0.0	16.1	3.4	0.0	100.0	1,581
Mara	42.8	5.6	3.7	14.7	16.2	0.0	0.1	12.1	4.6	0.3	100.0	884
Manyara	78.7	3.0	0.4	0.9	12.9	0.0	0.0	4.1	0.0	0.0	100.0	404
Njombe	61.6	3.8	2.6	2.1	23.3	2.9	0.0	3.4	0.4	0.0	100.0	265
Katavi	64.4	1.4	0.1	1.0	12.4	0.8	0.5	17.9	1.4	0.0	100.0	118
Simiyu	52.3	5.0	2.5	0.0	32.9	0.0	0.0	6.8	0.4	0.1	100.0	478
Geita	55.2	4.5	3.1	0.5	29.3	0.0	0.1	7.1	0.3	0.0	100.0	557
Songwe	87.7	1.7	0.4	0.0	4.0	1.1	0.0	5.0	0.2	0.0	100.0	468
Kaskazini Unguja	73.7	1.6	0.8	0.0	18.4	0.0	0.0	4.5	0.6	0.3	100.0	71
Kusini Unguja	78.0	3.0	0.8	0.0	13.1	0.9	0.0	2.0	2.4	0.0	100.0	51
Mjini Magharibi	52.5	3.8	1.8	0.9	18.5	0.0	0.4	20.5	0.6	0.9	100.0	149
Kaskazini Pemba	63.9	2.8	0.4	0.0	29.6	0.3	0.1	2.5	0.4	0.0	100.0	92
Kusini Pemba	73.0	0.5	0.3	0.0	19.6	0.0	0.0	5.0	1.5	0.2	100.0	96
Wealth quintile												
Lowest	61.2	4.8	2.0	5.9	16.9	0.1	0.4	5.5	3.4	0.0	100.0	2,548
Second	68.6	4.2	1.8	4.7	12.1	0.4	0.2	5.2	2.8	0.0	100.0	2,953
Middle	68.8	3.6	1.3	4.6	12.1	0.1	0.2	6.3	2.8	0.1	100.0	3,509
Fourth	56.4	3.9	1.0	4.4	15.7	0.2	0.3	15.5	2.4	0.2	100.0	4,212
Highest	41.2	1.5	0.8	2.3	14.4	0.2	0.6	37.0	1.7	0.3	100.0	4,702
Total	57.5	3.4	1.3	4.1	14.2	0.2	0.4	16.2	2.5	0.1	100.0	17,923

ANC = Antenatal care
SNP= School Net Programme
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, this was known as a long-lasting insecticidal net (LLIN).
[2] Any net that is not an ITN

Table 3.3 Cost of mosquito nets

Percent distribution of mosquito nets by whether obtained for free or bought, and among nets that were bought, the mean cost, according to background characteristics, Tanzania MIS 2017

Background characteristic	Among all nets reported by household				For nets that were bought	
	Bought	Obtained free	Total	Number of nets	Mean cost in TSh	Number of nets
Type of net						
ITN[1]	10.6	89.4	100.0	16,623	12,032	1,767
Other[2]	96.0	4.0	100.0	1,300	13,336	1,248
Residence						
Urban	30.9	69.1	100.0	6,511	13,787	2,013
Rural	8.8	91.2	100.0	11,413	10,082	1,002
Mainland/Zanzibar						
Mainland	17.0	83.0	100.0	17,465	12,538	2,972
Urban	31.1	68.9	100.0	6,387	13,800	1,988
Rural	8.9	91.1	100.0	11,078	10,026	985
Zanzibar	9.4	90.6	100.0	459	12,802	43
Unguja	13.1	86.9	100.0	270	13,434	35
Pemba	4.1	95.9	100.0	188	(9,729)	8
Zone						
Western	13.8	86.2	100.0	1,324	9,213	183
Northern	12.8	87.2	100.0	2,259	21,038	290
Central	9.1	90.9	100.0	1,479	10,496	135
Southern Highlands	13.7	86.3	100.0	1,020	12,365	140
Southern	31.6	68.4	100.0	1,067	9,517	338
South West Highlands	11.5	88.5	100.0	1,665	10,087	192
Lake	11.9	88.1	100.0	4,910	14,674	585
Eastern	29.6	70.4	100.0	3,741	11,595	1,109
Zanzibar	9.4	90.6	100.0	459	12,802	43
Region						
Dodoma	12.4	87.6	100.0	756	(10,929)	94
Arusha	16.3	83.7	100.0	612	(33,558)	100
Kilimanjaro	15.7	84.3	100.0	720	(18,385)	113
Tanga	8.3	91.7	100.0	927	(12,025)	77
Morogoro	15.9	84.1	100.0	1,202	9,519	191
Pwani	20.3	79.7	100.0	562	11,496	114
Dar es Salaam	40.7	59.3	100.0	1,976	12,147	803
Lindi	33.1	66.9	100.0	378	10,792	125
Mtwara	30.8	69.2	100.0	689	8,760	212
Ruvuma	20.7	79.3	100.0	483	12,135	100
Iringa	11.3	88.7	100.0	272	(13,856)	31
Mbeya	12.4	87.6	100.0	557	(12,255)	69
Singida	7.6	92.4	100.0	320	(8,570)	24
Tabora	17.4	82.6	100.0	735	9,785	128
Rukwa	14.5	85.5	100.0	522	(7,461)	76
Kigoma	9.4	90.6	100.0	589	7,925	55
Shinyanga	17.8	82.2	100.0	420	13,659	75
Kagera	7.5	92.5	100.0	990	(27,575)	74
Mwanza	16.1	83.9	100.0	1,581	14,388	254
Mara	12.4	87.6	100.0	884	11,332	110
Manyara	4.1	95.9	100.0	404	*	17
Njombe	3.3	96.7	100.0	265	*	9
Katavi	19.3	80.7	100.0	118	8,160	23
Simiyu	6.8	93.2	100.0	478	11,130	33
Geita	7.2	92.8	100.0	557	(11,464)	40
Songwe	5.2	94.8	100.0	468	(13,127)	24
Kaskazini Unguja	4.8	95.2	100.0	71	*	3
Kusini Unguja	2.0	98.0	100.0	51	*	1
Mjini Magharibi	20.9	79.1	100.0	149	12,503	31
Kaskazini Pemba	2.7	97.3	100.0	92	*	2
Kusini Pemba	5.5	94.5	100.0	96	*	5
Wealth quintile						
Lowest	6.0	94.0	100.0	2,548	7,070	152
Second	5.6	94.4	100.0	2,953	10,221	165
Middle	6.8	93.2	100.0	3,509	7,099	239
Fourth	16.0	84.0	100.0	4,212	9,731	672
Highest	38.0	62.0	100.0	4,702	15,125	1,787
Total	16.8	83.2	100.0	17,923	12,542	3,015

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] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, this was known as a long-lasting insecticidal net (LLIN).

[2] Any net that is not an ITN

Table 3.4.1 Access to an insecticide-treated net (ITN)

Percent distribution of the de facto household population by number of ITNs the household owns, according to number of persons who stayed in the household the night before the survey, Tanzania MIS 2017

	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
Number of ITNs[1]									
0	37.2	28.5	22.3	16.6	18.5	16.2	20.9	19.5	19.8
1	47.4	38.5	34.6	24.1	12.2	11.2	10.1	7.9	16.4
2	12.6	25.9	29.6	33.9	33.0	28.3	21.7	15.5	24.8
3	2.0	5.6	9.7	17.7	26.5	27.7	27.2	21.9	21.0
4	0.7	0.9	2.7	5.9	6.5	12.2	14.2	17.7	10.7
5	0.1	0.1	0.4	1.1	2.4	2.4	2.9	9.9	4.1
6	0.0	0.3	0.8	0.6	0.5	1.5	2.6	5.0	2.2
7	0.0	0.3	0.0	0.1	0.3	0.6	0.5	2.6	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,082	2,204	4,001	5,905	6,166	6,609	4,756	12,787	43,510
Percent with access to an ITN[1,2]	62.8	71.5	66.2	71.4	67.5	67.0	58.8	52.3	62.5

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, 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 2 people

Table 3.4.2 Access to an insecticide-treated net by background characteristic

Percentage of the de facto population with access to an ITN in the household, by background characteristics, Tanzania MIS 2017

Background characteristic	Percent with access to an ITN[1,2]
Residence	
Urban	68.7
Rural	59.9
Mainland/Zanzibar	
Mainland	62.5
Urban	69.0
Rural	59.8
Zanzibar	62.1
Unguja	58.9
Pemba	67.2
Zone	
Western	52.3
Northern	69.0
Central	54.8
Southern Highlands	59.6
Southern	73.8
South West Highlands	55.7
Lake	61.6
Eastern	72.6
Zanzibar	62.1
Region	
Dodoma	62.3
Arusha	61.1
Kilimanjaro	73.1
Tanga	72.0
Morogoro	73.7
Pwani	76.5
Dar es Salaam	70.8
Lindi	72.4
Mtwara	74.7
Ruvuma	69.5
Iringa	55.2
Mbeya	61.9
Singida	42.1
Tabora	48.5
Rukwa	47.9
Kigoma	57.6
Shinyanga	49.1
Kagera	68.2
Mwanza	65.8
Mara	71.8
Manyara	57.0
Njombe	51.3
Katavi	44.5
Simiyu	53.2
Geita	51.5
Songwe	65.0
Kaskazini Unguja	67.3
Kusini Unguja	76.3
Mjini Magharibi	52.1
Kaskazini Pemba	59.5
Kusini Pemba	76.8
Wealth quintile	
Lowest	50.4
Second	57.1
Middle	65.3
Fourth	71.1
Highest	68.6
Total	62.5

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, 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 2 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, Tanzania MIS 2017

	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	59.3	54.6	7,556	68.2	6,046
5-14	52.1	49.7	12,557	60.8	10,268
15-34	56.8	51.6	12,871	65.2	10,180
35-49	62.6	56.5	5,612	70.2	4,514
50+	56.1	51.6	4,814	64.9	3,831
Don't know/missing	38.5	34.6	100	47.3	73
Sex					
Male	54.4	50.4	20,930	62.9	16,746
Female	58.4	53.8	22,580	66.9	18,166
Residence					
Urban	74.7	64.6	12,952	75.6	11,072
Rural	48.8	46.9	30,557	60.1	23,840
Mainland/Zanzibar					
Mainland	56.3	52.0	42,285	64.7	33,932
Urban	75.2	64.9	12,590	75.8	10,785
Rural	48.4	46.4	29,696	59.6	23,147
Zanzibar	61.4	59.2	1,224	74.1	980
Unguja	58.3	55.8	749	71.6	583
Pemba	66.3	64.7	475	77.6	397
Zone					
Western	44.9	42.7	4,214	58.1	3,095
Northern	61.1	56.4	4,643	68.7	3,813
Central	36.6	34.7	4,431	46.7	3,287
Southern Highlands	44.5	41.8	2,525	57.9	1,820
Southern	65.7	61.2	2,036	71.7	1,738
South West Highlands	36.0	32.8	4,545	45.8	3,253
Lake	60.5	56.7	12,694	68.0	10,574
Eastern	79.3	69.9	7,197	79.2	6,352
Zanzibar	61.4	59.2	1,224	74.1	980
Region					
Dodoma	36.6	34.0	1,895	43.6	1,479
Arusha	48.3	42.1	1,388	58.4	1,000
Kilimanjaro	62.0	54.9	1,258	65.7	1,050
Tanga	69.3	67.4	1,997	76.3	1,763
Morogoro	77.1	71.7	2,435	79.6	2,192
Pwani	84.5	77.5	1,077	85.4	978
Dar es Salaam	79.2	66.4	3,685	76.9	3,182
Lindi	57.7	55.6	743	65.1	634
Mtwara	70.3	64.4	1,294	75.5	1,104
Ruvuma	59.3	53.4	981	64.5	812
Iringa	52.1	51.1	804	73.4	560
Mbeya	35.3	32.4	1,351	43.3	1,009
Singida	30.1	28.8	1,323	44.2	862
Tabora	36.8	33.9	2,464	48.2	1,736
Rukwa	35.6	32.1	1,719	49.5	1,114
Kigoma	56.5	55.0	1,750	70.8	1,359
Shinyanga	44.5	38.5	1,365	54.6	961
Kagera	58.0	54.4	2,167	64.2	1,835
Mwanza	73.6	67.8	3,781	78.0	3,289
Mara	70.6	67.4	1,936	74.1	1,760
Manyara	43.7	42.1	1,212	54.0	946
Njombe	16.6	16.1	740	26.6	448
Katavi	39.2	33.6	415	51.4	271
Simiyu	41.8	40.6	1,532	49.8	1,248
Geita	53.5	52.2	1,914	67.5	1,481
Songwe	36.3	34.0	1,059	42.0	859
Kaskazini Unguja	63.6	61.4	160	73.7	134
Kusini Unguja	73.3	73.3	109	81.7	98
Mjini Magharibi	53.1	49.9	479	68.0	351
Kaskazini Pemba	60.2	59.0	265	76.2	206
Kusini Pemba	74.0	72.0	210	79.2	191

(Continued…)

Table 3.5—*Continued*

Background characteristic	Household population			Household population in households with at least one ITN[1]	
	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
Wealth quintile					
Lowest	39.3	38.5	8,668	54.4	6,133
Second	46.7	45.8	8,681	59.4	6,697
Middle	54.2	52.6	8,692	63.7	7,183
Fourth	66.8	62.0	8,713	71.9	7,515
Highest	75.2	61.8	8,754	73.2	7,384
Total	56.5	52.2	43,510	65.0	34,912

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.6 Use of existing insecticide-treated nets

Percentage of insecticide-treated nets (ITNs) that were used by anyone the night before the survey, according to background characteristics, Tanzania MIS 2017

Background characteristic	Percentage of existing ITNs[1] used last night	Number of ITNs[1]
Residence		
Urban	76.2	5,619
Rural	61.9	11,004
Mainland/Zanzibar		
Mainland	66.1	16,184
Urban	75.9	5,504
Rural	61.1	10,680
Zanzibar	88.4	440
Unguja	87.5	255
Pemba	89.7	184
Zone		
Western	66.0	1,263
Northern	63.9	2,076
Central	52.2	1,419
Southern Highlands	59.0	961
Southern	71.3	996
South West Highlands	46.4	1,554
Lake	69.5	4,606
Eastern	78.6	3,308
Zanzibar	88.4	440
Region		
Dodoma	46.4	722
Arusha	54.3	547
Kilimanjaro	62.3	646
Tanga	71.1	884
Morogoro	76.7	1,129
Pwani	83.7	519
Dar es Salaam	78.2	1,660
Lindi	62.3	364
Mtwara	76.4	631
Ruvuma	64.9	438
Iringa	78.1	265
Mbeya	44.6	523
Singida	56.1	306
Tabora	56.0	687
Rukwa	51.2	477
Kigoma	78.0	576
Shinyanga	65.9	373
Kagera	60.2	929
Mwanza	77.7	1,454
Mara	69.1	841
Manyara	59.8	391
Njombe	29.5	258
Katavi	57.7	104
Simiyu	56.0	465
Geita	78.0	544
Songwe	40.8	449
Kaskazini Unguja	86.6	68
Kusini Unguja	84.9	51
Mjini Magharibi	89.0	137
Kaskazini Pemba	92.5	90
Kusini Pemba	86.9	94
Wealth quintile		
Lowest	59.3	2,506
Second	62.0	2,912
Middle	64.9	3,422
Fourth	69.4	3,915
Highest	73.9	3,869
Total	66.7	16,623

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.7 Reason for not using mosquito nets

Percentage of mosquito nets not used the night before the survey, and for those nets the reason given for not using them, according to background characteristics, Tanzania MIS 2017

Background characteristic	Percentage of nets not used the night before the survey	Total number of nets	Reason for not using a net													Number of nets not used
			No mosquitoes	No malaria now	Too hot	Don't like smell	Feel closed in/afraid	Net too old/torn	Net too dirty	Net not available last night/net being washed	Usual user(s) did not sleep here last night	Net too small	Saving net for later	No longer kills/ repels mosquitoes	Other	
Residence																
Urban	23.5	6,511	10.3	2.4	8.9	1.1	1.2	3.8	2.7	5.3	12.0	2.5	55.6	0.3	4.7	1,533
Rural	37.6	11,413	36.5	4.0	12.8	0.2	0.4	5.3	5.0	3.3	4.9	0.4	34.1	0.0	5.0	4,290
Mainland/Zanzibar																
Mainland	33.0	17,465	29.6	3.6	11.7	0.5	0.6	5.0	4.4	3.8	6.7	1.0	39.8	0.1	5.0	5,767
Urban	23.8	6,387	10.3	2.3	8.8	1.1	1.2	3.8	2.6	5.2	12.0	2.5	55.9	0.2	4.7	1,518
Rural	38.4	11,078	36.5	4.0	12.8	0.2	0.4	5.4	5.0	3.3	4.9	0.4	34.1	0.0	5.0	4,249
Zanzibar	12.1	459	23.5	4.5	17.9	1.0	0.0	3.0	7.5	5.4	7.9	0.5	35.1	0.3	0.0	55
Unguja	13.3	270	16.5	3.3	21.1	1.5	0.0	3.4	8.1	7.6	8.1	0.0	34.7	0.1	0.0	36
Pemba	10.3	188	36.5	6.7	11.9	0.0	0.0	2.1	6.3	1.3	7.5	1.4	35.6	0.8	0.0	19
Zone																
Western	33.3	1,324	42.2	1.0	8.4	0.0	0.8	5.4	7.0	4.4	5.2	0.2	29.5	0.1	2.0	440
Northern	36.1	2,259	31.3	4.3	7.0	1.1	1.9	2.8	3.9	7.0	5.9	0.8	41.2	0.0	3.8	816
Central	46.9	1,479	47.4	9.1	20.2	0.3	0.2	1.6	3.4	3.4	2.7	0.5	21.6	0.0	4.6	693
Southern Highlands	40.2	1,020	40.7	5.7	17.1	0.5	0.2	7.1	5.7	4.2	7.2	0.1	30.7	0.0	9.2	410
Southern	28.4	1,067	24.8	0.3	13.1	0.0	0.0	4.3	3.0	2.5	7.8	0.0	44.0	0.0	2.5	303
South West Highlands	51.9	1,665	40.5	6.7	20.0	0.2	0.4	7.9	6.2	1.7	5.8	0.6	23.2	0.0	3.5	865
Lake	29.7	4,910	21.4	1.1	6.2	0.7	0.4	6.6	4.1	3.3	6.3	0.4	50.3	0.2	8.2	1,457
Eastern	20.9	3,741	4.6	0.8	8.8	0.2	0.9	2.7	2.8	3.9	13.3	4.4	62.4	0.1	2.6	783
Zanzibar	12.1	459	23.5	4.5	17.9	1.0	0.0	3.0	7.5	5.4	7.9	0.5	35.1	0.3	0.0	55
Region																
Dodoma	52.5	756	45.4	14.8	19.2	0.0	0.0	0.2	3.4	4.2	2.0	0.0	22.1	0.0	2.0	397
Arusha	43.2	612	44.1	6.1	10.4	2.5	1.7	2.6	4.7	8.9	4.0	2.5	31.9	0.0	1.5	264
Kilimanjaro	37.2	720	35.0	5.3	9.7	0.8	1.6	2.3	1.3	2.8	8.5	0.0	36.0	0.0	5.1	268
Tanga	30.6	927	15.7	1.6	1.3	0.0	2.4	3.4	5.5	9.2	5.1	0.0	54.9	0.0	4.6	284
Morogoro	22.6	1,202	10.1	2.4	2.9	0.4	0.8	0.0	3.5	2.2	13.4	4.5	67.4	0.0	3.3	272
Pwani	16.3	562	2.3	0.0	1.7	0.0	0.0	5.8	3.5	2.5	17.0	1.0	61.9	1.0	5.4	92
Dar es Salaam	21.2	1,976	1.5	0.0	14.2	0.0	1.1	3.8	2.3	5.2	12.3	5.1	59.2	0.0	1.5	420
Lindi	37.5	378	36.1	0.6	10.7	0.0	0.0	6.3	2.5	4.3	8.1	0.0	34.7	0.0	1.5	142
Mtwara	23.4	689	14.8	0.0	15.3	0.0	0.0	2.6	3.4	0.8	7.5	0.0	52.2	0.0	3.4	161
Ruvuma	34.1	483	16.6	1.5	22.8	0.3	0.4	5.6	4.5	5.7	9.1	0.3	44.7	0.0	9.1	165
Iringa	21.3	272	46.5	7.6	7.1	1.2	0.0	6.4	6.9	0.0	15.5	0.0	26.7	0.0	0.0	58
Mbeya	54.1	557	52.0	5.8	13.5	0.6	1.1	4.7	1.4	2.0	3.0	0.4	21.7	0.0	2.6	301
Singida	42.9	320	46.5	0.9	33.1	0.0	0.0	7.1	4.0	0.9	4.9	0.0	19.2	0.0	3.8	137
Tabora	42.5	735	54.5	1.3	10.2	0.0	0.4	3.1	4.6	2.1	4.9	0.2	26.0	0.0	0.3	312
Rukwa	47.9	522	28.7	14.5	37.2	0.0	0.0	16.6	9.6	1.9	3.0	1.5	21.0	0.0	2.1	250
Kigoma	21.8	589	12.0	0.0	3.9	0.0	1.8	10.8	12.6	9.9	6.0	0.0	38.1	0.3	6.4	128
Shinyanga	31.6	420	44.3	5.8	11.8	1.6	0.0	8.7	3.4	0.4	7.9	0.8	28.1	0.0	2.1	133
Kagera	38.8	990	15.1	0.6	2.7	0.0	1.2	5.7	4.6	4.3	5.9	0.4	49.3	0.0	13.2	384

(Continued…)

Table 3.7—*Continued*

Background characteristic	Percentage of nets not used the night before the survey	Total number of nets	Reason for not using a net													Number of nets not used
			No mosquitoes	No malaria now	Too hot	Don't like smell	Feel closed in/afraid	Net too old/torn	Net too dirty	Net not available last night/net being washed	Usual user(s) did not sleep here last night	Net too small	Saving net for later	No longer kills/ repels mosquitoes	Other	
Mwanza	21.6	1,581	7.5	0.0	3.4	1.9	0.0	4.7	0.4	4.8	6.6	0.6	77.2	0.0	10.1	342
Mara	30.7	884	14.2	0.7	3.4	0.5	0.0	4.2	6.1	2.8	8.0	0.0	54.6	0.0	7.1	272
Manyara	39.4	404	53.2	2.2	11.5	1.5	0.8	0.5	2.8	3.8	2.7	2.0	22.2	0.0	11.6	159
Njombe	70.7	265	60.2	8.8	15.2	0.4	0.0	8.6	6.3	4.1	3.0	0.0	19.6	0.0	12.2	187
Katavi	38.8	118	35.6	0.5	21.5	0.0	0.0	8.1	5.1	1.5	8.5	0.5	28.6	0.0	4.0	46
Simiyu	43.5	478	36.0	0.8	11.7	0.3	0.2	16.3	6.2	3.3	4.0	0.6	26.1	0.0	4.6	208
Geita	21.5	557	46.9	1.9	15.9	0.0	0.0	1.3	5.5	0.8	5.3	0.0	33.4	2.5	1.8	120
Songwe	57.2	468	39.4	1.4	10.9	0.1	0.0	3.3	8.5	1.1	11.2	0.0	25.8	0.0	5.7	268
Kaskazini Unguja	13.9	71	21.4	0.0	19.9	0.0	0.0	0.0	6.5	3.4	5.9	0.0	47.4	0.0	0.0	10
Kusini Unguja	16.2	51	31.2	0.0	21.1	2.1	0.0	0.9	0.0	10.9	5.3	0.0	28.8	0.4	0.0	8
Mjini Magharibi	12.0	149	7.0	6.7	21.8	2.0	0.0	6.5	12.8	8.4	10.6	0.0	30.6	0.0	0.0	18
Kaskazini Pemba	7.4	92	4.8	11.1	14.3	0.0	0.0	5.9	13.7	0.0	4.6	3.9	43.7	0.0	0.0	7
Kusini Pemba	13.1	96	53.5	4.3	10.6	0.0	0.0	0.0	2.4	2.0	9.1	0.0	31.3	1.2	0.0	13
Wealth quintile																
Lowest	40.3	2,548	41.7	5.1	13.5	0.2	0.1	6.6	5.2	3.0	2.6	0.3	29.2	0.0	5.4	1,027
Second	37.6	2,953	34.7	4.7	14.0	0.4	0.2	6.4	6.4	3.8	4.3	0.1	32.6	0.0	5.9	1,111
Middle	34.8	3,509	34.0	3.6	13.1	0.1	0.5	6.3	4.9	4.1	6.0	0.3	34.0	0.0	4.9	1,222
Fourth	30.2	4,212	27.6	2.4	8.8	0.8	0.9	3.1	3.5	2.2	7.4	0.6	46.7	0.2	5.0	1,272
Highest	25.3	4,702	12.0	2.5	10.0	0.8	1.4	2.8	2.4	5.8	12.8	3.5	54.2	0.1	3.6	1,190
Total	32.5	17,923	29.6	3.6	11.8	0.5	0.6	4.9	4.4	3.8	6.8	1.0	39.8	0.1	4.9	5,822

Table 3.8 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, Tanzania MIS 2017

	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	63.4	57.7	1,508	70.8	1,230
12-23	59.8	55.4	1,518	69.3	1,212
24-35	57.9	53.2	1,471	67.2	1,165
36-47	60.0	56.3	1,525	69.6	1,233
48-59	55.3	50.4	1,534	64.1	1,206
Sex					
Male	60.8	55.9	3,782	69.5	3,040
Female	57.8	53.3	3,774	66.9	3,006
Residence					
Urban	79.3	66.8	2,002	77.8	1,719
Rural	52.1	50.2	5,554	64.4	4,326
Mainland/Zanzibar					
Mainland	59.0	54.2	7,349	67.8	5,875
Urban	79.5	66.7	1,950	77.7	1,676
Rural	51.6	49.7	5,399	63.9	4,199
Zanzibar	69.3	67.2	207	81.5	171
Unguja	66.3	63.6	116	77.3	96
Pemba	73.1	72.0	91	86.7	75
Zone					
Western	48.0	45.6	851	62.2	624
Northern	67.7	63.5	648	77.1	534
Central	40.1	39.0	799	52.2	596
Southern Highlands	46.0	43.8	368	64.2	251
Southern	67.5	64.0	273	72.2	242
South West Highlands	40.6	36.3	812	51.8	569
Lake	63.3	59.6	2,474	71.4	2,066
Eastern	81.8	68.6	1,124	77.5	994
Zanzibar	69.3	67.2	207	81.5	171
Region					
Dodoma	44.2	42.5	288	54.2	226
Arusha	58.2	52.7	190	72.4	138
Kilimanjaro	71.7	65.7	154	76.6	132
Tanga	71.6	69.0	304	79.8	263
Morogoro	74.6	68.8	396	77.5	352
Pwani	88.2	79.8	175	86.8	161
Dar es Salaam	84.9	64.8	552	74.5	481
Lindi	60.8	59.1	105	66.5	93
Mtwara	71.7	67.0	169	75.8	149
Ruvuma	65.6	59.8	127	70.4	108
Iringa	54.6	54.6	133	75.2	96
Mbeya	39.8	37.3	221	50.4	163
Singida	32.2	31.5	302	47.0	202
Tabora	38.3	35.7	518	51.0	362
Rukwa	42.6	36.3	323	57.7	203
Kigoma	63.0	61.1	333	77.7	262
Shinyanga	49.9	43.6	254	61.3	181
Kagera	58.7	56.0	353	69.1	286
Mwanza	77.1	71.3	725	80.9	639
Mara	71.6	67.6	393	74.3	357
Manyara	46.0	45.0	209	55.9	168
Njombe	12.4	11.6	108	27.1	46
Katavi	45.1	39.6	86	62.7	54
Simiyu	47.9	46.6	340	57.3	277
Geita	56.2	55.0	409	69.0	326
Songwe	35.9	33.5	182	41.3	148
Kaskazini Unguja	61.0	58.4	25	71.8	21
Kusini Unguja	79.5	79.5	17	86.7	16
Mjini Magharibi	65.1	61.6	74	76.8	59
Kaskazini Pemba	68.2	67.6	54	87.3	42
Kusini Pemba	80.2	78.4	37	86.0	34

(Continued…)

Table 3.8—*Continued*

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, Tanzania MIS 2017

	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
Wealth quintile					
Lowest	40.9	39.9	1,772	56.6	1,251
Second	50.6	49.2	1,622	63.2	1,263
Middle	58.6	57.0	1,449	68.4	1,208
Fourth	72.8	67.8	1,424	79.2	1,219
Highest	81.3	64.1	1,289	74.8	1,105
Total	59.3	54.6	7,556	68.2	6,046

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 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.9 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, Tanzania MIS 2017

	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	73.9	59.0	230	73.7	184
Rural	51.4	48.6	638	65.3	475
Mainland/Zanzibar					
Mainland	57.1	51.0	843	67.3	639
Urban	74.1	58.9	225	73.8	180
Rural	50.9	48.2	618	64.8	459
Zanzibar	65.6	63.4	26	78.2	21
Unguja	(61.4)	(57.5)	14	(72.8)	11
Pemba	(70.8)	(70.8)	11	(84.6)	10
Zone					
Western	49.1	47.0	114	65.5	82
Northern	(68.9)	(59.1)	66	(64.1)	61
Central	39.2	38.2	103	53.7	73
Southern Highlands	(49.8)	(44.7)	28	(69.9)	18
Southern	71.9	69.1	31	(75.1)	28
South West Highlands	25.2	18.3	109	40.6	49
Lake	68.3	63.9	270	77.8	222
Eastern	74.9	59.0	122	67.9	106
Zanzibar	65.6	63.4	26	78.2	21
Education					
No education	38.7	36.0	179	56.2	114
Primary incomplete	54.9	50.7	124	64.4	98
Primary complete	62.6	56.5	399	70.5	320
Secondary+	66.7	56.3	166	73.4	127
Wealth quintile					
Lowest	42.1	39.4	187	58.1	127
Second	53.2	51.5	194	67.1	149
Middle	58.2	56.6	170	73.8	131
Fourth	62.9	59.1	147	74.1	117
Highest	73.3	52.6	170	65.7	136
Total	57.4	51.4	868	67.7	660

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.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2010 TDHS, 2011-12 THMIS, and 2015-16 TDHS-MIS, this was known as a long-lasting insecticidal net (LLIN).

