REPUBLIC OF

CAMEROON

MALARIA INDICATOR SURVEY

2022

Final Report

REPUBLIC OF CAMEROON

MINSANTE

MALARIA INDICATOR SURVEY 2022

National Institute of Statistics
(NIS)
Yaoundé, Cameroon

National Malaria Control Program
(NMCP)
Yaoundé, Cameroon

The DHS Program
Rockville, Maryland, USA

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PMI U.S. PRESIDENT'S MALARIA INITIATIVE LED BY USAID FROM THE AMERICAN PEOPLE CDC

The Global Fund

INSTITUT NATIONAL DE LA STATISTIQUE NATIONAL INSTITUTE OF STATISTICS

The 2022 Cameroon Malaria Indicator Survey (CMIS) was implemented from August 22 to December 1, 2022, by the National Institute of Statistics (NIS) in close cooperation with the National Malaria Control Program (NMCP). Financial support for the 2022 CMIS was provided by the United States Agency for International Development (USAID) through the U.S. President's Malaria Initiative (PMI), the Government of Cameroon, and the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund). ICF provided technical assistance through The DHS Program, a USAID-funded project providing support and technical assistance in the implementation of population and health surveys in countries worldwide.

Additional information about the 2022 CMIS may be obtained from the National Institute of Statistics (NIS), P.O. Box 134, Yaoundé, Cameroon; telephone: +(237) 2 22 22 04 45; fax: +(237) 2 22 23 24 37; internet: www.ins-cameroon.cm; email: infos@ins-cameroun.cm.

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

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CONTENTS

TABLES, FIGURES, AND MAPS

PREFACE

With the publication of the 2022 Cameroon Malaria Indicator Survey (2022 CMIS), the Government of Cameroon and in particular the Ministry of Public Health, along with our development partners, our private sector partners, and the general public, have achieved a special moment in the fight to combat malaria in Cameroon. The survey's main objective was to measure essential indicators on a national scale, at the regional level, and by place of residence to help us assess the endemic character of malaria. The survey and its findings will assist us in assessing the progress made in interventions implemented in recent years in the fight against malaria under the leadership of our Head of State, His Excellency Paul Biya, President of the Republic, with the support of national and international partners and give us confidence that we can win this battle.

The findings of the 2022 CMIS arise midway in the execution of the United Nations' 2030 Sustainable Development Goals (SDGs) and a few years following the launch of the National Development Strategy (NDS30), which is the second phase of Cameroon's Development Vision 2035. They will allow us to assess the implementation of our National Malaria Control Strategic Plan (NMCSP 2019–2023), which is being finalized, and to determine a baseline for the monitoring and evaluation of our new National Malaria Control Strategic Plan (NMCSP 2023–2027).

The implementation of the 2022 CMIS benefited from the deployment of significant human, material, and financial resources by the government with the support of its technical and financial partners. I would especially like to acknowledge the contributions of our partners the United States Agency for International Development (USAID), through the U.S. President's Malaria Initiative (PMI), and the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund). They have our gratitude for their key contributions to the survey.

I would like to take this opportunity to commend the managers and experts from the National Institute of Statistics (NIS), the government agency in charge of carrying out the survey, as well as ICF, which provided the technical assistance required to make this endeavor such a resounding success.

The Minister of Public Health

Dr Manaouda Malachie

ACKNOWLEDGEMENTS

The National Institute of Statistics (NIS), in collaboration with the Ministry of Public Health (MINSANTE), conducted the 2022 Cameroon Malaria Indicator Survey (2022 CMIS). The survey, which is part of the operations undertaken through the National Malaria Control Strategic Plan (NMCSP) 2019–2023, provides information for assessing progress in reducing the malaria burden in the country. The survey was originally scheduled for implementation in 2020 but was delayed as a result of the COVID-19 pandemic. The aim of the survey was to provide quality information for assessing the country's national policies and programs in the area of malaria control.

The survey was coordinated by the Ministry of Public Health through the National Malaria Control Program (NMCP), which also provided technical input at the meetings of the Monitoring Working Group responsible for the management of the survey and the Technical Working Group with regard to staff training, data collection supervision, and analysis report validation. The Regional Funds for Health Promotion contributed by making available rapid malaria test kits to replace those likely to expire due to the postponement of the survey. ICF provided technical assistance for the survey through The DHS Program. In addition, the survey was technically and financially supported by the President's Malaria Initiative (PMI); the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund); and the United States Agency for International Development (USAID).

Administrative authorities, security and law enforcement officials, and traditional and religious authorities supported the data collection teams throughout the fieldwork. We would like, once again, to express our gratitude to them for this support to the teams and for their successful efforts to raise awareness among households, given the particularly satisfactory response rates.

We extend our appreciation to the Ministry of Public Health for the fruitful collaboration that resulted in the production of this important report. We also express our gratitude to the technical and financial partners, namely the Global Fund, USAID, and PMI, which provided their multifaceted support for the development of official statistics to better inform public policy choices aimed at guiding interventions to improve population health whenever they were solicited by the government.

We also extend our gratitude to the national technical team that worked relentlessly, with the diligence of the administrative and financial officials of the Ministry of Public Health and National Institute of Statistics, to complete all phases of this critical operation in a timely manner.

Finally, we express our appreciation to the field data collection teams for their professionalism and to the households and respondents for their availability and readiness to answer the various questions they were asked. By so doing, they made it possible to have quality information processed, analyzed, and presented in this report.

Director General of the NIS

TEDOU Joseph

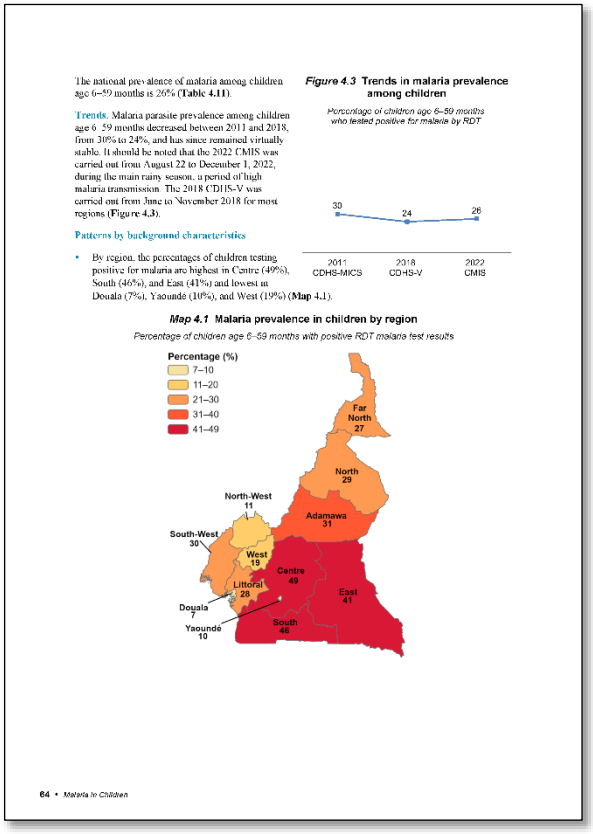
ACRONYMS AND ABBREVIATIONS

ACT	artemisinin-based combination therapy
ANC	antenatal care
BUCREP	Central Bureau of Population Censuses and Studies
CAPI	computer-assisted personal interviewing
CDC	Centers for Disease Control and Prevention
CDHS	Cameroon Demographic and Health Survey
CMIS	Cameroon Malaria Indicator Survey
COVID-19	coronavirus disease 2019
CSPro	Census and Survey Processing System
DHS	Demographic and Health Survey
EA	enumeration area
GPS	Global Positioning System
GRPH	General Census of Population and Housing
IPTp	intermittent preventive treatment (of malaria) in pregnancy
ITN	insecticide-treated net
JMP	Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene
MINSANTE	Ministry of Public Health
MIS	Malaria Indicator Survey
NIS	National Institute of Statistics
NMCP	National Malaria Control Program
NMCSP	National Malaria Control Strategic Plan
PC	personal computer
PMI	U.S. President's Malaria Initiative
RDT	rapid diagnostic test
SDG	Sustainable Development Goal
SP	sulfadoxine-pyrimethamine
USAID	United States Agency for International Development
WHO	World Health Organization

READING AND UNDERSTANDING TABLES FROM THE 2022 CAMEROON MALARIA INDICATOR SURVEY (CMIS)

The following pages introduce the organization of 2022 CMIS tables, describe the presentation of background characteristics, and give a summary of sampling and understanding denominators. This section also provides exercises for users to practice interpreting CMIS tables.

The report is based on 46 tables of data, and the tables are located at the end of each chapter instead of being embedded in the text. While the text and figures featured in each chapter highlight some of the most important findings from the tables, not every finding can be discussed or displayed graphically. For this reason, data users should be comfortable reading and interpreting CMIS tables.



The national prevalence of malaria among children age 6–59 months is 26% (**Table 4.11**).

Trends. Malaria parasite prevalence among children age 6–59 months decreased between 2011 and 2018, from 30% to 24%, and has since remained virtually stable. It should be noted that the 2022 CMIS was carried out from August 22 to December 1, 2022, during the main rainy season, a period of high malaria transmission. The 2018 CDHS-V was carried out from June to November 2018 for most regions (**Figure 4.3**).

Patterns by background characteristics

- By region, the percentages of children testing positive for malaria are highest in Centre (49%), South (46%), and East (41%) and lowest in Douala (7%), Yaoundé (10%), and West (19%) (**Map 4.1**).

Figure 4.3 **Trends in malaria prevalence among children**

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

Map 4.1 **Malaria prevalence in children by region**

Percentage of children age 6–59 months with positive RDT malaria test results

64 • Malaria in Children

Example 1: Exposure to mass media

A Question Asked to All Eligible Respondents

Table 2.16 Exposure to mass media 1

Percentage of women age 15–49 who are exposed to specific media on a weekly basis, according to background characteristics, Cameroon MIS 2022

Background characteristic 3	Reads a newspaper at least once a week	Watches television at least once a week	Listens to the radio at least once a week	Accesses all three media at least once a week	Accesses none of the three media at least once a week	Number of women 2
Age						
15–19	5.0	46.4	10.0	1.7	50.5	1,410
20–24	6.1	49.1	12.7	1.9	46.9	1,220
25–29	7.2	51.9	14.9	4.2	44.0	1,134
30–34	6.4	46.4	16.1	2.7	48.6	1,009
35–39	6.3	46.6	19.8	2.6	48.3	754
40–44	8.5	41.6	15.6	4.1	54.4	559
45–49	7.6	45.4	18.5	3.2	47.5	446
Residence						
Yaoundé/Douala	13.2	81.7	19.8	5.1	14.7	1,566
Other urban	8.0	56.4	18.2	4.2	39.5	2,076
Total urban	10.2	67.3	18.9	4.6	28.8	3,642
Rural	1.6	22.4	8.9	0.4	72.8	2,890
Region						
Adamawa	4.8	29.6	8.8	1.5	67.1	388
Centre (excludes Yaoundé)	6.8	52.4	18.2	2.0	41.2	418
Douala	12.0	81.4	21.4	5.3	14.7	876
East	1.0	30.5	5.7	0.5	67.6	329
Far North	2.5	10.5	8.0	1.3	85.0	1,186
Littoral (excludes Douala)	5.5	70.8	11.2	1.8	24.4	170
North	3.4	21.4	12.5	2.0	73.3	750
Northwest	3.1	38.7	13.7	1.8	55.2	303
West	4.6	57.8	16.5	1.6	38.3	755
South	8.3	60.5	29.7	5.4	32.1	200
Southwest	8.3	64.6	16.0	4.5	31.7	467
Yaoundé	14.7	82.2	17.8	4.8	14.7	690
Education						
No education	0.1	9.5	4.0	0.0	87.6	1,280
Primary	1.8	30.5	9.7	0.4	64.9	1,634
1st secondary cycle	5.1	56.5	15.8	2.2	38.5	1,604
2nd secondary cycle	11.9	74.4	21.2	4.8	21.2	1,254
More than secondary	20.7	84.1	28.8	10.2	11.6	759
Wealth quintile						
Lowest	0.3	1.3	3.8	0.0	94.9	1,146
Second	0.6	10.9	9.0	0.2	83.4	1,183
Middle	2.8	43.2	13.1	1.0	51.2	1,230
Fourth	9.7	76.1	17.8	3.8	20.2	1,453
Highest	15.4	86.6	24.8	7.1	10.3	1,520
Total 4	6.4	47.4	14.5	2.7	48.3	6,532

5

Step 1: Read the title and subtitle—highlighted in orange in Example 1. They tell you the topic and the specific population group being described. In this case, the table is about women age 15–49 who are exposed to specific media on a weekly basis.

Step 2: Scan the column headings—highlighted in green in Example 1. They describe how the information is categorized. In this table, the first three columns of data show women who are exposed to different types of media at least once a week. The fourth column shows women who are exposed to all three types of media at least once a week, and the fifth column shows women who are exposed to none of the three types of media at least once a week. The last column shows the number of women age 15–49 who were interviewed during 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 women's exposure to media by age, residence, region, education, and wealth quintile. Most of the tables in the CMIS report will be divided into these categories.

Step 4: Look at the row at the bottom of the table—highlighted in red in Example 1. These percentages represent the totals of women age 15–49 who were or were not exposed to different types of media. In this case, 6.4% of women age 15–49 read a newspaper at least once a week, while 47.4% watch television at least once a week and 14.5% listen to the radio at least once a week.*

Step 5: Draw two imaginary lines, as shown on the table, to find out what percentage of women age 15–49 with a primary education listen to the radio at least once a week. This shows that 9.7% of women with a primary education listen to the radio at least once a week.

By looking at patterns by background characteristics, we can see how exposure to mass media varies across Cameroon. Resources are often limited. Knowing how mass media exposure varies across groups can help program planners and policymakers determine how to use resources effectively.

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

Practice: Use the table in Example 1 to answer the following questions about women's exposure to mass media:

a) What percentage of women are not exposed to any of the three media at least once a week?
b) Compare women by residence—in which residence category is newspaper exposure the highest?
c) Is there a clear relationship between educational attainment and access to all three types of media at least once a week?
d) Is there a clear relationship between weekly television exposure and wealth quintile?
e) What is the range (minimum and maximum percentages) of women who are not exposed to any media by region?

Answers:

a) 48.3%.
b) Newspaper exposure is highest among women living in Yaoundé/Douala at 13.2%, as compared with 8.0% among women living in other urban areas and 1.6% among women living in rural areas.
c) Yes. Weekly access to all three types of media increases as education attainment increases; 0.0% of women with no education access all three media on a weekly basis, compared with 10.2% of women with a higher education.
d) Yes. The percentage of women who watch television weekly increases with increasing wealth, from 1.3% among those in the lowest wealth quintile to 86.6% among those in the highest wealth quintile.
e) By region, the percentage of women who do not access any media at least once a week varies from 14.7% among those in Yaoundé and Douala to 85.0% among those in Far North.

Example 2: Use of mosquito nets by pregnant women

A Question Asked for a Subgroup of Survey Respondents

Table 3.7 Use of mosquito nets by pregnant women 1

Percentage of pregnant women age 15–49 who slept under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN) the night before the survey, 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, Cameroon MIS 2022

	2 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					
Yaoundé/Douala	64.7	56.2	101	80.4	71
Other urban	64.6	62.5	160	79.1	126
Total urban	64.7	60.0	261	79.6	197
Rural	65.4	65.3	279	78.1	234
Region					
Adamawa	(92.7)	(92.7)	35	(94.2)	34
Centre (excludes Yaoundé)	(40.1)	(40.1)	38	*	20
Douala	(63.2)	(58.3)	52	(73.9)	41
East	(60.6)	(57.9)	32	(81.2)	23
Far North	91.4	89.7	108	93.3	104
Littoral (excludes Douala)	*	*	9	*	9
North	79.2	78.1	72	85.6	66
Northwest	(56.6)	(56.6)	25	*	19
West	28.5	28.5	81	(39.8)	58
South	(55.2)	(53.8)	19	(83.8)	12
Southwest	*	*	20	*	16
Yaoundé	(66.3) 4	(54.0)	49	(89.3)	30
Education					
No education	80.5	79.2	127	86.1	117
Primary	71.4	71.4	140	81.2	123
1st secondary cycle	51.0	47.6	155	71.6	103
2nd secondary cycle	55.1	53.8	81	72.8	60
More than secondary	(68.2)	(56.9)	39	(76.2)	29
Wealth quintile					
Lowest	81.2	81.2	120	90.2	108
Second	63.6	63.6	106	74.9	90
Middle	61.1	60.2	118	74.7	95
Fourth	56.4	54.0	110	78.0	76
Highest	60.8	51.0	87	71.6	62
Total	65.0	62.8	3 541	78.8	431

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

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Step 1: Read the title and subtitle. In this case, the table is about two separate groups: pregnant women age 15–49 in all households (a) and pregnant women age 15–49 in households with at least one ITN (b).

Step 2: Identify the two groups. First, identify the columns that refer to pregnant women in all households (a), and then isolate the columns that refer only to pregnant women in households with at least one ITN (b). The second panel is a subset of the first panel.

Step 3: Look at the first panel. How many pregnant women age 15–49 in all households were interviewed? 541. Now look at the second panel. How many pregnant women age 15–49 in households with at least one ITN were interviewed? 431.

Step 4: Look across the background characteristics rows and note any cells with asterisks or with percentages in parentheses. When pregnant women age 15–49 in all households and in households with at

least one ITN are further divided into the background characteristic categories, there may be too few cases for the percentages to be reliable.

- What percentage of pregnant women in all households with a higher education slept under a mosquito net last night? 68.2%. This percentage is in parentheses because there are between 25 and 49 pregnant women age 15–49 (unweighted) in this category. You should use this number with caution—it may not be reliable. (See Example 3 for more information on weighted and unweighted numbers.)

- What percentage of pregnant women in all households in the Southwest region slept under an ITN the night before the survey? There is no number in this cell—only an asterisk. This is because fewer than 25 pregnant women age 15–49 were interviewed in the survey. The subgroup is too small, so the data are not reliable. Results for this group are not reported.

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 for the data to be reliable.

Example 3: Understanding Sampling Weights in CMIS Tables

A sample is a group of people who have been selected for a survey. In the CMIS, 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 2022 CMIS, the survey sample is representative at the national and regional levels and for urban and rural areas.

Table 2.13 Background characteristics of survey respondents

Percent distribution of women age 15–49 by selected background characteristics, Cameroon MIS 2022

Background characteristic	3 Weighted percent	2 Weighted number	1 Unweighted number
	Number of women		
Region			
Adamawa	5.9	388	580
Centre (excludes Yaoundé)	6.4	418	483
Douala	13.4	876	618
East	5.0	329	448
Far North	18.2	1,186	771
Littoral (excludes Douala)	2.6	170	344
North	11.5	750	778
Northwest	4.6	303	381
West	11.6	755	636
South	3.1	200	436
Southwest	7.2	467	488
Yaoundé	10.6	690	569
Total	100.0	6,532	6,532

To generate statistics that are representative of the country as a whole and the 12 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 district for analysis. To solve this problem, regions with small populations are oversampled. For example, let's say that you have enough money to interview 6,532 women and want to produce results that are representative of Cameroon as a whole and its regions (as in Table 2.13). However, the total population of Cameroon is not evenly distributed among the regions: some regions, such as Far North, are heavily populated while others, such as Littoral (excluding Douala), are not. Thus, Littoral (excluding Douala) must be oversampled.

To get reliable statistics, a sampling statistician determines how many women should be interviewed in each region. The blue column (1) in the table above shows the actual number of women interviewed in each region. Within the regions, the number of women interviewed ranges from 344 in Littoral (excluding Douala) to 778 in North. 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 Far North is 18.2% of the population in Cameroon, while the population in Littoral (excluding Douala) contributes only 2.6% of the country's population. But as the blue column shows, the number of women interviewed in Far North accounts for only 11.8% of the total sample of women interviewed (771/6,532) and the number of women interviewed in Littoral (excluding Douala) accounts for 5.3% of the total sample of women interviewed (344/6,532). This unweighted distribution of women does not accurately represent the population.

