Reading and Understanding Tables from the 2014-15 Uganda Malaria Indicator Survey (UMIS)

Example 1: Knowledge of Causes of Malaria—A Question Asked of All Survey Respondents

Table 5.1 Knowledge of causes of malaria

Among women age 15-49, the percentage who reported specific causes of malaria, by background characteristics, Uganda 2014-15

1

Background characteristic	Percentage of women 15-49 who reported specific causes of malaria															
	Mosquito bites	Eating maize	Eating mangoes	Eating dirty food	Drinking unboiled water	Getting soaked with rain	Cold/changing weather	Witchcraft	Contact with infected person	Parasite	Germ	Standing water/other breeding environments	Poor hygiene	Other causes	Don't know any causes	Number of women
Age																
15-19	91.1	2.5	2.8	7.3	14.4	4.6	9.1	0.0	1.0	1.1	1.6	7.5	0.7	3.6	3.4	1,228
20-24	91.4	2.9	4.2	6.1	15.5	3.5	12.5	0.5	0.8	1.0	0.9	4.2	0.8	4.4	4.4	1,132
25-29	92.0	3.9	4.3	4.2	14.6	5.4	12.1	0.1	0.8	1.0	1.5	4.9	0.9	2.3	4.4	957
30-34	91.5	3.7	5.9	5.5	19.9	5.1	12.2	0.1	1.2	0.8	1.0	4.0	0.5	4.8	5.2	741
35-39	88.8	2.6	2.2	6.7	20.8	3.0	11.7	0.0	1.1	0.5	0.9	4.8	1.6	2.3	6.8	547
40-44	89.7	3.2	4.2	4.5	16.4	4.3	14.5	0.0	0.6	0.0	0.8	4.5	1.2	6.0	5.7	425
45-49	85.6	3.6	4.7	3.2	20.2	5.7	17.1	0.3	1.4	1.0	0.7	5.6	1.2	5.6	7.1	292
Residence																
Urban	93.9	2.9	2.9	3.7	16.6	2.8	5.5	0.0	0.7	1.9	0.5	5.9	0.4	2.0	2.7	1,227
Rural	89.8	3.2	4.2	6.3	16.6	4.9	13.9	0.2	1.0	0.5	1.3	5.0	1.0	4.4	5.4	4,095
Region																
Central 1	95.5	1.7	1.4	1.8	20.4	0.6	1.7	0.0	0.3	0.7	0.6	10.1	0.3	1.7	1.5	674
Central 2	92.3	1.6	1.3	2.0	12.2	0.0	2.2	0.0	0.4	0.5	0.8	2.8	0.3	2.1	3.9	521
East Central	97.1	20.1	23.9	20.3	25.2	20.4	13.1	0.2	2.0	1.2	2.8	15.0	1.3	7.5	1.5	559
Kampala	95.7	0.0	0.0	1.7	13.8	0.5	1.9	0.0	0.1	2.5	0.3	6.7	0.5	0.5	1.4	344
Mid-North	92.8	0.0	1.2	5.8	5.3	1.5	36.5	0.4	0.4	0.9	0.9	3.0	2.6	8.7	3.5	566
Mid-Western	81.7	3.4	5.5	5.2	28.0	5.2	1.9	0.0	2.7	1.0	0.8	5.4	0.2	1.7	11.0	556
Mid-Eastern	90.2	1.5	2.8	6.6	12.1	5.7	10.6	0.7	2.7	0.1	1.5	1.9	0.4	3.3	6.4	511
North East	87.2	0.0	0.4	2.6	2.2	3.7	29.6	0.2	0.1	1.2	0.9	0.9	3.1	3.8	3.5	486
South Western	89.6	1.2	1.0	7.1	30.3	3.7	4.4	0.0	0.6	0.5	1.4	1.1	0.0	1.8	7.1	708
West Nile	84.2	0.0	0.0	1.2	5.1	1.6	22.0	0.0	0.0	0.8	1.0	4.8	0.8	8.4	7.5	397
Special zone																
Karamoja	53.0	0.0	0.0	9.2	4.4	1.0	56.1	0.4	0.5	0.0	3.2	1.6	10.5	10.2	11.4	117
Education																
No education	79.3	5.4	5.8	6.6	14.1	5.7	18.9	0.1	0.8	0.0	0.8	3.6	1.8	4.8	12.4	792
Primary	90.7	3.2	4.4	6.4	16.3	4.6	13.8	0.3	0.9	0.4	1.2	4.1	0.9	4.3	4.8	2,892
Secondary	96.3	2.4	2.7	4.6	20.4	4.0	5.4	0.0	1.1	1.3	1.2	8.5	0.6	2.7	1.1	1,329
More than secondary	97.5	0.0	0.0	1.9	8.9	1.3	3.6	0.0	1.5	5.9	1.7	5.0	0.0	2.5	0.2	285
Wealth quintile																
Lowest	82.6	2.2	2.9	5.4	9.7	3.6	26.8	0.3	0.5	0.1	0.9	2.5	2.2	6.2	8.6	968
Second	88.0	4.5	4.8	6.5	14.5	5.2	17.4	0.2	0.4	0.2	1.3	4.4	0.7	4.7	7.2	992
Middle	92.2	3.7	5.7	7.5	18.2	6.3	8.1	0.3	0.9	1.2	1.5	5.0	0.6	3.6	4.4	991
Fourth	93.6	3.8	5.1	6.0	22.6	5.2	6.8	0.0	1.6	0.2	1.3	7.2	0.8	3.7	2.7	1,052
Highest	95.3	1.8	1.8	3.8	17.1	2.5	4.0	0.0	1.3	2.1	0.8	6.4	0.3	1.9	2.0	1,320
Total	90.7	3.1	3.9	5.7	16.6	4.4	11.9	0.2	1.0	0.9	1.1	5.2	0.9	3.9	4.8	5,322