Table 3.10 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 2 or more doses of SP/Fansidar, and received 3 or more doses of SP/Fansidar, according to background characteristics, Tanzania MIS 2017

Background characteristic	Percentage who received one or more doses of SP/Fansidar	Percentage who received 2 or more doses of SP/Fansidar	Percentage who received 3 or more doses of SP/Fansidar	Number of women with a live birth in the 2 years preceding the survey
Residence				
Urban	90.6	66.0	31.0	772
Rural	80.5	52.6	24.0	2,175
Mainland/Zanzibar				
Mainland	84.3	57.1	26.4	2,868
Urban	92.2	67.2	31.6	751
Rural	81.5	53.5	24.5	2,117
Zanzibar	41.0	18.1	5.2	79
Unguja	40.7	22.8	7.9	45
Pemba	41.3	11.7	1.5	34
Zone				
Western	72.0	36.4	12.1	325
Northern	89.2	72.3	35.4	276
Central	88.5	53.1	20.8	300
Southern Highlands	89.3	59.1	28.9	150
Southern	97.1	82.1	45.2	112
South West Highlands	81.9	48.8	21.5	343
Lake	81.0	56.0	24.4	973
Eastern	92.5	68.8	39.1	390
Zanzibar	41.0	18.1	5.2	79
Region				
Dodoma	86.3	50.5	11.8	109
Arusha	(89.8)	(69.7)	(28.3)	69
Kilimanjaro	(91.3)	(77.8)	(37.0)	71
Tanga	87.8	70.6	38.0	136
Morogoro	87.5	72.4	42.8	138
Pwani	95.9	67.5	24.4	65
Dar es Salaam	95.0	66.6	41.5	186
Lindi	94.6	79.8	42.8	44
Mtwara	98.7	83.5	46.7	68
Ruvuma	91.2	60.5	27.4	52
Iringa	92.3	78.1	39.6	53
Mbeya	83.0	53.9	25.0	95
Singida	87.5	52.4	25.8	114
Tabora	63.9	32.9	11.8	204
Rukwa	82.7	49.9	22.2	136
Kigoma	85.6	42.4	12.7	121
Shinyanga	78.6	53.9	25.3	91
Kagera	89.2	63.9	40.0	139
Mwanza	83.5	63.5	19.2	292
Mara	78.0	50.0	21.2	159
Manyara	93.2	58.0	26.3	76
Njombe	(83.3)	(34.8)	(18.1)	44
Katavi	78.7	39.9	11.5	38
Simiyu	70.9	42.3	15.2	136
Geita	82.4	54.3	30.8	156
Songwe	80.7	44.8	20.9	74
Kaskazini Unguja	43.1	26.1	10.4	10
Kusini Unguja	(44.2)	(23.3)	(5.6)	6
Mjini Magharibi	39.0	21.6	7.5	29
Kaskazini Pemba	43.9	14.5	2.5	20
Kusini Pemba	37.7	7.8	0.0	14
Education				
No education	74.3	48.1	17.5	624
Primary incomplete	79.4	49.3	19.4	435
Primary complete	86.6	59.4	29.6	1,421
Secondary+	87.8	62.9	31.4	467
Wealth quintile				
Lowest	75.8	48.8	21.0	693
Second	81.4	53.2	22.2	629
Middle	85.9	57.6	27.4	558
Fourth	85.4	60.7	29.4	546
Highest	89.6	62.7	31.0	520
Total	83.1	56.1	25.8	2,947

Note: Figures in parentheses are based on 25-49 unweighted cases.

MALARIA IN CHILDREN 4

Key Findings

- ***Fever prevalence:*** One in five children under age 5 had a fever in the 2 weeks before the survey (20%).
- ***Care seeking for fever:*** Advice or treatment was sought for 75% of children with a fever in the 2 weeks before the survey.
- ***Source of advice or treatment:*** Among children with a recent fever for whom care was sought, 47% received advice or treatment from the public sector, 9% from the private sector, 4% from religious/voluntary facilities, and 18% from other private sector sources.
- ***Testing:*** Forty-three percent of children under age 5 with a recent fever had blood taken from a finger or heel for testing.
- ***Type of antimalarial drug used:*** Among children under 5 with a recent fever who were given an antimalarial drug, 89% received artemisinin-based combination therapy (ACT).
- ***Severe anaemia:*** Four percent of children age 6-59 months had a haemoglobin level less than 8 g/dl.
- ***Malaria:*** Seven percent of children age 6-59 months were classified as having malaria according to rapid diagnostic test (RDT) results.

This chapter presents data useful for assessing how well fever management strategies are implemented. Specific topics include care seeking for febrile children, diagnostic testing of children with fever, and therapeutic use of antimalarial drugs. Prevalence of anaemia and malaria among children age 6-59 months is also assessed.

4.1 CARE SEEKING FOR FEVER IN CHILDREN

Care seeking for children under age 5 with fever

Percentage of children under age 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 age 5 with a fever in the 2 weeks before the survey

In Tanzania, artemisinin-based combination therapy (ACT) is the recommended first-line treatment for uncomplicated malaria. Children with uncomplicated malaria should receive an appropriate antimalarial drug within 24 hours (same or next day) of the onset of fever.

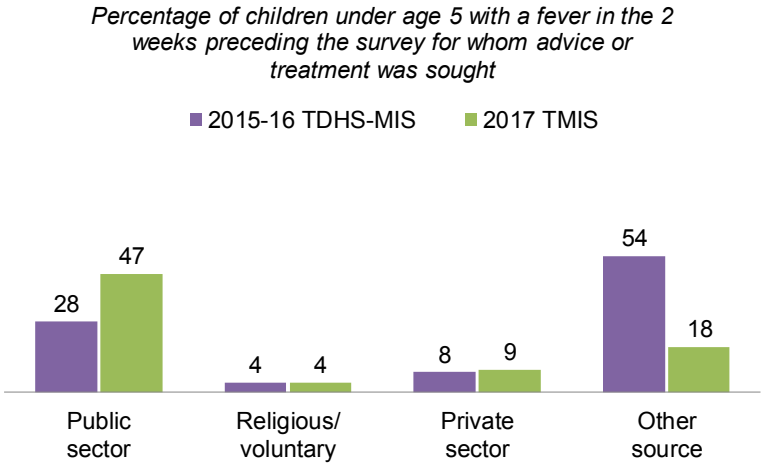
One of the key case management objectives of the National Malaria Control Programme (NMCP) and the Zanzibar Malaria Elimination Programme (ZAMEP) is to ensure that all children with suspected malaria cases have access to confirmatory diagnosis and receive effective treatment.

Fever is a key symptom of malaria and other acute infections in children. Malaria fevers require prompt and effective treatment to prevent malaria morbidity and mortality. Twenty percent of children under age 5 had a fever in the 2 weeks preceding the survey, and advice or treatment was sought for 75% of these children (**Table 4.1**).

Most children with recent fever for whom care was sought received advice or treatment from the public health sector (47%); among children for whom care was sought from public health facilities, 28% were taken to a dispensary, 12% to a health centre, and 6% to a hospital. Advice from a private sector source was sought for only 9% of children (**Table 4.2**).

Trends: The percentage of children under age 5 with a fever in the 2 weeks preceding the survey for whom advice or treatment was sought increased from 77% in the 2011-12 THMIS to 80% in the 2015-2016 TDHS-MIS and then decreased to 75% in the 2017 TMIS. One notable change between the 2015-16 TDHS-MIS and the 2017 TMIS is that more people visited public sector facilities and less people sought care from other sources. The percentage of children under age 5 with a fever in the 2 weeks preceding the survey for whom advice or treatment was sought from a public sector source increased from 28% in 2015-16 to 47% in 2017, while the percentage for whom advice or treatment was sought from other sources decreased from 54% to 18% (**Figure 4.1**).

Figure 4.1 **Trends in care seeking for children with fever by source of care**



Patterns by background characteristics

- The percentage of children with fever for whom advice or treatment was sought is higher in Zanzibar (82%) than in Mainland Tanzania (75%).
- Mothers with a secondary or higher education (77%) were more likely than mothers with no education (67%) to seek advice or treatment for their children when they had a fever.
- The percentage of children for whom advice or treatment was sought increases with increasing wealth, from 68% in the lowest wealth quintile to 82% in the fourth quintile.

4.2 Diagnostic Testing of Children with Fever

Diagnosis of malaria in children under age 5 with fever

Percentage of children under age 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 age 5 with a fever in the 2 weeks before the survey

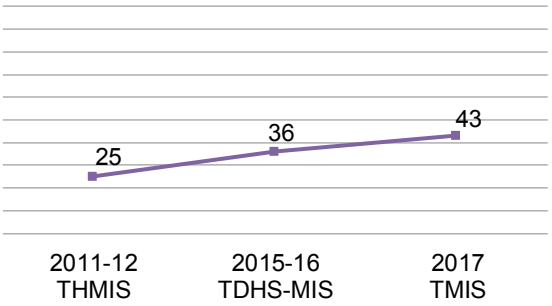
NMCP and ZAMEP policies recommend prompt parasitological confirmation by microscopy or, alternatively, by rapid diagnostic tests (RDTs) for all patients with suspected cases of malaria before treatment is started. Adherence to these policies cannot be directly measured through household surveys; however, the 2017 TMIS asked interviewed women with children under age 5 who had a fever in the 2 weeks before the survey if the child 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 NMCP policy of conducting diagnostic testing for all suspected malaria cases.

In the 2017 TMIS, 43% of children with a fever in the 2 weeks before the survey had blood taken from a finger or heel, presumably for malaria testing (**Table 4.1**).

Trends: The percentage of children under age 5 who had blood taken from a finger or heel for testing increased by 18 percentage points between the 2011-12 THMIS (25%) and the 2017 TMIS (43%) (**Figure 4.2**).

Figure 4.2 **Trends in diagnostic testing of children with fever**

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



Patterns by background characteristics

- Among children with recent fever, the percentage who had blood taken from a finger or heel for testing was higher in Mainland Tanzania (43%) than in Zanzibar (31%).
- The percentage of children under age 5 with a fever in the 2 weeks preceding the survey who had blood taken from a finger or heel for testing was higher among those whose mothers had a secondary or higher education (50%) than among those whose mothers had no education (33%).

4.3 USE OF RECOMMENDED ANTIMALARIALS

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

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

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

As noted above, artemisinin-based combination therapy (ACT) is the recommended first-line antimalarial drug for the treatment of uncomplicated malaria in Tanzania. The policy recommending use of ACT was implemented in January 2007 (NMCP 2014b). In Zanzibar, use of artemisinin-based combination therapy was introduced in 2003 (Bhattarai et al. 2007).

According to the results shown in **Table 4.3.1**, most children under age 5 in Mainland Tanzania with recent fever who received an antimalarial took ACT (89%). Six percent of children received quinine pills, 3% received quinine injections, and 3% took other antimalarials. Estimates for Zanzibar (Unguja and Pemba) are not shown in **Table 4.3.1** because there were no cases.

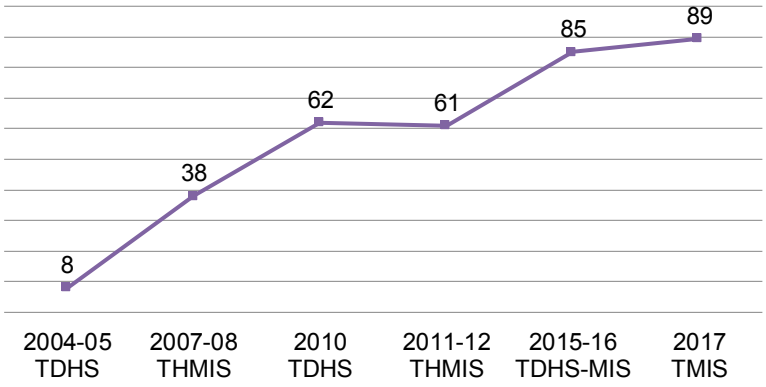
Trends: Use of ACT among children under age 5 who took an antimalarial increased by 53 percentage points between the 2004-05 TDHS (8%) and the 2011-12 THMIS (61%), and there was a 28 percentage point increase between the 2011-12 THMIS and the 2017 TMIS (from 61% to 89%) (**Figure 4.3**).

Patterns by background characteristics

- Among children under age 5 with a fever in the 2 weeks preceding the survey who took an antimalarial drug, the percentage who received ACT declined with increasing mother's education, from 91% among children whose mothers had no education to 86% among those whose mothers had a secondary or higher education.

Figure 4.3 **Trends in artemisinin-based combination therapy (ACT) use by children under age 5**

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



4.4 Prevalence of Low Haemoglobin in Children

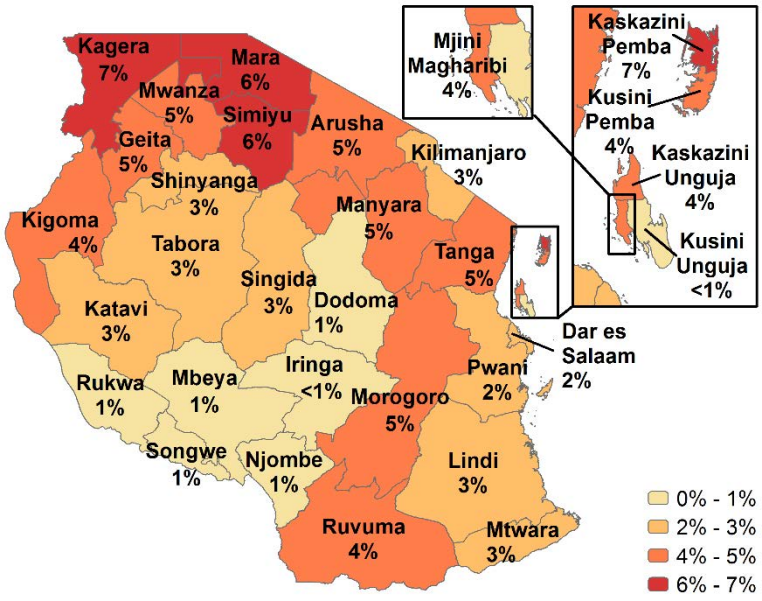
Prevalence of low haemoglobin in children

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

Sample: Children age 6-59 months

Figure 4.4 **Prevalence of low haemoglobin in children by region**

Percentage of children age 6-59 months with haemoglobin <8 g/dl



Anaemia, defined as a reduced level of haemoglobin in 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, haemoglobinopathy, and sickle cell disease. Although anaemia is not specific to malaria, trends in anaemia prevalence can reflect malaria morbidity, and they respond to changes in the coverage of malaria interventions (Korenromp et al. 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).

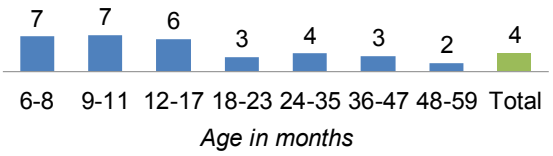
Among eligible children age 6-59 months from interviewed households, almost all (99%) were tested for anaemia after consent had been obtained from their parent or guardian (**Table 4.4**).

The 2017 TMIS results showed that 4% of children age 6-59 months had severe anaemia (haemoglobin less than 8.0 g/dl) (**Table 4.5**).

Trends: There has been a downward trend in the percentage of children age 6-59 months with severe anaemia (haemoglobin <8.0 g/dl), from 6% in the 2011-12 THMIS to 5% in the 2015-16 TDHS-MIS and 4% in the 2017 TMIS.

Figure 4.5 **Low haemoglobin in children by age**

Percentage of children age 6-59 months with haemoglobin lower than 8.0 g/dl



Patterns by background characteristics

- There is a slight difference between Mainland Tanzania (4%) and Zanzibar (5%) in the percentage of children under age 5 with severe anaemia.
- Among regions in Mainland Tanzania, the percentage of children age 6-59 months with severe anaemia (less than 8.0 g/dl) is highest in Kagera (7%) and lowest in Iringa (0%). In Zanzibar, severe anaemia is highest in Kaskazini Pemba (7%) and lowest in Kusini Unguja (0%) (**Figure 4.4**).
- The prevalence of severe anaemia in children age 6-59 months decreases with increasing age, from 7% among those age 6-8 months and 9-11 months to 2% among those age 48-59 months (**Figure 4.5**).
- Severe anaemia in children age 6-59 months decreases with increasing household wealth, from 5% in the lowest wealth quintile to 2% in the highest quintile.

4.5 Prevalence of Malaria in Children

Malaria prevalence in children

Percentage of children age 6-59 months classified as infected with malaria according to rapid diagnostic test (RDT) results.

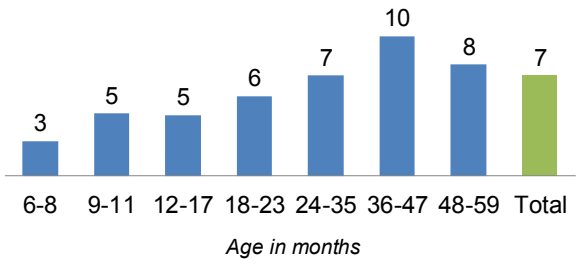
Sample: Children age 6-59 months

As is the case in many other countries in sub-Saharan Africa, malaria is the leading cause of death in Tanzania among children under age 5. 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 infected individuals.

In the 2017 TMIS, 7% of children age 6-59 months tested were positive for malaria parasites according to RDT results (**Table 4.6**).

Figure 4.6 **Prevalence of malaria in children by age**

Percentage of children age 6-59 months who tested positive for malaria by RDT



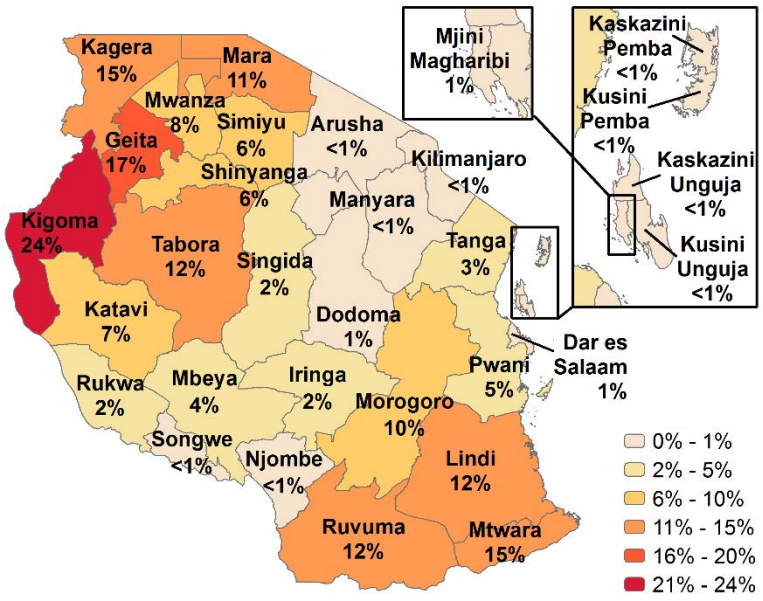
Patterns by background characteristics

- The percentage of children under age 5 with malaria is highest among those age 36-47 months (10%) and lowest among those age 6-8 months (3%) (**Figure 4.6**).
- The prevalence of malaria is higher in Mainland rural areas (10%) than in Mainland urban areas (2%).
- In Zanzibar, malaria prevalence is higher in Unguja (0.4%) than in Pemba (0%).
- In Mainland Tanzania, the prevalence of malaria is highest in Kigoma (24%) (**Figure 4.7**).
- Malaria prevalence decreases with increasing maternal education and household wealth (**Table 4.6**).

With respect to interpreting trends in malaria prevalence over time, it is important to note the season in which data were collected in different surveys. In Tanzania, there are two major patterns of rainfall, short rains in November-January and heavy rains in March-May. Despite these seasonal fluctuations, the rainfall patterns, temperatures, and humidity that characterise the tropical climate in Tanzania support continuous malaria transmission year round.

Figure 4.7 **Prevalence of malaria in children by region**

Percentage of children age 6-59 months who tested positive for malaria by RDT



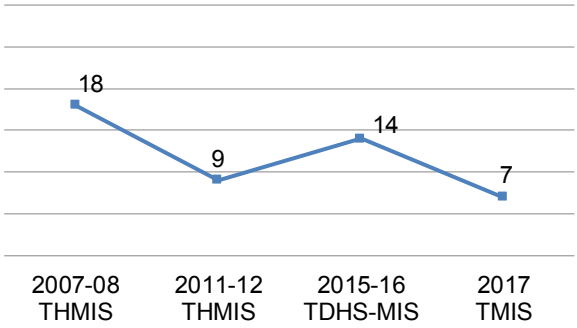
The 2017 TMIS was conducted from October to December 2017, during the peak malaria season. Normally a spike in malaria cases occurs during these months. The months of fieldwork noted in the box below should be considered when comparing malaria trends over time.

Survey	Fieldwork Dates
2007-08 THMIS	October 2007-February 2008
2011-12 THMIS	December 2011-May 2012
2015-16 TDHS-MIS	August 2015-February 2016
2017 TMIS	October 2017-December 2017

Trends: The percentage of children under age 5 who tested positive for malaria according to RDT results decreased from 18% in the 2007-08 THMIS to 7% in the 2017 TMIS (**Figure 4.8**).

Figure 4.8 **Trends in malaria prevalence in children**

Percentage of children age 6-59 months who tested positive for malaria by RDTs



LIST OF TABLES

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- **Table 4.1 Prevalence, diagnosis, and prompt treatment of children with fever**
- **Table 4.2 Source of advice or treatment for children with fever**
- **Table 4.3 Children with fever who took antimalarial drugs**
- **Table 4.3.1 Types of antimalarial drugs used**
- **Table 4.3.2 Timing of antimalarial drugs used**
- **Table 4.4 Coverage of testing for anaemia and malaria in children**
- **Table 4.5 Haemoglobin <8.0 g/dl in children**
- **Table 4.6 Prevalence of malaria in children**

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

Percentage of children under age five with fever in the 2 weeks preceding the survey; and among children under age five with fever, the percentage for whom advice or treatment was sought, the percentage for whom advice or treatment was sought the same or next day following the onset of fever, and the percentage who had blood taken from a finger or heel, by background characteristics, Tanzania MIS 2017

	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	Percentage for whom advice or treatment was sought the same or next day	Percentage who had blood taken from a finger or heel for testing	Number of children
Age in months						
<12	20.9	1,532	80.6	43.9	36.0	320
12-23	26.5	1,471	81.2	48.9	46.4	390
24-35	21.1	1,402	72.8	39.4	39.2	296
36-47	18.7	1,411	65.9	38.2	47.3	264
48-59	14.6	1,402	72.3	43.0	47.8	205
Sex						
Male	19.6	3,623	75.2	42.2	41.9	710
Female	21.2	3,595	75.6	44.1	44.2	764
Residence						
Urban	19.8	1,915	77.6	44.2	56.0	380
Rural	20.6	5,303	74.6	42.8	38.6	1,094
Mainland/Zanzibar						
Mainland	20.6	7,018	75.3	43.0	43.4	1,442
Urban	20.1	1,865	77.3	43.8	56.0	374
Rural	20.7	5,154	74.5	42.7	38.9	1,068
Zanzibar	15.8	200	81.9	52.7	30.9	32
Unguja	9.7	110	(90.0)	(72.1)	(50.4)	11
Pemba	23.3	90	77.9	42.8	21.0	21
Zone						
Western	23.9	786	71.9	43.6	35.2	188
Northern	19.9	625	74.0	40.4	49.8	125
Central	18.1	773	68.6	39.1	27.0	140
Southern Highlands	15.5	342	81.7	51.5	41.7	53
Southern	26.4	270	81.4	52.8	67.3	71
South West Highlands	19.9	822	84.9	56.8	41.0	164
Lake	20.9	2,311	72.8	35.6	38.2	484
Eastern	20.1	1,089	77.7	47.0	62.7	219
Zanzibar	15.8	200	81.9	52.7	30.9	32
Region						
Dodoma	12.0	270	*	*	*	32
Arusha	20.4	189	*	*	*	39
Kilimanjaro	19.0	144	*	*	*	27
Tanga	20.1	293	(88.2)	(45.1)	(74.0)	59
Morogoro	18.9	376	79.8	42.8	44.9	71
Pwani	16.4	159	(90.6)	(47.4)	(80.6)	26
Dar es Salaam	22.0	553	(73.7)	(49.3)	(69.3)	122
Lindi	24.0	100	86.3	51.9	73.2	24
Mtwara	27.9	169	79.0	53.3	64.3	47
Ruvuma	22.0	121	(79.8)	(57.6)	(60.2)	27
Iringa	13.3	121	*	*	*	16
Mbeya	16.2	219	*	*	*	35
Singida	20.3	294	74.4	33.6	14.9	60
Tabora	25.0	469	70.5	36.7	34.0	117
Rukwa	26.7	332	(84.7)	(64.9)	(54.6)	89
Kigoma	22.3	317	74.3	55.1	37.4	71
Shinyanga	20.9	228	83.2	54.3	22.2	48
Kagera	18.4	341	(62.3)	(19.3)	(55.2)	63
Mwanza	18.9	667	85.5	51.3	51.1	126
Mara	29.2	371	61.6	22.8	32.7	108
Manyara	22.8	210	(72.2)	(46.7)	(33.4)	48
Njombe	10.2	100	*	*	*	10
Katavi	18.2	86	81.1	28.9	36.9	16
Simiyu	23.8	319	76.2	32.2	22.3	76
Geita	16.4	386	65.3	32.9	36.6	63
Songwe	12.9	185	*	*	*	24
Kaskazini Unguja	5.6	24	*	*	*	1
Kusini Unguja	8.5	15	*	*	*	1
Mjini Magharibi	11.3	71	*	*	*	8
Kaskazini Pemba	16.0	53	(68.7)	(44.9)	(19.8)	9
Kusini Pemba	33.8	37	(84.2)	(41.4)	(21.8)	12
Mother's education						
No education	18.9	1,563	67.2	32.0	33.0	295
Primary incomplete	23.8	1,027	74.3	44.9	40.9	245
Primary complete	20.7	3,580	78.6	44.2	46.0	742
Secondary+	18.4	1,048	77.2	54.2	50.0	193

(Continued…)

Table 4.1—*Continued*

Background characteristic	Children under age 5		Children under age 5 with fever			
	Percentage with fever in the 2 weeks preceding the survey	Number of children	Percentage for whom advice or treatment was sought	Percentage for whom advice or treatment was sought the same or next day	Percentage who had blood taken from a finger or heel for testing	Number of children
Wealth quintile						
Lowest	21.1	1,682	68.4	36.6	32.3	354
Second	19.3	1,524	77.0	38.1	33.9	295
Middle	21.5	1,380	75.0	42.7	39.3	297
Fourth	21.6	1,386	81.9	51.9	60.2	300
Highest	18.3	1,246	76.3	49.1	54.2	228
Total	20.4	7,218	75.4	43.2	43.1	1,474

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.

Table 4.2 Source of advice or treatment for children with fever

Percentage of children under age 5 with a fever in the 2 weeks preceding the survey for whom advice or treatment was sought from specific sources, and among children under age 5 with a 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, Tanzania MIS 2017

Source	Percentage for whom advice or treatment was sought from each source:	
	Among children with fever	Among children with fever for whom advice or treatment was sought
Public sector	46.7	62.0
Zonal/referral/specialised hospital	1.2	1.6
Referral/regional hospital	0.6	0.8
Regional hospital	0.4	0.5
District hospital	3.9	5.2
Health centre	12.3	16.4
Dispensary	28.1	37.2
Clinic	1.0	1.3
CHW	0.2	0.3
Religious/voluntary	4.2	5.6
Referral/specialised hospital	0.3	0.3
District hospital	0.6	0.8
Hospital	0.7	0.9
Health centre	0.7	1.0
Dispensary	1.4	1.9
Clinic	0.3	0.3
Private sector	9.4	12.4
Specialised hospital	1.0	1.3
Hospital	0.9	1.2
Health centre	1.5	2.0
Dispensary	5.8	7.6
Clinic	0.4	0.5
Other private sector	18.3	24.3
Pharmacy	11.0	14.6
ADDO	6.1	8.1
NGO	0.2	0.2
Other	1.1	1.4
Number of children	1,474	1,111

CHW = Community health worker
ADDO = Accredited drug dispensary outlet
NGO = Nongovernmental organization

Table 4.3 Children with fever who took antimalarial drugs

Among children under age 5 with a fever in the 2 weeks preceding the survey, percentage who took any antimalarial drug, according to background characteristics, Tanzania MIS 2017

Background characteristic	Percentage who took antimalarial medicine	Number of children with fever
Age in months		
<6	12.4	96
6-11	28.2	224
12-23	36.5	390
24-35	35.1	296
36-47	46.6	264
48-59	44.1	205
Sex		
Male	35.5	710
Female	37.0	764
Residence		
Urban	26.1	380
Rural	39.7	1,094
Mainland/Zanzibar		
Mainland	37.0	1,442
Urban	26.5	374
Rural	40.7	1,068
Zanzibar	0.0	32
Unguja	(0.0)	11
Pemba	0.0	21
Zone		
Western	57.2	188
Northern	11.0	125
Central	15.1	140
Southern Highlands	39.5	53
Southern	42.4	71
South West Highlands	40.8	164
Lake	42.8	484
Eastern	30.6	219
Zanzibar	0.0	32
Region		
Dodoma	*	32
Arusha	*	39
Kilimanjaro	*	27
Tanga	(19.1)	59
Morogoro	49.7	71
Pwani	(22.6)	26
Dar es Salaam	(21.1)	122
Lindi	25.1	24
Mtwara	51.2	47
Ruvuma	(59.5)	27
Iringa	*	16
Mbeya	*	35
Singida	26.6	60
Tabora	54.5	117
Rukwa	(59.8)	89
Kigoma	61.5	71
Shinyanga	38.6	48
Kagera	(32.7)	63
Mwanza	41.2	126
Mara	51.7	108
Manyara	(7.2)	48
Njombe	*	10
Katavi	42.8	16
Simiyu	30.5	76
Geita	59.0	63
Songwe	*	24
Kaskazini Unguja	*	1
Kusini Unguja	*	1
Mjini Magharibi	*	8
Kaskazini Pemba	(0.0)	9
Kusini Pemba	(0.0)	12
Mother's education		
No education	39.8	295
Primary incomplete	33.1	245
Primary complete	37.8	742
Secondary+	28.6	193

(Continued…)

Table 4.3—*Continued*

Background characteristic	Percentage who took antimalarial medicine	Number of children with fever
Wealth quintile		
Lowest	40.4	354
Second	40.5	295
Middle	39.0	297
Fourth	36.0	300
Highest	21.0	228
Total	36.2	1,474

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.

Table 4.3.1 Types of antimalarial drugs used

Among children under age 5 with a fever in the 2 weeks preceding the survey who took any antimalarial medication, percentage who took specific antimalarial drugs, according to background characteristics, Tanzania MIS 2017

Background characteristic	Percentage of children who took:									Number of children with fever who took any anti-malarial drug
	Any ACT	SP/ Fansidar	Chloro-quine	Amodi-aquine	Quinine pills	Quinine injection	Artesunate rectal	Artesunate injection	Other anti-malarial	
Age in months										
<6	*	*	*	*	*	*	*	*	*	12
6-11	85.7	0.0	2.7	0.8	10.1	1.5	0.8	0.0	0.0	63
12-23	86.7	0.0	0.6	0.0	7.3	3.0	0.0	0.8	2.4	142
24-35	91.0	0.0	0.0	0.0	4.3	2.1	0.0	3.8	0.0	104
36-47	91.4	0.8	0.0	0.0	7.6	3.8	0.0	0.0	0.0	123
48-59	92.0	0.0	1.0	0.0	2.5	2.8	0.0	1.7	0.0	90
Sex										
Male	87.9	0.0	0.0	0.2	10.3	2.9	0.0	0.7	0.3	252
Female	90.8	0.4	1.2	0.0	3.0	2.6	0.2	1.7	1.0	282
Residence										
Urban	88.3	0.0	0.0	0.5	8.1	3.4	0.0	4.0	0.0	99
Rural	89.7	0.2	0.8	0.0	6.0	2.6	0.1	0.6	0.8	435
Mainland/Zanzibar[1]										
Mainland	89.4	0.2	0.7	0.1	6.4	2.7	0.1	1.2	0.6	534
Urban	88.3	0.0	0.0	0.5	8.1	3.4	0.0	4.0	0.0	99
Rural	89.7	0.2	0.8	0.0	6.0	2.6	0.1	0.6	0.8	435
Mother's education										
No education	91.1	0.0	0.0	0.0	5.1	2.0	0.0	0.0	2.4	118
Primary incomplete	88.7	0.0	1.1	0.0	3.6	2.2	0.0	4.5	0.0	81
Primary complete	89.6	0.4	0.9	0.0	6.6	2.3	0.2	0.7	0.2	281
Secondary+	86.2	0.0	0.0	0.9	12.0	7.1	0.0	2.0	0.3	55
Wealth quintile										
Lowest	90.9	0.0	0.6	0.0	3.2	3.5	0.0	0.4	1.9	143
Second	88.7	0.0	0.7	0.0	9.8	0.9	0.4	0.4	0.4	119
Middle	87.7	0.9	1.5	0.0	6.8	3.2	0.0	0.9	0.2	116
Fourth	91.2	0.0	0.0	0.0	7.3	4.5	0.0	0.5	0.0	108
Highest	(87.2)	(0.0)	(0.0)	(1.1)	(4.6)	(0.0)	(0.0)	(8.2)	(0.0)	48
Total	89.4	0.2	0.7	0.1	6.4	2.7	0.1	1.2	0.6	534

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
[1] Estimates for Zanzibar (Unguja and Pemba) are not shown because there were no cases.

