

Reading and Understanding Malaria Indicators Survey Tables

Statistical tables can look intimidating at first glance.

This flyer suggests ways to read and understand tables from the 2010 Nigeria MIS.

Example I: Knowledge of Ways Pregnant Women Can Prevent Getting Malaria A Question Asked of All 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 women age 15-49 in Nigeria. This represents the entire female survey population.

Step 2: Scan the column headings—the top horizontal row. They describe how the information is categorized. In this case, each column represents women's knowledge of ways pregnant women can prevent getting malaria.

Step 3: Scan the row headings—the first vertical column. 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 malaria prevention methods for pregnant women by age, urban-rural residence, zone of residence, educational level, and wealth. Most of the tables in MIS reports will be divided into these same categories.

Step 4: Look at the very last row at the bottom of the table. These percentages represent the totals of all women age 15-49 who know one way pregnant women can prevent getting malaria. In this case, 57.9% of women age 15-49 know that pregnant women can sleep under a mosquito net to prevent getting malaria, 27.8% know that keeping the environment clean can prevent pregnant women from getting malaria, and 21.8% know that pregnant women can take SP/Fansidar during antenatal care to prevent getting malaria.

Step 5: To find out what percentage of women in South West Zone know that pregnant women can take SP/Fansidar during antenatal care to avoid getting malaria, draw two imaginary lines, as shown on the table. This shows that 23.6% of women age 15-49 in South West Zone know that pregnant women can take SP/Fansidar during antenatal care to prevent getting malaria.

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

- What percentage of women age 15-49 with no education know that pregnant women can prevent getting malaria by sleeping under mosquito nets?
- In what age group are women most likely to know that pregnant women can prevent malaria by taking SP/Fansidar during antenatal care?
- Are urban or rural residents more likely to know that keeping the environment clean can prevent pregnant women from getting malaria?

Table 4.4 Knowledge of ways pregnant women can prevent getting malaria **1**

Among women age 15-49 who say there are ways to avoid getting malaria, the percentage who cite specific ways that pregnant women can prevent getting malaria, by background characteristics, Nigeria 2010

Background characteristic	Sleep under mosquito net	Keep environment clean	Take SP/Fansidar given during antenatal care	Number of women
Age				
15-19	51.2	25.0	15.9	897
20-24	57.5	26.3	21.5	1,016
25-29	61.2	31.1	24.1	1,122
30-34	57.2	24.5	26.4	846
35-39	60.1	26.6	23.4	697
40-44	61.4	32.6	19.6	528
45-49	58.3	31.3	19.8	409
Residence				
Urban	54.3	36.9	24.2	1,668
Rural	59.5	23.8	20.7	3,847
Zone				
North Central	35.3	26.6	18.9	848
North East	93.7	37.5	4.6	814
North West	66.3	24.5	18.9	1,447
South East	45.6	22.9	40.4	629
South South	70.5	30.2	30.3	853
South West	30.9	26.7	23.6	925
Education				
No education	64.9	21.9	12.4	2,261
Primary	52.9	27.2	25.9	904
Secondary	52.1	31.6	28.2	1,878
More than secondary	57.5	42.3	33.7	472
Wealth quintile				
Lowest	65.7	21.8	10.5	983
Second	64.4	23.2	15.4	954
Middle	59.9	24.2	22.3	1,068
Fourth	53.7	27.8	27.7	1,127
Highest	49.9	38.0	29.0	1,383
Total	57.9	27.8	21.8	5,515

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

Step 1: Read the title and subtitle.

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 all children under five (a), and then isolate the columns that refer only to the children under five who had fever in the two weeks preceding the survey (b).

Step 3: Look at the panel a. What percentage of children under five had fever? It's 35.4%. How many children under age five were included in this survey? 5,519.

Now look at the panel b. How many children under five are included in this group? Only 1,956 children under five had fever; 1,956 equals 35.4% of 5,519 (panel a). Panel b is a subgroup of panel a.

This table shows that there were 5,519 children under age five included in the survey (panel a); and of these children, 1,956 children had fever in the two weeks preceding the survey (panel b).