To get statistics that are representative of Cameroon, 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, like Littoral (excluding Douala), should contribute only a small amount to the national total. Women from a large region, like Far North, 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 the regional level. The total national sample size of 6,532 women has not changed after weighting, but the distribution of the women in the regions has been changed to represent their contribution to the total population size.

How do statisticians weight each category? They take into account the probability that a woman was selected in the sample. If you were to compare the green column (3) to the actual population distribution of Cameroon, 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 Far North and the proportion of women who live in Littoral (excluding Douala).

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 2022 CMIS tables, so do not be surprised if these numbers seem low: they may represent a larger number of women interviewed.

CAMEROON


NIGER
N
0
100
200
400
Kilomètres
NIGERIA
Far North
CHAD
North
Adamawa
North-West
South-West
West
CENTRAL
AFRICAN REPUBLIC
Centre
Littoral
East
EQUATORIAL
GUINEA
Douala
Yaoundé
South
CONGO
EQUATORIAL
GUINEA
GABON

INTRODUCTION AND SURVEY METHODOLOGY 1

The 2022 Cameroon Malaria Indicator Survey (2022 MIS) was implemented by the National Institute of Statistics (NIS). Data collection took place from August 22 to December 1, 2022. ICF provided technical assistance through The DHS Program, which is funded by the United States Agency for International Development (USAID) and offers financial support and technical assistance for population and health surveys in countries worldwide. Other agencies and organizations that facilitated the implementation of the survey through technical or financial support were the National Malaria Control Program (NMCP), USAID through the U.S. President's Malaria Initiative (PMI), and the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund).

1.1 SURVEY OBJECTIVES

The primary objective of the 2022 CMIS 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 among pregnant women, and care seeking for and treatment of fever among children. In addition, young children were tested for anemia and for malaria. Community knowledge, perceptions, and practices regarding malaria prevention and control were also assessed.

The information collected through the 2022 CMIS is intended to help policymakers and program managers in evaluating and implementing programs and strategies for improving the health of the country's population.

1.2 SAMPLE DESIGN

The 2022 CMIS targeted individuals in households throughout the country. A national sample of 6,580 households (3,598 in 263 urban clusters and 2,982 in 207 rural clusters) was planned for the survey. The sample was distributed to ensure adequate representation of urban and rural areas as well as the following 12 regions: Adamawa, Centre (excluding Yaoundé), Douala, East, Far North, Littoral (excluding Douala), North, North-West, West, South, South-West, and Yaoundé. In each of the regions (excluding Yaoundé and Douala, which are considered as having no rural sections), two layers were created: the urban layer and the rural layer.

A stratified, two-stage survey was implemented. In the first stage, 470 enumeration areas (EAs) or clusters were selected systematically with probability proportional to household size. The EAs were derived from the mapping work of the fourth General Census of Population and Housing (GRPH), carried out in 2017–18 by the Central Bureau of Population Censuses and Studies (BUCREP). A mapping exercise and enumeration of households in the clusters selected were implemented on tablet PCs by NIS from May 11 to August 14, 2022, to establish an updated list of households in each EA to serve as the basis for the second-degree draw. In the second stage, a sample of 14 households per cluster was selected using a systematic draw with equal probability.

All women age 15–49 who were residents of selected households or visitors who spent the night preceding the interview in the household were eligible to be interviewed. In addition, all children age 6–59 months were eligible for malaria and anemia tests.

1.3 QUESTIONNAIRES

Three questionnaires were used in the 2022 CMIS: the Household Questionnaire, the Woman's Questionnaire, and the Biomarker Questionnaire. The questionnaires were based on standard DHS Program templates and adapted to reflect Cameroon's specific population and malaria control needs. Information on survey data collectors was also gathered via a self-administered Fieldworker Questionnaire. All questionnaires were prepared in French and English.

The Household Questionnaire was used to list all regular household members and visitors who slept in the household the night before the interviewer visited. Information was collected on the characteristics of each person listed in the household, including age, gender, residence status, and relationship to the head of the household. The data on age and gender were used to identify women eligible for an individual interview and children age 6–59 months eligible for anemia and malaria testing. In addition, the Household Questionnaire collected information on household characteristics such as source of drinking water, types of sanitation facilities, materials used for the floor of the dwelling, ownership of durable goods, and ownership and usage of mosquito nets. GPS coordinates of all selected households were also collected in the interviews.

The Woman's Questionnaire was used to gather information from all women age 15–49. These women were asked questions about the following topics:

- Sociodemographic characteristics (age, literacy, education, access to media, religion, ethnicity)
- Births over the last 5 years
- Pregnancy and intermittent preventive treatment for the most recent birth
- Prevalence and treatment of fever among children under age 5
- Knowledge and beliefs about malaria

The Biomarker Questionnaire was used to record the results of anemia and malaria tests among children age 6–59 months.

The aim of the Fieldworker Questionnaire was to gather information on the basic characteristics of those in charge of data collection in the field, including team leaders, interviewers, and biomarker technicians (lab technicians and nurses).

The questionnaires and the survey protocol were validated by the Ministry of Public Health's National Ethics Committee for Human Health Research and ICF's Institutional Review Board after analysis and approval of the documents submitted to these committees.

1.4 ANEMIA AND MALARIA TESTING

Blood samples for biomarker testing were collected by finger or heel prick from children age 6–59 months. Each field team included one biomarker technician who carried out the anemia and malaria testing. A lab technician provided malaria medications for children who tested positive for malaria, in accordance with the approved treatment guidelines. The technicians sought informed consent for both tests from the child's parents or guardians before the blood samples were collected.

Anemia testing. A single-use, retractable, spring-loaded, sterile lancet was used to make a finger prick (or a heel prick in the case of children age 6–11 months), and a drop of blood from this site was then collected in a microcuvette. Hemoglobin analysis was carried out on site using a battery-operated portable HemoCue®201+ device. Results were provided to the child's parent or guardian verbally and in writing and were recorded in the Biomarker Questionnaire. Parents of children with a hemoglobin level below 8 g/dl were given a referral and instructed to take the child to a health facility for follow-up care.

Malaria testing using a rapid diagnostic test (RDT). Another drop of blood, taken from the same finger or heel prick that was used for anemia testing, was tested immediately using the Cameroon-approved ParaHIT® P.f version 1.0 RDT. This qualitative test detects the histidine-rich protein II antigens of *Plasmodium falciparum* in human whole blood. The *P. falciparum* parasite, transmitted by the *Anopheles* mosquito, is the major cause of malaria in Cameroon. The diagnostic test includes a disposable sample applicator that comes in a standard package. A tiny volume of blood is captured on the applicator and placed in the well of the testing device. All technicians were trained to perform the RDT in the field, in accordance with the manufacturer's instructions. RDT results were available in 20 minutes and recorded as either positive or negative, with faint test lines considered positive. As with anemia testing, the RDT results were provided to the child's parent or guardian verbally and were recorded on the Biomarker Questionnaire.

Children who tested positive for malaria according to the RDT and who had been treated with artemisinin-based combination therapy (ACT) within 2 weeks prior to the interview were referred to a health facility if they continued to have a fever 2 days after the last dose of ACT. In addition, children who tested positive according to the RDT and met one of the following two criteria—a hemoglobin level below 8 g/dl or symptoms indicative of severe malaria—were considered to have severe malaria and were referred to a health facility for immediate treatment. Children who tested positive for uncomplicated malaria were offered a full course of medication according to the standard treatment guidelines in Cameroon. Age-appropriate doses of ACT were provided, along with instructions on how to administer the medicine to the child.

1.5 Survey Implementation in the Context of COVID-19

Provisions were made for the sanitary protection of collection staff and interviewees in compliance with the measures prescribed by the Government of Cameroon against the coronavirus (COVID-19). In training, a water point was set up at the entrance to each training room, with soap (lump or liquid) available for regular hand washing with running water.

During collection, each member of the collection staff was provided with hydroalcoholic gels and masks. The vehicle used for the survey was equipped with bleach and liquid soap, and the number of passengers in the vehicle was limited to avoid crowding, even if the vehicle had to take several trips. In the field, all surveyors and supervisors were required to wear a mask.

1.6 Training of Trainers and Pretest

All data collection procedures were pretested. To this end, 12 interviewers and four lab technicians took part in the 2022 CMIS pretest from May 31 to June 14, 2022, under the guidance of 15 supervisors/trainers. Pretest activities included 10 days of staff training, followed by 3 days of field practice and ending with 2 days of debriefing. Two areas of Yaoundé and two surrounding rural areas outside the main survey sample were used for field practice. The work for the pretest was conducted in both French- and English-speaking households and in some national languages. Tablets were used for the pretest, and lessons learned from the pretest were used to finalize the survey instruments and logistics.

1.7 Training of Field Staff

From August 2 to 20, 2022, INS organized a training session in Yaoundé to prepare participants for the main survey. NIS had preselected 24 applicants for lab technician positions and 87 applicants for interviewer and team leader positions. The training was organized into three workshops: one for French-speaking applicants for the positions of survey agents, monitors, and team leaders; another for English-speaking applicants; and a third for lab technicians in charge of biological testing. All applicants gathered in the same room for the opening and closing portions of the training as well as for organization and feedback regarding the household fieldwork phase. Applicant interviewers, supervisors, and team leaders received training in interview techniques, questionnaire completion, and use of tablets for computer-

assisted personal interviewing (CAPI). Lab technician applicants were trained in anemia and malaria testing techniques. The approach used consisted of (1) parallel reading of instruction manuals and questionnaires, followed by explanations and demonstrations; (2) in-room role-playing including all trainees, followed by discussions; (3) field practice in actual households and healthcare facilities, followed by in-room discussions; and (4) regular assessment of knowledge acquired, followed by in-room discussions. Field practice was carried out in households in six Yaoundé zones and four surrounding rural areas that were not part of the main survey sample.

Following the main training course, 72 field agents were selected for 18 teams of four. The selected agents completed the Fieldworker Questionnaire, providing information on their basic sociodemographic characteristics (place of residence, age, gender, marital status, education, languages spoken), their experience with major surveys such as Demographic and Health Surveys, and their field skills.

Each team included a team leader, two interviewers, and a lab technician. Team leaders received additional training in technical control, task organizing, and logistics management, as well as contacting the authorities and the local population. Each team was provided with a chauffeur-driven vehicle.

Each of the 18 teams was placed under the direction of a supervisor with experience in data collection. In addition, two to three teams benefited from the support of an expert from the NIS IT department for CAPI work. Also, joint NIS/Ministry of Health (MINSANTE) and ICF expert supervision missions were organized to monitor all work and verify data quality.

1.8 FIELDWORK

Data collection began on August 22, 2022, in each regional capital, where each team covered a minimum of two clusters before being deployed to the region. This approach ensured that teams were closely monitored before being deployed outside the regional capitals. Deployment was based on agents' knowledge and language skills. Scheduled to last around 3 months, data collection was completed in the second half of November 2022 for most of regions surveyed and on December 1, 2022, in Douala and the North-West and South-West regions.

By the end of the fieldwork, the survey had been successfully completed in 444 of the 470 clusters selected for the 2022 CMIS sample. One cluster in the southern region was not mapped or enumerated due to the absence of maps showing its boundaries and borders. Consequently, no data were collected for this cluster. In two clusters, one in the East region and the other in the Far North region, there were no residential households at the time of mapping and enumeration. In the North-West region, 11 clusters out of the 41 selected could not be surveyed due to security issues. The clusters not covered in the North-West were mainly rural clusters, but clusters included in that region were in both urban and rural areas. Data collected in the North-West region were used to estimate indicators at the regional level and to back the estimation of indicators at the national level. Eleven of the 40 clusters selected in the South-West region, mainly located in rural areas (10 clusters versus one cluster in urban areas), could not be surveyed. These nonresponses at the cluster level are likely to introduce coverage bias in the indicators relevant for these two regions. This bias would be larger if nonrespondents were analytically different from respondents. In this report, findings presented at the North-West and South-West regional levels should be interpreted with caution. Data from all regions, including the North-West and South-West, are included in the overall findings and contribute to the estimation of indicators at the national level.

1.9 DATA PROCESSING

In the interviews, responses were recorded directly on tablets using the appropriate computer application, developed using CSPro software. This application has several menus and includes internal controls and interview guides. Then data collected in the field were sent to the central server via the Internet using a quality control program, allowing almost instantaneous detection of the main collection errors for each team and each fieldworker. This information was immediately sent to the field teams to improve data

quality, including returning to households for necessary checks. Regular activities of the chief supervisor focused mainly on teams for which there were specific concerns regarding data quality tables.

Once all of the field data were sent to the server, the survey data file was checked and cleaned and the weighting coefficients applied. All original identifiers were deleted from the data file. After checking that the data file was in its final format, the findings shown here were produced. All cover pages of the paper questionnaires containing identifiers were wiped out.

1.10 RESPONSE RATES

Table 1.1 summarizes the survey coverage findings. Of the 6,580 households initially scheduled to be surveyed, 6,290 were actually selected. Of these 6,290 households, 6,080 were occupied at the time of the survey. Of the occupied households, 6,031 were successfully surveyed, for a response rate of 99%. In the surveyed households, 6,647 women age 15–49 were eligible for the individual women's survey and 6,532 were successfully interviewed, for a response rate of 98%.

Table 1.1 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence (unweighted), Cameroon MIS 2022

	Residence				
Result	Yaoundé/Douala	Other urban	Total urban	Rural	Total
Household interviews					
Households selected	1,243	2,322	3,565	2,725	6,290
Households occupied	1,197	2,262	3,459	2,621	6,080
Households interviewed	1,165	2,250	3,415	2,616	6,031
Household response rate[1]	97.3	99.5	98.7	99.8	99.2
Interviews with women age 15–49					
Number of eligible women	1,253	2,586	3,839	2,808	6,647
Number of eligible women interviewed	1,187	2,568	3,755	2,777	6,532
Eligible women response rate[2]	94.7	99.3	97.8	98.9	98.3

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

HOUSING, HOUSEHOLD POPULATION, AND RESPONDENT CHARACTERISTICS 2

Key Findings

- ***Drinking water:*** 85% of households in Cameroon use an improved drinking water source.
- ***Sanitation:*** Approximately two-thirds (66%) of households use improved toilet facilities.
- ***Household composition:*** In Cameroon, the average household includes 4.9 people.
- ***Education:*** 20% of women age 15–49 have no schooling.
- ***Cell phone ownership:*** Among women age 15–49, 70% own a cell phone and 38% own a smartphone.
- ***Internet use:*** 43% of women used the Internet in the 12 months prior to the survey.

Information on the socioeconomic characteristics of the household population in the 2022 CMIS provides a context for interpreting demographic and health indicators as well as an indication of the representativeness of the survey. The information also sheds light on the living conditions of the population.

This chapter includes information on sources of drinking water, type of sanitation facility, housing characteristics and household possessions, use of clean fuels and technologies related to cooking, wealth, and the composition of the household population. The chapter also presents information on characteristics of respondents such as age, education, literacy, exposure to mass media, Internet usage, and mobile phone ownership. These socioeconomic characteristics are useful for understanding the factors that impact use of health services and other health behaviors related to malaria control.

2.1 DRINKING WATER SOURCES

Improved sources of drinking water

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

Sample: Households and de jure population[1]

Table 2.1 shows results regarding the source of water for use by Cameroonian households. Overall, 85% of Cameroonian households drink water from an improved source. In the majority of cases, water comes from a tube well or borehole (33%), a tap in the dwelling/yard/plot (14%), a public tap/standpipe (13%), or a neighbor's tap (10%). Other water sources are used to a lesser extent. The percentage of households using drinking water from an improved source is lower in rural areas than in urban areas (71% versus 95%). In particular, 20% of urban households use water from a tap located in their dwelling/yard/plot, as compared with only 7% in rural areas.

[1] The household, de jure, and de facto populations are defined in Section 2.7.

Twelve percent of households (22% in rural areas and 4% in urban areas) do not consume water from an improved source.

Overall, 35% of households get their water locally, including from a neighbor's tap, with a round-trip time of zero minutes. This percentage is 19% in rural areas and 48% in urban areas.

Fifty-six percent of households (70% in rural areas and 44% in urban areas) travel 30 minutes or less to fetch water (**Table 2.1**).

Trends: Overall, between 2018 and 2022, the percentage of households using water from improved sources increased from 79% to 85%. This increase was more noticeable in rural than urban areas. The percentage of rural households using water from improved sources rose from 57% in 2018 to 71% in 2022.

Drinking Water Service Ladder

Drinking water service ladder

Safely managed

Drinking water from an improved water source that is located on the premises, available when needed, and free from fecal and priority chemical contamination.

Basic

Drinking water from an improved source, provided either water is on the premises or round-trip collection time is 30 minutes or less.

Limited

Drinking water from an improved source, and round-trip collection time is over 30 minutes.

Unimproved

Drinking water from an unprotected dug well or unprotected spring.

Surface water

Drinking water directly from a river, dam, lake, pond, stream, canal, or irrigation canal.

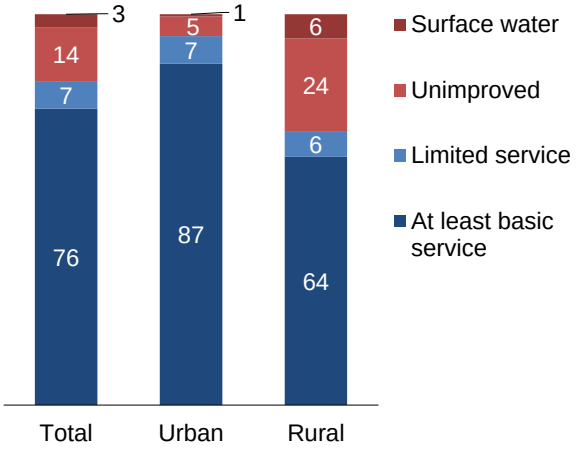
Sample: De jure population

Based on the classification of drinking water sources as improved or unimproved, the Joint Monitoring Program for Water Supply, Sanitation, and Hygiene (JMP) has devised a five-rung drinking water service ladder to benchmark and compare progress toward achieving Sustainable Development Goal (SDG) targets (WHO/UNICEF 2018). The 2022 CMIS captured information regarding four out of the five rungs. Because the survey did not include testing drinking water for fecal or chemical contamination, safely managed and basic drinking water services cannot be distinguished and are grouped together in **Table 2.2** as "at least basic service."

In Cameroon, 76% of households have access to at least basic drinking water service, while 7% have access to limited service (**Table 2.2** and **Figure 2.1**).

Figure 2.1 **Household population drinking water service by residence**

Percent distribution of de jure population by drinking water service ladder



Patterns by background characteristics

- The percentage of the population with access to at least basic drinking water service is lower in rural areas (64%) than in urban areas (87%).
- The percentage of households with access to at least basic drinking water service increases with increasing household wealth, from 54% in the lowest wealth quintile to 93% in the highest quintile.

2.2 SANITATION

Improved toilet facilities

Include flush/pour flush toilets that flush water and waste to a piped sewer system, septic tank, pit latrine, or unknown destination; ventilated improved pit (VIP) latrines; pit latrines with slabs; or composting toilets.

Sample: Households and de jure population

Overall, 63% of de jure household members use improved sanitation facilities, the majority of which are pit latrines with slabs (42%). About a third (32%) use unimproved toilet facilities, while only 6% have no toilet facilities at all (**Table 2.3**). The findings highlight significant differences by place of residence. The percentage of the population using improved toilet facilities is significantly higher in urban areas than in rural areas (85% versus 39%).

Trends: A comparison with the 2018 Cameroon DHS findings shows that the percentage of the population using improved toilet facilities has increased from 58% to 63%.

2.3 SANITATION SERVICE LADDER

Sanitation service ladder

Safely managed

Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite.

Basic

Use of improved facilities that are not shared with other households.

Limited

Use of improved facilities shared by two or more households.

Unimproved

Use of pit latrines without a slab or platform, hanging latrines, or bucket latrines.

Open defecation

Disposal of human feces in fields, woods, bushes, open bodies of water, beaches, or other open spaces or with solid waste.

