

Reading and Understanding Liberia Malaria Indicator Survey Tables

Statistical tables can look intimidating at first glance.

This flyer suggests ways to read and understand tables from the 2011 Liberia MIS.

Example 1: Knowledge of Causes of Malaria

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 in Liberia who have heard of malaria.

Step 2: Scan the column headings—the top horizontal row. They describe how the information is categorized. In this case, each column represents one cause of malaria that women reported.

Step 3: Scan the row headings—the first vertical column. These show the different ways the data are divided up into categories based on population characteristics. In this case, the table presents causes of malaria by age, urban-rural residence, region of residence, educational level, and wealth. Most of the tables in MIS reports will be divided into the same categories.

Step 4: Look at the very last row at the bottom of the table. These percentages represent the totals of women age 15-49 who have heard of malaria for each different cause of malaria. In this case, 82.7% of women age 15-49 who have heard of malaria know that mosquitoes cause malaria, while 16.0% believe that dirty water causes malaria.

Step 5: To find out what percentage of women age 35-39 who have heard of malaria know that mosquitoes cause malaria, draw two imaginary lines, as shown on the table. This shows that 83.4% of women of women age 35-39 who have heard of malaria know that mosquitoes cause malaria.

Step 6: Look for patterns: How does the knowledge that mosquitoes cause malaria vary among different population groups? For example, among women who have heard of malaria, are women living in urban or rural areas more likely to know that mosquitoes cause malaria? Is there a pattern by level of education? By wealth? The results of the 2011 Liberia Malaria Indicator Survey show that women who live in urban areas are more likely than women who live in rural areas to know that mosquitoes cause malaria. This table also shows that the knowledge that mosquitoes cause malaria increases with a woman's level of education; women with no education are least likely to know that mosquitoes cause malaria (72.1%), while women with secondary or higher education are most likely to know that mosquitoes cause malaria (92.6%). There is no clear pattern in knowledge of the cause of malaria by wealth.

Table 5.3 Knowledge of causes of malaria 1

Among women age 15-49 who have heard of malaria, the percentage who cite specific causes, of malaria, by background characteristics, Liberia 2011

Background Characteristic	2 Mosquitoes	Dirty Water	Dirty surroundings	Number of women
Age 3				
15-19	80.5	12.7	28.0	705
20-24	85.5	16.0	30.3	779
25-29	83.7	15.8	31.0	755
30-34	84.5	20.9	31.2	499
35-39	83.4	17.8	32.9	491
40-44	80.0	12.6	26.1	344
45-49	75.9	17.0	26.5	258
Residence				
Urban	86.9	16.7	34.0	2,069
Rural	77.7	15.2	24.9	1,764
Region				
Monrovia	85.3	18.6	36.9	1,272
North Western	79.7	16.4	31.1	268
South Central	77.7	13.7	25.1	710
South Eastern A	80.8	22.2	26.8	269
South Eastern B	85.0	18.5	25.6	211
North Central	83.7	12.4	25.9	1,102
Education				
No education	72.1	15.4	26.6	1,374
Primary	83.9	15.1	25.4	1,142
Secondary or higher	92.6	17.4	37.1	1,317
Wealth quintile				
Lowest	70.2	16.9	22.0	663
Second	79.9	13.5	24.5	722
Middle	85.6	16.7	31.8	735
Fourth	88.8	15.3	33.4	811
Highest	86.2	17.4	35.0	902
Total	82.7	16.0	29.8	3,833

5

4

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

Among women who have heard of malaria:

- What percentage of women age 15-49 living in Monrovia believe that dirty surroundings cause malaria?
- In what age group are women most aware mosquitoes cause malaria?
- Which level of education is least likely to believe that dirty water causes malaria?

Example 2: Prevalence and Prompt Treatment of Fever A Question Asked of a Subgroup of Survey Respondents

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 two separate groups of children: (a) all children under age five and (b) children under age five who had fever in the two weeks preceding the survey.

Step 2: Identify the two panels. First identify the columns that refer to children under five (a), and then isolate the columns that refer only to the children under five who had fever in the two weeks before the survey (b).