Table 4.3.2 Timing 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 the drugs the same or next day following the onset of fever, according to background characteristics, Tanzania MIS 2017

Background characteristic	Percentage of children who took:							Number of children with fever who took any antimalarial drug
	Any ACT	SP/ Fansidar	Chloroquine	Amodiaquine	Quinine pills/quinine injection/IV	Artesunate rectal/ artesunate injection	Other antimalarial	
Age in months								
<6	*	*	*	*	*	*	*	12
6-11	65.6	0.0	2.7	0.0	5.6	0.8	0.0	63
12-23	73.9	0.0	0.0	0.0	7.0	0.4	0.3	142
24-35	72.6	0.0	0.0	0.0	4.9	0.5	0.0	104
36-47	66.0	0.8	0.0	0.0	7.2	0.0	0.0	123
48-59	66.9	0.0	0.0	0.0	2.8	1.4	0.0	90
Sex								
Male	67.7	0.0	0.0	0.0	8.3	0.4	0.2	252
Female	71.3	0.4	0.6	0.0	3.2	0.6	0.0	282
Residence								
Urban	70.4	0.0	0.0	0.0	6.1	0.0	0.0	99
Rural	69.4	0.2	0.4	0.0	5.5	0.7	0.1	435
Mainland/Zanzibar[1]								
Mainland	69.6	0.2	0.3	0.0	5.6	0.5	0.1	534
Urban	70.4	0.0	0.0	0.0	6.1	0.0	0.0	99
Rural	69.4	0.2	0.4	0.0	5.5	0.7	0.1	435
Mother's education								
No education	67.0	0.0	0.0	0.0	4.1	0.0	0.0	118
Primary incomplete	71.9	0.0	0.0	0.0	3.5	0.0	0.0	81
Primary complete	69.1	0.4	0.6	0.0	5.9	0.8	0.2	281
Secondary+	74.8	0.0	0.0	0.0	10.4	1.0	0.0	55
Wealth quintile								
Lowest	67.4	0.0	0.0	0.0	5.5	0.4	0.0	143
Second	66.6	0.0	0.0	0.0	7.4	0.8	0.4	119
Middle	63.2	0.9	1.5	0.0	4.9	0.6	0.0	116
Fourth	81.1	0.0	0.0	0.0	6.0	0.5	0.0	108
Highest	(73.8)	(0.0)	(0.0)	(0.0)	(2.2)	(0.0)	(0.0)	48
Total	69.6	0.2	0.3	0.0	5.6	0.5	0.1	534

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
[1] Estimates for Zanzibar (Unguja and Pemba) are not shown because there were no cases.

Table 4.4 Coverage of testing for anaemia and malaria in children

Percentage of eligible children age 6-59 months who were tested for anaemia and for malaria, according to background characteristics (unweighted), Tanzania MIS 2017

Background characteristic	Percentage tested for: Anaemia	Malaria with RDT	Number of children
Age in months			
6-8	99.2	99.0	385
9-11	99.8	99.3	411
12-17	99.0	98.6	833
18-23	99.2	99.1	779
24-35	99.1	99.1	1,583
36-47	98.9	98.7	1,657
48-59	99.4	99.4	1,613
Sex			
Male	99.2	98.9	3,677
Female	99.2	99.1	3,584
Mother's interview status			
Interviewed	99.3	99.1	6,297
Not interviewed	98.4	98.2	964
Residence			
Urban	98.4	98.2	1,547
Rural	99.4	99.2	5,714
Mainland/Zanzibar			
Mainland	99.2	99.0	6,638
Urban	98.3	98.1	1,375
Rural	99.4	99.3	5,263
Zanzibar	99.0	98.7	623
Unguja	98.8	98.2	333
Pemba	99.3	99.3	290
Zone			
Western	99.5	99.3	855
Northern	98.1	98.1	324
Central	99.2	98.9	533
Southern Highlands	99.5	99.5	434
Southern	99.2	99.2	392
South West Highlands	98.6	98.6	842
Lake	99.7	99.4	2,596
Eastern	98.0	97.9	662
Zanzibar	99.0	98.7	623
Region			
Dodoma	100.0	100.0	132
Arusha	98.1	98.1	106
Kilimanjaro	97.8	97.8	92
Tanga	98.4	98.4	126
Morogoro	96.6	96.6	261
Pwani	99.6	99.2	252
Dar es Salaam	98.0	98.0	149
Lindi	100.0	100.0	207
Mtwara	98.4	98.4	185
Ruvuma	100.0	100.0	210
Iringa	98.4	98.4	129
Mbeya	99.2	99.2	131
Singida	98.7	98.3	232
Tabora	99.6	99.4	485
Rukwa	98.6	98.6	145
Kigoma	99.5	99.2	370
Shinyanga	99.5	98.7	399
Kagera	98.8	98.8	258
Mwanza	99.8	99.3	429
Mara	99.8	99.5	424
Manyara	99.4	98.8	169
Njombe	100.0	100.0	95
Katavi	98.2	98.2	446
Simiyu	99.8	99.8	587
Geita	99.8	99.8	499
Songwe	99.2	99.2	120
Kaskazini Unguja	98.3	97.4	116
Kusini Unguja	98.7	98.7	79
Mjini Magharibi	99.3	98.6	138
Kaskazini Pemba	98.7	98.7	155
Kusini Pemba	100.0	100.0	135

(Continued…)

Table 4.4—*Continued*

Background characteristic	Percentage tested for: Anaemia	Malaria with RDT	Number of children
Mother's education[1]			
No education	99.4	99.2	1,552
Primary incomplete	99.4	99.2	959
Primary complete	99.3	99.3	2,862
Secondary+	98.9	98.5	921
Wealth quintile			
Lowest	99.5	99.5	1,827
Second	99.4	99.2	1,629
Middle	99.6	99.3	1,434
Fourth	98.7	98.5	1,367
Highest	98.4	98.1	1,004
Total	99.2	99.0	7,261

RDT = Rapid diagnostic test (SD BIOLINE Malaria Ag Pf/Pan)
[1] Excludes children whose mothers were not interviewed

Table 4.5 Haemoglobin <8.0 g/dl in children

Percentage of children age 6-59 months with haemoglobin lower than 8.0 g/dl, by background characteristics, Tanzania MIS 2017

Background characteristic	Haemoglobin <8.0 g/dl	Number of children
Age in months		
6-8	6.8	357
9-11	7.1	378
12-17	6.3	770
18-23	2.8	728
24-35	3.5	1,456
36-47	3.0	1,507
48-59	1.6	1,522
Sex		
Male	3.9	3,378
Female	3.2	3,341
Mother's interview status		
Interviewed	3.7	5,852
Not interviewed	2.7	867
Residence		
Urban	2.9	1,786
Rural	3.8	4,934
Mainland/Zanzibar		
Mainland	3.6	6,539
Urban	2.9	1,742
Rural	3.8	4,796
Zanzibar	4.5	181
Unguja	3.6	100
Pemba	5.5	80
Zone		
Western	3.0	759
Northern	4.6	562
Central	2.4	714
Southern Highlands	1.6	329
Southern	3.0	244
South West Highlands	1.2	701
Lake	5.3	2,214
Eastern	2.7	1,015
Zanzibar	4.5	181
Region		
Dodoma	0.8	261
Arusha	5.1	173
Kilimanjaro	2.5	128
Tanga	5.2	261
Morogoro	4.7	343
Pwani	2.2	159
Dar es Salaam	1.6	513
Lindi	3.4	95
Mtwara	2.7	150
Ruvuma	3.5	118
Iringa	0.0	118
Mbeya	1.4	199
Singida	2.5	268
Tabora	2.6	466
Rukwa	0.8	269
Kigoma	3.7	293
Shinyanga	3.2	234
Kagera	6.9	313
Mwanza	5.1	642
Mara	5.7	361
Manyara	4.7	185
Njombe	1.3	93
Katavi	3.1	73
Simiyu	6.4	305
Geita	4.6	358
Songwe	0.6	159
Kaskazini Unguja	3.9	21
Kusini Unguja	0.0	14
Mjini Magharibi	4.4	65
Kaskazini Pemba	6.5	47
Kusini Pemba	4.1	34
Mother's education[1]		
No education	3.6	1,306
Primary incomplete	4.2	802
Primary complete	3.7	2,920
Secondary+	3.4	819

(Continued…)

Table 4.5—*Continued*

Background characteristic	Haemoglobin <8.0 g/dl	Number of children
Wealth quintile		
Lowest	4.9	1,586
Second	3.2	1,446
Middle	3.5	1,279
Fourth	3.8	1,274
Highest	2.2	1,134
Total	3.6	6,719

Note: Table is based on children who stayed in the household the night before the interview. Prevalence of anaemia is based on haemoglobin levels and is adjusted for altitude using CDC formulas (CDC 1998). Haemoglobin is measured in grams per decilitre (g/dl).
[1] Excludes children whose mothers were not interviewed

Table 4.6 Prevalence of malaria in children

Percentage of children age 6-59 months classified as having malaria, according to RDT, by background characteristics, Tanzania MIS 2017

Background characteristic	Malaria prevalence according to RDT: RDT positive	Malaria prevalence according to RDT: Number of children
Age in months		
6-8	2.6	357
9-11	4.6	376
12-17	4.5	764
18-23	5.9	728
24-35	7.4	1,455
36-47	10.3	1,505
48-59	8.2	1,522
Sex		
Male	7.5	3,368
Female	7.2	3,339
Mother's interview status		
Interviewed	7.0	5,841
Not interviewed	9.7	866
Residence		
Urban	2.1	1,781
Rural	9.2	4,926
Mainland/Zanzibar		
Mainland	7.5	6,527
Urban	2.2	1,738
Rural	9.5	4,789
Zanzibar	0.2	180
Unguja	0.4	100
Pemba	0.0	80
Zone		
Western	16.6	757
Northern	1.5	562
Central	1.1	712
Southern Highlands	4.9	329
Southern	13.6	244
South West Highlands	2.6	701
Lake	10.6	2,207
Eastern	4.6	1,015
Zanzibar	0.2	180
Region		
Dodoma	0.6	261
Arusha	0.0	173
Kilimanjaro	0.0	128
Tanga	3.1	261
Morogoro	9.5	343
Pwani	5.3	159
Dar es Salaam	1.1	513
Lindi	11.7	95
Mtwara	14.8	150
Ruvuma	11.8	118
Iringa	2.0	118
Mbeya	4.0	199
Singida	2.3	266
Tabora	11.7	465
Rukwa	1.8	269
Kigoma	24.4	292
Shinyanga	6.1	232
Kagera	15.4	313
Mwanza	8.1	638
Mara	11.2	360
Manyara	0.0	185
Njombe	0.0	93
Katavi	7.1	73
Simiyu	6.0	305
Geita	17.3	358
Songwe	0.0	159
Kaskazini Unguja	0.0	21
Kusini Unguja	0.0	14
Mjini Magharibi	0.6	65
Kaskazini Pemba	0.0	47
Kusini Pemba	0.0	34

(Continued…)

Table 4.6—*Continued*

Background characteristic	Malaria prevalence according to RDT: RDT positive	Malaria prevalence according to RDT: Number of children
Mother's education[1]		
No education	11.1	1,304
Primary incomplete	9.0	800
Primary complete	5.5	2,916
Secondary+	2.9	817
Wealth quintile		
Lowest	14.2	1,586
Second	9.5	1,443
Middle	6.3	1,275
Fourth	3.2	1,273
Highest	0.6	1,130
Total	7.3	6,707

RDT = Rapid diagnostic test (SD BIOLINE Malaria Ag Pf/Pan)
[1] Excludes children whose mothers were not interviewed

MALARIA KNOWLEDGE AND MESSAGING 5

Key Findings

- ***Most serious health problem in the community:*** Fifty-seven percent of women age 15-49 believe that malaria is the most serious health problem in their community.
- ***Knowledge of malaria symptoms:*** Seventy-seven percent of women age 15-49 reported that fever is a sign or symptom of malaria.
- ***Knowledge of ways to avoid malaria:*** The percentage of women age 15-49 who say there are ways to avoid malaria decreased from 92% in the 2011-12 THMIS and 91% in the 2015-16 TDHS-MIS to 87% in the 2017 TMIS.
- ***Access to ACT:*** Eighty-eight percent of women age 15-49 reported that artemisinin-based combination therapy (ACT) can be obtained at the nearest health facility or pharmacy.
- ***Media exposure to malaria messages:*** The percentage of women age 15-49 who have seen or heard a malaria message in the past year was the same in the 2011-12 THMIS, 2015-16 TDHS-MIS, and 2017 TMIS (84%).
- ***Attitude towards malaria and malaria treatment:*** Ninety-two percent of women age 15-49 reported that the only way to be sure someone has malaria is to test their blood.

Social behaviour change communication (SBCC) and information, education, and communication (IEC) programmes are essential to the effective implementation of integrated malaria vector control, diagnosis, treatment, and preventive therapies. Effective communication not only promotes positive behaviour for the prevention and control of malaria but also identifies community needs that are guided by informed choices and decisions, which eventually result in improved health conditions.

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

5.1 MOST SERIOUS HEALTH PROBLEM IN COMMUNITY

Most serious health problem in community

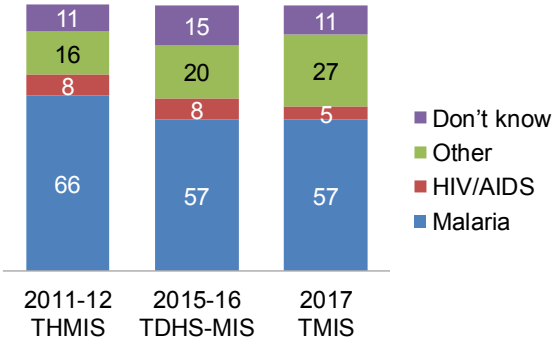
Percentage of women age 15-49 who believe that malaria is the most serious health problem in their community.

Sample: Women age 15-49

Malaria is a serious health problem that causes a large number of deaths among children under age 5 and pregnant women in Tanzania. Due to the high number of deaths attributable to malaria, the government has put much effort into curbing the disease by investing in integrated prevention, surveillance and monitoring, case management, and SBCC interventions. To understand their awareness of the extent of the malaria problem, women age 15-49 were asked during the 2017 TMIS to name the most serious health problem in their community. Fifty-seven percent of women believed that malaria is the most serious health problem in their community (**Table 5.1**). Five percent reported HIV/AIDS as the most serious health problem.

Figure 5.1 **Trends in the percent distribution of women by the most serious health problem in the community**

Percent distribution of women age 15-49 who believe that malaria, HIV/AIDS, or other health issues are the most serious health problem in their community



Trends: The percentage of women who reported that malaria is the most serious health problem in their community decreased from 66% in the 2011-12 THMIS to 57% in the 2015-16 TDHS-MIS and 2017 TMIS (**Figure 5.1**).

Patterns by background characteristics

- Overall, more women from Mainland urban areas (60%) than Mainland rural areas (58%) believe that malaria is the most health serious problem.
- The percentage of women who believe that malaria is the most serious health problem in their community is higher in Unguja (6%) than in Pemba (2%).
- Among regions in Mainland Tanzania, the percentage of women who believe that malaria is the most serious health problem is lowest in Arusha and Njombe (29% each) and highest in Morogoro, Ruvuma, and Mara (74% each). In Zanzibar, the percentage of women who report that malaria is the most serious health problem ranges from 2% in Kaskazini Pemba and Kusini Pemba to 7% in Mjini Magharibi.

5.2 Knowledge of Malaria Signs or Symptoms

Knowledge of malaria signs or symptoms

Percentage of women age 15-49 who reported specific signs or symptoms of malaria in a young child.

Sample: Women age 15-49

The health of children under age 5 with malaria can deteriorate rapidly leading to death if treatment is delayed. Knowledge of the signs and symptoms of malaria in children is very important to enhance early care seeking behaviour. During the 2017 TMIS women were asked to name the signs or symptoms of malaria in a young child. Seventy-seven percent of women age 15-49 reported fever as a symptom of malaria (**Figure 5.2**). Much smaller percentages reported weakness (18%), headaches (16%), and feeling cold/chills (12%) as symptoms (**Table 5.2**).

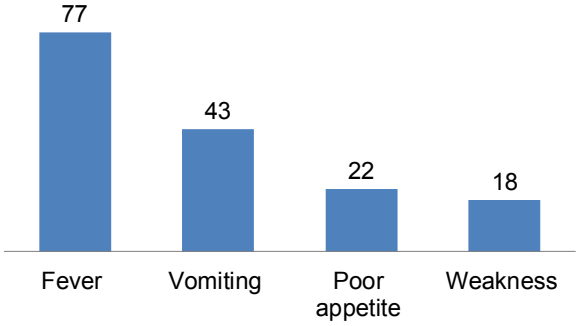
Trends: The percentage of women who reported fever as a specific sign or symptom of malaria decreased from 78% in the 2011-12 THMIS to 77% in the 2015-16 TDHS-MIS and 2017 TMIS.

Patterns by background characteristics

- The percentage of women who reported that fever is a symptom of malaria increases with increasing wealth, from 71% in the lowest quintile to 83% in the highest quintile.
- Women from Mainland urban areas (83%) were more likely than those from Mainland rural areas (74%) to report fever as a specific sign or symptom of malaria.
- A higher percentage of women from Unguja (76%) than women from Pemba (64%) cited fever as a specific sign or symptom of malaria.

Figure 5.2 **Knowledge of malaria symptoms**

Percentage of women age 15-49 who reported specific signs or symptoms of malaria in a young child



- By region, the percentage of women who reported that fever is a sign or symptom of malaria is higher in Kigoma, Kilimanjaro, and Dar es Salaam (87%, 86%, and 85%, respectively) than in Njombe (54%), Kaskazini Pemba (61%), and Singida and Shinyanga (66% each).

5.3 KNOWLEDGE OF WAYS TO AVOID MALARIA

Knowledge of ways to avoid malaria

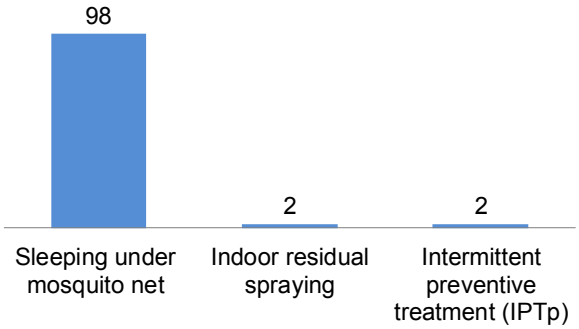
Percentage of women age 15-49 who say there are ways to avoid getting malaria.

Sample: Women age 15-49

Knowledge about prevention of malaria infection is vital to minimizing disease morbidity and mortality. During the 2017 TMIS, women were asked if there are ways to prevent malaria, and, if so, they were asked to cite specific ways of avoiding the disease. Eighty-seven percent of women responded that there are ways to avoid getting malaria. Among ways to avoid getting the disease, 98% of women cited sleeping under a mosquito net. Indoor residual spraying (IRS) and intermittent preventive treatment (IPTp) were much less commonly reported (only 2% each) (**Figure 5.3** and **Table 5.3**).

Figure 5.3 **Knowledge of ways to avoid malaria**

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



Trends: The percentage of women who say there are ways to avoid malaria decreased from 92% in the 2011-12 THMIS and 91% in the 2015-16 TDHS-MIS to 87% in the 2017 TMIS. However, the percentage of women who reported sleeping under a mosquito net as a way to avoid getting malaria was the same in the 2011-12 THMIS, 2015-16 TDHS-MIS, and the 2017 TMIS (98%).

Patterns by background characteristics

- The percentage of women who say there are ways to avoid malaria increases with increasing wealth, from 70% in the lowest wealth quintile to 97% in the highest quintile.
- The percentage of women who reported sleeping under a mosquito net as a way to avoid getting malaria is almost the same in Mainland urban areas (98%) and Mainland rural areas (97%). Similarly,

there is little difference between the percentage of women in Unguja (95%) and Pemba (94%) who cited sleeping under a mosquito net as a way to avoid malaria.

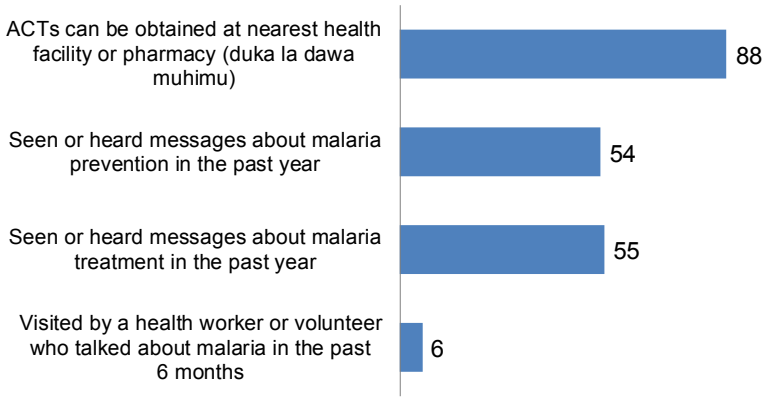
- Across all regions, more than 90% of women reported that sleeping under a mosquito net is a way to avoid getting malaria.

5.4 Access to Artemisinin-based Combination Therapy (ACT), Messages about Malaria Prevention and Treatment, and Visits from Health Workers

Access to early diagnosis and treatment ensures that all confirmed malaria cases are managed within 24 hours after the onset of fever. Treatment using first-line antimalarial medicine immediately improves the patient's condition by minimizing further complications of the disease. Around 9 in 10 (88%) women reported that artemisinin-based combination therapy (ACT) can be obtained at the nearest health facility or pharmacy (**Figure 5.4**). Only 6% of women said they were visited by a health worker or volunteer who talked about malaria in the past 6 months, a very low figure relative to the percentage of women who saw or heard messages about malaria prevention (54%) and treatment (55%) (**Table 5.4**).

***Figure 5.4* Access to artemisinin-based combination therapy, messages about malaria prevention and treatment, and visits from health workers**

Percentage of women age15-49 with affirmative responses to the following statements



Trends: The percentage of women who reported that ACT can be obtained at the nearest health facility or pharmacy increased from 87% in the 2011-12 THMIS to 90% in the 2015-16 TDHS-MIS before decreasing slightly to 88% in the 2017 TMIS.

Patterns by background characteristics

- The percentage of women who report that ACT can be obtained at the nearest health facility or pharmacy increases with increasing wealth, from 85% in the lowest wealth quintile to 90% in the fourth quintile.

- In Mainland Tanzania, the percentage of women who reported having seen or heard messages about malaria prevention ranges from 28% in Simiyu to 74% in Iringa. In Zanzibar, the percentage of women who reported having seen or heard such messages ranges from 30% in Kaskazini Pemba to 61% in both Kusini Unguja and Mjini Magharibi.

- In Mainland Tanzania, 89% of women reported that ACT can be obtained at the nearest health facility or pharmacy. However, in Zanzibar only 40% of women reported that ACT can be obtained at the nearest health facility or pharmacy.

- Six percent of women in Mainland Tanzania (7% in Mainland urban and 6% in Mainland rural) had been visited by a health worker or volunteer who talked about malaria, as compared with 8% of women in Zanzibar (6% in Unguja and 12% in Pemba).

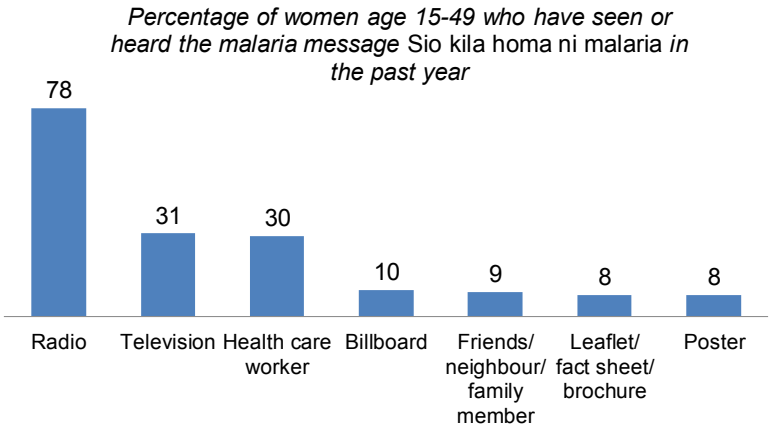
5.5 MEDIA EXPOSURE TO MALARIA MESSAGES

Media exposure to malaria messages

Percentage of women age 15-49 who have seen or heard the malaria message *Malaria haikubaliki*, *Maliza malaria*, or *Sio kila homa ni malaria* in the past year.

Sample: Women age 15-49

Figure 5.5 **Media exposure to malaria messages**



Exposure of target populations to specific messages is the primary aim of behaviour change communications. Increasing knowledge of malaria messages through various channels, such as radio, television, printed materials, and community events, contributes to changes in attitudes and practices related to malaria prevention methods. To determine how widely malaria communications have penetrated target audiences, 2017 TMIS participants were asked about their exposure to specific malaria messages. Respondents from Mainland Tanzania were asked if they had seen or heard the phrase *Malaria haikubaliki* (malaria is not acceptable) in the past year, while respondents in Zanzibar were asked if they had seen or heard the phrase *Maliza malaria* (wipe out malaria). All respondents were asked if they had seen or heard the phrase *Sio kila homa ni malaria* (not every fever is malaria) in the past year. Respondents who had seen or heard the phrase *Sio kila homa ni malaria* were then asked about specific places where they had been exposed to this message.

Eighty-four percent of women have seen or heard a malaria message (*Malaria haikubaliki*, *Maliza malaria*, or *Sio kila homa ni malaria*) in the past year. Among women who saw or heard the phrase *Sio kila homa ni malaria*, 78% reported that they heard the phrase on the radio, while 31% reported that they saw it on television (**Table 5.5** and **Figure 5.5**).

Trends: The percentage of women who have seen or heard a malaria message (*Malaria haikubaliki*, *Maliza malaria*, or *Sio kila homa ni malaria*) in the past year was the same in the 2011-12 THMIS, 2015-16 TDHS, and 2017 TMIS (84%).

Patterns by background characteristics

- The percentage of women who have seen or heard a malaria message in the past year increases with increasing wealth, from 65% in the lowest quintile to 96% in the highest quintile.
- Women in Mainland urban areas (80%) are more likely than those in Mainland rural areas (76%) to have heard a malaria message on the radio.
- The percentage of women who have heard a malaria message on the radio is higher in Unguja (70%) than in Pemba (68%).
- In Mainland Tanzania, the percentage of women who have seen or heard a malaria message in the past year ranges from 62% in Simiyu to 95% in Dar es Salaam. In Zanzibar, the percentage ranges from 44% in Kaskazini Pemba to 85% in Mjini Magharibi.

5.6 ATTITUDE TOWARDS MALARIA AND MALARIA TREATMENT

Attitude towards malaria and malaria treatment

Percentage of women age 15-49 who strongly agree with each of five statements about malaria.

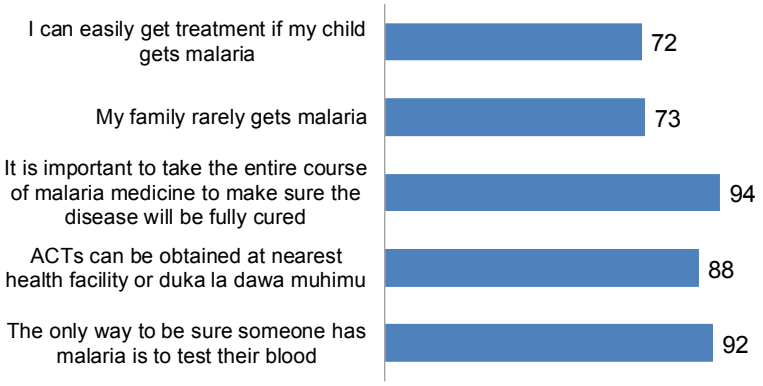
Sample: Women age 15-49

Perceptions, beliefs, and attitudes about malaria causation, symptom identification, treatment, and prevention are important factors in assessing knowledge among the population. To understand people's attitudes towards malaria and malaria treatment, it is necessary to know their treatment-seeking behaviours. To assess attitudes towards malaria, women age 15-49 were read five statements about malaria. For each statement, they were asked if they strongly agreed, somewhat agreed, somewhat disagreed, or strongly disagreed. **Table 5.6** presents the percentage of women who strongly agreed with each statement, by background characteristics.

The percentages of women who strongly agree with the statements were as follows: *I can easily get treatment if my child gets malaria* (72%), *My family rarely gets malaria* (73%), *It is important to take the entire course of malaria medicine to make sure the disease will be fully cured* (94%), *ACTs can be obtained at the nearest health facility or duka la dawa muhimu* (88%), and *The only way to be sure someone has malaria is to test their blood* (92%) (**Table 5.6** and **Figure 5.6**).

Figure 5.6 **Attitude towards malaria and malaria treatment**

Percentage of women age 15-49 who strongly agree with the following statements about malaria



Patterns by background characteristics

- The percentage of women who reported that they can easily get treatment if their child gets malaria increases with increasing wealth, from 62% in the lowest wealth quintile to 78% in the fourth and highest wealth quintiles.
- In Mainland Tanzania, the percentage of women who agreed that the only way to be sure someone has malaria is to test their blood is higher in urban areas (96%) than in rural areas (90%). In Zanzibar, the percentage is higher in Unguja (96%) than Pemba (92%).
- In Mainland Tanzania, the percentage of women who reported that they can easily get treatment if their child gets malaria ranges from 59% in both Lindi and Kigoma to 85% in Mara. In Zanzibar, the percentage ranges from 55% in Kaskazini Pemba to 95% in Kusini Unguja.