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 women age 15-49 who reported specific causes of malaria. All eligible female respondents age 15-49 were asked these questions.

Step 2: Scan the column headings—highlighted in green in the table above. They describe how the information is categorized. In this table, each column represents one cause of malaria that women reported. The last column lists the number of women interviewed in the survey.

Step 3: Scan the row headings—the first vertical column highlighted in blue in the table above. These show the different ways the data are divided into categories based on population characteristics. In this case, the table presents women's knowledge of causes of malaria by age, urban-rural residence, region, special zone, educational level, and wealth quintile. Most of the tables in the UMIS report will be divided into these same categories.

Step 4: Look at the row at the bottom of the table highlighted in red. These percentages represent the totals of all women age 15-49 who reported specific causes of malaria. In this case, 90.7% of women age 15-49 know that mosquitoes cause malaria, while 16.6% believe that drinking unboiled water causes malaria.

Step 5: To find out what percentage of women with no education know that mosquitoes cause malaria, draw two imaginary lines, as shown on the table. This shows that 79.3% of women age 15-49 with no education know that mosquitoes cause malaria.

Practice: Use the table to the left to answer the following questions (answers are upside down, below):

a) What percentage of women in East Central believe that getting soaked with rain causes malaria?

b) What age group of women are least aware that mosquitoes cause malaria?

c) Compare women in urban areas to women in rural areas—which group is more likely to not know any causes of malaria?

a) 20.4% of women in East Central believe that getting soaked with rain causes malaria. b) Women age 45-49—85.6%
c) Women in rural areas—5.4% of women do not know any causes, compared to 2.7% of women in urban areas.

Example 2: Prevalence of Malaria in Children
Comparing and Understanding Patterns

Step 1: Read the title and subtitle. In this case, the table presents malaria prevalence among children age 0-59 months in Uganda.

Step 2: Identify the information presented in the table—highlighted in green in the table to the right. In this table there is only one indicator—malaria prevalence, but it is divided into two categories. The first two columns show malaria prevalence according to rapid diagnostic test (RDT). The last two columns show malaria prevalence according to microscopy.

Step 3: Look at the row headings to identify the background characteristics. In this table, malaria prevalence is presented by age in months, sex, mother's interview status, urban-rural residence, study domain, region, special zones, mother's educational level, and wealth quintile.