Step 3: Look at the first panel (a). What percentage of children under five had fever? It's 49.2%. How many children under age five were included in this survey? 2,876.

Now look at the second panel (b). How many children under five are included in this group? Only 1,416 children under five had fever; 1,416 equals 49.2% of 2,876 (group a). Group (b) is a subgroup of Group (a).

Background Characteristic	Among children under age five		Among children under age five with fever		
	Percentage with fever in the two weeks preceding the survey	Number of children	Percentage who took ACT	Percentage who took ACT same or next day	Number of children
Age (in months)					
<12	47.8	581	28.0	16.4	278
12-23	55.3	628	34.0	21.7	347
24-35	54.6	551	44.0	26.4	301
36-47	43.2	557	46.6	28.8	241
48-59	44.6	559	48.9	30.7	249
Sex					
Male	49.8	1,494	40.6	25.2	744
Female	48.7	1,382	38.8	23.7	672
Residence					
Urban	49.6	1,175	35.8	17.9	583
Rural	49.0	1,701	42.4	29.0	833
Region					
Monrovia	44.8	624	29.6	13.5	280
North Western	54.4	256	41.5	27.2	139
South Central	54.8	528	39.9	24.8	290
South Eastern A	49.2	270	36.8	21.5	133
South Eastern B	48.1	215	38.5	27.1	103
North Central	48.0	982	46.1	30.2	471
Mother's education					
No education	50.4	1,294	39.2	25.9	652
Primary	49.6	900	40.8	23.5	446
Secondary or higher	46.6	681	39.3	22.8	317
Wealth quintile					
Lowest	47.3	751	41.9	31.9	355
Second	52.3	699	40.2	27.5	366
Middle	51.7	543	43.5	21.4	281
Fourth	50.4	498	35.8	14.9	251
Highest	42.3	384	33.4	21.5	162
Total	49.2	2,876	39.7	24.5	1,416

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

- Which region has the highest percentage of children under five who had fever?
- Among children whose mothers have secondary or higher education, what percentage of children who had fever took ACT the same or next day?
- In which wealth quintile were children who had fever most likely to have taken ACT?

a) South Central—54.8%; b) 22.8%; c) Middle quintile—43.5%

Example 3: Use of Mosquito Nets by Pregnant Women Minimum Number of Cases for Reliable Estimates

Step 1: Read the title and subtitle. In this case, the table is about the use of mosquito nets by pregnant women—how many pregnant women slept under a mosquito net the night before the survey?

Step 2: Scan the column headings—the top horizontal row. In this case there are two subgroups: (a) pregnant women in all households and (b) pregnant women in households with at least one insecticide-treated net (ITN). In each subgroup, there is a column for percentage who slept under an ITN the night before the survey and the number of pregnant women. For example, 39.0% of pregnant women in all households slept under an ITN the night before the survey; whereas, 77.4% of pregnant women in households with at least one ITN slept under an ITN the night before the survey.

Step 3: What percentage of pregnant women in North Western Region slept under an ITN the night before the survey? First, look among all households in North Western Region, 36.2% — this figure is in parentheses. This percentage is in parentheses because there are fewer than 50 pregnant women (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.)

Now look among households with at least one ITN in North Western Region; there is no number, but an asterisk instead. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. This means that there were fewer than 25 pregnant women (unweighted) in North Western Region in households with at least one ITN. Results for this group are not reported. The subgroup is too small, and therefore the data are not reliable.

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

- Among pregnant women living in all households, in which region are pregnant women most likely to sleep under an ITN?
- Among pregnant women living in households with at least one ITN, what percentage of pregnant women living in the North Central Region slept under an ITN? Can you use this answer with confidence? Why or why not?