Sample: De jure population

The JMP has also devised a five-rung sanitation service ladder to benchmark and compare progress toward achieving SDG targets related to sanitation. The 2022 CMIS captured information about four of the five rungs; the survey could not distinguish between safely managed and basic sanitation services. Thus, safely managed and basic sanitation services are grouped together in **Table 2.4** as "at least basic service."

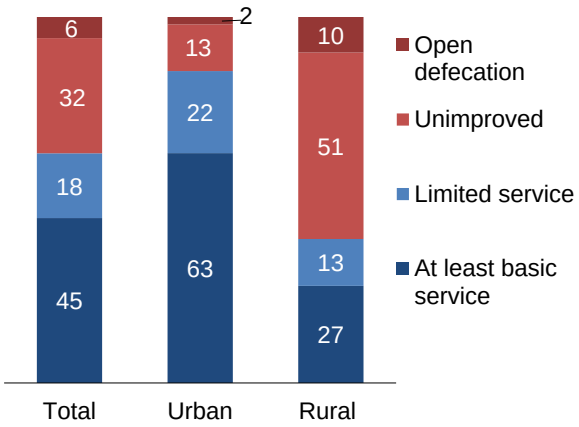
Overall, 45% of the population has access to at least basic sanitation service, and 18% has access to limited service.

Patterns by background characteristics

- The percentage of the population with access to at least basic sanitation service is higher in urban areas (63%) than in rural areas (27%) (**Figure 2.2**).
- The percentage of the population with access to at least basic sanitation service is significantly higher in Yaoundé (64%) and Douala (73%) than in the other regions surveyed, particularly Far North (24%) and North-West (34%).
- Eighty-nine percent of the household population in the highest wealth quintile has access to at least basic sanitation service, as compared with 6% in the lowest quintile.

Figure 2.2 **Household population sanitation service by residence**

Percent distribution of de jure population by sanitation service ladder



2.4 HOUSING CHARACTERISTICS

The 2022 CMIS collected data on household characteristics such as access to electricity, housing construction materials, number of rooms used for sleeping, and types of fuel and cooking technologies. These data, together with information collected on ownership of durable goods, source of drinking water, and type of toilet facilities, are used to compile the household wealth index and may be of interest with respect to other health topics.

Table 2.5 shows that cement is the most common flooring material (43%), with a much higher percentage in urban areas than in rural areas (56% versus 26%). Earth/sand is used in 38% of households, more frequently so in rural than urban areas (66% versus 16%). Tiles are used in 16% of households (24% in urban areas and 6% in rural areas). Other materials are used very little.

The roofs of most households are covered with sheet metal (81%). This roofing material is more common in urban areas (93%) than in rural areas (67%). Twelve percent of households have a thatch/palm leaf roof (24% in rural areas and 1% in urban areas).

The most common material used for exterior walls is cement (39%), with a much higher percentage in urban areas (58%), especially Yaoundé/Douala (76%), than in rural areas (16%).

Table 2.5 also shows that almost two households out of three (63%) use one or two rooms for sleeping, and 37% use at least three rooms.

2.5 USE OF CLEAN FUELS AND TECHNOLOGIES FOR COOKING

Primary reliance on clean fuels and technologies

The percentage of the population using clean fuels and technologies for cooking, where clean cooking fuels and technologies are defined as follows: cookers using electricity, liquefied petroleum gas (LPG)/natural gas/biogas, solar, and alcohol/ethanol.

Sample: Households and de jure population

Ensuring access to reliable, sustainable, and modern energy services is one of the targets for achieving the SDGs by 2030. The percentage of households with access to electricity and the percentage of households using clean fuels and technologies for cooking are two indicators used to measure progress towards this target.

Overall, almost two out of three households (65%) have access to electricity. Access to electricity is less common in rural than urban households (37% versus 88%) (**Table 2.6**).

To assess the level of pollution indoors, households were asked what fuel is used for cooking. The findings show that 31% of households use clean fuels and technologies for cooking, mainly LPG/natural gas stoves (30%). Forty-nine percent of urban households use LPG/natural gas stoves, as compared with only 7% of rural households.

Two out of three households (66%) use other fuels and technologies for cooking, with the majority (55%) using a three-stone firepit or an open hearth (84% in rural areas and 32% in urban areas). In 64% of households, solid fuels are used for cooking, mostly wood (59%).

Trends: Between 2018 and 2022, the percentage of households with access to electricity increased slightly from 62% to 65%. In rural areas, the percentage increased from 27% to 37%.

2.6 HOUSEHOLD WEALTH

2.6.1 Household Durable Goods

The 2022 CMIS collected data on household ownership of durable goods, means of transportation, agricultural land, and farm animals. The findings are shown in **Table 2.7**.

Cell phones are the most common durable good owned by households overall (89%) and households in urban (97%) and rural (80%) areas. Slightly over one out of two households (51%) own a television, and about two out of five households (42%) have cable service or a satellite dish. Approximately half of all households (48%) own a watch. Twenty-seven percent of households own a gas stove (27%), 26% own a fan, and 25% own a refrigerator or freezer (25%).

Motorcycles or scooters are the most common mode of transport (23%), followed by bicycles (10%) and cars/trucks (9%). Cars/trucks are more common in urban areas (13%) than in rural areas (4%), while bicycles are more prevalent in rural areas (14% versus 7%).

Over half of all households (54%) own farmland, with a higher percentage in rural areas (76%) than in urban areas (36%). The same pattern is observed for farm animal ownership; 39% of households own farm animals, including 60% in rural areas and 22% in urban areas.

2.6.2 Wealth Index

Wealth index

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

Sample: Households

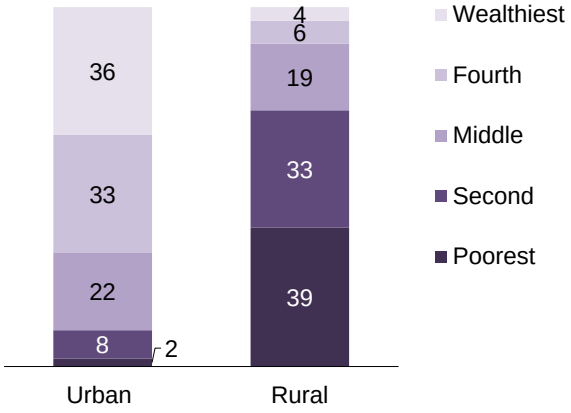
Table 2.8 shows the distribution of the de jure population by wealth quintile, according to area of residence and region. The majority of the urban population falls in the two highest quintiles (69%), while in rural areas the majority of the population falls in the two lowest quintiles (71%). Only 10% of the rural population falls in the two highest quintiles (**Figure 2.3**).

Table 2.8 also shows the gaps in economic well-being between regions, particularly the significant gap between Yaoundé and Douala and the rest of the country: in Yaoundé and Douala, 55% and 61% of the population, respectively, is concentrated in the highest quintile.

Less than 10% of the population in Far North, Adamawa, East, North, and North-West falls in the highest quintile.

Figure 2.3 **Household wealth by residence**

Percent distribution of de jure population by wealth quintiles



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

Overall, 29,414 individuals spent the night before the interview in the 6,031 households surveyed (**Table 2.9**). The gender ratio is 95 men to 100 women, and just over half of the population (51%) resides in urban areas.

Age and gender are significant demographic variables. The age pyramid in **Figure 2.4** shows the distribution of the population by gender and age.

Overall, the age pyramid has a wide base that narrows sharply upward as the population ages, which is characteristic of populations with high fertility and high mortality rates. From the base of the pyramid to its top, there is an almost equal distribution of men and women.

Individuals under age 15 account for 45% of the population (50% in rural areas and 41% in urban areas). The 15–64 age group accounts for about half (51%) of the population (56% in urban areas and 46% in rural areas). Individuals age 65 and over represent only 3% of the total population.

Figure 2.4 **Population pyramid**

Percent distribution of the household population

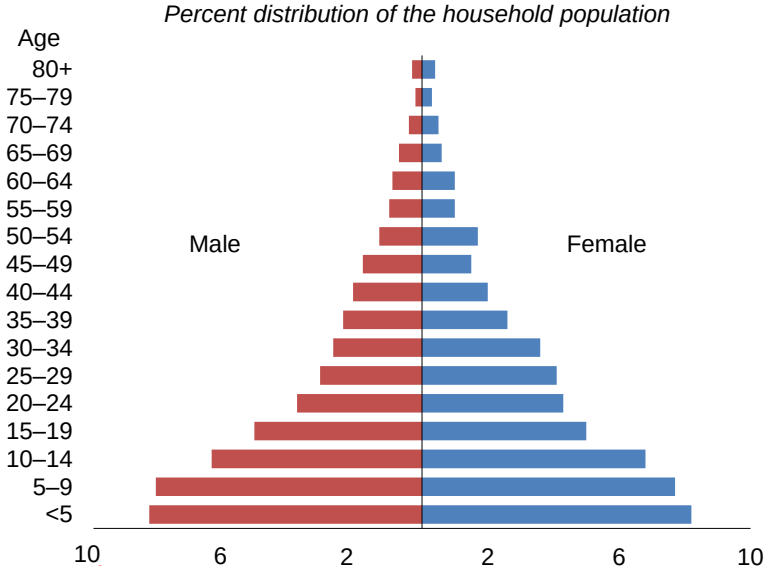


Table 2.10 shows the distribution of households by gender of the household head, household size, and average size of households. Overall, 74% of households are headed by a man and 26% by a woman. The distribution is similar in urban and rural areas. Households in Cameroon include on average 4.9 people (4.6 in urban areas and 5.3 in rural areas).

2.8 Travel Time to Reach the Nearest Healthcare Facility

The geographical distance between one's place of residence and the location of the nearest healthcare facility has an impact on access to health care and on household health care expenditures. Respondents were asked how long it took to cover the distance between their home and the nearest public or private healthcare facility. Time was recorded in minutes and hours.

Overall, the findings show that it takes slightly less time to travel to a private healthcare facility than to a public facility: 58% of respondents reported that they can reach the nearest private healthcare facility in less than 30 minutes, while 50% reported that they can reach the nearest public facility in the same amount of time. Twenty-eight percent of respondents said that it takes 30–59 minutes to reach the nearest public facility, whereas 14% said that it takes that amount of time to reach the nearest private facility (**Table 2.11**).

Travel time to the nearest healthcare facility is longer in rural areas than in urban areas. In rural areas, it takes 38% of households less than 30 minutes to reach the nearest public health facility, in comparison with 59% of households in urban areas. The time difference is greater for private health facilities (38% in rural areas versus 74% in urban areas).

2.9 Housing and Environmental Conditions

Studies have shown that female *Anopheles* mosquitoes, the malaria pathogen agents that transmit *Plasmodium* parasites to humans, thrive in stagnant waters and in undergrowth. In the survey, interviewers observed the surroundings of each household, noting the presence of puddles, stagnant or quasi-stagnant water, and undergrowth or trees within about 100 meters from the dwelling.

Overall, about 3 out of 10 households had stagnant or near-stagnant puddles located in the yard or near the dwelling. Sixty-eight percent of dwellings were in the proximity of undergrowth or trees. In total, 76% of households were close to stagnant puddles, undergrowth, or trees (**Table 2.12**).

Patterns by background characteristics

- Overall, the environmental conditions of rural households are more conducive to mosquito proliferation than those of urban households: 88% of rural households are located near stagnant water, trees, or underbrush, as compared with 67% of urban households.
- The percentage of households located near shady areas or stagnant water is highest in the Far North and North regions (92% each) and lowest in Yaoundé (51%).
- The percentage of households located near stagnant water, undergrowth, or trees decreases with increasing household wealth, from 96% in the lowest wealth quintile to 59% in the highest quintile.

2.10 Basic Characteristics of Survey Respondents

A total of 6,532 women were interviewed with the Woman's Questionnaire. The results listed in **Table 2.13** show that 58% of these women were under age 30 and 15% were age 40–49. Over half of the women interviewed resided in urban areas (56%).

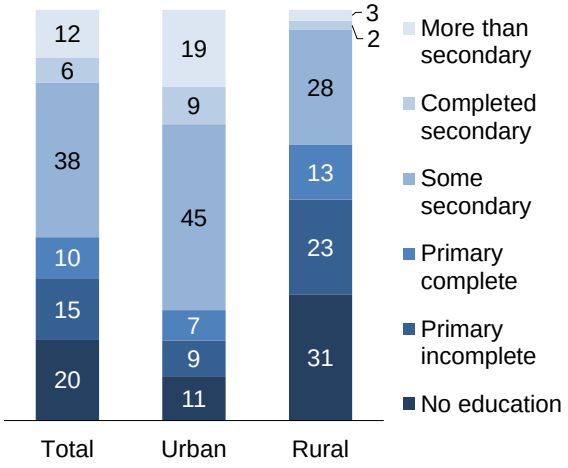
2.11 Educational Attainment

Numerous studies have emphasized the correlation between women's health behaviors and their educational attainment. Generally speaking, these studies show that the higher their level of education, the better women will know how to use health services and care for their own health and that of their children.

Table 2.14 shows the distribution of women age 15–49 by educational attainment, as well as the median number of schooling years completed, according to sociodemographic characteristics. Overall, 20% of women have no education. In addition, 25% of women have some primary-level education, with 10% having completed primary level. It should be noted that 44% of women have some secondary-level education (38% with an incomplete secondary education and 6% with a complete secondary education). Twelve percent of women have some level of higher education. The median number of years of education completed is 7 (**Figure 2.5**).

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

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



Patterns by background characteristics

- The percentage of women with no education decreases with age, from 27% among those age 15–19 to 13% among those age 45–49.
- The percentage of women with no education is higher in rural areas (31%) than in urban areas (11%).
- The percentage of women with no education is highest in Far North (48%), North (42%), Adamawa (38%), and East (31%). Conversely, the percentage is lowest in Yaoundé, Douala, Centre, and South (3% each).

- The percentage of women with no education declines substantially with increasing household wealth, from 53% in the lowest wealth quintile to 2% in the highest quintile.

2.12 LITERACY

Literacy

Respondents who had attended higher than secondary school were assumed to be literate. All other respondents were considered literate if they could read aloud all or part of a sentence shown to them.

Sample: Women age 15–49

Table 2.15 shows the distribution of women by literacy level as well as the percentage of women who are literate. Overall, 67% of women are literate.

Patterns by background characteristics

- The percentage of literate women is significantly higher in urban areas (81%) than in rural areas (48%).
- The North and Far North regions have the lowest percentages of literate women (29% and 34%, respectively). In contrast, Yaoundé and Douala have the highest percentages (94% and 92%, respectively).
- The percentage of literate women increases significantly with increasing household wealth, from 23% in the lowest wealth quintile to 96% in the highest quintile.

2.13 MASS MEDIA EXPOSURE

Exposure to mass media

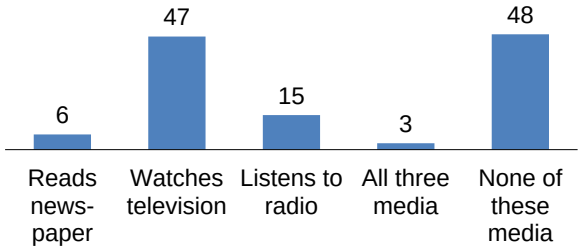
Respondents were asked how often they read a newspaper, listened to the radio, or watched television. Those who responded *at least once a week* are considered regularly exposed to that form of media.

Sample: Women age 15–49

Overall, 48% of women are not exposed at least once a week to any media. Television is the most widely used medium: 47% of women watch television at least once a week. Radio is the second most used medium (15%) (**Table 2.16** and **Figure 2.6**).

Figure 2.6 **Exposure to mass media**

Percentage of women age 15–49 who are exposed to media on a weekly basis



Patterns by background characteristics

- Media exposure varies significantly depending on place of residence. Almost three quarters of women (73%) living in rural areas are not regularly exposed to any media, as compared with only 29% of women living in urban areas.
- There are also significant differences between regions. The percentage of women who not exposed to any media is highest in Far North (85%), North (73%), East (68%), and Adamawa (67%). The percentage is significantly lower in Douala and Yaoundé (15% each).

- The percentage of women who are not exposed to any media decreases from 88% among those with no education to 39% among those with a higher education.
- The percentage of women who are not regularly exposed to any media decreases significantly from the lowest wealth quintile (95%) to the highest quintile (10%).

2.14 Mobile Phone Ownership and Internet Usage

Use of the Internet

Respondents were asked if they have ever used the Internet from any device, if they used the Internet in the past 12 months, and, if so, how often they used it during the past month.

Sample: Women age 15–49

Seven out of 10 women (70%) own a cell phone, and 38% own a smartphone (**Table 2.17**). Internet usage is not yet prevalent in Cameroon; 43% of women stated that they had used the Internet in the past 12 months, and 61% used it almost every day.

Patterns by background characteristics

- Ownership of cell phones and smartphones is more prevalent in urban areas (83% and 55%, respectively) than in rural areas (53% and 16%, respectively).
- By region, the percentages of women who own cell phones and smartphones are lowest in Far North (46% and 10%, respectively) and North (49% and 12%, respectively). Conversely, the percentages are 90% and 68%, respectively, in Yaoundé and 89% and 71%, respectively, in Douala.
- The percentage of women who own a cell phone is highest among those with a higher education (99%) and those from households in the highest wealth quintile (91%). Similar patterns are observed for ownership of a smartphone.
- Exposure to the Internet also varies by region. The percentages of women who have used the Internet in the past 12 months are lowest in Far North and North (9% and 13%, respectively) and highest in Douala (80%) and Yaoundé (81%).
- Internet usage increases with increasing education (from 4% among women with no education to 98% among women with a higher education) and household wealth (from 1% among women in the lowest wealth quintile to 87% among women in the highest quintile).