Table 4.8 Prevalence, diagnosis, and prompt treatment of children with fever 1

Percentage of children under age 5 with fever in the two weeks preceding the survey, and among children under age 5 with fever, the percentage who had blood taken from a finger or heel, the percentage who took antimalarial drugs, and the percentage who took the drugs the same or next day following the onset of fever, by background characteristics, Nigeria, 2010

Background characteristic	Among children under age 5:		Among children under age 5 with fever:			
	Percentage with fever in the two weeks preceding the survey	Number of children	Percentage who had blood taken from a finger or heel for testing	Percentage who took antimalarial drugs	Percentage who took antimalarial drugs same or next day	Number of children
Age (in months)						
<12	28.6	1,107	5.7	43.7	24.2	317
12-23	43.2	1,075	8.1	49.9	25.6	465
24-35	38.6	1,021	3.5	48.8	25.3	394
36-47	33.7	1,116	6.5	53.8	31.1	376
48-59	33.7	1,200	3.1	48.6	23.8	404
Sex						
Male	35.4	2,802	4.9	49.5	25.6	992
Female	35.5	2,717	6.0	48.7	26.4	964
Residence						
Urban	30.8	1,285	5.4	60.1	30.7	396
Rural	36.8	4,234	5.5	46.4	24.8	1,560
Zone						
North Central	17.6	850	9.1	39.7	17.8	149
North East	33.2	880	3.5	56.0	13.8	292
North West	49.3	1,777	4.7	54.3	33.3	875
South East	36.5	446	6.8	37.3	16.0	163
South South	38.5	759	5.7	48.5	28.5	292
South West	22.9	807	7.4	33.3	22.3	185
Mother's education						
No education	38.8	2,876	3.6	50.6	24.8	1,115
Primary	33.7	1,051	7.4	40.5	21.9	354
Secondary	30.4	1,350	7.7	50.1	30.7	410
More than secondary	31.8	242	11.7	63.7	38.3	77
Wealth quintile						
Lowest	36.5	1,172	4.4	42.6	19.2	428
Second	35.2	1,187	3.3	55.6	31.4	418
Middle	39.6	1,180	4.8	39.1	16.6	467
Fourth	37.3	1,015	8.5	54.6	29.7	379
Highest	27.5	965	7.2	59.4	39.9	265
Total	35.4	5,519	5.4	49.1	26.0	1,956

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

- Which zone has the highest percentage of children under five who had fever?
- Among children whose mothers have more than secondary education, what percentage of children who had fever took antimalarial drugs the same or next day?
- By wealth quintile, in which households were the children who had fever most likely to have taken antimalarial drugs?

a) North West—49.3%; b) 38.3%; c) households in the highest wealth quintile—59.4%

Example 3: Use of Mosquito Nets by Children Comparing Data and Understanding Patterns

Step 1: Read the title and subtitle. In this case, the table is about the use of mosquito nets by children—how many children under age 5 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 categories: the percent of children who slept under an insecticide-treated mosquito net (ITN) the night before the survey, and the percent of children who slept under a long-lasting insecticide-treated net (LLIN) the night before the survey.

Step 3: Scan the row headings—the first vertical column. These show the different ways the data are divided into categories based on population characteristics. This table presents children’s mosquito net use by age, urban-rural residence, zone of residence, areas for LLIN malaria campaigns, educational level, and wealth. The data in these categories will help you understand how children’s use of mosquito nets varies throughout the country.

Step 4: Answer the following questions to understand how children throughout the population use mosquito nets:

- What are the highest and the lowest percentages (range) of children’s ITN use and LLIN use within the zones? Children’s ITN use ranges from a low of 8.1% in South West Zone to a high of 51.3% in North East Zone. Children’s LLIN use ranges from a low of 8.0% in South West Zone to a high of 41.7% in North East Zone.
- Look for patterns: How do ITN use and LLIN use vary within specific populations? For example, is there a clear pattern of ITN use and LLIN use by wealth? By age? By LLIN campaign areas? There are no clear patterns by wealth and age; overall, children in richer households are less likely to use ITNs or LLINs and older children are less likely to use ITNs or LLINs. There is a clear pattern by LLIN campaign areas: children in areas with LLIN campaigns are more than three times as likely to use ITNs and LLINs as children in areas with no campaigns.
- Compare different groups: urban vs rural? female vs male?