Step 4: Look at the row in the bottom of the table to determine the total proportion of children age 0-59 months with malaria **according to microscopy.** This shows that 18.9% of children age 0-59 months in Uganda tested positive for malaria by microscopy.

Step 5: In Uganda, 18.9% of children age 0-59 months tested positive for malaria by microscopy, but a closer look at the table shows how malaria prevalence varies throughout Uganda. To gain a better understanding of differences in the prevalence of malaria **according to microscopy**, consider the following questions:

- Is malaria more common in urban or rural areas? Malaria prevalence is more common in rural areas (21.3%) than in urban areas (6.3%).
- Now, compare malaria prevalence among girls and boys. There is no difference. Malaria prevalence among both girls and boys is 18.9%.
- What are the lowest and the highest percentages (range) of malaria prevalence by region? Just 0.4% of children age 0-59 months in Kampala tested positive for malaria, compared to a high of 36.2% in East Central region.
- Look for patterns: Does malaria prevalence vary by background characteristics? For example, is there a clear pattern of malaria prevalence by age in months? By study domain (see footnote 2)? By special zone (see footnote 2)? By mother's education? By wealth quintile?
- Answers:
  - Malaria prevalence increases with age. Malaria prevalence is highest among children age 48-59 months (25.9%), while malaria prevalence is lowest among children age <6 months (7.7%).
  - Malaria prevalence is higher among children who live in future IRS districts (35.6%) (see footnote 4) than among children who live in current IRS districts (7.2%) (see footnote 3).
  - By special zone, malaria prevalence is higher among children who live in Karamoja (48.0%) than among children living in Greater Kampala (3.3%) (see footnote 6).
  - Malaria prevalence is higher among children whose mothers have no education (27.3%) than among children whose mother's have more than secondary education (1.1%).
  - Finally, there is also a clear pattern in malaria prevalence by household wealth quintile. Malaria prevalence decreases as household wealth increases; 27.9% of children living in households in the lowest wealth quintile tested positive for malaria by microscopy, compared to 3.9% of children living in households in the highest wealth quintile.
- By looking at patterns by background characteristics, we can see which groups are more in need of interventions to address malaria. Resources are often limited; looking for patterns can help programme planners and policymakers determine how to most effectively use resources.

Note: Table footnotes are included at the bottom of tables. Always check table footnotes. In this table, the footnotes provide further information about the background characteristics.

Table 4.7 Prevalence of malaria in children **1**

Percentage of eligible children 0-59 months classified as having malaria according to two tests (RDT and microscopy), by background characteristics, Uganda MIS 2014-15

Background characteristic **3**	Malaria prevalence according to RDT **2**		Malaria prevalence according to microscopy	
	RDT positive	Number of children	Microscopy positive	Number of children
Age in months				
<6	10.9	429	7.7	432
6-8	16.6	239	7.9	240
9-11	28.0	218	14.4	220
12-17	25.5	506	12.6	506
18-23	30.7	448	16.6	449
24-35	34.5	986	22.1	993
36-47	32.7	1,068	21.4	1,078
48-59	36.2	962	25.9	969
Sex				
Male	30.1	2,357	18.9	2,370
Female	29.7	2,499	18.9	2,518
Mother's interview status				
Interviewed	29.4	4,116	18.3	4,144
Not interviewed[1]	32.4	739	22.3	744
Residence				
Urban	10.1	768	6.3	787
Rural	33.6	4,088	21.3	4,101
Study domain[2]				
Current IRS districts[3]	15.1	342	7.2	338
Future IRS districts[4]	62.7	622	35.6	627
High-altitude districts[5]	9.9	375	8.8	368
Region				
Central 1	13.0	531	10.5	574
Central 2	33.1	522	23.6	512
East Central	49.2	556	36.2	563
Kampala	3.7	178	0.4	188
Mid-North	34.2	544	19.6	536
Mid-Western	17.6	620	17.6	612
Mid-Eastern	26.6	526	13.4	543
North East	55.7	496	27.2	487
South Western	5.7	516	4.1	511
West Nile	51.3	366	27.5	359
Special zones[2]				
Greater Kampala[6]	5.5	487	3.3	510
Karamoja	68.5	125	48.0	126
Mother's education[7]				
No education	41.2	752	27.3	749
Primary	31.0	2,490	19.0	2,499
Secondary	16.5	721	9.8	739
More than secondary	3.3	134	1.1	138
Wealth quintile				
Lowest	47.1	1,085	27.9	1,085
Second	37.0	1,064	22.9	1,054
Middle	29.8	987	22.4	989
Fourth	20.1	898	13.7	911
Highest	8.7	822	3.9	849
Total 0-59	29.9	4,856	**4** 18.9	4,888
Total 6-59	31.7	4,426	20.0	4,456