List of Tables

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

- **Table 2.1 Household drinking water**
- **Table 2.2 Drinking water service ladder**
- **Table 2.3 Household sanitation facilities**
- **Table 2.4 Sanitation service ladder**
- **Table 2.5 Household characteristics: Construction materials and rooms used for sleeping**
- **Table 2.6 Household characteristics: Electricity, cooking technologies, and cooking fuels**
- **Table 2.7 Household possessions**
- **Table 2.8 Wealth quintiles**
- **Table 2.9 Household population by age, sex, and residence**
- **Table 2.10 Household composition**

- **Table 2.11 Distance to healthcare facility**
- **Table 2.12 Environmental conditions in and around the dwelling**
- **Table 2.13 Background characteristics of survey respondents**
- **Table 2.14 Educational attainment**
- **Table 2.15 Literacy**
- **Table 2.16 Exposure to mass media**
- **Table 2.17 Mobile phone ownership and Internet usage**

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, according to residence, Cameroon MIS 2022

Characteristic	Households					Population				
	Yaoundé/ Douala	Other urban	Total urban	Rural	Total	Yaoundé/ Douala	Other urban	Total urban	Rural	Total
Source of drinking water										
Improved source	**98.0**	**93.3**	**95.4**	**71.4**	**84.6**	**97.2**	**92.7**	**94.5**	**70.1**	**82.5**
Piped into dwelling/yard/plot	23.6	16.2	19.5	6.7	13.8	27.2	16.4	20.8	5.8	13.4
Piped to neighbor	20.0	11.1	15.1	4.0	10.1	20.4	9.6	14.0	3.8	9.0
Public tap/standpipe	5.7	17.2	12.1	13.7	12.8	5.5	16.5	12.0	14.4	13.2
Tube well or borehole	24.0	32.1	28.5	38.4	32.9	24.8	35.6	31.2	38.8	34.9
Protected dug well	1.2	3.1	2.2	3.3	2.7	1.2	3.2	2.4	3.2	2.8
Protected spring	5.6	6.0	5.8	4.0	5.0	4.7	6.3	5.7	3.4	4.5
Rainwater	0.2	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.3
Tanker truck/cart with small tank	0.2	1.3	0.8	0.0	0.4	0.2	1.3	0.8	0.0	0.4
Bottled water	17.1	4.6	10.1	0.8	5.9	12.7	2.7	6.8	0.5	3.7
Sachet water	0.5	1.3	0.9	0.0	0.5	0.3	0.7	0.6	0.0	0.3
Unimproved source	**2.0**	**5.9**	**4.1**	**22.4**	**12.3**	**2.8**	**6.3**	**4.9**	**23.7**	**14.1**
Unprotected dug well	0.1	2.8	1.6	11.7	6.1	0.1	2.9	1.8	13.4	7.5
Unprotected spring	1.8	3.0	2.5	10.7	6.2	2.7	3.4	3.1	10.3	6.6
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Surface water	**0.0**	**0.8**	**0.4**	**6.2**	**3.0**	**0.0**	**1.1**	**0.6**	**6.2**	**3.3**
Total	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[1]	60.4	38.7	48.3	18.7	35.0	61.1	37.1	46.9	18.0	32.7
30 minutes or less	33.0	53.2	44.2	70.0	55.8	31.2	54.1	44.8	70.6	57.4
More than 30 minutes	6.4	7.7	7.1	11.2	8.9	7.6	8.2	7.9	11.4	9.6
Don't know	0.2	0.4	0.3	0.1	0.2	0.2	0.6	0.4	0.1	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households/population	1,475	1,843	3,318	2,713	6,031	6,161	8,979	15,140	14,501	29,641

[1] Includes water piped to a neighbor and those reporting a round-trip collection time of zero minutes

Table 2.2 Drinking water service ladder

Percent distribution of de jure population by drinking water service ladder, according to background characteristics, Cameroon MIS 2022

Background characteristic	At least basic service[1]	Limited service[2]	Unimproved[3]	Surface water	Total	Number of persons
Residence						
Yaoundé/Douala	91.4	5.8	2.8	0.0	100.0	6,161
Other urban	84.6	8.1	6.3	1.1	100.0	8,979
Total urban	87.3	7.1	4.9	0.6	100.0	15,140
Rural	63.7	6.4	23.7	6.2	100.0	14,501
Region						
Adamawa	58.7	5.9	28.4	7.0	100.0	1,744
Centre (excludes Yaoundé)	61.5	16.9	19.4	2.2	100.0	2,043
Douala	94.6	4.1	1.3	0.0	100.0	3,390
East	68.2	3.2	22.5	6.1	100.0	1,559
Far North	79.3	6.8	11.5	2.4	100.0	6,027
Littoral (excludes Douala)	70.1	4.2	22.9	2.8	100.0	792
North	51.7	6.0	34.1	8.2	100.0	3,450
North-West	76.3	4.0	10.8	8.8	100.0	1,473
West	79.2	6.5	11.0	3.2	100.0	3,509
South	69.7	15.2	14.0	1.1	100.0	903
South-West	92.9	3.7	2.0	1.5	100.0	1,979
Yaoundé	87.4	7.9	4.7	0.0	100.0	2,771
Wealth quintile						
Lowest	54.0	6.4	32.0	7.6	100.0	5,925
Second	62.9	7.2	22.9	6.9	100.0	5,929
Middle	79.8	7.0	11.3	1.9	100.0	5,938
Fourth	88.9	8.2	2.7	0.2	100.0	5,920
Highest	93.3	5.0	1.6	0.0	100.0	5,930
Total	75.8	6.8	14.1	3.3	100.0	29,641

Note: Service ladder concept/definitions are based on the WHO/UNICEF Joint Monitoring Program for Water Supply, Sanitation, and Hygiene (JMP).

[1] Defined as drinking water from an improved source, provided either water is on the premises or round-trip collection time is 30 minutes or less. Includes safely managed drinking water, which is not shown separately.

[2] Drinking water from an improved source, and round-trip collection time is more than 30 minutes or is unknown

[3] Drinking water from an unprotected dug well or unprotected spring

Table 2.3 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, Cameroon MIS 2022

Type and location of toilet/latrine facility	Households					Population				
	Yaoundé/ Douala	Other urban	Total urban	Rural	Total	Yaoundé/ Douala	Other urban	Total urban	Rural	Total
Improved sanitation facility	**93.0**	**81.1**	**86.4**	**40.1**	**65.6**	**93.3**	**79.6**	**85.2**	**39.4**	**62.8**
Flush/pour flush to piped sewer system	2.9	2.4	2.7	2.1	2.4	3.1	2.0	2.5	1.3	1.9
Flush/pour flush to septic tank	45.4	15.7	28.9	3.8	17.6	47.4	14.1	27.6	3.6	15.9
Flush/pour flush to pit latrine	1.2	4.4	3.0	0.6	1.9	1.2	3.9	2.8	0.5	1.7
Ventilated improved pit (VIP) latrine	1.6	1.1	1.3	0.8	1.1	2.2	1.0	1.5	0.9	1.2
Pit latrine with slab	41.9	57.4	50.5	32.7	42.5	39.5	58.6	50.8	33.0	42.1
Composting toilet	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1
Unimproved sanitation facility	**5.8**	**16.1**	**11.5**	**49.0**	**28.3**	**5.4**	**17.9**	**12.8**	**50.9**	**31.5**
Flush/pour flush not to sewer/septic tank/pit latrine	0.5	0.1	0.3	0.0	0.2	0.5	0.1	0.2	0.0	0.1
Pit latrine without slab/open pit	5.0	15.2	10.7	47.5	27.2	4.6	16.9	11.9	49.7	30.4
Bucket	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1
Hanging toilet/hanging latrine	0.2	0.6	0.4	1.3	0.8	0.3	0.7	0.6	1.1	0.9
Other	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Open defecation (no facility/bush/ field)	**1.3**	**2.9**	**2.2**	**10.9**	**6.1**	**1.3**	**2.5**	**2.0**	**9.7**	**5.8**
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households/population	1,475	1,843	3,318	2,713	6,031	6,161	8,979	15,140	14,501	29,641
Location of toilet facility										
In own dwelling	46.7	22.5	33.3	7.5	22.3	49.9	20.3	32.4	6.2	20.1
In own yard/plot	52.3	73.6	64.0	85.1	73.0	48.9	75.9	64.8	87.4	75.4
Elsewhere	1.1	3.9	2.6	7.4	4.7	1.2	3.7	2.7	6.4	4.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households/population with a toilet/latrine facility	1,456	1,790	3,246	2,417	5,664	6,082	8,754	14,835	13,091	27,927

Table 2.4 Sanitation service ladder

Percent distribution of de jure population by type of sanitation service, according to background characteristics, Cameroon MIS 2022

Background characteristic	At least basic service[1]	Limited service[2]	Unimproved[3]	Open defecation	Total	Number of persons
Residence						
Yaoundé/Douala	68.8	24.5	5.4	1.3	100.0	6,161
Other urban	58.6	20.9	17.9	2.5	100.0	8,979
Total urban	62.8	22.4	12.8	2.0	100.0	15,140
Rural	26.5	12.8	50.9	9.7	100.0	14,501
Region						
Adamawa	45.6	6.2	43.8	4.5	100.0	1,744
Centre (excludes Yaoundé)	40.4	19.7	38.2	1.8	100.0	2,043
Douala	73.2	17.7	6.8	2.3	100.0	3,390
East	34.7	16.3	42.9	6.1	100.0	1,559
Far North	24.0	4.5	57.6	14.0	100.0	6,027
Littoral (excludes Douala)	59.3	18.2	20.1	2.4	100.0	792
North	39.2	4.7	42.1	13.9	100.0	3,450
North-West	34.1	11.1	52.8	2.0	100.0	1,473
West	47.6	39.3	12.8	0.3	100.0	3,509
South	36.6	21.8	40.2	1.4	100.0	903
South-West	59.6	33.4	5.5	1.6	100.0	1,979
Yaoundé	63.5	32.7	3.7	0.0	100.0	2,771
Wealth quintile						
Lowest	6.0	2.2	70.4	21.5	100.0	5,925
Second	31.1	10.1	53.5	5.3	100.0	5,929
Middle	43.6	30.6	24.4	1.4	100.0	5,938
Fourth	55.3	36.2	7.7	0.7	100.0	5,920
Highest	89.3	9.4	1.2	0.0	100.0	5,930
Total	45.1	17.7	31.5	5.8	100.0	29,641

Note: Service ladder concept/definitions are based on the WHO/UNICEF Joint Monitoring Program for Water Supply, Sanitation, and Hygiene (JMP).

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

[2] Defined as use of improved facilities shared by two or more households

[3] Use of flush/pour flush toilet not to sewer, septic tank, or pit latrine; pit latrine without a slab/open pit; hanging toilet/latrine; or bucket

Table 2.5 Household characteristics: Construction materials and rooms used for sleeping

Percent distribution of households and de jure population by housing construction materials and rooms used for sleeping, according to residence, Cameroon MIS 2022

	Households					Population				
Characteristic	Yaoundé/ Douala	Other urban	Total urban	Rural	Total	Yaoundé/ Douala	Other urban	Total urban	Rural	Total
Flooring material										
Earth, sand	5.3	23.9	15.7	65.9	38.3	5.7	27.0	18.4	66.4	41.8
Dung	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1
Wood/planks	1.0	0.0	0.4	0.1	0.3	1.4	0.0	0.6	0.0	0.3
Palm/bamboo	0.0	0.3	0.2	0.1	0.1	0.0	0.3	0.2	0.1	0.2
Parquet or polished wood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vinyl or asphalt strips	2.1	0.8	1.4	0.3	0.9	1.1	0.4	0.7	0.2	0.4
Ceramic tiles	33.2	16.8	24.1	6.0	15.9	34.9	16.3	23.8	5.0	14.6
Cement	57.2	54.8	55.9	26.4	42.6	56.4	53.9	54.9	27.2	41.4
Carpet	1.2	3.3	2.4	1.1	1.8	0.6	2.0	1.4	1.0	1.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Roof material										
No roof	0.5	0.1	0.3	0.0	0.2	0.6	0.1	0.3	0.0	0.2
Thatch/palm leaf	0.0	2.6	1.4	24.3	11.7	0.0	2.5	1.5	24.6	12.8
Sod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rustic mat	0.0	1.0	0.6	2.1	1.3	0.0	1.1	0.6	2.0	1.3
Palm/bamboo	0.0	0.1	0.1	3.1	1.4	0.0	0.1	0.1	3.6	1.8
Wood planks	0.0	0.3	0.1	0.3	0.2	0.0	0.3	0.2	0.3	0.2
Cardboard	0.0	0.3	0.2	0.2	0.2	0.0	0.2	0.1	0.1	0.1
Metal	93.5	91.7	92.5	66.9	81.0	93.7	92.1	92.8	66.6	80.0
Wood	0.5	1.6	1.1	1.9	1.5	0.5	1.5	1.1	1.7	1.4
Calamine/fiber cement	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.2	0.1	0.1
Ceramic tiles	0.4	0.5	0.4	0.0	0.3	0.3	0.5	0.4	0.0	0.2
Cement	5.0	1.2	2.9	0.6	1.8	4.6	0.9	2.4	0.5	1.5
Roofing shingles	0.1	0.6	0.3	0.5	0.4	0.1	0.6	0.4	0.5	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Exterior wall material										
No walls	0.0	0.4	0.2	2.4	1.2	0.0	0.3	0.2	2.2	1.2
Cane/palm/trunks	0.1	0.3	0.2	3.2	1.5	0.0	0.3	0.2	3.6	1.9
Dirt	2.1	5.7	4.1	15.3	9.2	2.7	5.6	4.4	14.6	9.4
Bamboo with mud	0.2	0.7	0.5	3.1	1.7	0.2	0.6	0.4	2.8	1.6
Stone with mud	0.0	0.2	0.1	1.1	0.5	0.0	0.2	0.1	1.2	0.7
Uncovered adobe	0.0	3.1	1.7	15.3	7.8	0.0	3.9	2.3	16.7	9.3
Plywood	0.4	0.4	0.4	0.2	0.3	0.5	0.4	0.4	0.2	0.3
Reused wood	1.6	1.0	1.3	1.3	1.3	1.7	0.8	1.1	1.4	1.3
Cement	76.4	43.6	58.2	16.0	39.2	76.5	40.6	55.2	14.4	35.2
Stone with lime/cement	0.8	0.3	0.5	0.0	0.3	0.8	0.3	0.5	0.1	0.3
Bricks	0.7	15.4	8.9	20.0	13.9	0.9	15.4	9.5	20.6	14.9
Cement blocks	8.4	12.3	10.5	4.3	7.7	8.3	12.8	10.9	4.3	7.7
Covered adobe	1.7	12.2	7.5	12.6	9.8	0.9	14.7	9.1	13.9	11.4
Wood planks/shingles	7.6	4.2	5.7	5.2	5.5	7.6	3.9	5.4	4.0	4.8
Other	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	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
Rooms used for sleeping										
One	37.5	34.2	35.7	29.5	32.9	19.3	18.0	18.5	15.3	17.0
Two	31.2	29.1	30.0	29.6	29.9	33.7	28.8	30.8	26.5	28.7
Three or more	31.3	36.7	34.3	40.9	37.3	47.0	53.2	50.7	58.2	54.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households/ population	1,475	1,843	3,318	2,713	6,031	6,161	8,979	15,140	14,501	29,641

Table 2.6 Household characteristics: Electricity, cooking technologies, and cooking fuels

Percent distribution of households and de jure population by access to electricity and cooking fuels and technologies, according to residence, Cameroon MIS 2022

	Households					Population				
Housing characteristic	Yaoundé/ Douala	Other urban	Total urban	Rural	Total	Yaoundé/ Douala	Other urban	Total urban	Rural	Total
Electricity										
Yes	97.1	80.9	88.1	37.0	65.1	97.0	80.2	87.0	35.2	61.7
No	2.9	19.1	11.9	63.0	34.9	3.0	19.8	13.0	64.8	38.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Main cooking technology										
Clean fuels and technologies	**71.2**	**33.0**	**50.0**	**7.4**	**30.8**	**67.5**	**26.4**	**43.1**	**5.4**	**24.7**
Electric stove	0.2	0.1	0.2	0.0	0.1	0.2	0.0	0.1	0.0	0.1
LPG/natural gas stove	69.9	31.7	48.7	7.3	30.1	66.2	25.5	42.1	5.4	24.1
Piped natural gas stove	1.1	0.4	0.7	0.1	0.4	1.1	0.3	0.6	0.0	0.3
Biogas stove	0.0	0.9	0.5	0.0	0.3	0.0	0.5	0.3	0.0	0.2
Liquid fuel stove using alcohol/ ethanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other fuels and technologies	**24.8**	**63.2**	**46.1**	**89.5**	**65.6**	**31.1**	**72.7**	**55.7**	**93.8**	**74.4**
Liquid fuel stove not using alcohol/ ethanol	2.5	2.1	2.3	0.2	1.4	1.9	1.1	1.4	0.1	0.8
Manufactured solid fuel stove	9.5	4.3	6.6	0.8	4.0	12.7	4.5	7.8	0.7	4.3
Traditional solid fuel stove	4.3	5.6	5.0	4.9	5.0	5.1	5.9	5.6	5.5	5.5
Three-stone stove/open fire	8.0	51.0	31.9	83.6	55.1	11.2	61.1	40.8	87.5	63.6
Other	0.5	0.1	0.3	0.0	0.1	0.3	0.0	0.1	0.0	0.1
No food cooked in household	**4.1**	**3.8**	**3.9**	**3.1**	**3.5**	**1.5**	**1.0**	**1.2**	**0.8**	**1.0**
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cooking fuel										
Clean fuels and technologies[1]	**71.2**	**33.0**	**50.0**	**7.4**	**30.8**	**67.5**	**26.4**	**43.1**	**5.4**	**24.7**
Solid fuels for cooking	**21.2**	**60.6**	**43.1**	**89.2**	**63.8**	**28.3**	**71.4**	**53.9**	**93.6**	**73.3**
Coal/lignite	0.8	0.3	0.5	0.0	0.3	0.9	0.3	0.6	0.0	0.3
Charcoal	8.0	5.6	6.7	0.3	3.8	9.8	5.4	7.2	0.3	3.8
Wood	9.8	53.5	34.1	88.9	58.8	13.8	64.4	43.8	93.3	68.0
Straw/shrubs/grass	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Agricultural crop	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Processed biomass (pellets) or woodchips	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.0	0.1
Sawdust	2.2	1.0	1.5	0.0	0.8	3.4	1.2	2.1	0.0	1.1
Other fuels	**3.6**	**2.6**	**3.0**	**0.3**	**1.8**	**2.8**	**1.2**	**1.9**	**0.2**	**1.0**
Gasoline/diesel	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kerosene/paraffin	3.1	2.2	2.6	0.3	1.6	2.5	1.0	1.6	0.2	0.9
Other	0.5	0.3	0.4	0.0	0.2	0.3	0.2	0.2	0.0	0.1
No food cooked in household	**4.1**	**3.8**	**3.9**	**3.1**	**3.5**	**1.5**	**1.0**	**1.2**	**0.8**	**1.0**
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households/population	1,475	1,843	3,318	2,713	6,031	6,161	8,979	15,140	14,501	29,641

LPG = liquefied petroleum gas

[1] Includes stove/cookers using electricity, LPG/natural gas/biogas, solar, and alcohol/ethanol

Table 2.7 Household possessions

Percentage of households possessing various household effects, means of transportation, agricultural land, and livestock/farm animals, according to residence, Cameroon MIS 2022

	Residence				
Possession	Yaoundé/ Douala	Other urban	Total urban	Rural	Total
Household effects					
Radio	33.4	30.7	31.9	24.1	28.4
Television	84.7	61.7	71.9	25.5	51.0
Mobile phone	98.3	95.6	96.8	80.3	89.4
Non-mobile telephone	2.7	1.5	2.0	1.3	1.7
Desktop computer	15.1	6.4	10.3	1.5	6.4
Refrigerator/freezer	58.3	25.2	39.9	7.4	25.3
Cooker	31.3	14.3	21.9	6.1	14.8
Gas stove	54.4	32.9	42.4	7.9	26.9
Air conditioner	4.7	2.8	3.6	0.3	2.1
Fan	60.0	26.9	41.6	6.7	25.9
CD/DVD player	20.5	17.0	18.6	6.8	13.3
Grain mill/mixer	33.1	17.4	24.3	5.5	15.9
Modem/router	17.0	8.5	12.3	2.2	7.7
Cable/satellite dish	77.5	46.8	60.4	18.7	41.7
Generator	3.3	3.0	3.1	3.1	3.1
Solar panel	1.8	4.6	3.4	9.5	6.1
Water pump	2.4	1.5	1.9	1.8	1.9
Clock	21.4	15.2	18.0	6.6	12.9
Watch	72.8	56.2	63.6	28.0	47.6
Laptop computer	24.9	14.5	19.1	3.8	12.2
Tablet computer	8.5	5.3	6.7	1.6	4.4
Means of transportation					
Bicycle	3.4	10.2	7.2	13.8	10.2
Animal-drawn cart	0.7	0.8	0.8	2.3	1.5
Motorcycle/scooter	17.8	27.2	23.0	23.5	23.3
Car/truck	17.1	9.2	12.7	4.4	9.0
Boat with a motor	1.1	0.6	0.8	1.0	0.9
Ownership of agricultural land	**26.6**	**43.2**	**35.8**	**75.9**	**53.9**
Ownership of farm animals[1]	**12.3**	**30.4**	**22.4**	**59.9**	**39.2**
Number of households	1,475	1,843	3,318	2,713	6,031

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

Table 2.8 Wealth quintiles

Percent distribution of the de jure population by wealth quintiles and the Gini coefficient, according to residence and region, Cameroon MIS 2022

Residence/region	Wealth quintile					Total	Number of persons	Gini coefficient[1]
	Lowest	Second	Middle	Fourth	Highest			
Residence								
Yaoundé/Douala	0.0	0.3	6.3	35.0	58.4	100.0	6,161	0.15
Other urban	3.7	13.1	31.9	31.6	19.8	100.0	8,979	0.30
Total urban	2.2	7.9	21.5	33.0	35.5	100.0	15,140	0.24
Rural	38.6	32.6	18.5	6.4	3.8	100.0	14,501	0.44
Region								
Adamawa	26.5	31.1	22.2	15.2	5.0	100.0	1,744	0.47
Centre (excludes Yaoundé)	7.2	29.1	23.1	23.7	16.9	100.0	2,043	0.39
Douala	0.0	0.6	5.3	33.3	60.9	100.0	3,390	0.15
East	20.9	34.3	20.5	18.4	5.8	100.0	1,559	0.48
Far North	53.0	24.6	13.9	5.7	2.7	100.0	6,027	0.45
Littoral (excludes Douala)	0.4	13.0	39.7	31.3	15.6	100.0	792	0.35
North	43.8	27.3	17.6	4.4	6.8	100.0	3,450	0.48
North-West	9.9	31.4	36.4	15.0	7.4	100.0	1,473	0.35
West	0.4	22.0	42.0	25.8	9.9	100.0	3,509	0.39
South	3.6	28.1	23.5	26.1	18.8	100.0	903	0.37
South-West	4.4	10.9	19.7	31.5	33.4	100.0	1,979	0.38
Yaoundé	0.0	0.0	7.6	37.0	55.4	100.0	2,771	0.20
Total	20.0	20.0	20.0	20.0	20.0	100.0	29,641	0.42

[1] The Gini coefficient indicates the level of concentration of wealth, with 0 representing an equal wealth distribution and 1 representing a totally unequal distribution.