LIST OF TABLES

For detailed information on malaria knowledge and messaging, see the following tables:

- **Table 5.1 Most serious health problem in community**
- **Table 5.2 Knowledge of malaria symptoms**
- **Table 5.3 Knowledge of ways to avoid malaria**

- **Table 5.4 Access to ACT, messages about malaria prevention and treatment, and visits from health workers**
- **Table 5.5 Media exposure to malaria messages**
- **Table 5.6 Attitude towards malaria and malaria treatment**

Table 5.1 Most serious health problem in community

Among women age 15-49, percent distribution of those who believe that malaria, HIV/AIDS, or other health issues are the most serious health problem in their community, by background characteristics, Tanzania MIS 2017

Background characteristic	Most serious health problem in community				Total	Number of women
	HIV/AIDS	Malaria	Other	Don't know		
Residence						
Urban	4.1	58.2	27.5	10.2	100.0	3,616
Rural	5.3	55.7	27.4	11.6	100.0	6,402
Mainland/Zanzibar						
Mainland	4.8	58.3	26.9	10.1	100.0	9,711
Urban	4.0	59.6	26.9	9.4	100.0	3,520
Rural	5.2	57.5	26.9	10.4	100.0	6,192
Zanzibar	7.7	4.8	44.4	43.2	100.0	307
Unguja	5.6	6.4	43.4	44.5	100.0	196
Pemba	11.3	1.9	46.0	40.8	100.0	111
Zone						
Western	2.8	67.4	21.5	8.2	100.0	855
Northern	3.6	43.4	39.4	13.6	100.0	1,150
Central	5.6	50.9	28.2	15.4	100.0	856
Southern Highlands	11.2	53.8	27.2	7.8	100.0	568
Southern	2.2	69.1	18.5	10.2	100.0	520
South West Highlands	8.6	41.0	41.0	9.3	100.0	1,044
Lake	4.5	62.0	22.7	10.7	100.0	2,717
Eastern	2.9	68.4	21.9	6.8	100.0	2,002
Zanzibar	7.7	4.8	44.4	43.2	100.0	307
Region						
Dodoma	4.5	55.5	23.3	16.7	100.0	364
Arusha	4.0	28.8	47.3	19.9	100.0	376
Kilimanjaro	3.8	29.5	55.0	11.8	100.0	330
Tanga	3.3	66.2	21.0	9.6	100.0	444
Morogoro	2.7	74.0	18.2	5.0	100.0	591
Pwani	4.2	59.1	26.2	10.4	100.0	267
Dar es Salaam	2.8	67.7	22.7	6.8	100.0	1,144
Lindi	3.6	70.2	17.7	8.5	100.0	189
Mtwara	1.4	68.5	18.9	11.2	100.0	331
Ruvuma	1.8	73.9	18.9	5.4	100.0	228
Iringa	13.8	51.5	20.4	14.3	100.0	172
Mbeya	8.5	33.4	48.5	9.6	100.0	315
Singida	7.2	56.6	22.7	13.6	100.0	262
Tabora	3.9	64.4	20.5	11.3	100.0	480
Rukwa	6.4	48.8	34.9	9.9	100.0	395
Kigoma	1.5	71.4	22.8	4.2	100.0	375
Shinyanga	10.5	52.2	18.9	18.4	100.0	299
Kagera	2.2	63.5	25.7	8.7	100.0	490
Mwanza	3.6	60.7	25.0	10.7	100.0	823
Mara	2.7	73.8	14.6	8.9	100.0	402
Manyara	5.4	36.9	42.4	15.3	100.0	229
Njombe	21.4	28.6	45.6	4.4	100.0	167
Katavi	10.1	54.1	26.5	9.3	100.0	93
Simiyu	12.0	48.9	29.3	9.9	100.0	321
Geita	0.7	69.5	20.2	9.6	100.0	382
Songwe	11.9	33.1	46.9	8.1	100.0	241
Kaskazini Unguja	1.4	4.9	34.2	59.5	100.0	38
Kusini Unguja	0.1	4.1	36.9	58.8	100.0	26
Mjini Magharibi	7.9	7.3	47.4	37.4	100.0	132
Kaskazini Pemba	12.7	1.5	40.3	45.5	100.0	62
Kusini Pemba	9.7	2.4	53.1	34.8	100.0	49
Wealth quintile						
Lowest	3.6	58.5	25.6	12.3	100.0	1,652
Second	4.7	59.6	24.7	10.9	100.0	1,714
Middle	6.4	56.9	26.7	10.1	100.0	1,874
Fourth	5.0	54.9	29.6	10.5	100.0	2,152
Highest	4.5	54.8	29.1	11.6	100.0	2,626
Total	4.8	56.6	27.4	11.1	100.0	10,018

Table 5.2 Knowledge of malaria symptoms

Among women age 15-49, percentage who reported specific signs or symptoms of malaria in a young child, by background characteristics, Tanzania MIS 2017

Background characteristic	Percentage of women who reported specific signs or symptoms of malaria in a child: Fever	Feeling cold/ chills	Perspiration/ sweating	Headache	Body aches	Poor appetite	Vomiting	Diarrhoea	Weakness	Coughing	Convulsion	Other	Does not know any	Number of women
Residence														
Urban	82.6	12.6	5.2	18.6	7.4	30.0	45.6	16.7	22.6	4.7	0.6	4.6	6.7	3,616
Rural	74.2	11.5	3.3	13.9	5.9	18.0	41.4	17.0	15.1	7.3	1.1	8.6	11.0	6,402
Mainland/Zanzibar														
Mainland	77.4	11.8	4.0	15.2	6.3	22.6	42.9	16.9	18.0	6.4	0.9	7.3	9.2	9,711
Urban	82.8	12.4	5.3	18.3	7.2	30.4	45.7	16.8	22.9	4.7	0.6	4.7	6.5	3,520
Rural	74.4	11.4	3.4	13.5	5.8	18.1	41.3	17.0	15.2	7.4	1.1	8.9	10.7	6,192
Zanzibar	71.2	15.7	2.5	25.8	11.3	13.7	44.4	15.4	12.2	3.8	0.2	0.6	16.5	307
Unguja	75.5	16.3	2.7	26.8	12.9	14.4	48.1	16.6	15.5	4.0	0.0	0.9	12.8	196
Pemba	63.5	14.6	2.0	24.0	8.4	12.5	37.8	13.2	6.2	3.5	0.6	0.1	23.0	111
Zone														
Western	79.6	9.5	1.6	12.6	3.7	15.7	38.5	14.0	11.9	6.4	0.9	6.8	11.2	855
Northern	82.3	11.3	2.1	23.6	8.1	26.8	47.0	12.3	21.0	7.1	1.0	7.6	5.1	1,150
Central	71.3	9.9	7.0	13.8	2.7	17.6	40.3	21.2	12.4	10.5	0.5	8.7	10.3	856
Southern Highlands	71.6	14.6	3.4	15.9	15.6	29.0	50.1	22.4	20.6	4.5	0.6	6.0	8.6	568
Southern	72.9	11.4	0.8	20.8	7.5	19.4	56.1	15.4	23.0	4.5	1.7	14.3	6.6	520
South West Highlands	74.0	11.8	3.1	13.3	2.5	13.2	34.7	21.4	17.0	5.8	1.9	8.1	14.2	1,044
Lake	76.0	12.6	5.0	12.0	6.8	22.1	39.8	16.3	13.5	7.9	0.9	9.4	10.3	2,717
Eastern	82.8	11.8	5.2	16.0	6.3	29.7	46.4	16.4	25.7	3.8	0.3	2.1	6.9	2,002
Zanzibar	71.2	15.7	2.5	25.8	11.3	13.7	44.4	15.4	12.2	3.8	0.2	0.6	16.5	307
Region														
Dodoma	70.0	9.6	5.7	12.5	3.2	20.7	42.3	22.7	14.5	10.8	0.0	6.1	12.3	364
Arusha	81.2	15.3	4.4	19.9	9.4	26.5	50.4	11.5	22.6	5.0	0.4	3.9	9.7	376
Kilimanjaro	86.0	9.9	0.4	30.8	8.1	34.2	47.8	9.6	24.7	4.0	0.2	4.5	3.3	330
Tanga	80.5	8.9	1.4	21.4	6.9	21.7	43.4	15.0	16.8	11.2	2.1	13.1	2.6	444
Morogoro	81.0	9.0	5.2	17.1	7.6	23.7	49.1	14.1	24.5	3.9	0.9	0.9	7.8	591
Pwani	77.0	9.6	1.2	26.3	8.1	24.2	51.3	14.7	20.9	3.7	0.5	11.6	5.8	267
Dar es Salaam	85.0	13.8	6.1	13.1	5.2	34.1	43.9	17.9	27.4	3.7	0.0	0.5	6.6	1,144
Lindi	76.8	7.4	1.4	13.9	5.9	24.6	48.0	12.5	20.5	1.9	0.9	19.5	6.8	189
Mtwara	70.6	13.8	0.5	24.8	8.4	16.5	60.8	17.1	24.4	5.9	2.2	11.3	6.5	331
Ruvuma	80.2	12.7	4.5	16.1	14.8	21.2	54.6	19.9	21.8	4.1	1.3	12.1	3.2	228
Iringa	77.3	7.6	3.9	18.7	16.8	49.2	55.6	26.9	22.0	4.6	0.0	1.3	6.8	172
Mbeya	69.2	12.0	3.1	13.3	2.5	15.0	32.1	21.2	24.9	6.0	1.1	11.5	17.2	315
Singida	65.6	6.4	11.3	8.5	1.5	9.3	35.1	23.3	7.9	9.1	0.7	18.0	10.7	262
Tabora	74.1	6.3	2.0	9.4	4.2	16.8	38.4	14.4	10.9	8.9	0.7	5.0	16.3	480
Rukwa	78.3	12.8	2.1	16.9	3.5	9.9	34.9	18.8	10.8	4.6	2.2	8.1	14.4	395
Kigoma	86.7	13.6	1.1	16.7	3.2	14.2	38.5	13.6	13.2	3.3	1.2	9.2	4.7	375
Shinyanga	66.0	5.4	7.8	8.3	2.4	8.7	22.6	14.5	10.6	5.5	1.2	5.8	20.5	299
Kagera	75.8	11.0	3.0	14.8	8.6	15.6	46.7	26.4	19.6	7.1	2.7	9.6	7.6	490
Mwanza	82.1	15.1	5.7	11.9	7.1	33.9	41.6	6.7	7.8	4.9	0.3	4.8	9.0	823
Mara	80.6	20.3	1.8	8.5	9.2	18.5	40.1	16.6	18.9	11.0	0.8	10.5	5.6	402
Manyara	79.7	14.5	4.2	21.7	3.3	22.2	43.2	16.3	14.3	11.7	1.1	2.1	6.8	229

(Continued…)

Table 5.2—*Continued*

Background characteristic	Percentage of women who reported specific signs or symptoms of malaria in a child:													Number of women
	Fever	Feeling cold/ chills	Perspiration/ sweating	Headache	Body aches	Poor appetite	Vomiting	Diarrhoea	Weakness	Coughing	Convulsion	Other	Does not know any	
Njombe	53.9	24.3	1.5	12.7	15.6	18.6	38.2	21.0	17.6	4.9	0.1	2.5	17.9	167
Katavi	75.2	7.5	3.4	9.1	3.3	15.1	37.1	16.1	17.7	4.8	0.8	5.0	8.6	93
Simiyu	71.7	9.3	6.2	7.5	3.8	12.6	29.3	21.3	13.6	18.5	0.9	32.5	10.5	321
Geita	69.8	9.7	6.0	18.7	6.9	27.2	48.9	20.8	14.7	4.8	0.0	1.7	13.4	382
Songwe	73.0	11.5	4.8	8.8	0.7	15.4	36.6	27.8	16.6	8.0	2.7	5.0	12.0	241
Kaskazini Unguja	76.6	11.8	1.5	22.1	9.7	14.2	41.4	17.5	15.4	4.5	0.0	0.9	16.8	38
Kusini Unguja	80.7	17.7	3.9	23.4	9.4	20.8	58.9	22.8	24.7	3.5	0.0	0.0	13.1	26
Mjini Magharibi	74.2	17.4	2.9	28.8	14.5	13.3	48.0	15.1	13.7	3.9	0.0	1.1	11.6	132
Kaskazini Pemba	61.1	12.2	1.3	17.6	8.9	12.8	32.7	10.4	4.1	2.9	0.7	0.0	26.2	62
Kusini Pemba	66.6	17.6	2.8	32.1	7.7	12.0	44.1	16.9	9.0	4.4	0.5	0.3	18.9	49
Wealth quintile														
Lowest	71.2	11.3	2.7	11.4	4.4	13.7	34.3	15.5	11.7	8.8	0.6	10.8	14.0	1,652
Second	72.9	10.4	3.6	10.6	5.1	16.0	41.2	17.3	14.7	7.9	1.3	8.1	11.2	1,714
Middle	75.4	11.6	3.6	15.7	6.2	18.3	41.3	17.1	14.8	6.2	1.6	8.1	10.5	1,874
Fourth	80.1	13.1	4.1	16.6	7.3	25.3	45.4	17.1	19.6	6.4	0.7	6.7	7.9	2,152
Highest	82.8	12.4	5.2	20.5	8.1	32.1	48.6	17.1	24.3	3.9	0.4	3.8	5.8	2,626
Total	77.2	11.9	4.0	15.6	6.4	22.3	42.9	16.9	17.8	6.4	0.9	7.1	9.4	10,018

Table 5.3 Knowledge of ways to avoid malaria

Among women age 15-49, percentage who say there are ways to avoid getting malaria, and among those, percentage who cite specific ways of avoiding malaria, by background characteristics, Tanzania MIS 2017

Background characteristic	Percentage who say there are ways to avoid malaria	Number of women	Among women who say there are ways to avoid getting malaria , percentage who cite specific ways of avoiding malaria													Number of women
			Sleep under mosquito net	Use mosquito coil	Use insecticide spray	Indoor residual spraying (IRS)	Keep doors/ windows closed	Use insect repellent	Keep surroundings clean	Cut the grass	Remove standing water	Intermittent preventive treatment (IPTp)	House screening	Other	Does not know any way	
Residence																
Urban	95.9	3,616	97.9	9.1	15.4	2.2	4.2	3.5	28.7	18.8	18.1	1.6	2.0	1.0	0.2	3,470
Rural	82.3	6,402	97.2	3.1	5.5	1.1	2.9	1.6	19.4	10.7	7.4	2.1	0.7	2.4	0.7	5,271
Mainland/Zanzibar																
Mainland	87.1	9,711	97.6	5.4	9.1	1.5	3.4	2.2	22.5	13.7	11.7	1.9	1.3	1.9	0.5	8,454
Urban	96.0	3,520	98.0	9.1	15.0	2.2	4.2	3.4	28.2	18.8	18.2	1.6	2.1	1.0	0.2	3,378
Rural	82.0	6,192	97.3	2.9	5.1	1.0	2.9	1.4	18.7	10.4	7.3	2.0	0.7	2.5	0.7	5,076
Zanzibar	93.4	307	95.0	8.8	19.8	2.5	4.0	5.3	40.1	18.8	11.8	2.2	0.4	0.0	0.1	287
Unguja	93.9	196	95.4	7.0	26.9	3.2	5.1	5.1	41.0	20.7	15.4	1.9	0.6	0.0	0.0	184
Pemba	92.7	111	94.3	12.1	6.9	1.3	1.8	5.8	38.4	15.4	5.2	2.9	0.0	0.0	0.3	103
Zone																
Western	81.0	855	98.4	1.8	2.4	1.0	0.9	1.0	10.3	4.5	3.9	2.6	0.2	0.6	0.3	692
Northern	91.7	1,150	96.1	5.6	9.9	2.1	3.0	4.5	27.8	19.8	17.6	2.1	1.2	1.2	0.4	1,055
Central	78.2	856	98.2	2.8	4.7	0.8	2.2	0.8	20.7	10.5	8.1	2.1	0.8	2.8	0.7	669
Southern Highlands	87.6	568	95.8	4.1	8.1	1.7	7.8	2.8	31.8	16.8	15.6	3.9	0.0	6.4	0.8	497
Southern	87.4	520	97.5	9.9	8.5	1.2	1.8	2.0	30.5	10.9	8.2	1.9	1.0	3.8	0.4	454
South West Highlands	83.8	1,044	97.9	1.3	2.6	0.1	0.7	1.0	14.2	7.7	7.6	0.5	0.1	1.5	0.3	875
Lake	85.5	2,717	97.4	5.5	10.9	2.3	5.7	1.9	17.3	12.1	6.7	2.2	1.4	2.1	0.7	2,324
Eastern	94.3	2,002	98.4	8.5	13.8	1.3	2.7	2.8	30.5	19.5	20.2	1.1	2.6	0.6	0.4	1,888
Zanzibar	93.4	307	95.0	8.8	19.8	2.5	4.0	5.3	40.1	18.8	11.8	2.2	0.4	0.0	0.1	287
Region																
Dodoma	71.9	364	98.2	1.8	4.3	1.0	2.2	0.5	24.3	10.3	9.3	1.9	1.2	1.8	0.8	262
Arusha	90.5	376	94.9	9.5	15.0	2.7	5.3	6.6	30.3	19.9	20.6	3.6	0.9	1.8	0.4	340
Kilimanjaro	97.1	330	93.3	6.4	9.4	2.5	2.5	3.8	38.9	32.7	24.2	2.2	0.0	2.2	0.8	321
Tanga	88.7	444	99.5	1.6	5.9	1.3	1.3	3.4	16.6	9.1	9.5	0.6	2.3	0.0	0.0	394
Morogoro	91.1	591	98.1	2.7	5.5	1.1	3.8	3.7	29.2	11.7	16.0	0.7	2.1	0.3	0.9	539
Pwani	91.8	267	98.2	10.9	11.0	3.2	2.6	3.7	25.7	16.0	11.3	1.4	0.5	1.7	0.0	245
Dar es Salaam	96.6	1,144	98.6	10.8	18.4	0.9	2.2	2.1	32.2	24.2	24.3	1.2	3.4	0.6	0.2	1,104
Lindi	90.2	189	98.1	3.1	7.1	0.3	4.0	1.9	27.5	15.9	6.1	1.0	0.9	5.2	0.3	170
Mtwara	85.8	331	97.1	14.0	9.3	1.7	0.5	2.1	32.3	7.9	9.4	2.4	1.0	2.9	0.5	284
Ruvuma	88.0	228	91.8	1.9	3.4	0.7	0.3	0.9	29.0	10.9	19.9	2.5	0.0	10.7	1.9	201
Iringa	95.1	172	99.0	9.6	15.8	3.9	19.9	7.2	41.3	27.2	10.4	5.4	0.0	0.0	0.0	164
Mbeya	81.6	315	99.3	0.7	2.5	0.0	0.2	0.7	16.0	7.5	11.0	0.0	0.0	3.0	0.7	257
Singida	81.9	262	98.0	1.4	2.5	0.9	0.8	0.9	13.6	7.8	6.9	1.4	0.6	2.7	0.8	215
Tabora	71.6	480	99.5	2.7	4.3	1.7	0.9	1.7	10.9	3.9	2.5	0.7	0.0	0.7	0.5	344
Rukwa	84.6	395	99.3	2.0	2.2	0.0	1.1	1.3	14.0	6.6	4.5	0.0	0.0	0.7	0.0	334
Kigoma	92.9	375	97.3	0.8	0.6	0.2	1.0	0.4	9.7	5.0	5.3	4.4	0.4	0.5	0.0	349
Shinyanga	83.0	299	97.9	3.4	6.0	0.5	1.8	0.9	10.9	5.4	5.9	3.3	0.8	0.7	0.6	248
Kagera	87.2	490	97.3	1.3	3.9	2.8	3.5	1.0	17.1	12.9	7.7	3.4	1.0	5.6	0.3	427
Mwanza	94.2	823	97.6	11.8	21.5	3.8	7.0	2.8	17.4	13.6	4.8	0.9	2.6	0.4	1.0	775

(Continued…)

Table 5.3—*Continued*

Background characteristic	Percentage who say there are ways to avoid malaria	Number of women	Among women who say there are ways to avoid getting malaria: Sleep under mosquito net	Use mosquito coil	Use insecticide spray	Indoor residual spraying (IRS)	Keep doors/ windows closed	Use insect repellent	Keep surroundings clean	Cut the grass	Remove standing water	Intermittent preventive treatment (IPTp)	House screening	Other	Does not know any way	Number of women
Mara	81.2	402	96.3	1.0	3.4	0.5	0.7	1.1	13.0	5.3	9.0	1.2	0.4	0.5	1.2	327
Manyara	84.0	229	98.2	5.5	7.8	0.4	3.9	1.1	23.6	14.0	7.8	3.2	0.6	4.3	0.6	193
Njombe	79.3	167	98.0	0.7	5.9	0.5	4.3	0.3	24.2	12.8	15.6	4.0	0.0	7.7	0.0	132
Katavi	81.3	93	93.4	0.7	2.8	0.2	0.8	0.0	10.9	8.1	7.7	2.0	1.0	0.0	1.5	75
Simiyu	64.7	321	95.4	4.4	3.7	0.4	1.9	0.9	10.9	4.5	6.3	1.4	0.3	8.8	0.3	207
Geita	88.8	382	98.7	2.7	10.8	2.8	15.8	3.1	30.2	24.0	8.3	4.2	1.2	0.0	0.1	339
Songwe	86.1	241	95.3	1.1	3.3	0.2	0.4	1.3	13.3	9.4	8.4	1.5	0.2	1.5	0.0	208
Kaskazini Unguja	90.2	38	98.9	8.9	19.7	3.5	6.2	0.9	37.2	18.7	13.4	1.3	2.0	0.0	0.2	34
Kusini Unguja	94.9	26	98.0	5.7	29.9	4.7	7.3	0.0	47.4	28.3	26.0	0.0	0.1	0.0	0.0	25
Mjini Magharibi	94.7	132	93.9	6.8	28.3	2.9	4.4	7.2	40.7	19.8	13.9	2.4	0.3	0.0	0.0	125
Kaskazini Pemba	89.7	62	92.2	10.1	6.3	1.3	1.4	5.6	37.9	12.3	4.9	4.3	0.0	0.0	0.0	56
Kusini Pemba	96.5	49	96.8	14.5	7.7	1.2	2.4	6.0	39.0	19.0	5.5	1.2	0.0	0.0	0.6	47
Wealth quintile																
Lowest	70.1	1,652	96.7	2.2	3.6	0.5	1.7	1.0	12.5	5.1	2.6	1.4	0.2	2.4	1.3	1,158
Second	81.4	1,714	97.4	2.3	4.4	0.7	2.6	0.9	14.2	7.7	4.4	2.4	0.4	2.5	0.9	1,395
Middle	86.2	1,874	97.3	3.4	4.2	0.9	3.4	0.9	21.1	10.1	7.9	2.0	0.7	2.4	0.3	1,615
Fourth	94.5	2,152	98.2	5.2	9.5	1.5	3.0	2.7	24.4	14.3	12.0	1.9	1.3	1.3	0.3	2,033
Highest	96.7	2,626	97.4	10.2	18.3	2.9	5.2	4.3	33.0	23.4	21.9	1.8	2.5	1.2	0.2	2,539
Total	87.3	10,018	97.5	5.5	9.4	1.5	3.5	2.3	23.1	13.9	11.7	1.9	1.2	1.8	0.5	8,741

Table 5.4 Access to ACT, messages about malaria prevention and treatment, and visits from health workers

Percentage of women age 15-49 who say that ACTs can be obtained at the nearest health facility or pharmacy, who have seen or heard messages about malaria prevention in the past year, who have seen or heard messages about malaria treatment in the past year, and who have been visited by a health worker or volunteer who talked about malaria in the past 6 months, by background characteristics, Tanzania MIS 2017

Background characteristic	ACTs can be obtained at nearest health facility or pharmacy	Seen or heard messages about malaria prevention	Seen or heard messages about malaria treatment	Visited by a health worker or volunteer who talked about malaria	Number of women
Residence					
Urban	89.4	64.9	66.6	7.2	3,616
Rural	86.6	48.5	47.7	5.8	6,402
Mainland/Zanzibar					
Mainland	89.1	54.5	54.8	6.2	9,711
Urban	90.8	65.0	67.0	7.2	3,520
Rural	88.2	48.5	47.9	5.7	6,192
Zanzibar	40.1	52.2	45.2	8.1	307
Unguja	43.2	60.6	54.0	6.1	196
Pemba	34.8	37.4	29.7	11.8	111
Zone					
Western	92.9	45.9	47.4	4.3	855
Northern	87.8	55.7	57.0	6.2	1,150
Central	81.3	48.2	46.7	4.5	856
Southern Highlands	87.9	49.1	48.7	8.1	568
Southern	96.7	50.7	50.8	15.6	520
South West Highlands	89.9	62.7	55.2	4.9	1,044
Lake	88.0	53.6	54.5	5.3	2,717
Eastern	91.2	59.4	63.2	6.8	2,002
Zanzibar	40.1	52.2	45.2	8.1	307
Region					
Dodoma	81.2	48.4	46.1	2.6	364
Arusha	82.5	60.7	62.2	10.8	376
Kilimanjaro	82.5	67.8	66.7	4.8	330
Tanga	96.1	42.4	45.5	3.4	444
Morogoro	88.1	56.8	61.1	9.3	591
Pwani	95.6	57.6	61.5	11.0	267
Dar es Salaam	91.8	61.1	64.7	4.5	1,144
Lindi	97.8	46.8	43.8	11.3	189
Mtwara	96.0	53.0	54.7	18.0	331
Ruvuma	96.6	43.0	45.3	5.5	228
Iringa	90.2	73.7	75.9	17.9	172
Mbeya	86.6	72.9	60.7	4.9	315
Singida	82.4	46.4	47.0	2.3	262
Tabora	92.4	37.3	39.2	5.4	480
Rukwa	93.7	55.6	48.0	6.0	395
Kigoma	93.5	56.8	58.0	3.0	375
Shinyanga	89.2	43.6	41.6	3.2	299
Kagera	84.0	55.6	54.5	6.4	490
Mwanza	84.8	64.5	64.7	2.9	823
Mara	96.4	46.5	48.4	5.9	402
Manyara	80.1	50.1	47.2	9.9	229
Njombe	73.7	32.0	25.2	1.7	167
Katavi	97.9	55.6	61.4	2.1	93
Simiyu	82.4	28.3	34.9	2.5	321
Geita	94.9	64.3	65.8	12.4	382
Songwe	85.0	63.9	57.6	4.0	241
Kaskazini Unguja	36.6	57.1	51.6	4.3	38
Kusini Unguja	38.8	61.2	54.9	7.9	26
Mjini Magharibi	45.9	61.4	54.5	6.2	132
Kaskazini Pemba	31.2	30.1	24.9	9.7	62
Kusini Pemba	39.4	46.7	35.7	14.5	49
Wealth quintile					
Lowest	85.1	38.2	38.1	4.8	1,652
Second	86.8	45.4	43.2	5.0	1,714
Middle	89.0	51.6	50.9	6.5	1,874
Fourth	89.9	60.1	61.2	6.7	2,152
Highest	86.9	67.8	69.4	7.6	2,626
Total	87.6	54.4	54.5	6.3	10,018

Table 5.5 Media exposure to malaria messages

Percentage of women age 15-49 who have seen or heard the malaria message *Malaria haikubaliki*, *Maliza malaria*, or *Sio kila homa ni malaria* in the past year, and among those who have seen or heard the message *Sio kila homa ni malaria*, percentage who cite specific places where they saw or heard the message, by background characteristics, Tanzania MIS 2017

Background characteristic	Percentage who have seen or heard a malaria message in the past year	Number of women	Among women who have seen or heard the malaria message *Sio kila homa ni malaria* in the past year, percentage who saw or heard the message through various sources:														Number of women
			Radio	Billboard	Poster	T-shirt	Leaflet/ fact sheet/ brochure	Television	Mobile video unit	School	Health care worker	Community event/ presentation	Friend/ neighbour/ family member	Other	Don't know	
Residence																	
Urban	94.6	3,616	79.8	10.7	9.3	2.4	7.4	49.7	2.0	5.5	24.4	5.8	6.7	0.2	0.0	3,191
Rural	77.9	6,402	75.8	9.4	6.3	1.9	8.8	16.6	1.6	4.0	33.8	5.7	9.8	0.4	0.9	4,325
Mainland/Zanzibar																	
Mainland	84.3	9,711	77.7	9.8	7.6	2.0	8.1	30.5	1.7	4.4	29.9	5.9	8.6	0.3	0.9	7,349
Urban	94.9	3,520	80.1	10.6	9.3	2.4	7.4	49.8	1.9	5.4	24.5	5.9	6.8	0.2	0.0	3,124
Rural	78.3	6,192	75.9	9.3	6.3	1.7	8.7	16.2	1.5	3.7	33.9	5.8	9.9	0.4	0.9	4,225
Zanzibar	71.1	307	69.5	14.2	10.3	7.0	12.1	37.8	3.5	13.3	26.3	2.2	4.0	0.2	0.0	166
Unguja	79.9	196	70.1	16.2	9.2	6.3	6.0	40.5	2.5	11.2	28.2	1.2	3.4	0.3	0.0	127
Pemba	55.5	111	67.6	7.8	14.1	9.0	31.6	29.2	6.8	19.8	20.3	5.2	5.9	0.0	0.0	40
Zone																	
Western	75.2	855	75.9	6.3	4.1	0.6	10.9	17.4	0.5	3.2	31.2	4.0	11.3	0.1	0.0	555
Northern	90.2	1,150	73.9	12.9	9.1	1.3	7.7	44.8	1.3	5.0	25.1	3.3	8.5	0.5	0.0	910
Central	77.1	856	79.4	7.4	3.3	0.5	8.8	19.2	0.6	3.4	33.1	5.3	10.3	0.4	0.0	529
Southern Highlands	87.5	568	75.8	20.8	11.2	5.2	5.9	23.6	2.8	3.7	33.9	11.0	7.0	0.3	0.0	469
Southern	88.9	520	79.1	17.5	11.1	8.3	8.2	21.2	4.2	5.6	36.6	8.3	9.3	0.5	0.9	445
South West Highlands	79.4	1,044	80.4	9.2	4.3	0.6	14.2	23.8	0.7	0.7	35.9	1.9	4.9	0.0	0.0	699
Lake	82.4	2,717	77.4	9.4	10.5	1.8	9.8	22.7	2.0	5.7	28.0	6.9	10.3	0.5	0.0	2,034
Eastern	91.0	2,002	79.1	5.9	5.1	1.4	3.4	46.9	1.8	4.6	28.0	6.3	7.0	0.3	0.0	1,707
Zanzibar	71.1	307	69.5	14.2	10.3	7.0	12.1	37.8	3.5	13.3	26.3	2.2	4.0	0.2	0.0	166
Region																	
Dodoma	79.6	364	80.7	8.2	0.0	0.0	7.8	18.4	0.9	1.8	38.5	4.9	12.8	0.0	0.0	238
Arusha	93.1	376	72.2	12.5	13.3	3.4	9.4	57.7	1.8	5.0	26.3	5.4	4.5	1.3	0.0	310
Kilimanjaro	94.1	330	79.6	10.9	7.9	0.5	6.5	49.9	0.5	6.8	19.7	1.5	4.1	0.0	0.0	272
Tanga	84.8	444	70.6	15.0	6.1	0.0	7.0	28.4	1.4	3.5	28.4	2.8	15.9	0.0	0.0	328
Morogoro	83.5	591	75.1	6.9	3.5	0.5	0.6	23.5	0.0	1.9	31.3	8.0	8.2	0.0	0.0	440
Pwani	91.5	267	84.6	9.1	6.4	4.0	6.8	46.4	3.3	3.5	28.6	8.1	7.5	0.4	0.0	234
Dar es Salaam	94.7	1,144	79.6	4.7	5.6	1.2	3.8	56.9	2.2	6.1	26.4	5.1	6.4	0.3	0.0	1,033
Lindi	86.0	189	77.4	7.3	5.0	3.8	6.3	34.3	4.3	3.2	40.2	8.0	7.5	0.8	0.0	151
Mtwara	90.5	331	80.0	22.8	14.2	10.5	9.1	14.5	4.1	6.7	34.7	8.4	10.1	0.3	0.9	294
Ruvuma	90.1	228	66.5	19.5	5.6	1.1	6.3	29.5	2.1	2.7	41.9	11.9	10.5	0.2	0.0	195
Iringa	90.3	172	87.2	31.5	25.6	12.8	7.2	20.7	4.7	4.9	27.6	10.9	3.3	0.0	0.0	152
Mbeya	81.6	315	82.3	10.7	4.4	0.0	18.5	27.8	0.0	0.0	32.9	0.3	3.4	0.0	0.0	203
Singida	73.3	262	73.8	2.6	6.8	0.8	9.9	17.2	0.0	2.6	36.3	7.7	11.5	0.7	0.0	156
Tabora	70.1	480	75.2	8.5	1.8	0.0	10.1	22.3	0.2	2.0	24.8	3.8	13.6	0.0	0.0	282
Rukwa	74.4	395	85.2	12.9	5.3	0.4	17.7	23.8	1.0	0.4	38.3	0.6	1.9	0.0	0.0	255
Kigoma	81.6	375	76.7	3.9	6.5	1.3	11.7	12.5	0.8	4.4	37.7	4.2	9.0	0.2	0.0	274
Shinyanga	78.0	299	74.6	2.8	9.4	0.2	3.7	22.5	1.5	1.9	22.5	5.5	10.5	0.4	0.0	211