Note: Total includes 20 cases with missing information on mother's education.
[1] Includes children whose mothers are deceased.
[2] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample description.
[3] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[4] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[5] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[6] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala.
[7] Excludes children whose mothers were not interviewed.

Example 3: Type of Antimalarial Drugs Used
Minimum Number of Cases Required for Reliable Results

Table 4.4 Type of antimalarial drugs used **1**

Among children under age five with fever in the two weeks preceding the survey who took any antimalarial medication, the percentage who took specific antimalarial drugs, by background characteristics, Uganda 2014-15

Background characteristic **3**	Percentage of children who took drug: Any ACT **2**	Quinine	SP/Fansidar	Chloroquine	Amodia-quine	Other anti-malarial	Number of children with fever who took anti-malarial drug
Age in months							
< 6	(81.8)	(16.4)	(1.8)	(0.0)	(0.0)	(0.0)	40
6-11	82.4	15.6	3.3	0.5	1.8	0.0	104
12-23	86.4	9.9	1.7	4.2	0.5	0.8	287
24-35	85.8	12.8	0.9	0.0	2.3	1.5	248
36-47	89.0	11.3	0.0	2.0	0.6	0.4	236
48-59	88.8	10.6	1.3	1.0	0.7	0.3	163
Sex							
Male	85.7	10.4	1.7	2.7	1.3	0.8	528
Female	87.6	13.1	0.8	0.8	0.8	0.6	549
Residence							
Urban	80.7	14.5	0.7	6.0	2.8	0.0	127
Rural	87.5	11.4	1.3	1.2	0.8	0.8	951
Region							
Central 1	(73.3) **4**	(13.2)	(5.0)	(12.8)	(1.8)	(2.6)	75
Central 2	82.0	12.5	0.0	2.9	5.4	0.0	124
East Central	91.6	7.4	3.1	0.0	0.0	0.0	197
Kampala	(86.6)	(15.5)	(3.1)	(0.0)	(0.0)	(0.0)	28
Mid-North	95.9	5.4	0.0	0.5	0.5	0.7	117
Mid-Western	81.5	22.2	1.5	0.0	0.0	0.0	118
Mid-Eastern	85.8	12.3	0.0	4.4	0.0	0.0	76
North East	88.7	11.3	0.1	0.1	0.0	1.5	172
South Western	(76.4)	(20.4)	(0.0)	(0.0)	(6.1)	(1.8)	46
West Nile	89.2	9.6	0.6	1.3	0.0	1.1	124
Special zone							
Karamoja	94.8	9.7	1.0	0.8	0.0	0.0	23
Mother's education[2]							
No education	90.6	9.3	1.2	1.6	0.0	0.7	203
Primary	87.9	12.1	0.5	1.7	0.4	0.6	676
Secondary	79.0	13.6	4.0	0.8	4.3	1.3	174
More than secondary	* **4**	*	*	*	*	*	21
Wealth quintile							
Lowest	90.8	7.7	1.0	0.5	0.0	1.1	313
Second	88.4	12.2	0.4	1.4	0.0	1.6	261
Middle	86.2	15.4	0.0	1.6	1.6	0.0	204
Fourth	88.3	11.4	2.9	0.0	1.7	0.0	162
Highest	72.8	15.3	3.5	7.6	3.9	0.0	138
Total	86.7	11.8	1.3	1.7	1.1	0.7	1,078 **4**

Notes: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Total includes four cases with missing information on mother's education.
ACT = Artemisinin-based combination therapy
[2] Excludes children whose mothers were not interviewed.