Table 2.9 Household population by age, sex, and residence

Percent distribution of the de facto household population by various age groups and percentage of the de facto household population age 10–19, according to sex and residence, Cameroon MIS 2022

	Yaoundé/Douala			Other urban			Total urban			Rural			Total		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	12.5	12.1	12.3	16.1	15.7	15.9	14.6	14.2	14.4	19.5	17.7	18.6	17.0	15.9	16.5
5–9	13.0	13.7	13.3	15.0	14.1	14.5	14.1	14.0	14.1	19.1	16.1	17.5	16.6	15.0	15.8
10–14	11.9	11.4	11.6	13.8	13.8	13.8	13.0	12.8	12.9	13.4	13.6	13.5	13.2	13.2	13.2
15–19	9.8	9.1	9.5	12.1	10.7	11.4	11.1	10.1	10.6	9.9	9.5	9.7	10.5	9.8	10.1
20–24	10.8	9.0	9.9	8.7	9.6	9.1	9.5	9.3	9.4	6.1	7.5	6.9	7.9	8.5	8.2
25–29	9.0	10.2	9.6	7.1	8.6	7.9	7.9	9.3	8.6	4.8	6.7	5.8	6.4	8.0	7.2
30–34	6.6	9.8	8.2	5.9	6.7	6.3	6.2	7.9	7.1	4.9	5.9	5.4	5.5	6.9	6.3
35–39	6.5	6.3	6.4	4.8	4.6	4.7	5.5	5.3	5.4	4.5	5.0	4.8	5.0	5.1	5.1
40–44	6.2	5.1	5.6	3.8	3.6	3.7	4.8	4.2	4.5	3.8	3.6	3.7	4.3	3.9	4.1
45–49	4.1	3.4	3.8	3.9	3.0	3.5	4.0	3.2	3.6	3.4	2.9	3.1	3.7	3.0	3.4
50–54	3.3	3.4	3.4	2.8	2.7	2.7	3.0	3.0	3.0	2.2	3.5	2.9	2.6	3.2	2.9
55–59	2.6	2.2	2.4	1.6	1.9	1.8	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0
60–64	1.8	1.7	1.8	1.9	1.7	1.8	1.9	1.7	1.8	1.9	2.3	2.1	1.9	2.0	1.9
65–69	0.8	1.1	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.9	1.2	1.5	1.4	1.1	1.3
70–74	0.4	0.5	0.5	0.6	0.9	0.8	0.6	0.7	0.6	0.9	1.1	1.0	0.7	0.9	0.8
75–79	0.1	0.4	0.3	0.4	0.8	0.6	0.3	0.6	0.4	0.7	0.5	0.6	0.5	0.5	0.5
80+	0.2	0.7	0.5	0.4	0.8	0.6	0.3	0.7	0.5	1.0	0.9	1.0	0.6	0.8	0.7
Don't know/missing	0.2	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.2	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
Dependency age groups															
0–14	37.3	37.2	37.2	44.9	43.6	44.2	41.8	41.0	41.4	51.9	47.4	49.6	46.8	44.1	45.4
15–64	60.8	60.2	60.5	52.5	53.0	52.8	55.9	55.9	55.9	43.5	48.8	46.2	49.8	52.5	51.2
65+	1.7	2.6	2.1	2.4	3.4	2.9	2.1	3.1	2.6	4.4	3.7	4.1	3.2	3.4	3.3
Don't know/missing	0.2	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.2	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
Child and adult populations															
0–17	43.1	42.1	42.6	52.1	50.4	51.3	48.4	47.1	47.7	58.7	53.2	55.9	53.5	50.1	51.7
18+	56.7	57.9	57.3	47.6	49.5	48.6	51.4	52.9	52.2	41.1	46.7	44.0	46.3	49.9	48.2
Don't know/missing	0.2	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.2	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
Adolescents 10–19	21.7	20.4	21.1	25.9	24.5	25.1	24.1	22.9	23.5	23.2	23.0	23.1	23.7	22.9	23.3
Number of persons	3,021	3,093	6,115	4,249	4,639	8,889	7,271	7,733	15,003	7,055	7,356	14,411	14,326	15,089	29,414

Table 2.10 Household composition

Percent distribution of households by sex of head of household and by household size and mean size of households, according to residence, Cameroon MIS 2022

Characteristic	Residence				Total
	Yaoundé/ Douala	Other urban	Total urban	Rural	
Household headship					
Male	72.3	72.1	72.2	76.3	74.0
Female	27.7	27.9	27.8	23.7	26.0
Total	100.0	100.0	100.0	100.0	100.0
Number of usual members					
1	16.5	13.8	15.0	12.0	13.6
2	13.3	11.7	12.4	9.9	11.2
3	16.9	11.8	14.1	11.2	12.8
4	13.5	13.6	13.5	12.9	13.3
5	13.2	12.2	12.6	11.7	12.2
6	10.7	10.5	10.6	10.7	10.7
7	6.1	8.4	7.4	9.5	8.3
8	3.6	7.9	6.0	6.6	6.3
9+	6.3	10.1	8.4	15.4	11.5
Total	100.0	100.0	100.0	100.0	100.0
Mean size of households	4.2	4.9	4.6	5.3	4.9
Number of households	1,475	1,843	3,318	2,713	6,031

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

Table 2.11 Distance to healthcare facility

Percent distribution of households by travel time to nearest public health facility and by travel time to nearest private health facility, according to background characteristics, Cameroon MIS 2022

Background characteristic	Travel time to nearest public health facility						Travel time to nearest private health facility						Number of house-holds
	<30 minutes	30–59 minutes	60–119 minutes	≥2 hours	Don't know	Total	<30 minutes	30–59 minutes	60–119 minutes	≥2 hours	Don't know	Total	
Residence													
Yaoundé/Douala	51.0	29.0	7.9	0.7	11.4	100.0	80.6	10.1	2.8	0.2	6.3	100.0	1,476
Other urban	65.3	25.6	5.6	1.8	1.6	100.0	68.4	15.9	7.9	2.5	5.3	100.0	1,843
Total urban	58.9	27.1	6.6	1.3	5.9	100.0	73.8	13.3	5.6	1.5	5.7	100.0	3,319
Rural	38.2	28.5	20.5	11.6	1.2	100.0	37.9	15.5	13.0	15.5	18.0	100.0	2,712
Region													
Adamawa	57.9	23.4	11.1	7.1	0.5	100.0	65.5	12.9	6.3	5.8	9.5	100.0	323
Centre (excludes Yaoundé)	50.4	25.8	15.9	4.9	3.0	100.0	53.3	16.6	9.9	4.7	15.5	100.0	475
Douala	54.1	22.2	8.8	0.8	14.0	100.0	76.3	12.4	3.9	0.3	7.1	100.0	780
East	60.7	27.9	5.6	4.5	1.3	100.0	65.3	12.7	1.8	2.4	17.9	100.0	333
Far North	45.2	20.9	18.8	13.5	1.5	100.0	21.1	14.3	15.9	27.1	21.6	100.0	986
Littoral (excludes Douala)	49.1	28.4	12.7	4.6	5.2	100.0	61.5	13.0	7.5	5.0	12.9	100.0	191
North	36.3	26.5	24.9	11.6	0.6	100.0	49.6	8.6	10.8	10.2	20.8	100.0	594
North-West	38.2	30.7	17.3	11.8	2.0	100.0	47.9	23.9	13.7	8.8	5.7	100.0	340
West	59.1	31.9	7.6	1.2	0.3	100.0	66.1	17.3	12.5	2.7	1.5	100.0	675
South	50.6	22.6	15.1	10.7	1.0	100.0	45.8	18.0	19.3	14.0	2.8	100.0	202
South-West	51.9	39.1	7.0	1.4	0.6	100.0	65.6	23.1	4.7	1.1	5.6	100.0	435
Yaoundé	47.5	36.6	6.9	0.6	8.4	100.0	85.4	7.6	1.5	0.0	5.5	100.0	696
Wealth quintile													
Lowest	35.3	20.2	26.6	16.3	1.6	100.0	25.8	11.9	12.9	24.5	24.9	100.0	1,036
Second	40.8	29.5	17.5	11.0	1.2	100.0	38.2	16.6	16.6	10.8	17.9	100.0	1,099
Middle	51.6	31.3	10.4	4.3	2.4	100.0	57.2	19.2	9.8	6.1	7.6	100.0	1,153
Fourth	55.4	29.7	8.0	0.9	6.0	100.0	75.7	12.6	5.2	1.5	4.9	100.0	1,332
Highest	59.9	27.2	5.8	0.6	6.6	100.0	79.7	11.9	3.0	0.5	5.0	100.0	1,411
Total	49.6	27.7	12.9	5.9	3.8	100.0	57.7	14.3	9.0	7.8	11.2	100.0	6,031

Table 2.12 Environmental conditions in and around the dwelling

Percentage of households with puddles of stagnant or almost stagnant water in the household courtyard or in the vicinity of the household dwelling at the time of the survey, and percentage with bushes or trees in the household courtyard or in the vicinity of the household dwelling at the time of the survey, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage with puddles of stagnant or almost stagnant water in the household courtyard or in the vicinity of the household dwelling	Percentage with bushes or trees in the household courtyard or in the vicinity of the household dwelling	Percentage with puddles of stagnant or almost stagnant water or bushes or trees in the household courtyard or in the vicinity of the household dwelling	Number of households
Residence				
Yaoundé/Douala	44.5	41.5	62.0	1,476
Other urban	28.0	61.3	70.7	1,843
Total urban	35.4	52.5	66.9	3,319
Rural	25.7	86.8	88.1	2,712
Region				
Adamawa	28.5	65.1	68.7	323
Centre (excludes Yaoundé)	14.4	72.6	76.0	475
Douala	52.7	53.7	71.8	780
East	16.3	58.3	61.8	333
Far North	61.0	82.3	92.1	986
Littoral (excludes Douala)	27.8	69.7	75.8	191
North	10.2	91.4	91.9	594
North-West	5.5	76.4	77.3	340
West	19.9	82.0	85.1	675
South	12.5	62.3	68.3	202
South-West	24.2	70.6	75.5	435
Yaoundé	35.4	27.9	51.0	696
Wealth quintile				
Lowest	39.1	94.5	95.5	1,036
Second	25.3	84.1	86.9	1,099
Middle	24.8	71.1	78.5	1,153
Fourth	35.8	55.1	69.5	1,332
Highest	30.0	45.4	59.0	1,411
Total	31.0	67.9	76.4	6,031

Table 2.13 Background characteristics of survey respondents

Percent distribution of women age 15–49 by selected background characteristics, Cameroon MIS 2022

Background characteristic	Number of women		
	Weighted percent	Weighted number	Unweighted number
Age			
15–19	21.6	1,410	1,394
20–24	18.7	1,220	1,250
25–29	17.4	1,134	1,096
30–34	15.5	1,009	1,011
35–39	11.5	754	773
40–44	8.6	559	540
45–49	6.8	446	468
Religion			
Catholic	33.1	2,161	2,245
Protestant	27.1	1,769	1,960
Other Christian	6.1	401	453
Muslim	30.6	1,996	1,674
Animist	1.3	82	74
Other	0.7	44	50
None	1.2	80	76
Ethnic group			
Arabes-Choa/Peulh/Haoussa/ Kanuri	13.5	883	854
Biu-Mandara	16.4	1,071	839
Adamaoua-Oubangui	9.8	640	727
Bantoïde Sud-Ouest	4.3	279	359
Grassfields	9.9	649	739
Bamilike/Bamoun	22.2	1,452	1,247
Côtier/Ngoe/Oroko	4.6	302	343
Beti/Bassa/Mbam	13.1	857	962
Kako/Meka/Pygmé	2.3	152	249
Foreigner/other	3.8	247	213
Residence			
Yaoundé/Douala	24.0	1,566	1,187
Other urban	31.8	2,076	2,568
Total urban	55.8	3,642	3,755
Rural	44.2	2,890	2,777
Region			
Adamawa	5.9	388	580
Centre (excludes Yaoundé)	6.4	418	483
Douala	13.4	876	618
East	5.0	329	448
Far North	18.2	1,186	771
Littoral (excludes Douala)	2.6	170	344
North	11.5	750	778
North-West	4.6	303	381
West	11.6	755	636
South	3.1	200	436
South-West	7.2	467	488
Yaoundé	10.6	690	569
Education			
No education	19.6	1,280	1,188
Primary	25.0	1,634	1,635
1st secondary cycle	24.6	1,604	1,704
2nd secondary cycle	19.2	1,254	1,330
More than secondary	11.6	759	675
Wealth quintile			
Lowest	17.5	1,146	1,070
Second	18.1	1,183	1,275
Middle	18.8	1,230	1,321
Fourth	22.3	1,453	1,508
Highest	23.3	1,520	1,358
Total	100.0	6,532	6,532

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

Table 2.14 Educational attainment

Percent distribution of women age 15–49 by highest level of schooling attended or completed, and median years completed, according to background characteristics, Cameroon MIS 2022

Background characteristic	Highest level of schooling						Total	Median years completed	Number of women
	No education	Some primary	Completed primary[1]	Some secondary	Completed secondary[2]	More than secondary			
Age									
15–24	13.8	15.3	7.0	47.8	6.6	9.5	100.0	8.1	2,631
15–19	12.9	17.8	5.9	54.9	5.3	3.2	100.0	8.0	1,410
20–24	14.8	12.5	8.3	39.5	8.1	16.8	100.0	8.4	1,220
25–29	19.0	13.2	7.8	35.4	7.5	17.1	100.0	8.2	1,134
30–34	24.6	13.8	9.3	30.7	5.8	15.7	100.0	6.1	1,009
35–39	25.3	15.9	13.9	28.4	4.9	11.6	100.0	5.6	754
40–44	25.6	15.8	17.8	29.6	2.8	8.4	100.0	5.5	559
45–49	27.0	18.3	18.0	25.3	6.6	4.9	100.0	5.3	446
Residence									
Yaoundé/Douala	3.1	3.8	5.5	47.3	11.8	28.6	100.0	11.1	1,566
Other urban	16.6	12.3	8.8	43.7	7.3	11.2	100.0	8.3	2,076
Total urban	10.8	8.7	7.4	45.3	9.2	18.7	100.0	9.5	3,642
Rural	30.7	23.1	13.3	28.0	2.2	2.7	100.0	4.6	2,890
Region									
Adamawa	38.1	20.6	9.5	26.1	2.5	3.2	100.0	4.0	388
Centre (excludes Yaoundé)	3.4	13.7	13.4	54.4	6.0	9.1	100.0	8.2	418
Douala	3.4	4.7	6.0	49.7	11.2	25.0	100.0	10.6	876
East	31.0	17.7	6.0	35.7	2.8	7.0	100.0	5.2	329
Far North	47.5	26.0	6.3	18.5	1.1	0.7	100.0	a	1,186
Littoral (excludes Douala)	5.0	7.5	17.7	56.3	7.0	6.5	100.0	8.7	170
North	41.9	30.5	3.8	19.9	1.6	2.3	100.0	1.7	750
North-West	6.4	17.2	27.2	34.2	9.2	5.7	100.0	5.9	303
West	3.8	12.3	15.7	53.6	6.5	8.0	100.0	8.2	755
South	3.3	5.6	11.5	61.9	7.4	10.2	100.0	8.7	200
South-West	6.0	4.7	20.4	37.6	9.0	22.3	100.0	9.5	467
Yaoundé	2.7	2.6	4.9	44.2	12.5	33.1	100.0	11.6	690
Wealth quintile									
Lowest	52.7	29.9	6.0	11.3	0.1	0.0	100.0	a	1,146
Second	29.4	23.3	13.8	30.8	1.8	0.9	100.0	4.7	1,183
Middle	17.4	18.0	14.6	44.4	3.3	2.2	100.0	5.8	1,230
Fourth	5.6	7.8	11.1	51.9	11.2	12.5	100.0	9.1	1,453
Highest	2.2	2.0	5.2	43.7	11.5	35.6	100.0	11.7	1,520
Total	19.6	15.0	10.0	37.6	6.1	11.6	100.0	7.0	6,532

a = omitted because more than 50% of the women completed zero years of education
[1] Completed grade 6 at the primary level
[2] Completed grade 7 at the secondary level

Table 2.15 Literacy

Percent distribution of women age 15–49 by level of schooling attended and level of literacy, and percentage literate, according to background characteristics, Cameroon MIS 2022

Background characteristic	Higher than secondary schooling	No schooling, primary or secondary school: Can read a whole sentence	Can read part of a sentence	Cannot read at all	No card with required language	Blind/ visually impaired	Total	Percentage literate[1]	Number of women
Age									
15–24	9.5	50.2	10.0	30.1	0.0	0.2	100.0	69.7	2,631
15–19	3.2	56.6	10.6	29.5	0.0	0.1	100.0	70.4	1,410
20–24	16.8	42.9	9.2	30.7	0.0	0.3	100.0	68.9	1,220
25–29	17.1	43.1	8.6	31.0	0.0	0.1	100.0	68.9	1,134
30–34	15.7	40.5	8.1	35.4	0.3	0.0	100.0	64.3	1,009
35–39	11.6	42.3	8.2	37.7	0.1	0.1	100.0	62.1	754
40–44	8.4	42.9	11.1	37.0	0.0	0.6	100.0	62.4	559
45–49	4.9	47.5	10.1	34.9	1.4	1.1	100.0	62.5	446
Residence									
Yaoundé/Douala	28.6	59.9	4.6	6.7	0.0	0.3	100.0	93.0	1,566
Other urban	11.2	53.1	8.3	27.1	0.0	0.2	100.0	72.7	2,076
Total urban	18.7	56.0	6.7	18.3	0.0	0.3	100.0	81.4	3,642
Rural	2.7	32.9	12.6	51.2	0.3	0.2	100.0	48.2	2,890
Region									
Adamawa	3.2	33.7	10.6	52.5	0.0	0.0	100.0	47.5	388
Centre (excludes Yaoundé)	9.1	61.9	9.2	19.2	0.0	0.6	100.0	80.2	418
Douala	25.0	62.1	5.3	7.3	0.0	0.3	100.0	92.3	876
East	7.0	41.1	9.3	41.8	0.0	0.7	100.0	57.4	329
Far North	0.7	19.9	13.1	65.1	0.8	0.5	100.0	33.7	1,186
Littoral (excludes Douala)	6.5	69.5	12.3	11.7	0.0	0.0	100.0	88.3	170
North	2.3	19.2	7.1	71.5	0.0	0.0	100.0	28.5	750
North-West	5.7	46.0	14.7	33.7	0.0	0.0	100.0	66.3	303
West	8.0	69.1	7.2	15.7	0.0	0.0	100.0	84.3	755
South	10.2	64.0	14.1	11.3	0.2	0.1	100.0	88.3	200
South-West	22.3	51.5	15.2	10.7	0.0	0.2	100.0	89.0	467
Yaoundé	33.1	57.0	3.7	5.9	0.0	0.3	100.0	93.8	690
Wealth quintile									
Lowest	0.0	11.2	11.9	76.0	0.7	0.1	100.0	23.1	1,146
Second	0.9	34.2	13.3	51.2	0.0	0.5	100.0	48.4	1,183
Middle	2.2	50.9	12.2	34.3	0.0	0.3	100.0	65.3	1,230
Fourth	12.5	66.0	8.7	12.5	0.1	0.3	100.0	87.2	1,453
Highest	35.6	57.3	2.6	4.4	0.0	0.1	100.0	95.5	1,520
Total	11.6	45.8	9.3	32.9	0.2	0.3	100.0	66.7	6,532