Table 3.9 Use of mosquito nets by pregnant women 1

Percentages of pregnant women age 15-49 who, the night before the survey, slept under an insecticide-treated net (ITN); and among pregnant women age 15-49 in households with at least one ITN, the percentage who slept under an ITN the night before the survey, by background characteristics, Liberia 2011

Background Characteristic	Among pregnant women age 15-49 in all households 2		Among pregnant women age 15-49 in households with at least one ITN ¹	
	Percentage who slept under an ITN ¹ last night	Number of women	Percentage who slept under an ITN ¹ last night	Number of women
Residence				
Urban	39.3	160	87.5	72
Rural	38.8	203	70.8	111
Region				
Monrovia	39.5	101	*	43
North Western	(36.2) 3	29	*	12
South Central	26.0	72	*	26
South Eastern A	54.7	25	(74.3)	18
South Eastern B	50.3	24	(73.9)	16
North Central	41.9	112	(69.4)	68
Education				
No education	38.8	130	78.4	64
Primary	37.2	126	71.9	65
Secondary or higher	41.5	108	82.8	54
Wealth quintile				
Lowest	37.6	85	77.1	41
Second	47.2	87	73.2	56
Middle	39.3	71	(78.4)	35
Fourth	(39.5)	63	*	30
Highest	(27.7)	58	*	20
Total	39.0	363	77.4	183

¹ An insecticide-treated net (ITN) is (1) a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months
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

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.

(a) South Eastern A—54.7%; (b) 69.4% but because this is based on fewer than 50 cases, you cannot use this number with any confidence.

Example 4: Understanding Sampling Weights in MIS Tables

A sample is a group of people that have been selected for a survey. In MIS surveys, the sample represents the entire national population. Most countries want to collect data and report information both for the entire country and also for a country's regions or provinces.

MIS surveys are designed to provide these national and regional statistics. We want the sample surveyed in each region to resemble the actual population of that region, just as we want the national sample to resemble the actual population of the country. If the regions in a particular country vary in size and especially if some regions have very small populations, then a randomly-drawn sample may not include enough people from each region for analysis.

For example, let's say that you have enough money to interview 3,939 women for a survey that should be representative of both the regions and the entire country (as in the Liberia table to the right). In Liberia, the regions are not evenly distributed: some regions are more heavily populated (such as North Central), while others have smaller populations (such as South Eastern B).

A sampling statistician can determine how many women should be interviewed in each region in order to get reliable statistics. In the case of Liberia, the **blue column (1)** shows the actual number of women selected and interviewed in each region, ranging from 497 in North Western Region to 690 in North Central Region, and 721 in South Eastern B Region. With these numbers, there are enough interviews to get reliable results in each region.

With this distribution of interviews, some regions are overrepresented and some regions are underrepresented. For example, according to the 2008 National Population and Housing Census households in the South Eastern B Region made up approximately 7.7% of all Liberian households. In contrast, households in the North Central Region made up approximately 31.2% of all Liberian households. But as the blue column shows, the MIS survey has interviewed more women in South Eastern B Region than in North Central Region. This does not accurately represent the population distribution of Liberia.

In order to get statistics that are representative of the entire country, the distribution of the women in the sample needs to resemble the distribution of the women in the country. Women from a smaller region, like South Eastern B, should only contribute a small amount to the national total. Likewise, women from a larger region, like North Central, should contribute more. Therefore, MIS statisticians mathematically adjust or "weight" the number of women from each region so that each region's contribution to the total is proportionate to the actual population of the country. The numbers in the **purple column (2)** represent the "weighted" values. The total sample size of 3,939 women has not changed, 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 recalculate the categories to reflect the real population of the country. If you were to compare the **light red column (3)** to the actual population distribution of Liberia, 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 how many women live in North Central and how fewer women live in South Eastern B.

With sampling and weighting, it is possible to interview enough women to provide reliable statistics at both the national and regional level without distorting the overall distribution of the population within the country. In general, only the weighted numbers are shown in each of the MIS tables, so don't be distressed if weighted numbers seem low: they may actually represent a larger number of women interviewed. And remember, the table will use parentheses and asterisks to warn you if there are too few unweighted cases in any category.

Table 2.8 Background Characteristics of Respondents
Percent distribution of women age 15-49 by selected background characteristics, Liberia 2011

Background characteristic	Number of Women		
	Weighted percent	Weighted number	Unweighted number
Region			
Monrovia	32.9	1,296	689
North Western	7.0	275	497
South Central	18.3	723	673
South Eastern A	7.0	278	669
South Eastern B	5.9 (3)	231 (2)	721 (1)
North Central	28.9	1,136	690
Total 15-49	100.0	3,939	3,939