Step 1: Read the title and subtitle. In this case, the table is about children under five with fever in the two weeks before the survey who took any antimalarial medication.

Step 2: Identify the information presented in the table—highlighted in green. In this table, each column represents one type of antimalarial drug. The last column lists the number of children with fever who took an antimalarial drug.

Step 3: Look at the row headings to identify the background characteristics. In this table, type of antimalarial drug used is presented by age in months, sex, urban-rural residence, region, special zone, mother's educational level, and wealth quintile.

Step 4: There are only 1,078 children with fever in the last two weeks who took any antimalarial drug. When these children are divided by background characteristics, sometimes there are too few cases for the data to be reliable. For example:

- What percent of children under five with fever who took any antimalarial drug from Cental 1 region took any artemisinin-based combination therapy or ACT? 73.3%. This percent is in parentheses because there are 25-49 children (unweighted) in this category. Readers should use this number with caution—it may not be accurate. (For more information on weighted and unweighted numbers, see Example 4.)
- What percent of children under five with fever who took any antimalarial drug whose mothers have more than secondary education took any ACT? There is no number in this cell—only an asterisk. This is because fewer than 25 children whose mothers have no education (unweighted) took any ACT. 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 on a table, you can proceed with confidence that enough cases were included in all categories that the data are reliable.

Example 4: Understanding Sampling Weights in UMIS Tables

A sample is a group of people who have been selected for a survey. In MIS surveys, 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 (e.g., about 800 women per area). For the 2014-15 UMIS, the survey sample is representative of the country as a whole, for urban and rural areas, and for 10 survey regions.

To generate statistics that are representative of the country as a whole and the 10 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 5,322 women and want to produce results that are representative of Uganda as a whole and its regions (as in Table 2.8). However, the total population of Uganda is not evenly distributed among the regions: some regions, such as South Western, are heavily populated while others, such as Kampala are not. Thus, Kampla 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 369 in Central 2 region to 864 in North East region. The number of interviews is sufficient to get reliable results in each region.

Table 2.8 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, Uganda MIS 2014-15

Background characteristic	Women		
	Weighted percent	Weighted number	Unweighted number
Region	3	2	1
Central 1	12.7	674	402
Central 2	9.8	521	369
East Central	10.5	559	394
Kampala	6.5	344	489
Mid-North	10.6	566	779
Mid-Western	10.5	556	488
Mid-Eastern	9.6	511	505
North East	9.1	486	864
South Western	13.3	708	602
West Nile	7.5	397	430
Total 15-49	100.0	5,322	5,322

With this distribution of interviews, some regions are overrepresented and some regions are underrepresented. For example, the population in the Kampala is about 7% of the population in Uganda, while South Western is about 13% of the population in Uganda. But as the blue column shows, the number of women interviewed in Kampala accounts for about 9% of the total sample of women interviewed (489/5,322) and the number of women interviewed in South Western accounts for 11% of the total sample of women interviewed (602/5,322). This unweighted distribution of Ugandan women does not accurately represent the population.

In order to get statistics that are representative of Uganda, the distribution of the women in the sample needs to be weighted (or mathematically adjusted) such that it resembles the true distribution in the country. Women from a small region, like Kampala, should only contribute a small amount to the national total. Women from a large region, like South Western should contribute much more. Therefore, DHS statisticians mathematically calculate a "weight" which is used to adjust the number of women from each region so that each region's contribution to the total is proportional to the actual population of the region. The numbers in the purple column (2) represent the "weighted" values. The weighted values can be smaller or larger than the unweighted values at regional level. The total national sample size of 5,322 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 Uganda, you would see that women in each region are contributing to the total sample with the same weight that they contribute to the population of Uganda. The weighted number of women in the survey now accurately represents the proportion of women who live in Kampala and the proportion of women who live in South Western.

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