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

Table 2.16 Exposure to mass media

Percentage of women age 15–49 who are exposed to specific media on a weekly basis, according to background characteristics, Cameroon MIS 2022

Background characteristic	Reads a newspaper at least once a week	Watches television at least once a week	Listens to the radio at least once a week	Accesses all three media at least once a week	Accesses none of the three media at least once a week	Number of women
Age						
15–19	5.0	46.4	10.0	1.7	50.5	1,410
20–24	6.1	49.1	12.7	1.9	46.9	1,220
25–29	7.2	51.9	14.9	4.2	44.0	1,134
30–34	6.4	46.4	16.1	2.7	48.6	1,009
35–39	6.3	46.6	19.8	2.6	48.3	754
40–44	8.5	41.6	15.6	4.1	54.4	559
45–49	7.6	45.4	18.5	3.2	47.5	446
Residence						
Yaoundé/Douala	13.2	81.7	19.8	5.1	14.7	1,566
Other urban	8.0	56.4	18.2	4.2	39.5	2,076
Total urban	10.2	67.3	18.9	4.6	28.8	3,642
Rural	1.6	22.4	8.9	0.4	72.8	2,890
Region						
Adamawa	4.8	29.6	8.8	1.5	67.1	388
Centre (excludes Yaoundé)	6.8	52.4	18.2	2.0	41.2	418
Douala	12.0	81.4	21.4	5.3	14.7	876
East	1.0	30.5	5.7	0.5	67.6	329
Far North	2.5	10.5	8.0	1.3	85.0	1,186
Littoral (excludes Douala)	5.5	70.8	11.2	1.8	24.4	170
North	3.4	21.4	12.5	2.0	73.3	750
North-West	3.1	38.7	13.7	1.8	55.2	303
West	4.6	57.8	16.5	1.6	38.3	755
South	8.3	60.5	29.7	5.4	32.1	200
South-West	8.3	64.6	16.0	4.5	31.7	467
Yaoundé	14.7	82.2	17.8	4.8	14.7	690
Education						
No education	0.1	9.5	4.0	0.0	87.6	1,280
Primary	1.8	30.5	9.7	0.4	64.9	1,634
1st secondary cycle	5.1	56.5	15.8	2.2	38.5	1,604
2nd secondary cycle	11.9	74.4	21.2	4.8	21.2	1,254
More than secondary	20.7	84.1	28.8	10.2	11.6	759
Wealth quintile						
Lowest	0.3	1.3	3.8	0.0	94.9	1,146
Second	0.6	10.9	9.0	0.2	83.4	1,183
Middle	2.8	43.2	13.1	1.0	51.2	1,230
Fourth	9.7	76.1	17.8	3.8	20.2	1,453
Highest	15.4	86.6	24.8	7.1	10.3	1,520
Total	6.4	47.4	14.5	2.7	48.3	6,532

Table 2.17 Mobile phone ownership and Internet usage

Percentage of women age 15–49 who own any mobile phone, who own a smart phone, who have ever used the Internet, and who have used the Internet in the last 12 months, and among women who have used the Internet in the last 12 months, percent distribution by frequency of Internet use in the last month, according to background characteristics, Cameroon MIS 2022

Background characteristic	Mobile phone ownership:		Ever used the Internet	Used the Internet in the last 12 months	Number of women	Among respondents who have used the Internet in the last 12 months, percentage who, in the last month, used the Internet:					
	Percentage who own any mobile phone	Percentage who own a smart-phone				Almost every day	At least once a week	Less than once a week	Not at all	Total	Number of women
Age											
15–19	47.6	20.8	36.0	32.4	1,410	43.6	30.1	16.7	9.6	100.0	458
20–24	74.5	43.3	52.6	49.4	1,220	66.6	15.7	7.9	9.8	100.0	603
25–29	76.5	46.1	55.0	52.3	1,134	62.7	20.6	9.7	7.0	100.0	592
30–34	76.6	45.8	50.9	47.8	1,009	68.7	17.1	10.0	4.2	100.0	482
35–39	76.5	40.4	44.1	41.7	754	65.9	21.5	6.0	6.6	100.0	314
40–44	74.3	38.5	42.3	40.3	559	59.5	28.2	7.9	4.5	100.0	225
45–49	73.2	33.9	36.2	33.6	446	57.7	30.1	9.8	2.4	100.0	150
Residence											
Yaoundé/Douala	89.2	69.5	84.4	80.6	1,566	68.8	17.7	6.7	6.8	100.0	1,262
Other urban	78.1	44.5	53.4	50.3	2,076	61.0	24.9	9.8	4.3	100.0	1,045
Total urban	82.9	55.2	66.8	63.3	3,642	65.3	20.9	8.1	5.7	100.0	2,307
Rural	52.7	16.1	20.2	17.9	2,890	43.4	25.1	18.2	13.2	100.0	517
Region											
Adamawa	65.8	20.8	26.3	24.1	388	47.2	29.7	19.6	3.5	100.0	94
Centre (excludes Yaoundé)	71.4	34.5	47.8	42.8	418	58.8	19.0	10.0	12.3	100.0	179
Douala	88.5	71.1	84.5	80.0	876	67.2	18.3	7.3	7.2	100.0	701
East	59.7	23.0	33.8	32.1	329	52.8	33.6	12.8	0.8	100.0	106
Far North	46.0	9.9	10.3	9.4	1,186	57.4	26.5	14.9	1.2	100.0	111
Littoral (excludes Douala)	75.2	44.3	53.7	49.5	170	59.1	20.8	11.0	9.1	100.0	84
North	49.0	12.4	14.0	13.1	750	50.2	33.5	10.2	6.1	100.0	98
North-West	75.3	32.8	34.9	31.4	303	52.9	30.1	16.0	1.0	100.0	95
West	82.8	51.6	63.1	57.0	755	49.8	23.5	11.8	14.9	100.0	430
South	70.3	40.8	57.0	52.7	200	45.5	32.8	17.2	4.5	100.0	105
South-West	76.9	49.8	57.1	55.4	467	70.2	18.8	10.4	0.6	100.0	259
Yaoundé	90.1	67.5	84.3	81.4	690	70.9	16.9	6.0	6.3	100.0	561
Education											
No education	41.3	5.2	5.5	4.4	1,280	50.2	29.5	20.3	0.0	100.0	56
Primary	60.5	17.5	20.3	17.8	1,634	39.0	31.0	18.4	11.6	100.0	291
1st secondary cycle	74.1	39.7	51.3	46.2	1,604	47.3	29.3	12.6	10.7	100.0	741
2nd secondary cycle	86.3	63.4	83.4	79.4	1,254	59.5	23.1	9.8	7.5	100.0	996
More than secondary	99.0	91.1	98.0	97.6	759	87.2	8.0	3.3	1.4	100.0	741
Wealth quintile											
Lowest	33.1	1.1	1.7	1.0	1,146	*	*	*	*	100.0	12
Second	52.9	12.3	15.6	13.2	1,183	27.3	25.9	31.8	15.0	100.0	156
Middle	73.9	28.4	37.3	32.2	1,230	38.9	31.1	16.5	13.4	100.0	396
Fourth	85.1	54.4	68.7	65.0	1,453	59.4	23.6	10.0	6.9	100.0	944
Highest	91.4	77.5	89.1	86.6	1,520	73.8	17.0	5.0	4.2	100.0	1,316
Total	69.5	37.9	46.2	43.2	6,532	61.3	21.7	10.0	7.0	100.0	2,824

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

MALARIA PREVENTION 3

Key Findings

- ***Ownership of insecticide-treated mosquito nets (ITNs):*** In Cameroon, over 7 out of 10 households (72%) own at least one ITN. Forty-nine percent of households have at least one ITN for every two people.
- ***Source of ITNs:*** The majority of ITNs (85%) available in households were obtained during mass distribution campaigns; 6% of ITNs were obtained during antenatal care visits and 4% at markets or stores.
- ***Access to ITNs:*** In Cameroon, 64% of households have access to an ITN, including 61% in urban areas and 68% in rural areas.
- ***Use of ITNs:*** Overall, 54% of the household population, 58% of children under age 5, and 63% of pregnant women slept under an ITN the night prior to the interview. In the case of children and pregnant women, the percentages are higher among those residing in households with at least one ITN (69% and 79%, respectively).
- ***Intermittent preventive treatment:*** Over 4 out of 10 women age 15–49 (46%) who had a live birth in the 2 years preceding the survey received at least three doses of sulfadoxine-pyrimethamine (SP)/Fansidar for malaria prevention during pregnancy.

This chapter describes population coverage rates for some of the key malaria control interventions in Cameroon, including availability, source, and use of mosquito nets and prophylactic use of antimalarial drugs among pregnant women.

3.1 OWNERSHIP AND COVERAGE OF INSECTICIDE-TREATED NETS

Ownership of insecticide-treated nets

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

Sample: Households

Full household ITN coverage

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

Sample: Households (with at least one person who stayed in the household the night prior to the survey)

ITNs repel and kill mosquitoes, thus providing protection against mosquito bites and reducing the transmission of malaria parasites. When high coverage and use of ITNs is achieved, ITNs help decrease malaria risk at the individual level as well as at the community level by reducing the vector population.

The distribution and use of ITNs is one of the core interventions for preventing malaria infection in Cameroon.

The 2022 CMIS findings show that more than 7 out of 10 households (72%) own at least one ITN (**Table 3.1**). On average, households have 2.1 ITNs, and 49% of households have at least one ITN for every two people who stayed in the household the night before the interview (**Figure 3.1**).

Trends: The percentage of households that own at least one ITN increased significantly between 2004 and 2018, with little change between 2018 and 2022. Overall, ownership rose from 2% in 2004 to 36% in 2011 and 73% in 2018. In 2022, it stands at 72% (**Figure 3.2**).

Patterns by background characteristics

- ITN ownership differs according to place of residence: 77% of households in rural areas own at least one ITN, as compared with 69% of households in urban areas.
- The percentage of households with at least one ITN is highest in the Far North (97%), North (94%), and Adamawa (91%) regions and lowest in the Centre region (55%) (**Map 3.1**).

Figure 3.1 **Household ownership of ITNs**

Percent distribution of households

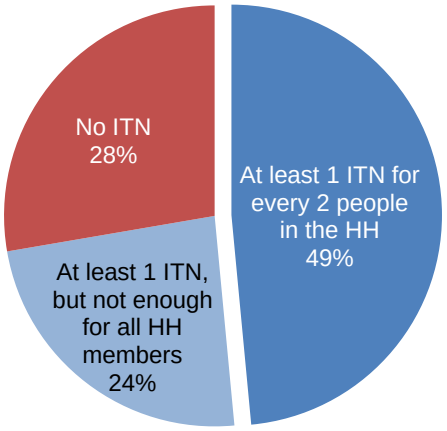
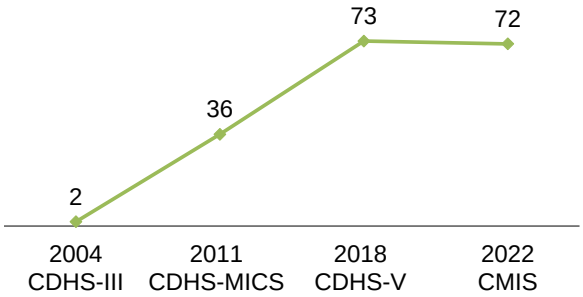


Figure 3.2 **Trends in household ownership of ITNs**

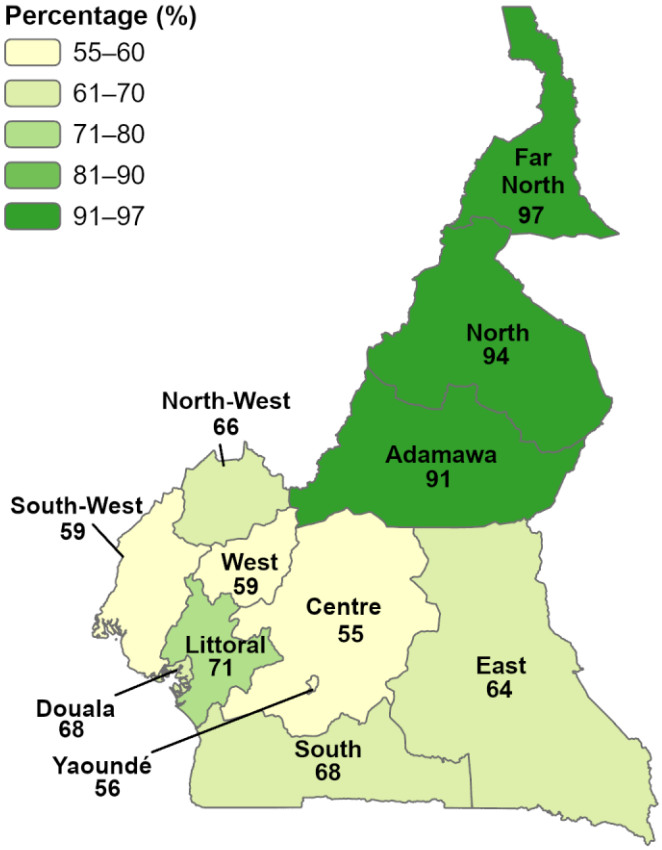
Percentage of households owning at least one insecticide-treated net (ITN)



Note: The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Map 3.1 ITN ownership by region

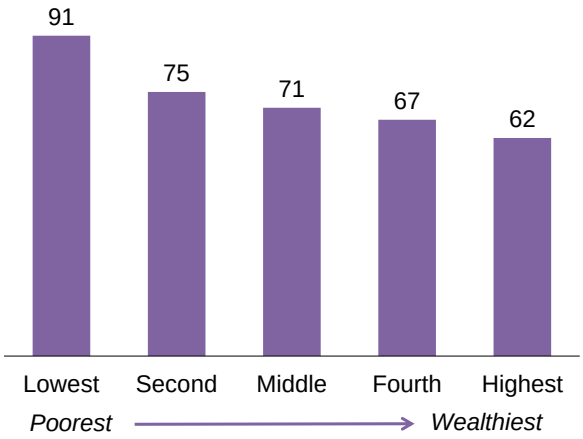
Percentage of households with at least one ITN



- The percentage of households with at least one ITN differs according to household wealth, decreasing from 91% in the lowest wealth quintile to 62% in the highest quintile (**Figure 3.3**).

Figure 3.3 ITN ownership by household wealth

Percentage of households with at least one ITN

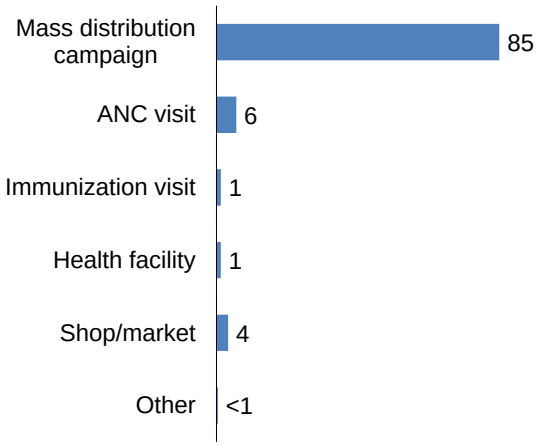


Source of Nets

The vast majority of ITNs available in households were obtained during distribution campaigns (85%). Only 6% of ITNs were obtained during an antenatal care visit and 4% at a market or a store. The percentage of ITNs obtained during vaccination visits was very low (1%) (**Table 3.2** and **Figure 3.4**).

Figure 3.4 **Source of ITNs**

Percent distribution of ITNs in 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 up to two people.

Sample: De facto household population

Use of ITNs

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

Sample: De facto household population

ITNs act as both a physical and a chemical barrier against mosquitoes. By reducing the vector population, ITNs can help reduce malaria risk at the community level as well as among individuals who use them.

Access to an ITN is measured by the proportion of the population that could sleep under an ITN if each ITN in the household were used by up to two people. Comparing ITN access and ITN use indicators can help programs identify if there is a behavioral gap in which available ITNs are not being used. If the difference between these indicators is substantial, the ITN program may need to focus on behavior change and on how to identify the main drivers of or barriers to ITN use to design an appropriate intervention. This type of analysis helps ITN programs determine whether they need to achieve higher ITN coverage, promote ITN use, or both.

In Cameroon, 64% of the household population has access to an ITN, and 54% reported having slept under an ITN the night prior to the interview (**Tables 3.3** and **3.4** and **Figure 3.5**). Thus, there is a gap of 10 percentage points between access to and use of ITNs at the population level (and similar gaps in urban and rural areas). In households with at least one ITN, 69% of the population slept under an ITN the night prior to the interview. The findings also show that 63% of existing ITNs were used by someone the night before the interview (**Table 3.5**). In the case of the 37% of nets not used the night before the interview, the main reason for nonuse was that they were extra nets or being saved for later (75%) (**Table 3.8**).

Trends: Between 2004 and 2022, the percentage of the household population with access to an ITN increased significantly, from 1% to 64%. The percentage of the population that slept under an ITN the night prior to the interview rose from 1% in 2004 to 54% in 2018 and has since remained unchanged (**Figure 3.6**).

Patterns by background characteristics

- Access to ITNs is higher in rural than urban areas (68% versus 61%).
- Access to ITNs is high in Far North (91%), North (86%), and Adamawa (82%). These regions also have the highest percentages of the population using an ITN the night prior to the interview. Access to ITNs is lowest in Centre (41%), Yaoundé (43%), and West (43%) (**Table 3.3** and **Map 3.2**).

Figure 3.5 Access to and use of ITNs by residence

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

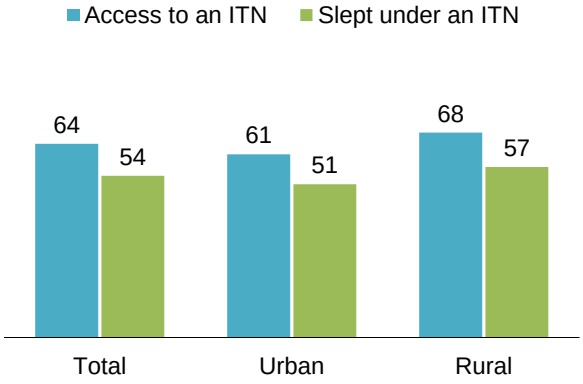
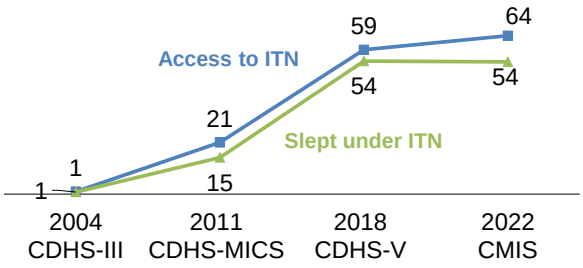


Figure 3.6 Trends in access to and use of ITNs

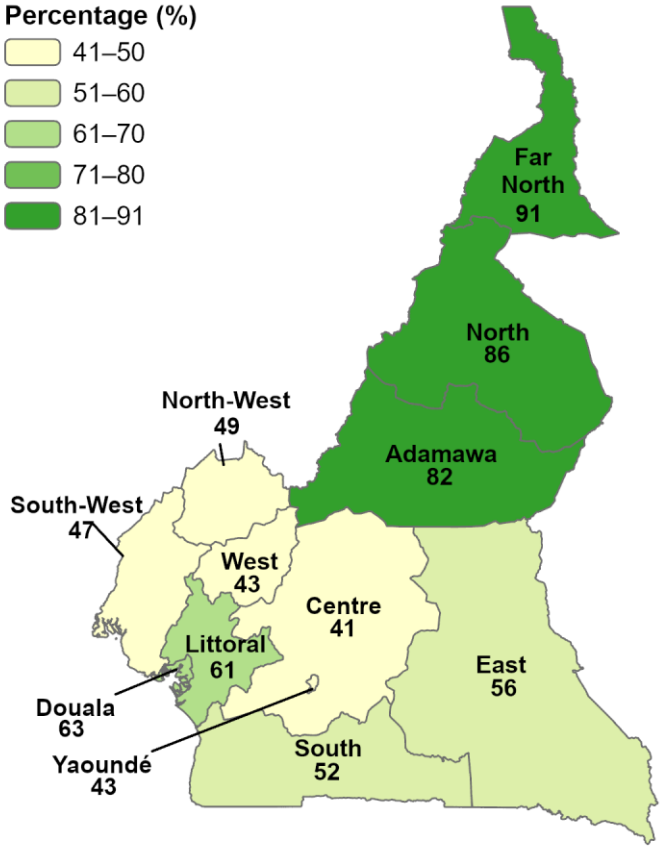
Percentage of the household population with access to an ITN and percentage of the population that slept under an ITN the night before the survey



Note: The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Map 3.2 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 two people



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

Because of their vulnerability, children under age 5 and pregnant women are the priority targets of the Cameroon government's antimalaria interventions. Children under age 5 have not yet developed sufficient immunity against malaria infection. In pregnant women, pregnancy can weaken and, in some cases, suppress immunity, exposing them to a higher risk of severe malaria during pregnancy. This malarial status during pregnancy can lead to development of anemia and to low birth weight (Shulman and Dorman 2003).