Background characteristic	Percentage who slept under an ITN ¹ last night	Percentage who slept under an LLIN ² last night	Number of children
Age (in months)			
<12	27.9	28.7	1,172
12-23	30.8	18.2	1,185
24-35	31.4	21.9	1,180
36-47	27.7	27.5	1,271
48-59	27.1	20.5	1,427
Sex			
Male	29.0	20.6	3,154
Female	28.8	25.0	3,080
Residence			
Urban	22.5	16.2	1,420
Rural	30.8	25.2	4,815
Zone			
North Central	18.9	14.2	977
North East	51.3	41.7	968
North West	36.6	31.4	2,008
South East	16.8	12.5	503
South South	25.8	21.2	896
South West	8.1	8.0	883
Areas for LLIN malaria campaigns			
World Bank Booster ⁴	50.2	39.9	1,476
Others with campaigns ⁵	48.7	40.7	1,147
Others with no campaigns ⁶	13.9	10.8	3,611
Wealth quintile			
Lowest	33.3	30.4	1,347
Second	31.7	26.5	1,335
Middle	36.0	27.4	1,353
Fourth	22.5	16.6	1,161
Highest	17.6	13.1	1,039
Total	28.9	22.8	6,234

Step 5: What does all this mean? First, 28.9% of children use ITNs and 22.8% of children use LLINs. This means that the current national program is only meeting the needs of about a quarter of children under five. ITN use and LLIN use are much higher in areas with LLIN campaigns compared with areas with no campaigns.

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 zones.

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

For example, let's say that you have enough money to interview 6,344 women for a survey that should be representative of both the zones and the entire country (as in the Nigeria table to the right). In Nigeria, some zones are more heavily populated (such as North West), while others have smaller populations (such as South East).

A sampling statistician can determine how many women should be interviewed in each zone in order to get reliable statistics. In the case of Nigeria, the **blue column (1)** shows the actual number of women selected and interviewed in each zone, ranging from 838 in South South Zone to 1,205 in North West Zone. With these sample sizes, there are enough interviews to get reliable results in each zone.

Percent distribution of women age 15-49 by zone, Nigeria 2011

Zone	Number of women		
	Weighted percent ¹	Weighted	Unweighted
North Central	16.4	1,039	1,079
North East	15.0	951	1,087
North West	25.0 3	1,584 2	1,205 1
South East	10.7 3	681 2	1,011 1
South South	15.1	959	1,124
South West	17.8	1,130	838
Total 15-49	100.0	6,344	6,344

¹ Based on population data from the 2006 Population and Housing Census.

With this distribution of interviews, some zones are overrepresented and some zones are underrepresented. For example, the population of North West Zone in 2010 was about 25% of the entire Nigerian population. In contrast, the population of South East Zone in 2010 was approximately 11% of the Nigerian population. But as the blue column shows, the number of women that the MIS survey interviewed in North West Zone (1,205) accounts for only 19.0% of the total population of women interviewed (1,205/6,344). Conversely, the number of women that the MIS interviewed in South East Zone (1,011) accounts for 15.9% of the total population of women interviewed (1,011/6,344). This does not accurately represent the population of Nigeria.

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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 zone, like South East, should only contribute a small amount to the national total. Likewise, women from a larger zone, like North West, should contribute more. Therefore, MIS statisticians mathematically adjust or "weight" the number of women from each zone so that each zone'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 6,344 women has not changed, but the distribution of the women in the zones 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 Nigeria, you would see that women in each zone 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 West and how fewer women live in South East.

With sampling and weighting, it is possible to interview enough women to provide reliable statistics at both the national and zonal 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.