(Continued…)

Table 5.5—*Continued*

Background characteristic	Percentage who have seen or heard a malaria message in the past year	Number of women	Among women who have seen or heard the malaria message *Sio kila homa ni malaria* in the past year, percentage who saw or heard the message through various sources:													Number of women
			Radio	Billboard	Poster	T-shirt	Leaflet/ fact sheet/ brochure	Television	Mobile video unit	School	Health care worker	Community event/ presentation	Friend/ neighbour/ family member	Other	Don't know	
Kagera	80.7	490	72.1	6.5	7.0	0.5	25.9	20.8	2.4	3.3	34.9	8.7	7.4	1.2	0.0	360
Mwanza	91.2	823	88.1	3.0	13.2	2.2	8.6	31.7	0.7	8.1	17.4	2.0	9.9	0.4	0.0	709
Mara	87.5	402	65.9	16.9	9.0	1.2	5.9	18.8	2.5	4.0	41.2	10.1	8.2	0.0	0.0	300
Manyara	77.4	229	83.5	11.5	5.1	1.0	9.1	23.1	0.9	7.2	19.8	3.3	4.7	0.6	0.0	135
Njombe	81.2	167	76.3	9.4	2.2	2.3	3.7	17.8	1.4	4.0	28.8	9.8	6.1	0.7	0.0	122
Katavi	88.5	93	71.2	8.1	5.3	1.9	4.4	19.0	0.3	2.6	28.9	4.7	11.8	0.0	0.0	76
Simiyu	62.3	321	60.4	10.2	4.8	0.4	4.5	16.3	1.5	3.6	32.7	6.6	16.0	0.5	0.0	177
Geita	80.2	382	82.2	26.2	13.8	5.4	4.6	10.9	5.0	9.0	33.1	15.4	13.5	0.0	0.0	276
Songwe	81.0	241	74.8	2.1	2.3	1.2	8.2	20.9	1.4	1.0	39.3	4.6	8.2	0.0	0.0	166
Kaskazini Unguja	63.1	38	56.6	42.9	2.5	11.5	17.4	13.5	5.9	31.4	54.8	2.4	5.3	0.0	0.0	18
Kusini Unguja	78.7	26	65.4	9.4	3.0	3.0	0.5	18.3	3.2	11.8	43.2	4.2	4.6	0.0	0.0	15
Mjini Magharibi	84.9	132	73.4	12.2	11.4	5.9	4.7	49.3	1.7	7.2	20.6	0.5	2.8	0.4	0.0	93
Kaskazini Pemba	43.8	62	63.9	0.0	21.1	5.1	32.3	23.2	3.3	12.0	19.0	6.9	8.1	0.0	0.0	18
Kusini Pemba	70.5	49	70.5	14.0	8.4	12.1	31.1	34.0	9.7	26.1	21.4	3.9	4.3	0.0	0.0	22
Wealth quintile																
Lowest	64.7	1,652	71.9	5.5	4.6	1.2	6.1	5.1	1.4	2.6	34.5	5.5	13.4	0.3	0.9	905
Second	75.6	1,714	72.5	9.3	6.3	2.3	7.1	7.9	1.6	3.2	33.6	6.5	11.0	0.3	0.0	1,107
Middle	82.2	1,874	79.3	9.0	6.0	1.8	10.2	11.8	1.5	3.7	33.5	6.7	9.8	0.1	0.0	1,353
Fourth	92.3	2,152	82.6	12.4	8.0	2.1	9.5	29.0	1.7	4.9	31.0	5.6	8.0	0.5	0.0	1,813
Highest	95.7	2,626	77.0	10.6	10.0	2.4	7.4	63.5	2.2	6.3	23.2	5.1	5.0	0.3	0.0	2,337
Total	83.9	10,018	77.5	9.9	7.6	2.1	8.2	30.6	1.7	4.6	29.8	5.8	8.5	0.3	0.9	7,515

Table 5.6 Attitude towards malaria and malaria treatment

Among women age 15-49 who had one or more births in the past 5 years, percentage who strongly agree with each of six statements about malaria, by background characteristics, Tanzania MIS 2017

Background characteristic	I can easily get treatment if my child gets malaria	My family rarely gets malaria	It is important to take the entire course of malaria medicine to make sure the disease will be fully cured	ACT can be obtained at nearest health facility or *duka la dawa muhimu*	The only way to be sure someone has malaria is to test their blood	Number of women
Residence						
Urban	78.5	79.3	96.2	91.7	95.6	1,571
Rural	69.2	69.8	92.8	86.6	90.1	3,713
Mainland/Zanzibar						
Mainland	71.9	72.9	94.0	89.1	91.7	5,148
Urban	78.4	79.6	96.4	92.6	95.5	1,534
Rural	69.1	70.1	93.0	87.6	90.1	3,614
Zanzibar	75.8	62.0	86.1	50.1	94.6	136
Unguja	85.6	70.5	91.5	58.4	96.4	81
Pemba	61.4	49.5	78.0	37.8	92.0	55
Zone						
Western	65.1	61.5	95.5	92.7	84.7	514
Northern	74.8	68.8	94.0	86.1	94.9	509
Central	67.6	79.0	94.7	86.7	88.3	521
Southern Highlands	74.2	78.1	96.4	89.1	95.3	281
Southern	66.4	67.8	87.4	90.1	89.4	244
South West Highlands	67.2	82.9	93.9	91.9	93.5	627
Lake	74.2	67.0	92.4	86.3	91.1	1,544
Eastern	76.6	81.1	96.6	92.6	95.0	909
Zanzibar	75.8	62.0	86.1	50.1	94.6	136
Region						
Dodoma	66.6	89.1	97.1	91.2	90.0	195
Arusha	73.5	67.4	91.2	82.8	92.0	150
Kilimanjaro	75.7	65.8	95.3	79.9	98.4	130
Tanga	75.1	71.4	95.1	91.7	94.7	228
Morogoro	80.4	81.1	98.4	95.6	97.4	304
Pwani	68.9	67.9	92.3	88.8	92.1	126
Dar es Salaam	76.1	84.5	96.5	91.8	94.2	479
Lindi	59.3	65.3	92.2	92.8	91.9	90
Mtwara	70.5	69.2	84.6	88.4	87.9	154
Ruvuma	72.1	84.1	99.3	96.1	96.9	109
Iringa	77.8	87.3	93.5	91.3	95.4	95
Mbeya	79.3	82.1	94.3	93.4	94.6	174
Singida	73.4	72.0	92.5	85.4	87.8	184
Tabora	70.0	71.0	95.1	95.9	85.6	296
Rukwa	63.7	81.9	89.9	87.6	90.8	246
Kigoma	58.5	48.7	96.0	88.3	83.4	218
Shinyanga	76.8	71.0	94.5	87.9	93.2	158
Kagera	67.3	52.0	95.6	74.9	90.6	249
Mwanza	76.0	66.3	96.2	89.6	94.6	450
Mara	84.5	75.5	96.3	95.8	98.0	242
Manyara	61.5	74.2	94.0	82.3	86.6	142
Njombe	72.7	58.5	96.1	76.4	92.9	77
Katavi	60.7	73.5	98.2	95.5	98.4	61
Simiyu	59.6	59.8	81.0	79.1	75.9	199
Geita	77.9	78.4	86.4	87.3	89.5	245
Songwe	61.3	89.4	98.2	95.8	94.6	147
Kaskazini Unguja	83.0	85.0	98.1	45.5	97.8	17
Kusini Unguja	95.2	81.8	95.9	81.2	98.2	12
Mjini Magharibi	84.3	63.2	88.4	57.5	95.6	52
Kaskazini Pemba	54.9	51.3	75.4	32.3	88.4	31
Kusini Pemba	70.0	47.1	81.6	45.1	96.7	24
Wealth quintile						
Lowest	62.2	65.6	89.4	84.1	84.9	1,112
Second	69.9	69.0	92.5	87.0	91.1	1,029
Middle	72.5	72.7	94.8	89.4	92.3	1,035
Fourth	77.6	76.5	95.9	89.7	94.3	1,060
Highest	78.3	79.6	96.6	90.5	96.5	1,049
Total	72.0	72.6	93.8	88.1	91.8	5,284

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SAMPLE DESIGN FOR THE 2017 TANZANIA MALARIA INDICATOR SURVEY

APPENDIX A

A.1 INTRODUCTION

The 2017 Tanzania Malaria Indicator Survey (2017 TMIS) was the second stand-alone malaria indicator survey conducted in the country, following the one implemented in 2011-2012 (2011-12 THMIS). The survey involved a nationally representative sample of 9,724 households from 442 sample clusters. The survey was expected to interview 9,287 women age 15-49 and cover about 7,842 children under age 5. It was designed to provide information on key malaria control indicators such as the proportion of households having at least one bed net and at least one insecticide-treated net (ITN), the proportion of the household population with access to an ITN, the proportion of children under age 5 who slept under an ITN the night before the survey, the proportion of pregnant women who slept under an ITN the night before the survey, and the proportion of pregnant women who received intermittent preventive treatment (IPT) for malaria during their last pregnancy. Information was also collected on malaria prevalence among children under age 5 based on on-site malaria testing.

The survey was designed to produce representative estimates for the main MIS indicators for the country as a whole, for urban and rural areas separately, for urban and rural areas of Tanzania Mainland and Zanzibar separately, and for each of the nine geographical zones of Tanzania. For some indicators, representative results are available for each of the 31 regions.

A.2 SAMPLING FRAME

The sampling frame used for the 2017 TMIS was the 2012 Tanzania Population and Housing Census (PHC). The sampling frame was a complete list of enumeration areas (EAs) covering the whole country provided by the National Bureau of Statistics (NBS) of Tanzania, the implementing agency for the 2017 TMIS. This frame was created for the 2012 PHC, and the EAs served as counting units for the census. In rural areas, an EA is a natural village, a segment of a large village, or a group of small villages; in urban areas, an EA is a street or a city block. Each EA includes identification information, administrative information, and, as a measure of size, the number of residential households residing in the EA. Each EA is also classified into one of two types of residence, urban or rural. For each EA, there are cartographical materials that delineate its geographical locations, boundaries, main access, and landmarks inside or outside the EA, helping to identify the different areas.

Tanzania Mainland's administrative units were reformed in 2012, increasing the number of regions from 21 to 26 (relative to the last population census conducted in 2002). In the 2012 PHC, Tanzania Mainland was divided into regions and each region was sub-divided into districts. There are a total of 26 regions and 139 districts. The 26 Mainland regions have been regrouped to form eight geographical zones. Zanzibar is treated as a zone and is subdivided into five regions and 11 districts. Thus, there are in total nine geographical zones and 31 regions in Tanzania. Below is the composition of the nine geographical zones.

- Western zone: Tabora, Kigoma
- Northern zone: Kilimanjaro, Tanga, Arusha
- Central zone: Dodoma, Singida, Manyara
- Southern Highlands zone: Iringa, Njombe, Ruvuma
- Southern zone: Lindi, Mtwara
- South West Highlands zone: Mbeya, Rukwa, Katavi, Songwe
- Lake zone: Kagera, Mwanza, Geita, Mara, Simiyu, Shinyanga
- Eastern zone: Dar es Salaam, Pwani, Morogoro
- Zanzibar: Kaskazini Unguja, Kusini Unguja, Mjini Magharibi, Kaskazini Pemba, and Kusini Pemba

Table A.1 shows the distribution of residential households by region and according to type of residence (urban or rural), summarised from the sampling frame after exclusion of institutional EAs. Regional shares vary from 0.3% for Kusini Unguja to 11.7% for Dar es Salaam. In Tanzania, 32.59% of the residential households live in urban areas. The percentage of urban areas varies from 6.7% for Kusini Unguja to 100% for Dar es Salaam. Table A.2 shows the distribution of EAs and their average size (number of households) after exclusion of institutional EAs. Among the 106,642 EAs, 34,960 are in urban areas and 71,682 are in rural areas. Mean EA size is practically the same in urban and rural areas, with an overall average of 86 households per EA.

Table A.1 Distribution of residential households by region and according to type of residence

	Households			Percentage	
Region	Urban	Rural	Total	Urban	Region
Dodoma	72,556	376,850	449,406	16.1	4.9
Arusha	122,345	235,074	357,419	34.2	3.9
Kilimanjaro	96,175	283,639	379,814	25.3	4.1
Tanga	96,325	338,708	435,033	22.1	4.7
Morogoro	149,730	349,453	499,183	30.0	5.4
Pwani	83,359	170,310	253,669	32.9	2.8
Dar es Salaam	1,078,865		1,078,865	100.0	11.7
Lindi	43,644	180,228	223,872	19.5	2.4
Mtwara	76,997	264,559	341,556	22.5	3.7
Ruvuma	76,482	222,819	299,301	25.6	3.3
Iringa	60,720	159,511	220,231	27.6	2.4
Mbeya	161,476	241,473	402,949	40.1	4.4
Singida	36,689	218,533	255,222	14.4	2.8
Tabora	62,649	305,299	367,948	17.0	4.0
Rukwa	49,269	148,581	197,850	24.9	2.2
Kigoma	70,842	297,386	368,228	19.2	4.0
Shinyanga	56,654	202,132	258,786	21.9	2.8
Kagera	54,870	462,167	517,037	10.6	5.6
Mwanza	186,433	293,694	480,127	38.8	5.2
Mara	59,756	247,222	306,978	19.5	3.3
Manyara	42,664	227,923	270,587	15.8	2.9
Njombe	40,059	128,542	168,601	23.8	1.8
Katavi	20,243	58,984	79,227	25.6	0.9
Simiyu	22,250	205,372	227,622	9.8	2.5
Geita	54,831	228,725	283,556	19.3	3.1
Songwe	51,080	175,286	226,366	22.6	2.5
Kaskazini Unguja	3,188	33,325	36,513	8.7	0.4
Kusini Unguja	1,726	23,860	25,586	6.7	0.3
Mjini Magharibi	51,481	60,935	112,416	45.8	1.2
Kaskazini Pemba	7,134	32,119	39,253	18.2	0.4
Kusini Pemba	7,022	28,487	35,509	19.8	0.4
Tanzania	2,997,514	6,201,196	9,198,710	32.6	100.0

Source: Residential households, 2012 Population and Housing Census, Tanzania

Table A.2 Distribution of Enumeration Areas (EAs) and their average size (number of households) by region and according to type of residence

Region	Number of EAs			Average EA size		
	Urban	Rural	Total	Urban	Rural	Total
Dodoma	621	4,170	4,791	117	90	94
Arusha	909	2,200	3,109	135	107	115
Kilimanjaro	729	2,570	3,299	132	110	115
Tanga	905	3,599	4,504	106	94	97
Morogoro	1,458	3,567	5,025	103	98	99
Pwani	911	1,922	2,833	92	89	90
Dar es Salaam	15,287		15,287	71		71
Lindi	451	2,004	2,455	97	90	91
Mtwara	812	2,979	3,791	95	89	90
Ruvuma	694	2,309	3,003	110	97	100
Iringa	580	1,621	2,201	105	98	100
Mbeya	1,623	2,433	4,056	99	99	99
Singida	308	2,312	2,620	119	95	97
Tabora	1,026	4,859	5,885	61	63	63
Rukwa	815	2,152	2,967	60	69	67
Kigoma	870	3,818	4,688	81	78	79
Shinyanga	535	2,349	2,884	106	86	90
Kagera	733	6,907	7,640	75	67	68
Mwanza	1,715	3,000	4,715	109	98	102
Mara	550	2,732	3,282	109	90	94
Manyara	357	2,218	2,575	120	103	105
Njombe	367	1,455	1,822	109	88	93
Katavi	273	778	1,051	74	76	75
Simiyu	201	2,373	2,574	111	87	88
Geita	619	2,842	3,461	89	80	82
Songwe	844	2,325	3,169	61	75	71
Kaskazini Unguja	40	405	445	80	82	82
Kusini Unguja	22	319	341	78	75	75
Mjini Magharibi	542	693	1,235	95	88	91
Kaskazini Pemba	75	406	481	95	79	82
Kusini Pemba	88	365	453	80	78	78
Tanzania	34,960	71,682	106,642	86	87	86

Source: Residential EAs, 2012 Population and Housing Census, Tanzania

A.3 STRUCTURE OF THE SAMPLE AND SAMPLING PROCEDURE

The sample for the 2017 TMIS was a stratified sample selected in two stages from the 2012 census frame. Stratification was achieved by separating each region into urban and rural areas, with these areas each forming a sampling stratum. In total, 61 sampling strata were created, since Dar es Salaam has only urban areas. Samples were selected independently in each sampling stratum via a two-stage selection. Implicit stratification and proportional allocation were achieved at each of the lower administrative unit levels by sorting the sampling frame within the explicit stratum according to administrative units at different levels before sample selection in the first stage and by using probability proportional to size selection in the first stage.

In the first stage, 442 EAs were selected with probability proportional to EA size and with independent selection in each sampling stratum according to the sample allocation shown in Table A.3. Among the 442 EAs, 127 were from urban areas and 315 from rural areas. With a fixed number of 22 households to be selected per cluster, the total number of sample households was 9,724, 2,794 from urban areas and 6,930 from rural areas. With the aim of obtaining representative results for most of the MIS indicators at the regional level, the total sample size was fixed and therefore an equal size allocation was adopted with adjustment. Based on the results of the 2015-16 Tanzania Demographic and Health Survey and Malaria Indicator Survey (2015-16 TDHS-MIS), all regions in Tanzania Mainland with a malaria prevalence below 10% were allocated 10 clusters except for Dar es Salaam, which was allocated 15 clusters; all regions in Tanzania Mainland with a malaria prevalence above 10% were allocated 20 clusters; and the five regions in Zanzibar were each allocated 7 or 8 clusters because of their small population size and the fact that there is no malaria transmission in Zanzibar.

A household listing operation was carried out in all of the selected EAs before the main survey. The listing operation consisted of visiting each of the 442 selected EAs, drawing a location map and a detailed sketch map, and recording on the household listing forms all residential households found in the EA along with the address and the name of the head of the household. The resulting list of households served as the

sampling frame for the selection of households in the second stage. Some of the EAs selected in the household listing operation were found to be large in size. In order to minimise the task of household listing, selected EAs with an estimated number of households greater than 400 were segmented. Only one segment was selected for the survey with probability proportional to segment size. The methodology and the detailed household listing procedure were addressed in the household listing manual.

In the second stage, a fixed number of 22 households from each EA were selected using the newly updated listing. The interviewers were asked to interview only the pre-selected households; to prevent bias, no replacements were allowed for non-respondent households. Interviewers were asked to make at least two to three callbacks in order to reduce non-response.

Table A.3 Sample allocation of EAs and households by region and according to type of residence

	Allocation of EAs			Allocation of households		
Region	Urban	Rural	Total	Urban	Rural	Total
Dodoma	2	8	10	44	176	220
Arusha	3	7	10	66	154	220
Kilimanjaro	2	8	10	44	176	220
Tanga	2	8	10	44	176	220
Morogoro	7	13	20	154	286	440
Pwani	7	13	20	154	286	440
Dar es Salaam	15		15	330		330
Lindi	4	16	20	88	352	440
Mtwara	5	15	20	110	330	440
Ruvuma	5	15	20	110	330	440
Iringa	3	7	10	66	154	220
Mbeya	4	6	10	88	132	220
Singida	2	8	10	44	176	220
Tabora	3	17	20	66	374	440
Rukwa	3	7	10	66	154	220
Kigoma	5	15	20	110	330	440
Shinyanga	5	15	20	110	330	440
Kagera	4	16	20	88	352	440
Mwanza	8	12	20	176	264	440
Mara	4	16	20	88	352	440
Manyara	2	8	10	44	176	220
Njombe	3	7	10	66	154	220
Katavi	5	15	20	110	330	440
Simiyu	4	16	20	88	352	440
Geita	4	16	20	88	352	440
Songwe	4	6	10	88	132	220
Kaskazini Unguja	2	6	8	44	132	176
Kusini Unguja	2	5	7	44	110	154
Mjini Magharibi	4	4	8	88	88	176
Kaskazini Pemba	2	5	7	44	110	154
Kusini Pemba	2	5	7	44	110	154
Tanzania	127	315	442	2,794	6,930	9,724

Note: The Mbeya sample can be split into two samples of 10 clusters each if the region is split into two sub-regions.

Table A.4 shows the sample allocation of the expected numbers of women interviewed and children under age 5 covered by the survey. These calculations were based on the results of the 2015-16 TDHS-MIS.

Table A.4 Sample allocation of expected numbers of women interviewed and children under age 5 covered in the survey by region and according to type of residence

	Women age 15-49			Children under age 5		
Region	Urban	Rural	Total	Urban	Rural	Total
Dodoma	44	164	208	26	104	130
Arusha	66	144	210	45	106	151
Kilimanjaro	44	164	208	19	76	95
Tanga	44	164	208	30	120	151
Morogoro	155	267	422	85	157	242
Pwani	155	267	422	86	160	246
Dar es Salaam	332		332	156		156
Lindi	89	330	419	43	171	214
Mtwara	111	308	419	46	137	182
Ruvuma	111	308	419	63	188	250
Iringa	66	144	210	35	82	118
Mbeya	89	124	212	49	73	122
Singida	44	164	208	36	144	180
Tabora	66	350	416	80	454	534
Rukwa	66	144	210	56	131	187
Kigoma	111	308	419	107	320	427
Shinyanga	111	308	419	122	365	486
Kagera	89	330	419	73	292	365
Mwanza	177	247	424	174	261	435
Mara	89	330	419	95	382	477
Manyara	44	164	208	37	146	183
Njombe	66	144	210	35	81	115
Katavi	111	308	419	115	345	460
Simiyu	89	330	419	127	507	634
Geita	89	330	419	97	388	485
Songwe	89	124	212	49	73	122
Kaskazini Unguja	44	123	167	37	111	148
Kusini Unguja	44	102	146	37	91	128
Mjini Magharibi	89	83	172	63	63	126
Kaskazini Pemba	44	102	146	42	105	147
Kusini Pemba	44	102	146	42	106	148
Tanzania	2,811	6,476	9,287	2,104	5,738	7,842

Note: Data are based on the results of the 2015-16 TDHS-MIS.

A.4 SELECTION PROBABILITY AND SAMPLING WEIGHTS

Due to the non-proportional allocation of the sample to the different regions and the differences in response rates, sampling weights will be required for any analysis using 2017 TMIS data to ensure the representativeness of the survey results at the national level as well as the domain levels. Since the 2017 TMIS sample was a two-stage stratified cluster sample, sampling weights were calculated based on sampling probabilities separately for each sampling stage and for each cluster. We use the following notations:

P_{1hi}: first-stage sampling probability of the i^{th} EA in stratum h
P_{2hi}: second-stage sampling probability within the i^{th} EA (household selection)

Let a_h be the number of EAs selected in stratum h, M_{hi} the total population according to the sampling frame in the i^{th} EA, and $\sum M_{hi}$ the total population in stratum h. The probability of selecting the i^{th} EA in the 2017 TMIS sample is calculated as follows:

$$\frac{a_h M_{hi}}{\sum M_{hi}}$$

Let b_{hi} be the proportion of households in the selected segment relative to the total number of households in EA i in stratum h if the EA is segmented; otherwise, $b_{hi} = 1$. Then the probability of selecting EA i in the sample is:

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

A 2017 TMIS cluster was either an EA or a segment of a large EA. Let L_{hi} be the number of households listed in the household listing operation in cluster *i* in stratum *h*, and 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 for 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 design 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 prepared to facilitate the calculation of design weights. Design weights were adjusted for household non-response and individual non-response to obtain sampling weights for households and women, respectively. Differences between household sampling weights and individual sampling weights were a result of non-response among women. The final sampling weights were normalised to produce unweighted cases equal to weighted cases at the national level for both household weights and individual weights.

It is important to note that normalised weights are relative weights that are valid for estimating means, proportions, and ratios but are not valid for estimating population totals or for pooled data. Also, the number of weighted cases obtained using normalised weights has no direct relation with survey precision because it is relative, especially for oversampled areas; the number of weighted cases will be much smaller than the number of unweighted cases. It is the number of unweighted cases that is directly related to survey precision.

Sampling errors were calculated for selected indicators for the national sample, for urban and rural areas separately, for urban and rural areas of Tanzania Mainland and Zanzibar separately, and for each of the nine geographical zones of Tanzania.

A.5 SURVEY IMPLEMENTATION RESULTS

Table A.5a Sample implementation: Women

Percent distribution of households and eligible women age 15-49 by results of the household and individual interviews, and household, eligible women, and overall women response rates, according to residence and zone (unweighted), Tanzania MIS 2017

	Residence		Zone									
Result	Urban	Rural	Western	Northern	Central	Southern Highlands	Southern	South West Highlands	Lake	Eastern	Zanzibar	Total
Selected households												
Completed (C)	94.6	96.5	95.3	96.2	93.5	95.7	97.7	95.8	96.7	93.7	97.8	95.9
Household present but no competent respondent at home (HP)	0.7	0.4	0.5	0.9	0.6	0.2	0.9	0.1	0.2	0.6	1.2	0.5
Refused (R)	0.2	0.1	0.1	0.2	0.2	0.2	0.0	0.1	0.0	0.2	0.0	0.1
Dwelling not found (DNF)	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Household absent (HA)	1.9	1.2	2.4	0.9	2.3	1.5	0.9	1.5	1.0	2.1	0.7	1.4
Dwelling vacant/address not a dwelling (DV)	1.5	1.3	1.1	1.4	2.0	0.1	0.3	2.3	1.5	2.2	0.1	1.3
Dwelling destroyed (DD)	0.4	0.2	0.3	0.3	0.2	0.0	0.1	0.2	0.2	0.7	0.1	0.2
Other (O)	0.6	0.4	0.2	0.0	1.4	2.3	0.0	0.0	0.4	0.2	0.0	0.5
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
Number of sampled households	2,793	6,931	880	660	660	880	880	1,099	2,641	1,210	814	9,724
Household response rate (HRR)[1]	99.0	99.5	99.4	98.8	99.2	99.5	99.1	99.8	99.8	99.0	98.8	99.4
Eligible women												
Completed (EWC)	99.0	98.8	99.0	97.1	97.8	99.3	98.9	98.8	99.0	98.7	99.7	98.8
Not at home (EWNH)	0.3	0.3	0.4	1.0	0.3	0.0	0.1	0.1	0.3	0.3	0.0	0.3
Refused (EWR)	0.1	0.1	0.1	0.0	0.8	0.0	0.1	0.0	0.0	0.1	0.0	0.1
Incapacitated (EWI)	0.3	0.5	0.1	1.3	0.3	0.1	0.8	0.5	0.4	0.3	0.3	0.4
Other (EWO)	0.3	0.4	0.4	0.6	0.8	0.5	0.1	0.5	0.3	0.5	0.0	0.4
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
Number of women	2,986	7,150	958	621	630	736	789	1,129	3,046	1,195	1,032	10,136
Eligible women response rate (EWRR)[2]	99.0	98.8	99.0	97.1	97.8	99.3	98.9	98.8	99.0	98.7	99.7	98.8
Overall women response rate (OWRR)[3]	98.0	98.3	98.4	95.9	97.0	98.9	97.9	98.7	98.8	97.7	98.5	98.2

[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

Table A.5b Sample implementation by region: Women

Result	Region															
	Dodo-ma	Arusha	Kiliman-jaro	Tanga	Moro-goro	Pwani	Dar es Salaam	Lindi	Mtwara	Ru-vuma	Iringa	Mbeya	Singida	Tabora	Rukwa	Kigoma
Selected households																
Completed (C)	94.1	92.3	96.8	99.5	94.5	94.3	91.8	98.4	97.0	95.5	96.4	98.6	93.2	94.3	99.1	96.4
Household present but no competent respondent at home (HP)	0.0	0.9	1.8	0.0	0.0	1.1	0.6	0.7	1.1	0.5	0.0	0.0	1.4	0.7	0.0	0.2
Refused (R)	0.0	0.5	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Dwelling not found (DNF)	0.0	0.5	0.0	0.0	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Household absent (HA)	1.8	2.3	0.0	0.5	2.7	1.8	1.5	0.7	1.1	1.1	3.6	0.5	0.5	2.3	0.9	2.5
Dwelling vacant/ address not a dwelling (DV)	2.3	2.7	1.4	0.0	2.7	0.9	3.3	0.2	0.5	0.0	0.0	0.9	2.7	2.0	0.0	0.2
Dwelling destroyed (DD)	0.5	0.9	0.0	0.0	0.0	0.5	2.1	0.0	0.2	0.0	0.0	0.0	0.0	0.5	0.0	0.2
Other (O)	1.4	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	2.7	0.0	0.0	2.3	0.2	0.0	0.2
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
Number of sampled households	220	220	220	220	440	440	330	440	440	440	220	219	220	440	220	440
Household response rate (HRR)[1]	100.0	98.1	98.2	100.0	100.0	98.1	98.7	99.3	98.8	99.3	100.0	100.0	98.6	99.3	100.0	99.5
Eligible women																
Completed (EWC)	98.4	98.6	97.5	95.2	98.6	98.6	99.1	99.0	98.7	99.0	100.0	98.6	97.4	99.2	99.5	98.7
Not at home (EWNH)	0.0	0.0	0.5	2.4	0.0	0.7	0.3	0.0	0.3	0.0	0.0	0.5	0.4	0.2	0.0	0.6
Refused (EWR)	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.2
Incapacitated (EWI)	0.0	0.9	1.0	1.9	0.5	0.5	0.0	0.8	0.8	0.3	0.0	0.5	0.9	0.0	0.5	0.2
Other (EWO)	1.0	0.5	1.0	0.5	0.9	0.0	0.6	0.0	0.3	0.8	0.0	0.5	0.4	0.6	0.0	0.2
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
Number of women	193	213	199	209	425	432	338	390	399	390	179	207	234	489	204	469
Eligible women response rate (EWRR)[2]	98.4	98.6	97.5	95.2	98.6	98.6	99.1	99.0	98.7	99.0	100.0	98.6	97.4	99.2	99.5	98.7
Overall women response rate (OWRR)[3]	98.4	96.7	95.7	95.2	98.6	96.7	97.8	98.3	97.6	98.3	100.0	98.6	96.0	98.5	99.5	98.3

(Continued…)

Table A.5b—*Continued*

Result	Region															
	Shiny-anga	Kagera	Mwan-za	Mara	Man-yara	Njombe	Katavi	Simiyu	Geita	Song-we	Kaska-zini Unguja	Kusini Unguja	Mjini Magha-ribi	Kaska-zini Pemba	Kusini Pemba	Total
Selected households																
Completed (C)	93.6	96.4	99.3	97.7	93.2	95.5	94.1	95.7	97.5	93.2	96.6	96.8	98.9	97.4	99.4	95.9
Household present but no competent respondent at home (HP)	0.2	0.7	0.0	0.0	0.5	0.0	0.2	0.2	0.0	0.0	3.4	2.6	0.0	0.0	0.0	0.5
Refused (R)	0.2	0.0	0.0	0.0	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Dwelling not found (DNF)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Household absent (HA)	0.2	2.0	0.7	0.0	4.5	0.0	2.0	1.6	1.4	2.3	0.0	0.6	0.6	1.9	0.6	1.4
Dwelling vacant/ address not a dwelling (DV)	4.3	0.9	0.0	2.3	0.9	0.5	3.2	0.7	0.9	4.1	0.0	0.0	0.0	0.6	0.0	1.3
Dwelling destroyed (DD)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.2	0.5	0.0	0.0	0.6	0.0	0.0	0.2
Other (O)	1.4	0.0	0.0	0.0	0.5	3.6	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
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
Number of sampled households	440	441	440	440	220	220	440	440	440	220	176	154	176	154	154	9,724
Household response rate (HRR)[1]	99.5	99.3	100.0	100.0	99.0	99.5	99.5	99.8	100.0	100.0	96.6	97.4	100.0	100.0	100.0	99.4
Eligible women																
Completed (EWC)	98.4	97.3	99.8	98.5	97.5	99.4	98.5	99.5	99.8	99.4	100.0	100.0	99.3	100.0	99.5	98.8
Not at home (EWNH)	0.2	1.2	0.2	0.2	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Refused (EWR)	0.2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Incapacitated (EWI)	0.6	1.0	0.0	0.9	0.0	0.0	0.7	0.2	0.2	0.0	0.0	0.0	0.7	0.0	0.5	0.4
Other (EWO)	0.6	0.5	0.0	0.4	1.0	0.6	0.7	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.4
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
Number of women	513	407	513	467	203	167	538	629	517	180	194	146	284	212	196	10,136
Eligible women response rate (EWRR)[2]	98.4	97.3	99.8	98.5	97.5	99.4	98.5	99.5	99.8	99.4	100.0	100.0	99.3	100.0	99.5	98.8
Overall women response rate (OWRR)[3]	98.0	96.6	99.8	98.5	96.6	98.9	98.0	99.3	99.8	99.4	96.6	97.4	99.3	100.0	99.5	98.2

[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 2017 Tanzania Malaria Indicator Survey (2017 TMIS) 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 2017 TMIS 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.