A number of measures have been undertaken to reduce the risk of morbidity and mortality, including campaigns to distribute insecticide-treated mosquito nets to households, distribution of antimalarial drugs to children, and provision of free treatment for both simple malaria and severe malaria in children under age 5.

Tables 3.6 and **3.7** show the percentages of children under age 5 and pregnant women age 15–49 who slept under an ITN the night prior to the interview.

Overall, almost three out of five children under age 5 (58%) slept under an ITN the night prior to the interview. In households with at least one ITN, 69% of children slept under an ITN the night before the interview.

Among pregnant women age 15–49, 63% slept under an ITN the night prior to the interview. In households with at least one ITN, 79% of pregnant women slept under an ITN.

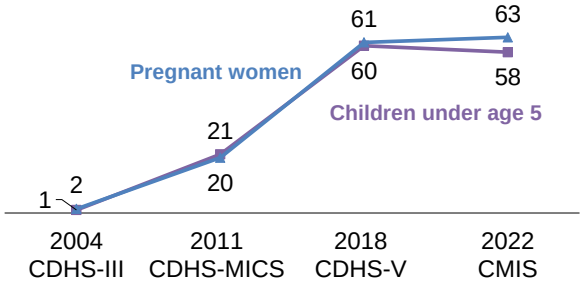
Trends: ITN use among pregnant women age 15–49 has increased over time, from 2% in 2004 and 20% in 2011 to 63% in 2022 (**Figure 3.7**). Among children under age 5, ITN use increased from 1% in 2004 to 60% in 2018 before declining slightly to 58% in 2022.

Patterns by background characteristics

- ITN use is slightly higher in rural areas than in urban areas among both children under age 5 (59% versus 56%) and pregnant women age 15–49 (65% versus 60%) (**Tables 3.6** and **3.7**).
- By region, the percentage of children who slept under an ITN the night prior to the interview is highest in Far North (83%) and North (73%) and lowest in West (33%).

Figure 3.7 **Trends in ITN use by children and pregnant women**

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



Note: The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

- ITN use among children under age 5 decreases with increasing household wealth, from 75% in the lowest wealth quintile to 48% in the highest wealth quintile. Similarly, ITN use among pregnant women decreases from 81% in the lowest wealth quintile to 51% in the highest quintile.

3.4 Antenatal Care Coverage

3.4.1 Skilled Providers

Antenatal care (ANC) from a skilled provider

Pregnancy care received from skilled providers, such as doctors and nurses/midwives

Sample: Women age 15–49 who had a live birth in the 2 years before the survey

The survey collected information to assess antenatal care coverage for the most recent births in the previous 2 years. In Cameroon, 89% of women age 15–49 received antenatal care from skilled health personnel for their most recent birth. Nurses/midwives (52%) are the most common ANC providers; it should also be noted that in 36% of cases, doctors provided antenatal care. Nine percent of women received no antenatal care (**Table 3.9**).

- By region, antenatal care coverage by skilled providers ranges from 74% in North to 99% each in West and South-West.
- The percentage of women receiving antenatal care from a skilled provider increases with increasing household wealth, from 71% in the lowest wealth quintile to 99% in the highest quintile.

3.4.2 Timing and Number of Antenatal Care Visits

The World Health Organization (WHO) recommends at least four antenatal care visits during pregnancy, with the first visit occurring before the third month of pregnancy. In Cameroon, 65% of women had at least four ANC visits during the pregnancy for their most recent live birth (**Table 3.10**). This percentage is higher in urban areas (75%) than in rural areas (56%).

In addition, 41% of women (31% in rural areas and 53% in urban areas) made their first antenatal care visit during the first trimester of pregnancy. The percentage of women who had their first ANC visit during the

first trimester of pregnancy is lowest in the North (19%) and Far North (24%) regions and highest in Yaoundé and Douala (72% each).

Overall, among women receiving antenatal care, the median number of months of pregnancy at the first ANC visit is 4.2. Median months pregnant is 4.6 in rural areas and 3.8 in urban areas and ranges from 3.2 in Douala to 5.1 in Far North.

In the survey, women age 15–49 who had a live birth in the previous 2 years and did not receive ANC during the pregnancy of the most recent live birth were asked to give their main reason for not obtaining the recommended care. The primary reason cited by women for not seeking ANC was lack of financial means (63%) (**Table 3.11**).

3.4.3 Protective Measures against COVID-19 at Health Facilities

Among women age 15–49 with a live birth in the previous 2 years who went to a health facility for antenatal consultations during the pregnancy for the most recent live birth, 76% reported that hand-washing devices were available on the premises of the health facility and 75% reported that health professionals wore a mask to protect against COVID-19. In addition, 22% of women said that staff practiced physical distancing. However, 12% of women reported that no protective measures against COVID-19 were taken (**Table 3.12**).

3.5 Malaria in Pregnancy

Intermittent preventive treatment (IPTp) during pregnancy (IPTp3+)

Percentage of women who took at least three doses of sulfadoxine-pyrimethamine (SP)/Fansidar during their last pregnancy.

Sample: Women age 15–49 with a live birth in the 2 years before the survey

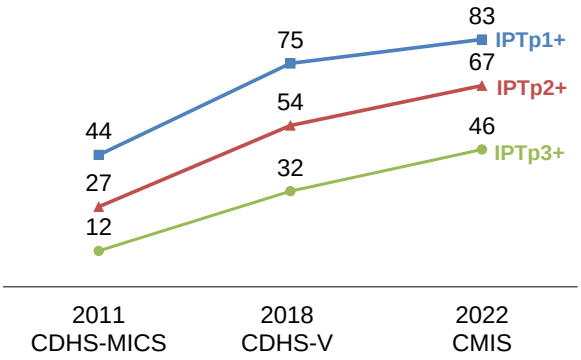
Malaria infection during pregnancy is a major public health problem in Cameroon, with substantial risks for the mother, her fetus, and the neonate. Intermittent preventive treatment of malaria in pregnancy (IPTp) is a full therapeutic course of antimalarial medicine given to pregnant women at routine antenatal care visits for malaria prevention. IPTp helps prevent maternal malaria episodes, maternal and fetal anemia, placental parasitemia, low birth weight, and neonatal mortality.

Eighty-three percent of women who had a live birth in the 2 years before the survey received one or more doses of SP/Fansidar for malaria prevention, while 67% received two or more doses and 46% received three or more doses (**Table 3.13**).

Trends: The percentage of women receiving sulfadoxine-pyrimethamine for malaria prevention during pregnancy increased significantly between 2011 and 2022, regardless of the number of doses. In particular, the percentage of women receiving at least three doses rose from 12% in 2011 to 32% in 2018 and 46% in 2022 (**Figure 3.8**).

Figure 3.8 **Trends in use of IPTp 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



Patterns by background characteristics

- By region, the percentage of women who received at least three doses of SP/Fansidar ranges from 30% in South to 69% each in North-West and South-West.
- The percentage of women who received at least three doses of SP/Fansidar is lowest among those from households in the lowest wealth quintile (37%) and highest among those from households in the highest quintile (56%).

List of Tables

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

Table 3.1 Household ownership of mosquito nets
Table 3.2 Source of mosquito nets
Table 3.3 Access to an insecticide-treated net (ITN)
Table 3.4 Use of mosquito nets by persons in the household
Table 3.5 Use of existing ITNs
Table 3.6 Use of mosquito nets by children
Table 3.7 Use of mosquito nets by pregnant women
Table 3.8 Main reason mosquito net was not used the night before the survey
Table 3.9 Antenatal care
Table 3.10 Number of antenatal care visits and timing of first visit
Table 3.11 Reasons for not seeing anyone for antenatal care
Table 3.12 Protective measures against COVID-19 at the health facility or from health care providers
Table 3.13 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 two persons who stayed in the household last night, according to background characteristics, Cameroon MIS 2022

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 two persons who stayed in the household last night[1]		Number of households with at least one person who stayed in the household last night
	Any mosquito net	Insecticide-treated mosquito net (ITN)[2]	Any mosquito net	Insecticide-treated mosquito net (ITN)[2]		Any mosquito net	Insecticide-treated mosquito net (ITN)[2]	
Residence								
Yaoundé/Douala	69.2	62.5	1.7	1.5	1,475	44.0	40.2	1,466
Other urban	74.9	73.9	2.2	2.2	1,843	49.9	48.9	1,829
Total urban	72.4	68.8	2.0	1.9	3,318	47.3	45.0	3,296
Rural	77.8	76.5	2.5	2.5	2,713	53.7	52.8	2,692
Region								
Adamawa	91.2	91.0	3.0	3.0	323	64.9	64.8	321
Centre (excludes Yaoundé)	59.5	55.1	1.2	1.1	475	32.8	28.3	468
Douala	72.1	68.3	2.0	1.9	779	50.9	48.2	778
East	64.6	64.1	1.6	1.6	330	40.5	40.0	322
Far North	97.3	97.1	4.0	4.0	989	80.4	80.2	986
Littoral (excludes Douala)	72.2	70.6	1.9	1.8	191	47.9	46.3	190
North	94.7	94.4	3.5	3.5	594	76.8	75.7	593
North-West	65.5	65.5	1.3	1.3	339	36.6	36.6	336
West	59.7	58.7	1.5	1.4	676	28.8	28.8	669
South	70.2	67.6	1.6	1.5	202	37.0	36.2	202
South-West	61.6	59.1	1.4	1.3	435	31.8	29.9	435
Yaoundé	65.9	55.9	1.3	1.1	696	36.3	31.1	688
Wealth quintile								
Lowest	91.7	91.1	3.4	3.4	1,042	72.0	71.7	1,035
Second	76.3	75.1	2.4	2.4	1,119	51.7	50.2	1,105
Middle	72.7	70.6	2.0	2.0	1,174	45.6	44.5	1,163
Fourth	70.3	67.2	1.8	1.7	1,351	43.4	40.9	1,342
Highest	66.7	62.0	1.8	1.7	1,346	42.9	40.3	1,342
Total	74.8	72.3	2.2	2.1	6,031	50.2	48.5	5,987

[1] De facto household members
[2] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.2 Source of mosquito nets

Percent distribution of insecticide-treated nets (ITNs), non-ITNs, and all mosquito nets by source of net, according to background characteristics, Cameroon MIS 2022

Background characteristic	Mass distribution campaign[1]	ANC visit	Immunization visit	Public health facility	Private health facility	Pharmacy	Shop/ market	Community health worker	Religious institution	Association/ NGO	Parent/ friend	Other	Don't know/ missing	Total	Number of mosquito nets
							ITNs[2]								
Residence															
Yaoundé/Douala	71.1	6.5	0.4	2.0	1.3	0.7	10.3	0.3	0.0	0.1	6.7	0.5	0.0	100.0	2,272
Other urban	84.8	6.6	1.5	0.4	0.2	0.5	2.7	0.1	0.0	0.1	2.3	0.5	0.2	100.0	3,967
Total urban	79.8	6.6	1.1	1.0	0.6	0.6	5.5	0.1	0.0	0.1	4.0	0.5	0.1	100.0	6,239
Rural	88.9	5.2	1.6	1.1	0.1	0.0	1.7	0.1	0.0	0.0	1.0	0.3	0.0	100.0	6,716
Region															
Adamawa	93.1	2.2	0.0	2.6	0.0	0.0	1.0	0.0	0.0	0.0	0.7	0.3	0.0	100.0	960
Centre (excludes Yaoundé)	60.6	9.3	0.0	1.7	0.8	1.9	15.6	0.5	0.0	0.0	7.0	2.5	0.0	100.0	506
Douala	85.5	4.5	0.2	2.1	0.3	0.2	2.5	0.1	0.0	0.0	4.0	0.6	0.0	100.0	1,499
East	92.2	2.6	0.7	0.3	0.0	0.0	1.8	0.0	0.0	0.0	1.6	0.7	0.2	100.0	518
Far North	94.4	3.6	0.2	0.1	0.0	0.0	1.4	0.1	0.0	0.0	0.3	0.0	0.0	100.0	3,968
Littoral (excludes Douala)	88.4	4.1	0.2	2.0	0.0	0.0	0.7	0.0	0.0	0.0	3.5	0.6	0.5	100.0	353
North	89.1	7.5	0.0	1.5	0.0	0.1	0.5	0.0	0.0	0.0	0.7	0.3	0.2	100.0	2,085
North-West	81.2	13.3	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5	0.0	100.0	438
West	76.7	12.2	1.3	0.9	0.3	0.7	3.2	0.0	0.0	0.2	4.6	0.0	0.1	100.0	966
South	77.8	6.4	0.1	1.5	0.1	0.6	5.8	0.6	0.3	0.2	4.3	2.4	0.0	100.0	313
South-West	69.2	3.9	21.6	0.3	0.9	0.2	0.7	0.2	0.0	0.5	1.6	0.6	0.3	100.0	578
Yaoundé	43.2	10.4	0.7	1.8	3.3	1.9	25.4	0.7	0.0	0.2	12.1	0.4	0.0	100.0	773
Wealth quintile															
Lowest	93.2	3.7	0.3	0.8	0.0	0.0	1.1	0.0	0.0	0.0	0.7	0.2	0.0	100.0	3,510
Second	90.2	5.5	0.5	1.2	0.1	0.0	1.3	0.1	0.0	0.0	0.9	0.1	0.0	100.0	2,652
Middle	84.1	7.6	1.4	0.6	0.1	0.1	2.4	0.2	0.0	0.1	2.7	0.8	0.0	100.0	2,289
Fourth	77.4	7.2	1.6	1.3	0.4	0.7	6.4	0.1	0.0	0.1	4.0	0.7	0.1	100.0	2,255
Highest	71.9	6.8	3.6	1.5	1.3	1.0	7.9	0.1	0.0	0.1	5.1	0.3	0.2	100.0	2,250
Total	84.5	5.9	1.3	1.0	0.3	0.3	3.5	0.1	0.0	0.1	2.4	0.4	0.1	100.0	12,955
							NON-ITNS[2]								
Total	na	na	na	na	0.0	2.6	71.7	0.4	0.0	0.1	13.3	7.6	4.3	100.0	387
							ALL MOSQUITO NETS								
Total	82.1	5.7	1.3	1.0	0.3	0.4	5.5	0.1	0.0	0.1	2.7	0.6	0.2	100.0	13,342

na = not applicable
ANC = antenatal care
NGO = nongovernmental organization
[1] Mass distribution campaign includes the 2015–16, 2019–21, and 2022 campaigns.
[2] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.3 Access to an insecticide-treated net (ITN)

Percentage of the de facto population with access to an ITN in the household, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage of the de facto population with access to an ITN[1,2]	Number of persons
Residence		
Yaoundé/Douala	54.4	6,115
Other urban	65.1	8,889
Total urban	60.7	15,003
Rural	67.9	14,411
Region		
Adamawa	82.3	1,757
Centre (excludes Yaoundé)	40.6	2,026
Douala	63.4	3,374
East	55.7	1,484
Far North	91.0	5,901
Littoral (excludes Douala)	60.9	788
North	86.2	3,422
North-West	49.3	1,444
West	43.2	3,562
South	52.3	935
South-West	46.8	1,982
Yaoundé	43.2	2,740
Wealth quintile		
Lowest	83.7	5,831
Second	67.0	5,884
Middle	58.5	5,831
Fourth	57.5	5,902
Highest	54.7	5,966
Total	64.2	29,414

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

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

Table 3.4 Use of mosquito nets by persons in the household

Percentage of the de facto household population that slept under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN) the night before the survey, and among the de facto household population in households with at least one ITN, percentage that slept under an ITN the night before the survey, according to background characteristics, Cameroon MIS 2022

	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	58.9	57.5	4,890	69.2	4,064
5–14	55.1	53.2	8,467	66.3	6,805
15–34	52.3	50.3	9,322	66.8	7,010
35–49	60.7	58.2	3,701	75.0	2,873
50+	55.2	53.3	3,002	70.8	2,258
Sex					
Male	53.3	51.3	14,326	66.5	11,044
Female	57.7	55.8	15,089	70.3	11,986
Residence					
Yaoundé/Douala	51.9	45.7	6,115	67.5	4,141
Other urban	55.4	54.3	8,889	67.9	7,113
Total urban	54.0	50.8	15,003	67.8	11,254
Rural	57.2	56.5	14,411	69.2	11,777
Region					
Adamawa	63.1	62.7	1,757	65.8	1,672
Centre (excludes Yaoundé)	41.8	38.7	2,026	62.8	1,248
Douala	53.3	49.4	3,374	65.5	2,545
East	39.2	38.8	1,484	54.8	1,049
Far North	82.1	82.0	5,901	83.8	5,775
Littoral (excludes Douala)	53.2	51.6	788	67.6	602
North	70.6	70.1	3,422	73.3	3,271
North-West	39.4	39.4	1,444	57.1	995
West	29.2	28.5	3,562	44.0	2,311
South	52.7	50.8	935	70.5	674
South-West	42.7	41.0	1,982	62.7	1,294
Yaoundé	50.2	41.2	2,740	70.8	1,595
Wealth quintile					
Lowest	74.7	74.1	5,831	79.8	5,420
Second	54.2	53.5	5,884	65.6	4,792
Middle	49.7	48.6	5,831	64.5	4,389
Fourth	50.7	47.7	5,902	64.6	4,360
Highest	48.7	44.5	5,966	65.3	4,069
Total	55.6	53.6	29,414	68.5	23,030

Note: Total includes 34 persons for whom information on age is missing.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.5 Use of existing ITNs

Percentage of insecticide-treated nets (ITNs) that were used by anyone the night before the survey, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage of existing ITNs[1] used last night	Number of ITNs[1]
Residence		
Yaoundé/Douala	63.6	2,272
Other urban	64.3	3,967
Total urban	64.0	6,239
Rural	62.5	6,716
Region		
Adamawa	60.1	960
Centre (excludes Yaoundé)	79.1	506
Douala	55.8	1,499
East	55.7	518
Far North	65.5	3,968
Littoral (excludes Douala)	59.9	353
North	60.2	2,085
North-West	67.4	438
West	49.8	966
South	80.7	313
South-West	67.7	578
Yaoundé	78.9	773
Wealth quintile		
Lowest	63.1	3,510
Second	62.6	2,652
Middle	63.9	2,289
Fourth	63.6	2,255
Highest	63.3	2,250
Total	63.3	12,955

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.6 Use of mosquito nets by children