A 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% 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 2017 TMIS sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use more complex formulas. The computer software used to calculate sampling errors for the 2017 TMIS is an SAS program. This program uses 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 calculated, which 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. The relative standard error and confidence limits for the estimates are also calculated.

Sampling errors for the 2017 TMIS 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 separately, for the urban and rural areas of Tanzania Mainland and Zanzibar separately, and for each of the nine geographical zones of Tanzania. For each variable, the type of statistic (mean, proportion, or rate) and the base population are given in Table B.1. Tables B.2 to B.18 present the value of the statistic (R), its standard error (SE), the number of unweighted (N) and weighted (WN) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95% 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 children under age 5 with a fever in the last 2 weeks) can be interpreted as follows: the overall proportion from the national sample is 0.204, and its standard error is 0.008. Therefore, to obtain the 95% confidence limits, one adds and subtracts twice the standard error to the sample estimate, that is, $0.204 \pm 2 \times 0.008$. There is a high probability (95%) that the *true* average proportion of children under age 5 with a fever in the last 2 weeks is between 0.187 and 0.221.

For the total sample, the value of the DEFT, averaged over all variables, is 1.620. This means that, due to multi-stage clustering of the sample, the average standard error is increased by a factor of 1.620 over that in an equivalent simple random sample.

Table B.1 List of indicators for sampling errors, Tanzania MIS 2017

VARIABLE	Type of estimate	Base population
HOUSEHOLDS		
Proportion of households having at least one ITN	Proportion	All households interviewed
Proportion of households having at least one ITN per two people	Proportion	All households interviewed
Proportion of de facto population with access to an ITN	Proportion	De facto population in all households interviewed
Proportion of household population that slept under an ITN last night	Proportion	Household population in all households interviewed
Ratio of ITN use to ITN access	Ratio	De facto population with access to an ITN
CHILDREN UNDER AGE 5		
Slept under an ITN last night	Proportion	All children under age 5
Slept under an ITN last night in household with at least one ITN	Proportion	All children under age 5 in households with at least one ITN
Had a fever in last 2 weeks	Proportion	All children under age 5
Advice or treatment for fever sought	Proportion	Children under age 5 with fever in last 2 weeks
Received antimalarial treatment for fever	Proportion	Children under age 5 with fever in last 2 weeks
Received ACT treatment for fever	Proportion	Children under age 5 with fever in last 2 weeks who took any antimalarial drug
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	Proportion	All children under age 5 who were tested
Prevalence of malaria (RDT)	Proportion	All children under age 5 who were tested
PREGNANT WOMEN		
Slept under an ITN last night	Proportion	Pregnant women age 15-49
Slept under an ITN last night in household with at least one ITN	Proportion	Pregnant women age 15-49 in households with at least one ITN
Received at least two doses of SP/Fansidar during last pregnancy	Proportion	Pregnant women age 15-49 with a pregnancy in last 5 years
Received at least three doses of SP/Fansidar during last pregnancy	Proportion	Pregnant women age 15-49 with a pregnancy in last 5 years

Table B.2 Sampling errors: Total sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.779	0.008	9,330	9,330	1.776	0.010	0.764	0.795
Proportion of households having at least one ITN per two people	0.454	0.009	9,294	9,298	1.675	0.019	0.436	0.471
Proportion of de facto population with access to an ITN	0.625	0.008	45,814	43,510	1.714	0.012	0.609	0.641
Proportion of household population that slept under an ITN last night	0.522	0.010	45,814	43,510	1.918	0.019	0.502	0.541
Ratio of ITN use to ITN access	0.835	0.010	28,007	27,193	1.759	0.012	0.814	0.855
CHILDREN								
Slept under an ITN last night	0.546	0.012	8,084	7,556	1.667	0.023	0.521	0.571
Slept under an ITN last night in household with at least one ITN	0.682	0.012	6,371	6,046	1.589	0.017	0.659	0.706
Had a fever in last 2 weeks	0.204	0.008	7,459	7,218	1.681	0.041	0.187	0.221
Advice or treatment for fever sought	0.754	0.015	1,502	1,474	1.305	0.020	0.723	0.785
Received antimalarial treatment for fever	0.362	0.021	1,502	1,474	1.641	0.059	0.319	0.405
Received ACT treatment for fever	0.894	0.022	549	534	1.575	0.025	0.850	0.938
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.036	0.003	7,202	6,719	1.393	0.092	0.029	0.042
Prevalence of malaria (RDT)	0.073	0.007	7,189	6,707	1.927	0.098	0.059	0.088
PREGNANT WOMEN								
Slept under an ITN last night	0.514	0.025	942	868	1.469	0.050	0.463	0.565
Slept under an ITN last night in household with at least one ITN	0.677	0.025	722	660	1.328	0.036	0.627	0.726
Received at least two doses of SP/Fansidar during last pregnancy	0.561	0.015	3,068	2,947	1.648	0.026	0.531	0.590
Received at least three doses of SP/Fansidar during last pregnancy	0.258	0.012	3,068	2,947	1.476	0.045	0.235	0.281

Table B.3 Sampling errors: Urban sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.805	0.013	2,643	3,145	1.637	0.016	0.779	0.830
Proportion of households having at least one ITN per two people	0.503	0.014	2,625	3,127	1.464	0.028	0.474	0.531
Proportion of de facto population with access to an ITN	0.687	0.011	11,204	12,952	1.424	0.016	0.665	0.708
Proportion of household population that slept under an ITN last night	0.646	0.012	11,204	12,952	1.409	0.019	0.622	0.670
Ratio of ITN use to ITN access	0.941	0.012	7,627	8,894	1.448	0.013	0.916	0.966
CHILDREN								
Slept under an ITN last night	0.668	0.018	1,717	2,002	1.307	0.027	0.632	0.704
Slept under an ITN last night in household with at least one ITN	0.778	0.020	1,457	1,719	1.523	0.025	0.738	0.817
Had a fever in last 2 weeks	0.198	0.020	1,591	1,915	1.926	0.102	0.158	0.238
Advice or treatment for fever sought	0.776	0.036	297	380	1.511	0.047	0.703	0.849
Received antimalarial treatment for fever	0.261	0.043	297	380	1.727	0.166	0.175	0.348
Received ACT treatment for fever	0.883	0.060	86	99	1.690	0.068	0.762	1.003
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.029	0.006	1,523	1,786	1.291	0.196	0.018	0.040
Prevalence of malaria (RDT)	0.021	0.007	1,519	1,781	1.544	0.308	0.008	0.035
PREGNANT WOMEN								
Slept under an ITN last night	0.590	0.049	198	230	1.389	0.084	0.492	0.689
Slept under an ITN last night in household with at least one ITN	0.737	0.051	161	184	1.439	0.069	0.635	0.840
Received at least two doses of SP/Fansidar during last pregnancy	0.660	0.029	650	772	1.553	0.044	0.602	0.717
Received at least three doses of SP/Fansidar during last pregnancy	0.310	0.026	650	772	1.445	0.085	0.257	0.362

Table B.4 Sampling errors: Rural sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.766	0.009	6,687	6,185	1.811	0.012	0.748	0.785
Proportion of households having at least one ITN per two people	0.429	0.011	6,669	6,171	1.783	0.025	0.407	0.450
Proportion of de facto population with access to an ITN	0.599	0.010	34,610	30,557	1.767	0.016	0.580	0.618
Proportion of household population that slept under an ITN last night	0.469	0.012	34,610	30,557	1.925	0.025	0.446	0.492
Ratio of ITN use to ITN access	0.783	0.013	20,380	18,300	1.762	0.017	0.756	0.809
CHILDREN								
Slept under an ITN last night	0.502	0.014	6,367	5,554	1.691	0.029	0.473	0.530
Slept under an ITN last night in household with at least one ITN	0.644	0.014	4,914	4,326	1.601	0.022	0.616	0.673
Had a fever in last 2 weeks	0.206	0.009	5,868	5,303	1.568	0.043	0.189	0.224
Advice or treatment for fever sought	0.746	0.017	1,205	1,094	1.246	0.022	0.713	0.779
Received antimalarial treatment for fever	0.397	0.023	1,205	1,094	1.563	0.058	0.351	0.444
Received ACT treatment for fever	0.897	0.023	463	435	1.567	0.026	0.851	0.943
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.038	0.004	5,679	4,934	1.440	0.104	0.030	0.046
Prevalence of malaria (RDT)	0.092	0.009	5,670	4,926	2.003	0.101	0.073	0.110
PREGNANT WOMEN								
Slept under an ITN last night	0.486	0.029	744	638	1.488	0.060	0.428	0.544
Slept under an ITN last night in household with at least one ITN	0.653	0.028	561	475	1.293	0.043	0.597	0.709
Received at least two doses of SP/Fansidar during last pregnancy	0.526	0.016	2,418	2,175	1.615	0.031	0.493	0.559
Received at least three doses of SP/Fansidar during last pregnancy	0.240	0.012	2,418	2,175	1.435	0.052	0.215	0.265

Table B.5 Sampling errors: Mainland sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.779	0.008	8,534	9,107	1.734	0.010	0.763	0.795
Proportion of households having at least one ITN per two people	0.454	0.009	8,500	9,076	1.636	0.019	0.437	0.472
Proportion of de facto population with access to an ITN	0.625	0.008	41,571	42,285	1.678	0.013	0.609	0.641
Proportion of household population that slept under an ITN last night	0.520	0.010	41,571	42,285	1.874	0.019	0.499	0.540
Ratio of ITN use to ITN access	0.831	0.011	25,215	26,433	1.714	0.013	0.810	0.852
CHILDREN								
Slept under an ITN last night	0.542	0.013	7,381	7,349	1.625	0.023	0.517	0.568
Slept under an ITN last night in household with at least one ITN	0.678	0.012	5,781	5,875	1.545	0.018	0.654	0.703
Had a fever in last 2 weeks	0.206	0.009	6,796	7,018	1.636	0.042	0.188	0.223
Advice or treatment for fever sought	0.753	0.016	1,395	1,442	1.266	0.021	0.721	0.784
Received antimalarial treatment for fever	0.370	0.022	1,395	1,442	1.577	0.059	0.327	0.414
Received ACT treatment for fever	0.894	0.022	549	534	1.515	0.025	0.850	0.938
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.036	0.003	6,585	6,539	1.366	0.095	0.029	0.042
Prevalence of malaria (RDT)	0.075	0.007	6,574	6,527	1.870	0.098	0.060	0.090
PREGNANT WOMEN								
Slept under an ITN last night	0.510	0.026	859	843	1.436	0.051	0.458	0.563
Slept under an ITN last night in household with at least one ITN	0.673	0.025	655	639	1.295	0.038	0.623	0.724
Received at least two doses of SP/Fansidar during last pregnancy	0.571	0.015	2,806	2,868	1.628	0.027	0.541	0.602
Received at least three doses of SP/Fansidar during last pregnancy	0.264	0.012	2,806	2,868	1.441	0.045	0.240	0.288

Table B.6 Sampling errors: Mainland urban sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.805	0.013	2,386	3,086	1.580	0.016	0.779	0.831
Proportion of households having at least one ITN per two people	0.506	0.015	2,368	3,069	1.414	0.029	0.477	0.535
Proportion of de facto population with access to an ITN	0.690	0.011	9,793	12,590	1.386	0.016	0.668	0.712
Proportion of household population that slept under an ITN last night	0.649	0.012	9,793	12,590	1.365	0.019	0.625	0.674
Ratio of ITN use to ITN access	0.941	0.013	6,706	8,687	1.407	0.013	0.916	0.966
CHILDREN								
Slept under an ITN last night	0.667	0.018	1,517	1,950	1.266	0.028	0.631	0.704
Slept under an ITN last night in household with at least one ITN	0.777	0.020	1,285	1,676	1.470	0.026	0.736	0.817
Had a fever in last 2 weeks	0.201	0.021	1,400	1,865	1.849	0.103	0.159	0.242
Advice or treatment for fever sought	0.773	0.037	273	374	1.440	0.048	0.700	0.847
Received antimalarial treatment for fever	0.265	0.044	273	374	1.645	0.166	0.177	0.353
Received ACT treatment for fever	0.883	0.060	86	99	1.606	0.068	0.762	1.003
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.029	0.006	1,352	1,742	1.248	0.199	0.018	0.041
Prevalence of malaria (RDT)	0.022	0.007	1,349	1,738	1.488	0.311	0.008	0.035
PREGNANT WOMEN								
Slept under an ITN last night	0.589	0.050	181	225	1.342	0.085	0.489	0.690
Slept under an ITN last night in household with at least one ITN	0.738	0.052	146	180	1.388	0.070	0.634	0.842
Received at least two doses of SP/Fansidar during last pregnancy	0.672	0.029	573	751	1.498	0.044	0.613	0.731
Received at least three doses of SP/Fansidar during last pregnancy	0.316	0.027	573	751	1.379	0.085	0.263	0.370

Table B.7 Sampling errors: Mainland rural sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.766	0.010	6,148	6,021	1.777	0.013	0.746	0.785
Proportion of households having at least one ITN per two people	0.428	0.011	6,132	6,007	1.750	0.026	0.406	0.450
Proportion of de facto population with access to an ITN	0.598	0.010	31,778	29,696	1.733	0.016	0.578	0.617
Proportion of household population that slept under an ITN last night	0.464	0.012	31,778	29,696	1.882	0.025	0.441	0.488
Ratio of ITN use to ITN access	0.777	0.014	18,509	17,746	1.718	0.017	0.750	0.804
CHILDREN								
Slept under an ITN last night	0.497	0.015	5,864	5,399	1.651	0.029	0.468	0.526
Slept under an ITN last night in household with at least one ITN	0.639	0.015	4,496	4,199	1.562	0.023	0.610	0.668
Had a fever in last 2 weeks	0.207	0.009	5,396	5,154	1.535	0.043	0.189	0.225
Advice or treatment for fever sought	0.745	0.017	1,122	1,068	1.216	0.023	0.712	0.779
Received antimalarial treatment for fever	0.407	0.023	1,122	1,068	1.501	0.057	0.361	0.454
Received ACT treatment for fever	0.897	0.023	463	435	1.516	0.026	0.851	0.943
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.038	0.004	5,233	4,796	1.420	0.108	0.030	0.046
Prevalence of malaria (RDT)	0.095	0.010	5,225	4,789	1.951	0.101	0.076	0.114
PREGNANT WOMEN								
Slept under an ITN last night	0.482	0.030	678	618	1.461	0.062	0.422	0.541
Slept under an ITN last night in household with at least one ITN	0.648	0.029	509	459	1.268	0.044	0.591	0.705
Received at least two doses of SP/Fansidar during last pregnancy	0.535	0.017	2,233	2,117	1.606	0.032	0.501	0.569
Received at least three doses of SP/Fansidar during last pregnancy	0.245	0.013	2,233	2,117	1.410	0.052	0.219	0.271

Table B.8 Sampling errors: Zanzibar sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.794	0.023	796	223	1.593	0.029	0.748	0.840
Proportion of households having at least one ITN per two people	0.424	0.029	794	222	1.638	0.068	0.366	0.481
Proportion of de facto population with access to an ITN	0.621	0.024	4,243	1,224	1.637	0.039	0.573	0.669
Proportion of household population that slept under an ITN last night	0.592	0.028	4,243	1,224	1.819	0.048	0.536	0.649
Ratio of ITN use to ITN access	0.954	0.019	2,792	760	1.382	0.020	0.916	0.992
CHILDREN								
Slept under an ITN last night	0.672	0.033	703	207	1.512	0.050	0.606	0.739
Slept under an ITN last night in household with at least one ITN	0.815	0.029	590	171	1.560	0.035	0.757	0.872
Had a fever in last 2 weeks	0.158	0.015	663	200	0.925	0.093	0.129	0.188
Advice or treatment for fever sought	0.819	0.040	107	32	1.000	0.049	0.740	0.899
Received antimalarial treatment for fever	0.000	0.000	107	32	na	na	0.000	0.000
Received ACT treatment for fever	na	na	0	0	na	na	0.000	na
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.045	0.012	617	181	1.365	0.271	0.020	0.069
Prevalence of malaria (RDT)	0.002	0.002	615	180	1.178	1.016	0.000	0.006
PREGNANT WOMEN								
Slept under an ITN last night	0.634	0.063	83	26	1.246	0.100	0.507	0.760
Slept under an ITN last night in household with at least one ITN	0.782	0.072	67	21	1.489	0.092	0.639	0.925
Received at least two doses of SP/Fansidar during last pregnancy	0.181	0.028	262	79	1.170	0.154	0.125	0.236
Received at least three doses of SP/Fansidar during last pregnancy	0.052	0.016	262	79	1.170	0.311	0.020	0.084

na = Not applicable

Table B.9 Sampling errors: Unguja sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.771	0.029	493	140	1.556	0.038	0.712	0.830
Proportion of households having at least one ITN per two people	0.403	0.033	491	140	1.477	0.081	0.337	0.468
Proportion of de facto population with access to an ITN	0.589	0.031	2,474	749	1.637	0.053	0.527	0.651
Proportion of household population that slept under an ITN last night	0.558	0.040	2,474	749	1.960	0.071	0.478	0.637
Ratio of ITN use to ITN access	0.947	0.027	1,582	441	1.419	0.028	0.894	1.000
CHILDREN								
Slept under an ITN last night	0.636	0.043	379	116	1.466	0.068	0.549	0.722
Slept under an ITN last night in household with at least one ITN	0.773	0.045	319	96	1.654	0.058	0.683	0.864
Had a fever in last 2 weeks	0.097	0.020	349	110	1.105	0.211	0.056	0.138
Advice or treatment for fever sought	0.900	0.043	33	11	0.878	0.048	0.813	0.987
Received antimalarial treatment for fever	0.000	0.000	33	11	na	na	0.000	0.000
Received ACT treatment for fever	na	na	0	0	na	na	0.000	na
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.036	0.016	329	100	1.362	0.428	0.005	0.068
Prevalence of malaria (RDT)	0.004	0.004	327	100	1.185	1.030	0.000	0.012
PREGNANT WOMEN								
Slept under an ITN last night	0.575	0.100	43	14	1.430	0.174	0.375	0.774
Slept under an ITN last night in household with at least one ITN	0.728	0.127	33	11	1.792	0.175	0.474	0.982
Received at least two doses of SP/Fansidar during last pregnancy	0.228	0.042	142	45	1.197	0.186	0.144	0.313
Received at least three doses of SP/Fansidar during last pregnancy	0.079	0.029	142	45	1.260	0.362	0.022	0.137

na = Not applicable

Table B.10 Sampling errors: Pemba sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.832	0.037	303	82	1.719	0.045	0.757	0.906
Proportion of households having at least one ITN per two people	0.460	0.053	303	82	1.839	0.115	0.354	0.566
Proportion of de facto population with access to an ITN	0.672	0.038	1,769	475	1.691	0.057	0.596	0.748
Proportion of household population that slept under an ITN last night	0.647	0.039	1,769	475	1.645	0.060	0.569	0.726
Ratio of ITN use to ITN access	0.964	0.028	1,210	319	1.359	0.029	0.907	1.020
CHILDREN								
Slept under an ITN last night	0.720	0.054	324	91	1.625	0.075	0.612	0.828
Slept under an ITN last night in household with at least one ITN	0.867	0.033	271	75	1.430	0.038	0.801	0.933
Had a fever in last 2 weeks	0.233	0.019	314	90	0.726	0.081	0.195	0.270
Advice or treatment for fever sought	0.779	0.057	74	21	1.099	0.073	0.666	0.892
Received antimalarial treatment for fever	0.000	0.000	74	21	na	na	0.000	0.000
Received ACT treatment for fever	na	na	0	0	na	na	0.000	na
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.055	0.020	288	80	1.457	0.367	0.015	0.095
Prevalence of malaria (RDT)	0.000	0.000	288	80	na	na	0.000	0.000
PREGNANT WOMEN								
Slept under an ITN last night	0.708	0.069	40	11	0.968	0.097	0.570	0.845
Slept under an ITN last night in household with at least one ITN	0.846	0.044	34	10	0.716	0.052	0.759	0.934
Received at least two doses of SP/Fansidar during last pregnancy	0.117	0.035	120	34	1.190	0.300	0.047	0.188
Received at least three doses of SP/Fansidar during last pregnancy	0.015	0.011	120	34	1.033	0.778	0.000	0.037

na = Not applicable

Table B.11 Sampling errors: Western sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.737	0.021	839	730	1.409	0.029	0.695	0.780
Proportion of households having at least one ITN per two people	0.315	0.019	837	729	1.159	0.059	0.277	0.352
Proportion of de facto population with access to an ITN	0.523	0.018	4,790	4,214	1.214	0.035	0.486	0.560
Proportion of household population that slept under an ITN last night	0.427	0.024	4,790	4,214	1.487	0.057	0.378	0.475
Ratio of ITN use to ITN access	0.816	0.030	2,494	2,205	1.390	0.037	0.755	0.876
CHILDREN								
Slept under an ITN last night	0.456	0.032	955	851	1.413	0.069	0.393	0.519
Slept under an ITN last night in household with at least one ITN	0.622	0.047	682	624	1.923	0.076	0.527	0.717
Had a fever in last 2 weeks	0.239	0.022	855	786	1.419	0.090	0.196	0.282
Advice or treatment for fever sought	0.719	0.038	192	188	1.166	0.053	0.643	0.796
Received antimalarial treatment for fever	0.572	0.041	192	188	1.152	0.071	0.490	0.653
Received ACT treatment for fever	0.874	0.063	115	107	1.774	0.072	0.748	1.000
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.030	0.006	851	759	1.021	0.199	0.018	0.043
Prevalence of malaria (RDT)	0.166	0.027	849	757	1.890	0.163	0.112	0.220
PREGNANT WOMEN								
Slept under an ITN last night	0.470	0.042	131	114	0.934	0.090	0.385	0.555
Slept under an ITN last night in household with at least one ITN	0.655	0.058	92	82	1.166	0.088	0.539	0.771
Received at least two doses of SP/Fansidar during last pregnancy	0.364	0.029	353	325	1.124	0.079	0.307	0.422
Received at least three doses of SP/Fansidar during last pregnancy	0.121	0.021	353	325	1.192	0.171	0.080	0.163

Table B.12 Sampling errors: Northern sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.800	0.020	635	1,125	1.268	0.025	0.759	0.840
Proportion of households having at least one ITN per two people	0.529	0.027	634	1,124	1.366	0.051	0.474	0.583
Proportion of de facto population with access to an ITN	0.690	0.024	2,611	4,643	1.458	0.035	0.642	0.739
Proportion of household population that slept under an ITN last night	0.564	0.022	2,611	4,643	1.158	0.039	0.520	0.608
Ratio of ITN use to ITN access	0.817	0.032	1,794	3,206	1.502	0.039	0.753	0.882
CHILDREN								
Slept under an ITN last night	0.635	0.034	363	648	1.122	0.053	0.568	0.702
Slept under an ITN last night in household with at least one ITN	0.771	0.035	297	534	1.241	0.045	0.701	0.840
Had a fever in last 2 weeks	0.199	0.024	329	625	1.073	0.123	0.150	0.248
Advice or treatment for fever sought	0.740	0.054	68	125	0.996	0.073	0.632	0.848
Received antimalarial treatment for fever	0.110	0.044	68	125	1.121	0.398	0.023	0.197
Received ACT treatment for fever	0.893	0.107	7	14	0.923	0.119	0.680	1.106
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.046	0.014	318	562	1.156	0.309	0.017	0.074
Prevalence of malaria (RDT)	0.015	0.007	318	562	1.067	0.493	0.000	0.029
PREGNANT WOMEN								
Slept under an ITN last night	0.591	0.097	35	66	1.208	0.165	0.396	0.785
Slept under an ITN last night in household with at least one ITN	0.641	0.096	32	61	1.171	0.150	0.449	0.833
Received at least two doses of SP/Fansidar during last pregnancy	0.723	0.053	144	276	1.402	0.073	0.617	0.828
Received at least three doses of SP/Fansidar during last pregnancy	0.354	0.049	144	276	1.226	0.139	0.255	0.452

Table B.13 Sampling errors: Central sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.747	0.032	617	851	1.822	0.043	0.683	0.811
Proportion of households having at least one ITN per two people	0.383	0.038	614	847	1.932	0.099	0.307	0.459
Proportion of de facto population with access to an ITN	0.548	0.033	3,221	4,431	1.791	0.060	0.483	0.613
Proportion of household population that slept under an ITN last night	0.347	0.039	3,221	4,431	2.122	0.112	0.269	0.425
Ratio of ITN use to ITN access	0.633	0.045	1,718	2,428	1.635	0.071	0.543	0.722
CHILDREN								
Slept under an ITN last night	0.390	0.051	591	799	1.898	0.132	0.287	0.493
Slept under an ITN last night in household with at least one ITN	0.522	0.052	436	596	1.688	0.100	0.417	0.627
Had a fever in last 2 weeks	0.181	0.020	552	773	1.199	0.111	0.141	0.221
Advice or treatment for fever sought	0.686	0.055	106	140	1.117	0.080	0.576	0.795
Received antimalarial treatment for fever	0.151	0.053	106	140	1.370	0.351	0.045	0.257
Received ACT treatment for fever	0.887	0.078	17	21	0.953	0.088	0.731	1.044
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.024	0.006	529	714	0.827	0.242	0.013	0.036
Prevalence of malaria (RDT)	0.011	0.008	527	712	1.602	0.753	0.000	0.028
PREGNANT WOMEN								
Slept under an ITN last night	0.382	0.090	73	103	1.553	0.235	0.202	0.562
Slept under an ITN last night in household with at least one ITN	0.537	0.102	52	73	1.430	0.189	0.334	0.740
Received at least two doses of SP/Fansidar during last pregnancy	0.531	0.055	215	300	1.609	0.104	0.421	0.641
Received at least three doses of SP/Fansidar during last pregnancy	0.208	0.037	215	300	1.320	0.176	0.135	0.281

Table B.14 Sampling errors: Southern Highlands sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.675	0.029	842	638	1.813	0.043	0.617	0.734
Proportion of households having at least one ITN per two people	0.439	0.024	836	635	1.397	0.055	0.391	0.488
Proportion of de facto population with access to an ITN	0.596	0.027	3,360	2,525	1.719	0.046	0.542	0.651
Proportion of household population that slept under an ITN last night	0.418	0.038	3,360	2,525	2.248	0.090	0.342	0.493
Ratio of ITN use to ITN access	0.700	0.043	2,111	1,506	1.998	0.061	0.615	0.785
CHILDREN								
Slept under an ITN last night	0.438	0.052	475	368	1.947	0.118	0.334	0.541
Slept under an ITN last night in household with at least one ITN	0.642	0.033	347	251	1.097	0.051	0.576	0.708
Had a fever in last 2 weeks	0.155	0.019	430	342	1.082	0.122	0.117	0.192
Advice or treatment for fever sought	0.817	0.056	72	53	1.182	0.068	0.706	0.928
Received antimalarial treatment for fever	0.395	0.070	72	53	1.161	0.177	0.255	0.534
Received ACT treatment for fever	0.973	0.028	31	21	0.888	0.029	0.918	1.029
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.016	0.007	432	329	1.112	0.418	0.003	0.030
Prevalence of malaria (RDT)	0.049	0.016	432	329	1.465	0.323	0.017	0.081
PREGNANT WOMEN								
Slept under an ITN last night	0.447	0.076	42	28	0.933	0.171	0.295	0.600
Slept under an ITN last night in household with at least one ITN	0.699	0.096	28	18	1.011	0.137	0.507	0.890
Received at least two doses of SP/Fansidar during last pregnancy	0.591	0.058	186	150	1.595	0.098	0.475	0.707
Received at least three doses of SP/Fansidar during last pregnancy	0.289	0.038	186	150	1.135	0.131	0.214	0.365

Table B.15 Sampling errors: Southern sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.798	0.017	860	553	1.274	0.022	0.763	0.833
Proportion of households having at least one ITN per two people	0.588	0.023	854	549	1.378	0.040	0.541	0.634
Proportion of de facto population with access to an ITN	0.738	0.019	3,189	2,036	1.377	0.025	0.701	0.776
Proportion of household population that slept under an ITN last night	0.612	0.026	3,189	2,036	1.585	0.042	0.561	0.664
Ratio of ITN use to ITN access	0.829	0.027	2,333	1,504	1.741	0.033	0.774	0.884
CHILDREN								
Slept under an ITN last night	0.640	0.034	434	273	1.277	0.054	0.571	0.709
Slept under an ITN last night in household with at least one ITN	0.722	0.038	382	242	1.407	0.053	0.646	0.798
Had a fever in last 2 weeks	0.264	0.026	413	270	1.131	0.097	0.213	0.316
Advice or treatment for fever sought	0.814	0.031	105	71	0.741	0.038	0.753	0.876
Received antimalarial treatment for fever	0.424	0.063	105	71	1.333	0.148	0.298	0.549
Received ACT treatment for fever	0.946	0.039	40	30	1.155	0.041	0.869	1.024
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.030	0.008	389	244	0.896	0.275	0.013	0.046
Prevalence of malaria (RDT)	0.136	0.030	389	244	1.640	0.220	0.076	0.195
PREGNANT WOMEN								
Slept under an ITN last night	0.691	0.068	50	31	0.982	0.099	0.554	0.827
Slept under an ITN last night in household with at least one ITN	0.751	0.059	46	28	0.850	0.078	0.634	0.869
Received at least two doses of SP/Fansidar during last pregnancy	0.821	0.033	171	112	1.130	0.041	0.754	0.887
Received at least three doses of SP/Fansidar during last pregnancy	0.452	0.042	171	112	1.105	0.093	0.368	0.536

Table B.16 Sampling errors: South West Highlands sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.706	0.019	1,053	1,075	1.368	0.027	0.668	0.745
Proportion of households having at least one ITN per two people	0.418	0.027	1,049	1,071	1.746	0.064	0.364	0.471
Proportion of de facto population with access to an ITN	0.557	0.026	5,061	4,545	1.821	0.047	0.505	0.610
Proportion of household population that slept under an ITN last night	0.328	0.028	5,061	4,545	1.997	0.087	0.271	0.385
Ratio of ITN use to ITN access	0.588	0.039	2,535	2,533	1.889	0.066	0.510	0.666
CHILDREN								
Slept under an ITN last night	0.363	0.029	960	812	1.381	0.079	0.305	0.420
Slept under an ITN last night in household with at least one ITN	0.518	0.033	625	569	1.341	0.064	0.451	0.585
Had a fever in last 2 weeks	0.199	0.034	931	822	2.336	0.170	0.131	0.267
Advice or treatment for fever sought	0.849	0.028	165	164	0.973	0.033	0.794	0.905
Received antimalarial treatment for fever	0.408	0.106	165	164	2.869	0.259	0.197	0.620
Received ACT treatment for fever	0.970	0.030	57	67	1.518	0.031	0.910	1.031
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.012	0.005	830	701	1.112	0.391	0.003	0.021
Prevalence of malaria (RDT)	0.026	0.014	830	701	1.968	0.535	0.000	0.053
PREGNANT WOMEN								
Slept under an ITN last night	0.183	0.054	118	109	1.427	0.293	0.076	0.291
Slept under an ITN last night in household with at least one ITN	0.406	0.095	64	49	1.330	0.234	0.216	0.596
Received at least two doses of SP/Fansidar during last pregnancy	0.488	0.037	403	343	1.479	0.076	0.414	0.562
Received at least three doses of SP/Fansidar during last pregnancy	0.215	0.028	403	343	1.342	0.128	0.160	0.270

Table B.17 Sampling errors: Lake sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.808	0.016	2,554	2,327	2.040	0.020	0.776	0.839
Proportion of households having at least one ITN per two people	0.389	0.016	2,547	2,322	1.694	0.042	0.356	0.421
Proportion of de facto population with access to an ITN	0.616	0.013	14,632	12,694	1.628	0.021	0.591	0.642
Proportion of household population that slept under an ITN last night	0.567	0.015	14,632	12,694	1.583	0.026	0.537	0.596
Ratio of ITN use to ITN access	0.919	0.016	8,740	7,826	1.523	0.018	0.887	0.952
CHILDREN								
Slept under an ITN last night	0.596	0.017	2,883	2,474	1.399	0.029	0.561	0.631
Slept under an ITN last night in household with at least one ITN	0.714	0.016	2,370	2,066	1.325	0.023	0.681	0.746
Had a fever in last 2 weeks	0.209	0.013	2,617	2,311	1.507	0.062	0.183	0.235
Advice or treatment for fever sought	0.728	0.022	557	484	1.075	0.030	0.684	0.772
Received antimalarial treatment for fever	0.428	0.029	557	484	1.287	0.068	0.370	0.487
Received ACT treatment for fever	0.850	0.036	235	207	1.482	0.042	0.778	0.921
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.053	0.007	2,587	2,214	1.545	0.139	0.039	0.068
Prevalence of malaria (RDT)	0.106	0.016	2,581	2,207	2.137	0.148	0.075	0.138
PREGNANT WOMEN								
Slept under an ITN last night	0.639	0.037	325	270	1.284	0.057	0.565	0.712
Slept under an ITN last night in household with at least one ITN	0.778	0.029	269	222	1.079	0.038	0.719	0.836
Received at least two doses of SP/Fansidar during last pregnancy	0.560	0.025	1,087	973	1.656	0.045	0.510	0.610
Received at least three doses of SP/Fansidar during last pregnancy	0.244	0.019	1,087	973	1.469	0.079	0.205	0.282

Table B.18 Sampling errors: Eastern sample, Tanzania MIS 2017

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								
Proportion of households having at least one ITN	0.835	0.017	1,134	1,808	1.561	0.021	0.801	0.869
Proportion of households having at least one ITN per two people	0.569	0.021	1,129	1,799	1.404	0.036	0.528	0.611
Proportion of de facto population with access to an ITN	0.726	0.017	4,707	7,197	1.463	0.023	0.693	0.759
Proportion of household population that slept under an ITN last night	0.699	0.016	4,707	7,197	1.252	0.023	0.667	0.730
Ratio of ITN use to ITN access	0.962	0.013	3,490	5,225	1.186	0.014	0.936	0.989
CHILDREN								
Slept under an ITN last night	0.686	0.027	720	1,124	1.260	0.039	0.632	0.739
Slept under an ITN last night in household with at least one ITN	0.775	0.028	642	994	1.432	0.037	0.719	0.832
Had a fever in last 2 weeks	0.201	0.030	669	1,089	1.842	0.151	0.140	0.262
Advice or treatment for fever sought	0.777	0.061	130	219	1.633	0.078	0.656	0.898
Received antimalarial treatment for fever	0.306	0.060	130	219	1.417	0.195	0.186	0.425
Received ACT treatment for fever	0.944	0.029	47	67	0.792	0.031	0.886	1.002
Prevalence of anaemia (haemoglobin level <8.0 g/dl)	0.027	0.009	649	1,015	1.274	0.312	0.010	0.045
Prevalence of malaria (RDT)	0.046	0.015	648	1,015	1.423	0.321	0.017	0.076
PREGNANT WOMEN								
Slept under an ITN last night	0.590	0.060	85	122	1.053	0.102	0.470	0.710
Slept under an ITN last night in household with at least one ITN	0.679	0.070	72	106	1.214	0.103	0.540	0.819
Received at least two doses of SP/Fansidar during last pregnancy	0.688	0.043	247	390	1.461	0.063	0.602	0.775
Received at least three doses of SP/Fansidar during last pregnancy	0.391	0.041	247	390	1.331	0.106	0.308	0.474

DATA QUALITY TABLES

APPENDIX C

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), Tanzania MIS 2017

	Female		Male	
Age	Number	Percent	Number	Percent
0	766	3.4	713	3.4
1	743	3.3	778	3.7
2	709	3.1	736	3.5
3	758	3.4	763	3.6
4	781	3.5	759	3.6
5	607	2.7	653	3.1
6	604	2.7	649	3.1
7	764	3.4	801	3.8
8	662	2.9	591	2.8
9	664	2.9	652	3.1
10	699	3.1	667	3.2
11	584	2.6	557	2.7
12	645	2.9	635	3.0
13	637	2.8	579	2.8
14	426	1.9	531	2.5
15	460	2.0	496	2.4
16	349	1.5	389	1.9
17	414	1.8	480	2.3
18	435	1.9	442	2.1
19	303	1.3	282	1.3
20	486	2.2	374	1.8
21	374	1.7	256	1.2
22	407	1.8	293	1.4
23	310	1.4	268	1.3
24	341	1.5	272	1.3
25	381	1.7	356	1.7
26	306	1.4	202	1.0
27	366	1.6	271	1.3
28	304	1.3	244	1.2
29	328	1.5	212	1.0
30	343	1.5	339	1.6
31	267	1.2	184	0.9
32	273	1.2	246	1.2
33	247	1.1	212	1.0
34	187	0.8	178	0.9
35	316	1.4	303	1.4
36	198	0.9	218	1.0
37	243	1.1	207	1.0
38	224	1.0	206	1.0
39	216	1.0	150	0.7
40	246	1.1	285	1.4
41	204	0.9	107	0.5
42	212	0.9	192	0.9
43	188	0.8	162	0.8
44	154	0.7	110	0.5
45	234	1.0	236	1.1
46	111	0.5	101	0.5
47	152	0.7	132	0.6
48	116	0.5	107	0.5
49	144	0.6	131	0.6
50	135	0.6	155	0.7
51	113	0.5	110	0.5
52	157	0.7	109	0.5
53	143	0.6	92	0.4
54	131	0.6	80	0.4
55	159	0.7	115	0.6
56	105	0.5	87	0.4
57	77	0.3	84	0.4
58	80	0.4	86	0.4
59	56	0.2	77	0.4
60	194	0.9	124	0.6
61	82	0.4	48	0.2
62	88	0.4	82	0.4
63	70	0.3	59	0.3
64	54	0.2	53	0.3
65	110	0.5	99	0.5

(Continued…)

Table C.1—*Continued*

Age	Female		Male	
	Number	Percent	Number	Percent
66	24	0.1	38	0.2
67	55	0.2	68	0.3
68	61	0.3	64	0.3
69	30	0.1	28	0.1
70+	715	3.2	521	2.5
Don't know/missing	55	0.2	44	0.2
Total	22,580	100.0	20,930	100.0

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

Table C.2.1 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, Tanzania MIS 2017

Age group	Household population of women age 10-54	Interviewed women age 15-49		Percentage of eligible women interviewed
		Number	Percentage	
10-14	2,990	na	na	na
15-19	1,961	1,927	19.8	98.3
20-24	1,917	1,893	19.5	98.7
25-29	1,686	1,670	17.2	99.0
30-34	1,317	1,302	13.4	98.9
35-39	1,197	1,184	12.2	98.9
40-44	1,004	991	10.2	98.7
45-49	757	747	7.7	98.6
50-54	679	na	na	na
15-49	9,839	9,713	100.0	98.7

Note: The de facto population includes all residents and non-residents who stayed in the household the night before the interview. Weights for both the 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), Tanzania MIS 2017

Subject	Percentage with information missing	Number of cases
Birth date		
Day only (births in the 15 years preceding the survey)	0.43	8,486
Month only (births in the 15 years preceding the survey)	0.25	8,486
Month and year (births in the 15 years preceding the survey)	0.04	8,486
Age at death (deceased children born in the 15 years preceding the survey)	0.00	246
Education		
Respondent's education (all women age 15-49)	0.00	10,018
Anaemia		
Anaemia (living children age 6-59 months from the Biomarker Questionnaire)	1.78	6,841

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, dead, and total children (weighted), Tanzania MIS 2017

	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
2017	1,321	33	1,355	100.0	100.0	100.0	91.9	101.6	92.1	na	na	na
2016	1,480	31	1,511	100.0	100.0	100.0	102.3	233.1	104.0	na	na	na
2015	1,453	43	1,496	99.8	98.9	99.8	105.8	101.1	105.6	101.1	111.4	101.4
2014	1,395	46	1,440	99.7	96.6	99.6	102.5	95.7	102.3	98.1	98.4	98.1
2013	1,389	50	1,439	99.2	100.0	99.2	98.2	68.7	97.0	107.2	112.2	107.3
2012	1,197	43	1,240	99.8	100.0	99.8	107.0	110.0	107.1	171.9	173.2	171.9
2013-2017	7,038	203	7,242	99.7	99.0	99.7	100.2	102.9	100.3	na	na	na
2008-2012	1,202	43	1,245	99.8	100.0	99.8	106.9	110.0	107.0	na	na	na
All	8,240	246	8,486	99.7	99.2	99.7	101.1	104.1	101.2	na	na	na

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

PERSONS INVOLVED IN THE 2017 TANZANIA MALARIA INDICATOR SURVEY

APPENDIX D

Survey Management Team

Dr. Albina Chuwa	Director General, NBS–Principal Investigator
Dr. Ally Jabir Mohamed	Principal Investigator
Dr. Renata Mandike	Co-Principal Investigator
Sylivia Meku	Project Coordinator
Stephano G. Cosmas	Desk Officer

Listing Team

Jamila Maumba	Neema Buhululula
Amina Jumanne	Hatibu Ahmad Kuchengo
Mariam Dinya Hamis	Grace Likwaro
Boaz Chikere	Magreth Kanyunyu
Anastazia Mwikwabe	Sarafina Jonas
David Ernest Mshana	Fortunatus Kamala
Elizabeth Eliyuko	Ferista Shayo
Machange Devis Machange	Fidea Mgasa
Shedrack J. Mkami	Brenda Modu
Justinus Kahabuka	Jenipher Malya
Diana Fabian	Bahati Mwakitwange
Gordon Godwin	Praxeda Angelo
Macklina Makwandi	Catheline Kimario
Mbazi Elidaima	Asha A. Abdulrabil
Lidya Kamgisha	Damaris Aroko
Patrick Mwekibindu	Judith Mrema
Rose Nyabukika	Doren Cornely
Rajabu Hussein	Nyabwile Kaboja
Ally Kinyaga	Albina Gabriel
Happyness Phisso	Veronica Titus
Betty Mwanga	Martha Dickson
Ivetha R. Pontian	Mgenyi Badru
Lynnet L. Mawala	Noela Joseph William
Raphael Rupia	Rehema Mkumbi
Nasra Kiseto	Patrick Matiko
Mlanzi Seif	Tryphone Mtasigwa

Trainers

Stephano G. Cosmas	Yasinta Kafulila
Prisca Mkongwe	Magreth Mzengi
Elinzuu Nicodemo	Munir Mdee
Hellen Hillary	William Mabusi
Mary August	Abdulla Makame
Adiel Mushi	David Edward
Andrew Gondwe	Ahmad Hamza
Bakila H. Bakila	Fahima Issa
Daniel Minde	Rose Meagie
Florah Gabriel	Eusebius Mwinuka
Frank Mapendo	Saumu Said
Hellen L. Mtove	

Fieldwork Supervisors

Janeth Richard
Julius Kombania
Stella Maka
Respicius Gasper
Venance Lucas
Doto Alley
Elias Bugumba
Fahima Issa
Jacob Lufingo
Demetria Ngirwa
Mariam Edmund
Andrew Gondwe
Eliud Kamendu
Hemed Nkunya
Kulwa Namkaa
Ahmad Hamza

Female Interviewers

Martha Bernard Mnenje
Lucia George
Rehema Abdul
Selina Hilary
Judith Stuart Kiyaya
Edith Songelaeli Mnogola
Asha S. Shao
Elizabeth John Mhando
Beata Daniel Tillya
Zainabu Mdimi
Mevaji Mery Anthony
Jeneroza John Rutatelemuka
Marietha Ngoge
Gloriana Joshua Akyoo
Rhobi K. Maro
Zuhura M. Izina
Cecilia S. Muganda
Oliva Paulo Magweiga
Remija J. Ngingo
Trudbertha W. Rutakinikwa
Mary W. Warioba
Matilda Erick Ruyange
Devotha Mhagama
Helena Andrew Saka
Mary Francis Tesha
Rahma A. Saum
Fatma Ussi Yahya
Asha Mohamed Ali
Fatma Ali Mohamed
Elizabeth Richard Msaki
Sala J. Kilakuno
Josephina Milwano
Rose Meagie
Praxeda M. Bakeisa
Jeremiah Steven Nyange
Elizabeth Sokoi
Saumu Khalid Said
Witness Silinu
Rosta Lyimo
Zuhura D. Kivaju
Tamasha Ngalomba
Elizabeth E. Lema
Hawa Bakari Nabone
Sharifa Khamisi Rashid
Nyachiro Mujaya
Kwezi R. Malale
Clemencia Assenga
Aneth M. Kaduma
Tausi Mghenyi
Johari Y. Sadi
Grace James Ng'Wandu
Jane M. Naleo
Nola Sanga
Verra John Lweyemamu
Lightness Ulomi
Bijuma Abdalla
Bahati Ali M
Raya K. Faki
Moza Mohamed Ali

Male Interviewers

Eusebius Mwinuka
Mayala William
Said Malando
Ressy R. Mashulano
Hurumaeli Ezekiel
Boniphace Kassanga
Henry Mosabi
Thomas M. Lutamla
Hassan M. Hassan
Thomas Ndimbo
Othman M. Ali
Innocent Kihongo
Paul A. Njau
John C. Nsalamba
Robert Tepeli
Bollen Mwaigomole
Mohammed J. Siri
Johnmark Obura
Clodwick Nyimbo
Abilahi Mbingu
Fauzi Abdi Nassor

Data Collection Drivers

Jailous Tinda
Benedict Liwoya
Zuberi Mkawa
Paulo Mkua
Michael Madembwe
Andrea Simkonda
John Fundisha
Zengo N. Lufeka
Damas Ndunguru
Viena Hiyera
Twaha Bendera
Charles Fallu
Shomari Matewele
Enock Geba
Salum K. Salum
Hemed S. Hemed
Simon Minja
Yohana Kipangula
Benjamin Makasi

Report Authors and Reviewers

Shija J. Shija
Mary August
Joyce Laurent
Sigsbert Mkude
Salma S. Ally
Elide S. Mwanri
Stephen N. Maganda
Mohamed H. Ali
Florah Gabriel
Prisca Mkongwe
Stephano G. Cosmas
Sylvia Meku
Magreth B. Mzengi
Aldegunda Komba
Nathanael Mbalilaki

Data Processing

Munir Mdee
Frank Mapendo
Abdullah Othman Makame

ICF

Michelle Winner
Chrystelle Jean
Albert Themme
Geofrey Lutwama
Michael Amakyi
Cameron Taylor
Ruilin Ren
Sally Zweimueller
Trinadh Dontamsetti
Tom Fish
Joan Wardell
Nancy Johnson
Chris Gramer
Greg Edmondson

QUESTIONNAIRES

APPENDIX E

FORMATTING DATE: 14 Mar 2016
ENGLISH LANGUAGE: 29 Jan 2016

TANZANIA MALARIA INDICATOR SURVEY
HOUSEHOLD QUESTIONNAIRE

UNITED REPUBLIC OF TANZANIA
NATIONAL BUREAU OF STATISTICS

IDENTIFICATION

REGION . . . . . | | |
DISTRCIT . . . . . | | |
WARD . . . . . | | | |

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 | | |

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 KISWAHILI

SUPERVISOR

NAME _____ NUMBER | | | | |

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INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with the National Bureau of Statistics. We are conducting a survey about malaria all over Tanzania. 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 LESS THAN ONE YEAR, CODE 00 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
12 = CO-WIFE
13 = BROTHER/SISTER IN LAW
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 LESS THAN ONE YEAR, CODE 00 IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5
11			M F 1 2	Y N 1 2	Y N 1 2	IN YEARS	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
12 = CO-WIFE
13 = BROTHER/SISTER IN LAW
98 = DON'T KNOW

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101 (2)	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 CART WITH SMALL TANK . . . . . 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) . . . . . 81 BOTTLED WATER . . . . . 91 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 CART WITH SMALL TANK . . . . . 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 (3)	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/WASHABLE 22 PIT LATRINE WITH SLAB/NON WASHABLE 23 PIT LATRINE WITHOUT SLAB/OPEN PIT . . 24 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 . . . . . 02 NATURAL GAS . . . . . 03 BIOGAS . . . . . 04 KEROSENE . . . . . 05 COAL, LIGNITE . . . . . 06 CHARCOAL . . . . . 07 WOOD . . . . . 08 STRAW/SHRUBS/GRASS . . . . . 09 AGRICULTURAL CROP . . . . . 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
111 (4)	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) Milk cows or bulls? b) Other cattle? c) Horses, donkeys, or mules? d) Goats? e) Sheep? f) Chickens or other poultry? g) Pigs	a) COWS/BULLS . . . . . [ ][ ] b) OTHER CATTLE . . . . . [ ][ ] c) HORSES/DONKEYS/MULES . . . . . [ ][ ] d) GOATS . . . . . [ ][ ] e) SHEEP . . . . . [ ][ ] f) CHICKENS/POULTRY [ ][ ] g) PIGS . . . . . [ ][ ]	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
112	Does any member of your household own any agricultural land?	YES . . . . . 1 NO 2	→ 114
113	How many hectares of agricultural land do members of this household own? IF 95 OR MORE, CIRCLE '950'.	HECTARES . . . . . ☐☐.☐ 95 OR MORE HECTARES . . . . . 950 DON'T KNOW 998	
114 (5)	Does your household have: a) Electricity? b) A radio? c) A television? d) A non-mobile telephone? e) A computer? f) A refrigerator?	YES NO a) ELECTRICITY . . . . . 1 2 b) RADIO . . . . . 1 2 c) TELEVISION . . . . . 1 2 d) NON-MOBILE TELEPHONE . . 1 2 e) COMPUTER . . . . . 1 2 f) REFRIGERATOR . . . . . 1 2 g) BATTERY 1 2 h) IRON 1 2	
115	Does any member of this household own: a) A watch? b) A mobile phone? c) A bicycle? d) A motorcycle or motor scooter? e) An animal-drawn cart? f) A car or truck? g) A boat with a motor?	YES NO a) WATCH . . . . . 1 2 b) MOBILE PHONE . . . . . 1 2 c) BICYCLE . . . . . 1 2 d) MOTORCYCLE/SCOOTER . . . . . 1 2 f) ANIMAL-DRAWN CART . . . . . 1 2 g) CAR/TRUCK . . . . . 1 2 h) BOAT WITH MOTOR 1 2	
116	Does any member of this household have a bank account?	YES . . . . . 1 NO 2	
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
121A	IF NET OBSERVED, RECORD ITS COLOR(S). IF NET NOT OBSERVED, ASK: What color is the net?	SOLID BLUE . . . . 1 SOLID WHITE . . . . 2 BLUE AND WHITE STRIPED 3 GREEN 4 OTHER ______ 6 (SPECIFY)	SOLID BLUE . . . . 1 SOLID WHITE . . . . 2 BLUE AND WHITE STRIPED 3 GREEN 4 OTHER ______ 6 (SPECIFY)	SOLID BLUE . . . . 1 SOLID WHITE . . . . 2 BLUE AND WHITE STRIPED 3 GREEN 4 OTHER ______ 6 (SPECIFY)
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 . . . . 11 OLYSET . . . . 12 NETPROTECT 13 DURANET . . . . 14 OTHER/DON'T NOW BRAND 16 OTHER TYPE . . . . 96 DON'T KNOW TYPE . . 98	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PermaNET . . . . 11 OLYSET . . . . 12 NETPROTECT 13 DURANET . . . . 14 OTHER/DON'T NOW BRAND 16 OTHER TYPE . . . . 96 DON'T KNOW TYPE . . 98	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PemaNET . . . . 11 OLYSET . . . . 12 NETPROTECT 13 DURANET . . . . 14 OTHER/DON'T NOW BRAND 16 OTHER TYPE . . . . 96 DON'T KNOW TYPE . . 98
126 (7)	Did you get the net through Government's net distribution campaign to households, during an antenatal care visit, during an immunization visit or through the school net programme (SNP); or through the shehia (local governement) issued coupon?	YES, NET DISTRIBUTION CAMPAIGN . . . . 1 YES, ANC . . . . 2 YES, IMMUNIZATION VISIT . . . . 3 YES, SNP . . . . 4 YES, SHEHIA COUPON 5 (SKIP TO 128) NO 6	YES, NET DISTRIBUTION CAMPAIGN . . . . 1 YES, ANC . . . . 2 YES, IMMUNIZATION VISIT . . . . 3 YES, SNP . . . . 4 YES, SHEHIA COUPON 5 (SKIP TO 128) NO 6	YES, NET DISTRIBUTION CAMPAIGN . . . . 1 YES, ANC . . . . 2 YES, IMMUNIZATION VISIT . . . . 3 YES, SNP . . . . 4 YES, SHEHIA COUPON 5 (SKIP TO 128) NO 6
127	Where did you get the net?	GOVERNMENT HEALTH FACILITY . . . . 01 PRIVATE HEALTH FACILITY . . . . 02 PHARMACY . . . . 03 SHOP/MARKET . . . . . 04 CHW . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 SCHOOL . . . . 07 OTHER . . . . 96 DON'T KNOW 98	GOVERNMENT HEALTH FACILITY . . . . 01 PRIVATE HEALTH FACILITY . . . . 02 PHARMACY . . . . 03 SHOP/MARKET . . . . . 04 CHW . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 SCHOOL . . . . 07 OTHER . . . . 96 DON'T KNOW 98	GOVERNMENT HEALTH FACILITY . . . . 01 PRIVATE HEALTH FACILITY . . . . 02 PHARMACY . . . . 03 SHOP/MARKET . . . . . 04 CHW . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 SCHOOL . . . . 07 OTHER . . . . 96 DON'T KNOW 98
127A	Did you pay for the net?	YES 1 NO 2 128	YES 1 NO 2 128	YES 1 NO 2 128

		NET #1	NET #2	NET #3
127B	How much did you pay?	TSHS [ ][ ][ ][ ][ ][ ][ ][ ] DON"T KNOW 99999998	TSHS [ ][ ][ ][ ][ ][ ][ ][ ] DON"T KNOW 99999998	TSHS [ ][ ][ ][ ][ ][ ][ ][ ] DON"T KNOW 99999998
128	Did anyone sleep under this mosquito net last night?	YES . . . . 1 NO . . . . 2 (SKIP TO 129H) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 129H) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 129H) NOT SURE 8
129	Who slept under this mosquito net last night?	NAME ____________ LINE NO. . . . . . . [ ][ ] NAME ____________ LINE NO. . . . . . . [ ][ ] NAME ____________ LINE NO. . . . . . . [ ][ ] NAME ____________ LINE NO. . . . . . . [ ][ ] GO BACK TO 121 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.	NAME ____________ LINE NO. . . . . [ ][ ] NAME ____________ LINE NO. . . . . [ ][ ] NAME ____________ LINE NO. . . . . [ ][ ] NAME ____________ LINE NO. . . . . [ ][ ] GO BACK TO 121 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.	NAME ____________ LINE NO. . . . . . [ ][ ] NAME ____________ LINE NO. . . . . . [ ][ ] NAME ____________ LINE NO. . . . . . [ ][ ] NAME ____________ LINE NO. . . . . . [ ][ ] GO BACK TO 121 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.
129H	Why not? RECORD ALL MENTIONED	NO MOSQUITOES . . . . . A NO MALARIA NOW . . . . . B TOO HOT . . . . C DON'T LIKE SMELL . . . . . D FEEL CLOSED IN/ AFRAID . . . . E NET TOO OLD/TORN . . . . . F NET TOO DIRTY . . . . G NET NOT AVAILABLE LAST NIGHT/NET BEING WASHED . . . . . H USUAL USER(S) DID NOT SLEEP HERE LAST NIGHT . . . . I NET TOO SMALL . . . . J SAVING NET FOR LATER . . . . K NO LONGER KILLS/ REPELS MOSQ. . . . . . L OTHER ____________ X (SPECIFY) DON'T KNOW . . . . Z	NO MOSQUITOES . . . . . A NO MALARIA NOW . . . . . B TOO HOT . . . . C DON'T LIKE SMELL . . . . . D FEEL CLOSED IN/ AFRAID . . . . E NET TOO OLD/TORN . . . . . F NET TOO DIRTY . . . . G NET NOT AVAILABLE LAST NIGHT/NET BEING WASHED . . . . . H USUAL USER(S) DID NOT SLEEP HERE LAST NIGHT . . . . I NET TOO SMALL . . . . J SAVING NET FOR LATER . . . . K NO LONGER KILLS/ REPELS MOSQ. . . . . . L OTHER ____________ X (SPECIFY) DON'T KNOW . . . . Z	NO MOSQUITOES . . . . . A NO MALARIA NOW . . . . . B TOO HOT . . . . C DON'T LIKE SMELL . . . . . D FEEL CLOSED IN/ AFRAID . . . . E NET TOO OLD/TORN . . . . . F NET TOO DIRTY . . . . G NET NOT AVAILABLE LAST NIGHT/NET BEING WASHED . . . . . H USUAL USER(S) DID NOT SLEEP HERE LAST NIGHT . . . . I NET TOO SMALL . . . . J SAVING NET FOR LATER . . . . K NO LONGER KILLS/ REPELS MOSQ. . . . . . L OTHER ____________ X (SPECIFY) DON'T KNOW . . . . Z
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.

		NET #4	NET #5	NET #6
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
121A	IF NET OBSERVED, RECORD ITS COLOR(S). IF NET NOT OBSERVED, ASK: What color is the net?	SOLID BLUE . . . . 1 SOLID WHITE . . . . 2 BLUE AND WHITE STRIPED 3 GREEN 4 OTHER ______ 6 (SPECIFY)	SOLID BLUE . . . . 1 SOLID WHITE . . . . 2 BLUE AND WHITE STRIPED 3 GREEN 4 OTHER ______ 6 (SPECIFY)	SOLID BLUE . . . . 1 SOLID WHITE . . . . 2 BLUE AND WHITE STRIPED 3 GREEN 4 OTHER ______ 6 (SPECIFY)
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 . . . . 11 OLYSET . . . . 12 NETPROTECT 13 DURANET . . . . 14 OTHER/DON'T NOW BRAND 16 (SKIP TO 126) OTHER TYPE . . . . 96 DON'T KNOW TYPE . . 98	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PERMANET . . . . 11 OLYSET . . . . 12 NETPROTECT 13 DURANET . . . . 14 OTHER/DON'T NOW BRAND 16 (SKIP TO 126) OTHER TYPE . . . . 96 DON'T KNOW TYPE . . 98	**LONG-LASTING INSECTICIDE-TREATED NET (LLIN)** PERMANET . . . . 11 OLYSET . . . . 12 NETPROTECT 13 DURANET . . . . 14 OTHER/DON'T NOW BRAND 16 (SKIP TO 126) OTHER TYPE . . . . 96 DON'T KNOW TYPE . . 98
126 (7)	Did you get the net through Government's net distribution campaign to households, during an antenatal care visit, during an immunization visit or through the school net programme (SNP); or through the shehia (local governement) issued coupon?	YES, NET DISTRIBUTION CAMPAIGN . . . . 1 YES, ANC . . . . 2 YES, IMMUNIZATION VISIT . . . . 3 YES, SNP . . . . 4 YES, SHEHIA COUPON 5 (SKIP TO 128) NO 6	YES, NET DISTRIBUTION CAMPAIGN . . . . 1 YES, ANC . . . . 2 YES, IMMUNIZATION VISIT . . . . 3 YES, SNP . . . . 4 YES, SHEHIA COUPON 5 (SKIP TO 128) NO 6	YES, NET DISTRIBUTION CAMPAIGN . . . . 1 YES, ANC . . . . 2 YES, IMMUNIZATION VISIT . . . . 3 YES, SNP . . . . 4 YES, SHEHIA COUPON 5 (SKIP TO 128) NO 6
127	Where did you get the net?	GOVERNMENT HEALTH FACILITY . . . . 01 PRIVATE HEALTH FACILITY . . . . 02 PHARMACY . . . . 03 SHOP/MARKET . . . . . 04 CHW . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 SCHOOL . . . . 07 OTHER . . . . 96 DON'T KNOW 98	GOVERNMENT HEALTH FACILITY . . . . 01 PRIVATE HEALTH FACILITY . . . . 02 PHARMACY . . . . 03 SHOP/MARKET . . . . . 04 CHW . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 SCHOOL . . . . 07 OTHER . . . . 96 DON'T KNOW 98	GOVERNMENT HEALTH FACILITY . . . . 01 PRIVATE HEALTH FACILITY . . . . 02 PHARMACY . . . . 03 SHOP/MARKET . . . . . 04 CHW . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 SCHOOL . . . . 07 OTHER . . . . 96 DON'T KNOW 98
127A	Did you pay for the net?	YES 1 NO 2 128	YES 1 NO 2 128	YES 1 NO 2 128

		NET #4	NET #5	NET #6
127B	How much did you pay?	TSHS [ ][ ][ ][ ][ ][ ][ ][ ] DON"T KNOW 99999998	TSHS [ ][ ][ ][ ][ ][ ][ ][ ] DON"T KNOW 99999998	TSHS [ ][ ][ ][ ][ ][ ][ ][ ] DON"T KNOW 99999998
128	Did anyone sleep under this mosquito net last night?	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) NOT SURE 8	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) NOT SURE 8	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) NOT SURE 8
129	Who slept under this mosquito net last night?	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. . . . . [ ][ ]
129H	Why not? RECORD ALL MENTIONED	NO MOSQUITOES . . . . . A NO MALARIA NOW . . . . . B TOO HOT . . . . . C DON'T LIKE SMELL . . . . . D FEEL CLOSED IN/ AFRAID . . . . . E NET TOO OLD/TORN . . . . . F NET TOO DIRTY . . . . . G NET NOT AVAILABLE LAST NIGHT/NET BEING WASHED . . . . . H USUAL USER(S) DID NOT SLEEP HERE LAST NIGHT . . . . . I NET TOO SMALL . . . . . J SAVING NET FOR LATER . . . . . K NO LONGER KILLS/ REPELS MOSQ. . . . . . L OTHER ____ X (SPECIFY) DON'T KNOW . . . . . Z	NO MOSQUITOES . . . . . A NO MALARIA NOW . . . . . B TOO HOT . . . . . C DON'T LIKE SMELL . . . . . D FEEL CLOSED IN/ AFRAID . . . . . E NET TOO OLD/TORN . . . . . F NET TOO DIRTY . . . . . G NET NOT AVAILABLE LAST NIGHT/NET BEING WASHED . . . . . H USUAL USER(S) DID NOT SLEEP HERE LAST NIGHT . . . . . I NET TOO SMALL . . . . . J SAVING NET FOR LATER . . . . . K NO LONGER KILLS/ REPELS MOSQ. . . . . . L OTHER ____ X (SPECIFY) DON'T KNOW . . . . . Z	NO MOSQUITOES . . . . . A NO MALARIA NOW . . . . . B TOO HOT . . . . . C DON'T LIKE SMELL . . . . . D FEEL CLOSED IN/ AFRAID . . . . . E NET TOO OLD/TORN . . . . . F NET TOO DIRTY . . . . . G NET NOT AVAILABLE LAST NIGHT/NET BEING WASHED . . . . . H USUAL USER(S) DID NOT SLEEP HERE LAST NIGHT . . . . . I NET TOO SMALL . . . . . J SAVING NET FOR LATER . . . . . K NO LONGER KILLS/ REPELS MOSQ. . . . . . L OTHER ____ X (SPECIFY) DON'T KNOW . . . . . Z
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.

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 VINYL OR ASPHALT STRIPS . . . . . 32 CERAMIC TILES . . . . . 33 CEMENT/CONCRETE . . . . . 34 CARPET . . . . . 35 OTHER _____ 96 (SPECIFY)	
132	OBSERVE MAIN MATERIAL OF THE ROOF OF THE DWELLING. RECORD OBSERVATION.	**NATURAL ROOFING** NO ROOF . . . . . 11 GRASS/THATCH/PALM LEAF/MUD . . . . . 12 **RUDIMENTARY ROOFING** RUSTIC MAT . . . . . 21 PALM/BAMBOO . . . . . 22 WOOD PLANKS . . . . . 23 **FINISHED ROOFING** IRON SHEET . . . . . 31 CONCRETE . . . . . 32 TILES . . . . . 33 OTHER _____ 96 (SPECIFY)	
133	OBSERVE MAIN MATERIAL OF THE EXTERIOR WALLS OF THE DWELLING. RECORD OBSERVATION.	**NATURAL WALLS** NO WALL 11 GRASS . . . . . 12 CANE/PALM/TRUNKS/BAMBOO 13 **RUDIMENTARY WALLS** POLES WITH MUD . . . . . 21 STONE WITH MUD . . . . . 22 WOOD,TIMBER . . . . . 23 **FINISHED WALLS** CEMENT/CONCRETE . . . . . 31 STONE WITH LIME/CEMENT . . . . . 32 SUN-DRIED BRICKS/MUD BRICK . . . . . 33 BAKED BRICKS . . . . . 34 CEMENT BLOCKS . . . . . 35 OTHER _____ 96 (SPECIFY)	
133A	OBSERVE EAVES OF THE HOUSE RECORD OBSERVATION	ALL EAVES CLOSED 11 ALL EAVES OPEN 12 PARTIALLY CLOSED 13	
133B	OBSERVE MATERIAL ON EXTERNAL WINDOWS RECORD OBSERVATION	GLASS A BAGS B WOOD C IRON/METAL D SCREENS E OTHER _____ X (SPECIFY)	
133C	OBSERVE EXTERNAL WINDOWS RECORD OBSERVATION	ALL WINDOWS SCREENED 11 ALL WINDOWS NOT SCREEDED 12 → 134 SOME WINDOWS SCREENED 13	
133D	OBERVETYPE OF SCREENING ON EXTERNAL WINDOWS RECORD OBSERVATION	**SCREENED WINDOWS** WIRE MESH 11 OLD BEDNET 12 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

EDITOR'S OBSERVATIONS

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TANZANIA MALARIA INDICATOR SURVEY
MODEL BIOMARKER QUESTIONNAIRE

UNITED REPUBLIC OF TANZANIA
NATIONAL BUREAU OF STATISTICS

IDENTIFICATION

REGION . . . . . | | |
DISTRCIT . . . . . | | |
WARD . . . . . | | | |

NAME OF HOUSEHOLD HEAD _____

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

FIELDWORKER VISITS

	1	2	3	FINAL VISIT
DATE				DAY
FIELDWORKER'S NAME				MONTH
				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
02 KISWAHILI

SUPERVISOR

NAME NUMBER

Note: Brackets [ ] indicate items that should be adapted on a country-specific basis.

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

101	CHECK COLUMN 9 IN HOUSEHOLD QUESTIONNAIRE. RECORD THE LINE NUMBER AND NAME FOR ALL ELIGIBLE CHILDREN 0-5 YEARS IN QUESTION 102; IF MORE THAN SIX CHILDREN, USE ADDITIONAL QUESTIONNAIRE(S).			
		CHILD 1	CHILD 2	CHILD 3
102	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
103	IF MOTHER INTERVIEWED: COPY CHILD'S DATE OF BIRTH (DAY, MONTH, AND YEAR) FROM BIRTH HISTORY. IF MOTHER NOT INTERVIEWED ASK: What is (NAME)'s date of birth?	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐
104 (2)	CHECK 103: CHILD BORN IN 2012-2017?	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←
105	CHECK 103: CHILD AGE 0-5 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR 5 PREVIOUS MONTHS?	0-5 MONTHS . . . . . 1 (SKIP TO 130) ← OLDER 2	0-5 MONTHS . . . . . 1 (SKIP TO 130) ← OLDER 2	0-5 MONTHS . . . . . 1 (SKIP TO 130) ← OLDER 2
106	LINE NUMBER OF PARENT/OTHER ADULT RESPONSIBLE FOR THE CHILD FROM COLUMN 1 OF HOUSEHOLD SCHEDULE.	LINE NUMBER . . . . . ☐☐ (RECORD '00' IF NOT LISTED)	LINE NUMBER . . . . . ☐☐ (RECORD '00' IF NOT LISTED)	LINE NUMBER . . . . . ☐☐ (RECORD '00' IF NOT LISTED)
107 (2)	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 2012 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

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
109 (2)	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 2012 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. 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).			
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
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

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________
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 (4)	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
121 (5)	In the past two weeks has (NAME) taken or is taking Alu/Coartem 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 124)	YES . . . . 1 (SKIP TO 123) NO . . . . 2 (SKIP TO 124)	YES . . . . 1 (SKIP TO 123) NO . . . . 2 (SKIP TO 124)

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
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 taked to a health facility right away. (SKIP TO 128)		
123 (5)	ALREADY TAKING [FIRST LINE MEDICATION] REFERRAL STATEMENT	You have told me that (NAME OF CHILD) had already received [FIRST LINE OF MEDICATION] for malaria. Therefore, I cannot give you additional [FIRST LINE OF MEDICATION]. However, the test shows that he/she has malaria. If your child has a fever for two days after the last dose of [FIRST LINE MEDICATION], you should take the child to the nearest health facility for further examination. (SKIP TO 130)		
124 (2)	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 [FIRST LINE OF MEDICATION]. [FIRST LINE OF MEDICATION] 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)
127 (5)	READ INFORMATION FOR MALARIA TREATMENT AND CONSENT STATEMENT TO PARENT/OTHER ADULT.	**Weight (in Kg) – Approximate Age** / **Dosage *** 5 to less than 15 – under 3 years of age: 1 tablet ALu twice daily for 3 days 15 to less than 25 – 3 to 8 years of age: 2 tablets ALu twice daily for 3 days ALSO TELL THE PARENT/OTHER ADULT: 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). Put the tablet in a little water, mix water and tablet well, and give to the child with fatty food or drinks like milk or breast milk. Make sure that the FULL 3 days (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 (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)
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.			

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

101	CHECK COLUMN 9 IN HOUSEHOLD QUESTIONNAIRE. RECORD THE LINE NUMBER AND NAME FOR ALL ELIGIBLE CHILDREN 0-5 YEARS IN QUESTION 102; IF MORE THAN SIX CHILDREN, USE ADDITIONAL QUESTIONNAIRE(S).			
		CHILD 1	CHILD 2	CHILD 3
102	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
103	IF MOTHER INTERVIEWED: COPY CHILD'S DATE OF BIRTH (DAY, MONTH, AND YEAR) FROM BIRTH HISTORY. IF MOTHER NOT INTERVIEWED ASK: What is (NAME)'s date of birth?	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐	DAY . . . . . ☐☐ MONTH . . . . . ☐☐ YEAR . . . ☐☐☐☐
104 (2)	CHECK 103: CHILD BORN IN 2012-2017?	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←	YES . . . . . 1 NO . . . . . 2 (SKIP TO 130) ←
105	CHECK 103: CHILD AGE 0-5 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR 5 PREVIOUS MONTHS?	0-5 MONTHS . . . . . 1 (SKIP TO 130) ← OLDER 2	0-5 MONTHS . . . . . 1 (SKIP TO 130) ← OLDER 2	0-5 MONTHS . . . . . 1 (SKIP TO 130) ← OLDER 2
106	LINE NUMBER OF PARENT/OTHER ADULT RESPONSIBLE FOR THE CHILD FROM COLUMN 1 OF HOUSEHOLD SCHEDULE.	LINE NUMBER . . . . . ☐☐ (RECORD '00' IF NOT LISTED)	LINE NUMBER . . . . . ☐☐ (RECORD '00' IF NOT LISTED)	LINE NUMBER . . . . . ☐☐ (RECORD '00' IF NOT LISTED)
107 (2)	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 2012 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

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
109 (2)	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 2012 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. 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).			
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
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

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________	LINE NUMBER . . . . . . [ ][ ] NAME ________

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 (4)	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
121 (5)	In the past two weeks has (NAME) taken or is taking Alu/Coartem 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 124)	YES . . . . 1 (SKIP TO 123) NO . . . . 2 (SKIP TO 124)	YES . . . . 1 (SKIP TO 123) NO . . . . 2 (SKIP TO 124)

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5

		CHILD 1	CHILD 2	CHILD 3
	CHECK HOUSEHOLD QUESTIONNAIRE: LINE NUMBER FROM COLUMN 9.	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____	LINE NUMBER . . . . . ☐☐ NAME _____
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 taked to a health facility right away. (SKIP TO 128)		
123 (5)	ALREADY TAKING [FIRST LINE MEDICATION] REFERRAL STATEMENT	You have told me that (NAME OF CHILD) had already received [FIRST LINE OF MEDICATION] for malaria. Therefore, I cannot give you additional [FIRST LINE OF MEDICATION]. However, the test shows that he/she has malaria. If your child has a fever for two days after the last dose of [FIRST LINE MEDICATION], you should take the child to the nearest health facility for further examination. (SKIP TO 130)		
124 (2)	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 [FIRST LINE OF MEDICATION]. [FIRST LINE OF MEDICATION] 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)
127 (5)	READ INFORMATION FOR MALARIA TREATMENT AND CONSENT STATEMENT TO PARENT/OTHER ADULT.	**Weight (in Kg) – Approximate Age** / **Dosage *** 5 to less than 15 – under 3 years of age: 1 tablet ALu twice dailv for 3 davs 15 to less than 25 – 3 to 8 years of age: 2 tablets ALu twice dailv for 3 davs ALSO TELL THE PARENT/OTHER ADULT: 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). Put the tablet in a little water, mix water and tablet well, and give to the child with fatty food or drinks like milk or breast milk. Make sure that the FULL 3 days (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 (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)
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.			

FIELDWORKER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING BIOMARKERS

SUPERVISOR'S OBSERVATIONS

EDITOR'S OBSERVATIONS

BIOMARKER: FOOTNOTES

(1) This section should be adapted for country-specific survey design.
(2) Year of fieldwork is assumed to be 2017. For fieldwork beginning in 2018, all references to calendar years should be increased by one; for example, 2012 should be changed to 2013, 2013 should be changed to 2014, and similarly for all years throughout the questionnaire.
(3) This question should be deleted in surveys that do not collect blood smears.
(4) This is a list of generic symptoms indicative of severe malaria. Symptoms should be revised according to the country's national malaria treatment guidelines.
(5) The referral statement should be revised to reflect the country's national malaria treatment guidelines in reference to antimalarial treatment failure.

FORMATTING DATE: 14 Mar 2016
ENGLISH LANGUAGE: 14 Mar 2016

TANZANIA MALARIA INDICATOR SURVEY
MODEL WOMAN'S QUESTIONNAIRE

UNITED REPUBLIC OF TANZANIA
NATIONAL BUREAU OF STATISTICS

IDENTIFICATION

REGION . . . . . | | |
DISTRCIT . . . . . | | |
WARD . . . . . | | | |

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 KISWAHILI

SUPERVISOR

NAME _____ NUMBER | | | | |

INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with the National Bureau of Statistics. We are conducting a survey about malaria all over Tanzania. 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, secondary, or higher?	PRE-PRIMARY . . . . . 0 PRIMARY . . . . . 1 POST PRIMARY TRAINING . . . . . 2 SECONDARY 'O' LEVEL . . . . . 3 POST SECONDARY 'O' LEVEL TRAINING . . . . . 4 SECONDARY 'A' LEVEI . . . . . 5 POST SECONDARY 'A' LEVEL TRAININ . . . . . 6 UNIVERSITY . . . . . 7 DON'T KNOW 8	
106	What is the highest GRADE you completed at that level? IF COMPLETED LESS THAN ONE YEAR AT THAT LEVEL, RECORD '00'.	[GRADE/FORM/YEAR] . . . . . [ ][ ]	
107	CHECK 105: PRIMARY OR SECONDARY ☐ ↓ HIGHER ☐ → 111		
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	
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: a) On the radio? b) On the television? c) On a poster or billboard? d) From a community health worker? e) At a community event? f) Anywhere else?	YES NO RADIO . . . . . 1 2 TELEVISION . . . . . 1 2 POSTER/BILLBOARD . . . . . 1 2 COMMUNITY HEALTH WORKER . . . . . 1 2 COMMUNITY EVENT . . . . . 1 2 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 in 2012-2017? RECORD NUMBER OF LIVE BIRTHS IN 2012-2017	TOTAL IN 2012-2017 . . . . . [ ][ ] NONE 00	→ 225

SECTION 2. REPRODUCTION

212 Now I would like to record the names of all your births in 2012-2017, whether still alive or not, starting with the most recent one you had.
RECORD IN 213 THE NAMES OF ALL THE BIRTHS BORN IN 2012-2017. 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 2012-2017	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 IN 2012-2017 (GO TO 301) NO BIRTHS IN 2012-2017 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,	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 got pregnant with (NAME), did you see anyone for antenatal care for this pregnancy?	YES . . . . . 1 NO 2	→ 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 AUXILIARY MIDWIFE . . . . . C **OTHER PERSON** TRADITIONAL BIRTH ATTENDANT . . . . . D COMMUNITY/VILLAGE HEALTH WORKER . . E OTHER _____ X (SPECIFY)	
303A	How many times did you receive antenatal care during this	NUMBER OF TIMES __ . . . . . ☐ DON'T KNOW 8	
303B	Did you receive a bed net at an antenatal care visit for this pregnancy?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
304	During this pregnancy, did you take SP/Fansidar to keep you from getting malaria?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 306D
305	How many times did you take SP/Fansidar during this pregnancy?	TIMES . . . . . ☐☐	
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	
306a	Did you buy SP/Fansidar or was it given to you free?	BOUGHT . . . . . 1 FREE . . . . . 2 (SKIP TO 307) DON'T KNOW 8	
306b	How much did you pay for SP/Fansidar? IF DK, WRITE '99998'.	COST (TSH) ☐☐☐☐☐☐☐☐	
306C	How did you pay	CASH (OUT OF POCKET) 1 SOCIAL HEALTH INSURANCE SCHEME (eg.NHIF, NSSF, CHF, etc) 2 PRIVATE HEALTH INSURANCE SCHEMME (eg.Medex, Jubilee, Metropilan, resolution etc) 3 CASH AND HEALTH INSURANCE 4	→ 307

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
306D	Why did you not take SP/Fansidar to prevent you from getting malaria? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED.	NONE AVAILABLE AT FACILITY A PROVIDER DID NOT OFFER MEDICINE B PROVIDER REFUSED TO GIVE MEDICINE C NO WATER AT FACILITY TO TAKE WITH MED D NO CUP AT FACILITY TO DRINK WATER E AFRAID OF EFFECTS ON MY HEALTH F AFRAID OF EFFECTS ON BABY'S HEALTH G HAD NOT EATEN BEFORE H AFRAID OF VOMITING I I DIDN'T HAVE MONEY TO PAY THE SP J TAKING SEPTRIM K OTHER (SPECIFY) _____ X DON'T KNOW Z	
307	CHECK 216 AND 217: ONE OR MORE LIVING CHILDREN BORN IN 2012-2017 ☐ (GO TO 401) NO LIVING CHILDREN BORN IN 2012-2017 ☐ → 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 IN 2012-2017. 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 2012. (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 NO . . . . . 2 (SKIP TO 411)	YES . . . . . 1 NO . . . . . 2 (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)	**GOVERNMENT/PARASTATAL** ZON/REFERRAL/SPEC.HOSPITA A REFERRAL REGIONAL HOSP. B REGIONAL HOSPITAL . . . . . C DISTRICT HOSPITAL . . . . . D HEALTH CENTRE . . . . . E DISPENSARY . . . . . F CLINIC . . . . . G CHW . . . . . H **RELIGIOUS/VOLUNTARY** REFERAL SPEC.HOSPITA . . . I DISTRICT HOSPITAL . . . . . J HOSPITAL . . . . . K HEALTH CENTRE . . . . . L DISPENSARY . . . . . M CLINIC . . . . . N **PRIVATE** SPECIALISED HOSPITAL O HOSPITAL . . . . . P HEALTH CENTRE . . . . . Q DISPENSARY . . . . . R CLINIC . . . . . S **OTHER** PHARMACY . . . . . T ADDO . . . . . U NGO . . . . . V OTHER _____ (SPECIFY) X	**GOVERNMENT/PARASTATAL** ZON/REFERRAL/SPEC.HOSP A REFERRAL REGIONAL HOSP B REGIONAL HOSPITAL . . . . . C DISTRICT HOSPITAL . . . . . D HEALTH CENTRE . . . . . E DISPENSARY . . . . . F CLINIC . . . . . G CHW . . . . . H **RELIGIOUS/VOLUNTARY** REFERAL SPEC.HOSPITA . . . I DISTRICT HOSPITAL . . . . . J HOSPITAL . . . . . K HEALTH CENTRE . . . . . L DISPENSARY . . . . . M CLINIC . . . . . N **PRIVATE** SPECIALISED HOSPITAL O HOSPITAL . . . . . P HEALTH CENTRE . . . . . Q DISPENSARY . . . . . R CLINIC . . . . . S **OTHER** PHARMACY . . . . . T ADDO . . . . . U NGO . . . . . V OTHER _____ (SPECIFY) X
407a	Did you pay for the advice or treatment for this illness?	YES 1 NO 2 (SKIP TO 408)	YES 1 NO 2 (SKIP TO 408)
407b	How much did you pay?	TSHS _____ DON'T KNOW 999998	TSHS _____ DON'T KNOW 999998

407C	How did you pay?	CASH (OUT OF POCKET) 1 SOCIAL HEALTH INSURANCE SCHEME (eg.NHIF, NSSF, CHF, etc) 2 PRIVATE HEALTH INSURANCE SCHEMME (eg.Medex, Jubilee, Metropilan, resolution etc) 3 CASH AND HEALTH INSURANCE 4	CASH (OUT OF POCKET) 1 SOCIAL HEALTH INSURANCE SCHEME (eg.NHIF, NSSF, CHF, etc) 2 PRIVATE HEALTH INSURANCE SCHEMME (eg.Medex, Jubilee, Metropilan, resolution etc) 3 CASH AND HEALTH INSURANCE 4

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) SUCH AS ALU/COARTEM/ARTESUNATE-AMODIAQUINE OR OTHER A SP/FANSIDAR . . . . . B CHLOROQUINE . . . . . C AMODIAQUINE . . . . . D QUININE PILLS . . . . . E INJECTION/IV . . . . . F ARTESUNATE RECTAL . . . . . G INJECTION/IV . . . . . H OTHER ANTIMALARIAL _____ (SPECIFY) I **ANTIBIOTIC DRUGS** PILL/SYRUP . . . . . J INJECTION/IV . . . . . K **OTHER DRUGS** ASPIRIN . . . . . L ACETAMINOPHEN . . . . . M IBUPROFEN . . . . . N OTHER _____ (SPECIFY) X DON'T KNOW . . . . . Z	**ANTIMALARIAL DRUGS** ARTEMISININ COMBINATION THERAPY (ACT) SUCH AS ALU/COARTEM/ARTESUNATE-AMODIAQUINE OR OTHER A SP/FANSIDAR . . . . . B CHLOROQUINE . . . . . C AMODIAQUINE . . . . . D QUININE PILLS . . . . . E INJECTION/IV . . . . . F ARTESUNATE RECTAL . . . . . G INJECTION/IV . . . . . H OTHER ANTIMALARIAL _____ (SPECIFY) I **ANTIBIOTIC DRUGS** PILL/SYRUP . . . . . J INJECTION/IV . . . . . K **OTHER DRUGS** ASPIRIN . . . . . L ACETAMINOPHEN . . . . . M IBUPROFEN . . . . . N OTHER _____ (SPECIFY) X DON'T KNOW . . . . . Z

412A	Where did you get these drugs from? 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(S))	**GOVERNMENT/PARASTATAL** ZON/REFERRAL/SPEC.HOSP A REFERRAL REGIONAL HOSP B REGIONAL HOSPITAL . . . . . C DISTRICT HOSPITAL . . . . . D HEALTH CENTRE . . . . . E DISPENSARY . . . . . F CLINIC . . . . . G CHW . . . . . H **RELIGIOUS/VOLUNTARY** REFERAL SPEC.HOSPITA . . . I DISTRICT HOSPITAL . . . . . J HOSPITAL . . . . . K HEALTH CENTRE . . . . . L DISPENSARY . . . . . M CLINIC . . . . . N **PRIVATE** SPECIALISED HOSPITAL O HOSPITAL . . . . . P HEALTH CENTRE . . . . . Q DISPENSARY . . . . . R CLINIC . . . . . S **OTHER** PHARMACY . . . . . T ADDO . . . . . U NGO . . . . . V OTHER _____ (SPECIFY) X	**GOVERNMENT/PARASTATAL** ZON/REFERRAL/SPEC.HOSP A REFERRAL REGIONAL HOSP B REGIONAL HOSPITAL . . . . . C DISTRICT HOSPITAL . . . . . D HEALTH CENTRE . . . . . E DISPENSARY . . . . . F CLINIC . . . . . G CHW . . . . . H **RELIGIOUS/VOLUNTARY** REFERAL SPEC.HOSPITA . . . I DISTRICT HOSPITAL . . . . . J HOSPITAL . . . . . K HEALTH CENTRE . . . . . L DISPENSARY . . . . . M CLINIC . . . . . N **PRIVATE** SPECIALISED HOSPITAL O HOSPITAL . . . . . P HEALTH CENTRE . . . . . Q DISPENSARY . . . . . R CLINIC . . . . . S **OTHER** PHARMACY . . . . . T ADDO . . . . . U NGO . . . . . V OTHER _____ (SPECIFY) X
413	CHECK 412: ANY CODE A-I CIRCLED?	YES NO (SKIP TO 428)	YES NO (SKIP TO 428)
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
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	GO TO 403 IN FIRST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO

SECTION 10. MALARIA

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	In your opinion, what is the most serious health problem in your community?	HIV/AIDS . . . . . 01 TUBERCULOSIS . . . . . 02 MALARIA . . . . . 03 MALNUTRITION . . . . . 04 DIABETES . . . . . 05 CANCER . . . . . 06 FLU . . . . . 07 ROAD TRAFFIC ACCIDENTS . . . . . 08 DIARRHEA . . . . . 09 HEART DISEASE . . . . . 10 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	
502	Can you tell me the signs or symptoms of malaria in a young child? RECORD ALL MENTIONED.	FEVER . . . . . A FEELING COLD . . . . . B CHILLS . . . . . C PERSPIRATION/SWEATIN . . . . . D HEADACHE . . . . . E BODY ACHES . . . . . F POOR APPETITI . . . . . G VOMITING . . . . . H DIARRHEA . . . . . I WEAKNESS . . . . . J COUGHING . . . . . K OTHER _____ X (SPECIFY) DOES NOT KNOW ANY Z	
503	Are there ways to avoid getting malaria?	YES . . . . . 1 NO 2	→ 505
504	What are the ways to avoid getting malaria? RECORD ALL MENTIONED.	SLEEP UNDER MOSQUITO N . . . . . A USE MOSQUITO COILS . . . . . B USE INSECTICIDE SPRAY . . . . . C INDOOR RESIDUAL SPRAYING (IRS . . D KEEP DOORS/WINDOWS CLOSE . . . . . E USE INSECT REPELLANT . . . . . F KEEP SURROUNDINGS CLEA . . . . . G CUT THE GRASS . . . . . H REMOVE STANDING WATER . . . . . I INTERMITTENT PREVENTIVE TREAT- MENT (IPTP) . . . . . J HOUSE SCREENIN . . . . . K OTHER _____ X (SPECIFY) DOES NOT KNOW ANY . . . . . Z	
505	**Can ACTs such as Alu/Coartem/Artesunate-Amodiaquine or other be obtained at your nearest health facility or pharmacy (duka la dawa muhimu)?**	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
506A	In the past year, have you seen or heard any messages about malaria prevention?	YES . . . . . 1 NO 2	
506B	In the past year, have you seen or heard any messages about malaria treatment?	YES . . . . . 1 NO 2	
507	LOCATION OF INTERVIEW: MAINLAND TANZANIA ☐ ↓ ZANZIBAR ☐		→ 508B

SECTION 10. MALARIA

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
508A	Have you ever heard or seen the phrase "**Malaria Haikubaliki**"?	YES . . . . . 1 NO 2	→ 508C → 508C
508B	In the past year, have you ever heard or seen the phrase "**Maliza Malaria**"?	YES . . . . . 1 NO 2	
508C	Have you ever heard or seen the phrase "**Sio kila homa ni malaria**"?	YES . . . . . 1 NO 2	→ 510
509	Where did you hear or see this phrase? RECORD ALL MENTIONED.	RADIO . . . . . A BILLBOARD . . . . . B POSTER . . . . . C T-SHIRT . . . . . D LEAFLET/FACT SHEET/ BROCHURE . . E TELEVISION . . . . . F MOBILE VIDEO UNI . . . . . G SCHOOL . . . . . H HEALTH CARE WORKER . . . . . I COMMUNITY EVENT/PRESENTATIC . . J FRIEND/NEIGHBOR/FAMILY MEMBE . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
510	In the past six months, were you visited by a health worker or volunteer who talked to you about malaria?	YES . . . . . 1 NO 2	
511	Now I am going to read some statements and I would like you to tell me how much you agree or disagree with them. After I read each statement, please tell me whether you strongly agree with it, somewhat agree with it, somewhat disagree with it or strongly disagree with it. If you don't know, say, Don't know		
512	I can easily get treatment if my child gets malaria. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?	STRONGLY AGREE . . . . . 1 SOMEWHAT AGRE . . . . . 2 SOMEWHAT DISAGRE . . . . . 3 STRONGLY DISAGREE . . . . . 4 DON"T KNOW/UNCERTAIN 8	
513	My family rarely gets malaria. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?	STRONGLY AGREE . . . . . 1 SOMEWHAT AGRE . . . . . 2 SOMEWHAT DISAGRE . . . . . 3 STRONGLY DISAGREE 4 DON"T KNOW/UNCERTAIN 8	
514	It is important to take the entire course of malaria medicine to make sure the disease will be fully cured . Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?	STRONGLY AGREE . . . . . 1 SOMEWHAT AGRE . . . . . 2 SOMEWHAT DISAGRE . . . . . 3 STRONGLY DISAGREE 4 DON"T KNOW/UNCERTAIN 8	
515	ACTs can be obtained at nearest health facility or duka la dawa muhimu. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?	STRONGLY AGREE . . . . . 1 SOMEWHAT AGRE . . . . . 2 SOMEWHAT DISAGRE . . . . . 3 STRONGLY DISAGREE 4 DON"T KNOW/UNCERTAIN 8	
516	The only way to be sure someone has malaria is to test their blood. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?	STRONGLY AGREE . . . . . 1 SOMEWHAT AGRE . . . . . 2 SOMEWHAT DISAGRE . . . . . 3 STRONGLY DISAGREE 4 DON"T KNOW/UNCERTAIN 8	
518	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

EDITOR'S OBSERVATIONS

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	

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