Percentage of children under age 5 who slept under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN) the night before the survey, 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, Cameroon MIS 2022

	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	65.0	63.5	984	74.0	844
12–23	61.0	59.4	948	72.5	776
24–35	58.1	56.0	894	67.4	742
36–47	57.6	56.4	989	68.0	820
48–59	53.6	52.8	1,076	64.5	881
Sex					
Male	59.4	58.0	2,454	68.8	2,069
Female	58.5	57.0	2,436	69.6	1,995
Residence					
Yaoundé/Douala	57.0	52.0	757	69.1	570
Other urban	58.6	57.5	1,426	68.8	1,192
Total urban	58.0	55.6	2,184	68.9	1,762
Rural	59.7	59.1	2,706	69.5	2,301
Region					
Adamawa	62.6	62.3	337	64.4	326
Centre (excludes Yaoundé)	45.8	42.1	314	64.6	204
Douala	58.4	55.5	411	66.6	343
East	41.8	41.8	280	52.9	221
Far North	83.3	83.3	1,079	84.7	1,061
Littoral (excludes Douala)	61.9	59.7	107	71.3	90
North	73.5	72.7	633	74.1	620
North-West	39.5	39.5	256	56.7	179
West	33.5	33.2	630	47.7	439
South	55.9	53.2	153	72.0	113
South-West	44.0	42.5	343	60.7	240
Yaoundé	55.4	47.8	346	72.7	227
Wealth quintile					
Lowest	76.1	75.4	1,143	80.1	1,076
Second	56.8	56.1	1,101	66.4	929
Middle	52.1	51.4	1,007	66.7	775
Fourth	53.4	51.3	882	63.8	710
Highest	51.7	48.2	757	63.5	573
Total	58.9	57.5	4,890	69.2	4,064

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. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.7 Use of mosquito nets by pregnant women

Percentage of pregnant women age 15–49 who slept under a mosquito net (treated or untreated) and under an insecticide-treated net (ITN) the night before the survey, 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, Cameroon MIS 2022

	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					
Yaoundé/Douala	64.7	56.2	101	80.4	71
Other urban	64.6	62.5	160	79.1	126
Total urban	64.7	60.0	261	79.6	197
Rural	65.4	65.3	279	78.1	234
Region					
Adamawa	(92.7)	(92.7)	35	(94.2)	34
Centre (excludes Yaoundé)	(40.1)	(40.1)	38	*	20
Douala	(63.2)	(58.3)	52	(73.9)	41
East	(60.6)	(57.9)	32	(81.2)	23
Far North	91.4	89.7	108	93.3	104
Littoral (excludes Douala)	*	*	9	*	9
North	79.2	78.1	72	85.6	66
North-West	(56.6)	(56.6)	25	*	19
West	28.5	28.5	81	(39.8)	58
South	(55.2)	(53.8)	19	(83.8)	12
South-West	*	*	20	*	16
Yaoundé	(66.3)	(54.0)	49	(89.3)	30
Education					
No education	80.5	79.2	127	86.1	117
Primary	71.4	71.4	140	81.2	123
1st secondary cycle	51.0	47.6	155	71.6	103
2nd secondary cycle	55.1	53.8	81	72.8	60
More than secondary	(68.2)	(56.9)	39	(76.2)	29
Wealth quintile					
Lowest	81.2	81.2	120	90.2	108
Second	63.6	63.6	106	74.9	90
Middle	61.1	60.2	118	74.7	95
Fourth	56.4	54.0	110	78.0	76
Highest	60.8	51.0	87	71.6	62
Total	65.0	62.8	541	78.8	431

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

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.8 Main reason mosquito net was not used the night before the survey

Among ITNs, non-ITNs, and all mosquito nets, percentage that were not used by anyone the night before the survey, and among mosquito nets that were not used by anyone the night before the survey, percent distribution by the main reason each net was not used, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage of nets not used the night before the survey	Total number of mosquito nets	Main reason each net was not used the night before the survey													Number of mosquito nets not used the night before the survey
			Don't like material/ fabric	Don't like net shape, color, and/or size	Don't like smell	Unable to hang net	Slept outdoors	Usual user didn't sleep in household last night	No mosquitoes/ no malaria	Extra net/ saving for later	Net being washed	Don't like sleeping under net	Net old/ unusable	Other	Total	
ITNs[1]																
Residence																
Yaoundé/ Douala	36.2	2,272	3.6	1.5	2.0	1.9	3.0	5.7	3.3	74.7	1.5	1.1	0.1	1.6	100.0	823
Other urban	35.6	3,967	1.3	1.0	1.3	4.0	1.5	5.7	4.2	73.1	2.8	2.1	1.2	1.7	100.0	1,413
Total urban	35.8	6,239	2.2	1.2	1.6	3.2	2.1	5.7	3.9	73.7	2.3	1.7	0.8	1.7	100.0	2,236
Rural	37.3	6,716	0.5	0.3	1.4	3.1	0.8	7.2	3.8	76.2	4.8	0.9	0.2	0.8	100.0	2,504
Region																
Adamawa	39.7	960	0.8	1.0	0.5	3.1	0.0	3.4	7.4	80.0	0.3	1.2	0.1	2.3	100.0	381
Centre (excludes Yaoundé)	20.6	506	3.0	1.1	0.7	4.2	9.9	22.2	2.4	42.8	5.9	0.7	5.0	2.1	100.0	104
Douala	44.2	1,499	3.9	1.5	1.9	1.6	0.8	2.3	1.6	82.8	1.3	0.8	0.2	1.4	100.0	662
East	43.9	518	0.2	0.6	0.0	13.4	2.3	6.7	1.3	72.1	0.1	0.3	0.0	3.1	100.0	228
Far North	34.5	3,968	0.7	0.4	0.8	0.2	0.1	4.3	0.0	92.7	0.0	0.6	0.1	0.1	100.0	1,368
Littoral (excludes Douala)	40.1	353	1.1	0.3	1.7	3.3	1.6	11.0	3.6	69.7	1.8	3.0	1.0	1.9	100.0	142
North	39.5	2,085	0.9	0.2	2.0	0.9	1.1	8.1	3.5	73.2	6.4	3.0	0.0	0.7	100.0	824
North-West	32.6	438	0.0	2.5	8.0	31.1	1.7	4.6	6.9	34.1	4.8	2.4	2.4	1.5	100.0	143
West	49.9	966	1.5	0.9	0.8	3.1	1.0	6.7	14.2	49.3	18.7	0.0	1.4	2.4	100.0	482
South	19.3	313	0.0	1.6	0.4	2.6	6.5	19.0	4.0	61.4	0.0	3.2	0.0	1.3	100.0	60
South-West	32.3	578	0.0	0.0	3.6	5.9	0.6	9.6	3.8	72.7	0.6	1.8	1.4	0.0	100.0	187
Yaoundé	20.7	773	2.5	1.4	2.5	3.3	12.2	19.8	10.1	40.9	2.3	2.4	0.0	2.5	100.0	160
Wealth quintile																
Lowest	36.8	3,510	0.5	0.3	1.2	1.5	0.6	4.6	0.8	88.3	0.3	1.2	0.2	0.5	100.0	1,291
Second	37.2	2,652	0.6	0.8	1.2	4.7	0.3	7.3	6.3	73.1	4.2	0.6	0.1	0.8	100.0	988
Middle	35.9	2,289	0.9	0.7	0.8	4.1	2.1	6.3	4.5	69.9	7.4	0.6	1.0	1.7	100.0	821
Fourth	36.2	2,255	1.5	1.1	2.2	3.0	2.4	5.3	4.2	70.0	6.4	1.1	0.7	2.0	100.0	816
Highest	36.6	2,250	3.6	1.0	2.3	3.0	2.2	10.0	4.6	66.6	1.8	3.1	0.6	1.4	100.0	824
Total	36.6	12,955	1.3	0.7	1.5	3.1	1.4	6.5	3.8	75.0	3.7	1.3	0.5	1.2	100.0	4,740
NON-ITNS[1]																
Total	19.7	387	0.0	0.0	0.8	3.7	9.4	16.4	15.3	44.7	0.7	5.3	1.0	2.7	100.0	76
ALL MOSQUITO NETS																
Total	36.1	13,342	1.3	0.7	1.5	3.1	1.5	6.7	4.0	74.5	3.6	1.3	0.5	1.2	100.0	4,816

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. The definition of an ITN in DHS surveys conducted in Cameroon prior to 2011 included nets that had been soaked with insecticides within the last 12 months. Since 2011, only long-lasting insecticidal nets (LLIN) are distributed in Cameroon.

Table 3.9 Antenatal care

Percent distribution of women age 15–49 who had a live birth in the 2 years preceding the survey by antenatal care (ANC) provider during the pregnancy for the most recent live birth and percentage receiving antenatal care from a skilled provider for the most recent live birth, according to background characteristics, Cameroon MIS 2022

Background characteristic	Antenatal care provider						No ANC	Total	Percentage receiving antenatal care from a skilled provider[1]	Number of women
	Doctor	Nurse/ midwife	Auxiliary midwife	Community/ village health worker	Traditional birth attendant	Other				
Age at birth										
<20	29.3	60.2	3.6	0.2	0.0	0.0	6.7	100.0	89.5	258
20–34	38.8	49.9	2.4	0.1	0.0	0.1	8.7	100.0	88.7	1,267
35–49	30.8	56.7	1.4	0.0	0.5	0.0	10.5	100.0	87.6	221
Birth order										
1	42.5	50.4	1.3	0.1	0.0	0.1	5.7	100.0	92.9	702
2–3	32.7	53.1	3.3	0.1	0.2	0.0	10.7	100.0	85.7	1,027
4–5	*	*	*	*	*	*	*	100.0	*	17
Residence										
Yaoundé/Douala	58.0	39.5	0.3	0.0	0.0	0.0	2.2	100.0	97.5	300
Other urban	40.1	54.2	1.4	0.0	0.0	0.0	4.3	100.0	94.3	504
Total urban	46.8	48.7	1.0	0.0	0.0	0.0	3.5	100.0	95.5	804
Rural	27.5	55.4	3.7	0.2	0.2	0.1	13.0	100.0	82.9	941
Region										
Adamawa	22.1	64.4	6.2	0.0	0.0	0.0	7.2	100.0	86.6	130
Centre (excludes Yaoundé)	41.6	45.6	1.9	0.0	0.0	0.4	10.5	100.0	87.2	114
Douala	65.7	32.4	0.0	0.0	0.0	0.0	1.9	100.0	98.1	172
East	18.7	65.1	1.1	0.0	1.1	0.0	14.0	100.0	83.8	92
Far North	7.7	73.9	2.5	0.0	0.0	0.0	15.9	100.0	81.6	348
Littoral (excludes Douala)	67.2	30.4	0.0	0.0	0.0	1.2	1.2	100.0	97.6	38
North	8.1	65.9	8.8	0.4	0.0	0.0	16.7	100.0	74.1	252
North-West	56.3	39.2	0.0	0.0	0.0	0.0	4.6	100.0	95.4	83
West	74.5	24.6	0.0	0.0	0.0	0.0	0.9	100.0	99.1	213
South	32.8	56.9	0.0	1.0	0.9	0.0	8.4	100.0	89.7	55
South-West	59.1	39.7	0.0	0.0	0.0	0.0	1.2	100.0	98.8	120
Yaoundé	47.8	48.9	0.7	0.0	0.0	0.0	2.6	100.0	96.7	129
Education										
No education	9.6	64.3	4.1	0.3	0.3	0.0	21.4	100.0	74.0	413
Primary	27.0	59.4	4.7	0.0	0.0	0.2	8.8	100.0	86.3	452
1st secondary cycle	45.1	49.4	0.7	0.1	0.1	0.0	4.6	100.0	94.5	453
2nd secondary cycle	53.9	44.9	0.7	0.0	0.0	0.0	0.5	100.0	98.8	259
More than secondary	77.2	22.8	0.0	0.0	0.0	0.0	0.0	100.0	100.0	168
Wealth quintile										
Lowest	10.1	60.7	6.4	0.3	0.3	0.0	22.2	100.0	70.8	386
Second	27.6	56.6	4.0	0.1	0.1	0.0	11.5	100.0	84.2	390
Middle	37.7	58.1	0.4	0.0	0.0	0.1	3.6	100.0	95.9	347
Fourth	50.8	47.5	0.3	0.0	0.0	0.1	1.2	100.0	98.4	319
Highest	64.2	34.5	0.0	0.0	0.0	0.0	1.3	100.0	98.7	304
Total	36.4	52.3	2.5	0.1	0.1	0.0	8.6	100.0	88.7	1,746

Note: If more than one source of ANC was mentioned, only the provider with the highest qualifications is considered in this tabulation. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
[1] In Cameroon, skilled provider includes a doctor, a nurse, or a midwife.

Table 3.10 Number of antenatal care visits and timing of first visit

Percent distribution of women age 15–49 who had a live birth in the 2 years preceding the survey by number of antenatal care (ANC) visits during the pregnancy for the most recent live birth and by the timing of the first visit, and among women with ANC, median months pregnant at first visit, according to background characteristics, Cameroon MIS 2022

	Number of ANC visits								Number of months pregnant at time of first ANC visit								
Background characteristic	None	1	2–3	4–7	8+	Don't know	Total	4+ ANC visits	No ante-natal care	<4	4–6	7+	Don't know	Total	Num-ber of women	Median months pregnant at first visit (for those with ANC)	Num-ber of women with ANC
Age at birth																	
<20	6.7	3.7	32.9	51.2	5.3	0.2	100.0	56.5	6.7	37.9	46.7	8.7	0.0	100.0	258	4.6	240
20–34	8.7	2.3	21.6	58.2	8.0	1.3	100.0	66.2	8.7	42.1	45.0	3.9	0.3	100.0	1,267	4.2	1,157
35–49	10.5	5.8	18.0	55.9	9.5	0.3	100.0	65.4	10.5	40.7	41.6	7.2	0.0	100.0	221	4.2	197
Birth order																	
1	5.7	2.8	18.1	59.9	12.7	0.7	100.0	72.6	5.7	49.8	39.6	4.9	0.0	100.0	702	3.9	661
2–3	10.7	3.1	25.7	55.0	4.6	1.0	100.0	59.5	10.7	35.4	48.4	5.2	0.4	100.0	1,027	4.5	918
4–5	*	*	*	*	*	*	100.0	*	*	*	*	*	*	100.0	17	*	16
Residence																	
Yaoundé/ Douala	2.2	0.6	7.0	67.2	20.0	3.0	100.0	87.2	2.2	72.2	24.0	1.6	0.0	100.0	300	3.3	294
Other urban	4.3	2.7	25.4	57.6	9.4	0.7	100.0	67.0	4.3	41.7	47.1	6.7	0.2	100.0	504	4.3	482
Total urban	3.5	1.9	18.5	61.2	13.3	1.5	100.0	74.5	3.5	53.1	38.5	4.8	0.1	100.0	804	3.8	776
Rural	13.0	3.8	26.5	53.1	3.1	0.6	100.0	56.2	13.0	31.3	50.2	5.3	0.3	100.0	941	4.6	819
Region																	
Adamawa	7.2	5.3	35.1	48.0	3.8	0.5	100.0	51.8	7.2	32.7	52.5	6.7	1.0	100.0	130	4.7	121
Centre (excludes Yaoundé)	10.5	3.6	22.7	52.1	8.7	2.4	100.0	60.8	10.5	51.7	34.9	1.6	1.4	100.0	114	3.8	102
Douala	1.9	1.1	6.3	65.4	21.5	3.7	100.0	86.9	1.9	72.4	23.9	1.8	0.0	100.0	172	3.2	168
East	14.0	2.5	31.2	47.0	5.4	0.0	100.0	52.4	14.0	31.5	47.1	7.4	0.0	100.0	92	4.8	79
Far North	15.9	6.2	33.1	43.2	1.6	0.0	100.0	44.8	15.9	24.0	49.2	10.9	0.0	100.0	348	5.1	292
Littoral (excludes Douala)	1.2	0.0	15.6	72.9	9.7	0.6	100.0	82.6	1.2	58.1	39.3	1.5	0.0	100.0	38	3.7	37
North	16.7	3.6	22.0	55.0	1.2	1.6	100.0	56.2	16.7	18.6	56.9	7.8	0.0	100.0	252	5.0	210
North-West	4.6	0.0	18.1	64.0	13.2	0.0	100.0	77.3	4.6	38.1	56.3	1.0	0.0	100.0	83	4.4	80
West	0.9	0.2	22.8	68.4	7.7	0.0	100.0	76.1	0.9	51.0	46.4	1.8	0.0	100.0	213	3.9	211
South	8.4	9.4	25.1	49.8	5.3	2.0	100.0	55.1	8.4	59.2	28.5	2.0	2.0	100.0	55	3.6	51
South-West	1.2	0.0	19.0	68.5	11.3	0.0	100.0	79.8	1.2	40.6	56.4	1.9	0.0	100.0	120	4.3	119
Yaoundé	2.6	0.0	7.9	69.5	18.0	2.0	100.0	87.5	2.6	71.9	24.3	1.3	0.0	100.0	129	3.4	125
Education																	
No education	21.4	5.1	29.8	41.2	1.4	1.1	100.0	42.6	21.4	21.5	49.1	7.7	0.3	100.0	413	5.1	325
Primary	8.8	3.3	31.3	52.1	3.6	0.9	100.0	55.7	8.8	32.7	52.0	6.2	0.4	100.0	452	4.6	412
1st secondary cycle	4.6	3.1	20.3	65.1	5.7	1.2	100.0	70.8	4.6	41.2	48.7	5.3	0.2	100.0	453	4.3	432
2nd secondary cycle	0.5	0.6	13.6	69.5	14.4	1.4	100.0	83.9	0.5	61.4	36.3	1.7	0.0	100.0	259	3.6	258
More than secondary	0.0	0.0	3.4	66.3	30.3	0.0	100.0	96.6	0.0	82.7	17.3	0.0	0.0	100.0	168	3.1	168
Wealth quintile																	
Lowest	22.2	2.8	28.0	45.4	0.5	1.1	100.0	46.0	22.2	19.5	50.6	7.1	0.6	100.0	386	5.1	300
Second	11.5	6.3	28.3	51.4	2.1	0.5	100.0	53.4	11.5	33.7	47.9	6.7	0.1	100.0	390	4.5	345
Middle	3.6	2.5	30.0	57.4	5.7	0.8	100.0	63.1	3.6	36.6	55.2	4.6	0.0	100.0	347	4.5	335
Fourth	1.2	1.3	17.7	65.2	13.9	0.7	100.0	79.1	1.2	55.0	38.9	4.6	0.3	100.0	319	3.8	315
Highest	1.3	1.1	6.3	68.9	20.4	2.1	100.0	89.3	1.3	69.7	27.7	1.3	0.0	100.0	304	3.4	300
Total	8.6	2.9	22.8	56.8	7.8	1.0	100.0	64.6	8.6	41.3	44.8	5.1	0.2	100.0	1,746	4.2	1,595

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

Table 3.11 Reasons for not seeing anyone for antenatal care

Percent distribution of women age 15–49 with a live birth in the 2 years preceding the survey who did not attend antenatal care (ANC) during the pregnancy for the most recent live birth by the main reason for not attending ANC, according to residence, Cameroon MIS 2022

Main reason for not seeing anyone for antenatal care	Residence				Total
	Yaoundé/ Douala	Other urban	Total urban	Rural	
Had no money	*	*	(71.4)	60.7	62.7
Facility too far	*	*	(6.6)	9.3	8.8
COVID concerns	*	*	(0.0)	0.0	0.0
Not aware had to attend	*	*	(0.0)	0.0	0.0
Other	*	*	(13.0)	14.8	14.5
Don't know/missing	*	*	(9.0)	15.2	14.1
Total	*	*	(100.0)	100.0	100.0
Number of women who did not attend antenatal care	7	22	28	122	150

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 3.12 Protective measures against COVID-19 at the health facility or from health care providers

Percentage of women age 15–49 with a live birth in the 2 years preceding the survey who attended antenatal care (ANC) during the pregnancy for the most recent live birth by protective measures against COVID-19, according to residence, Cameroon MIS 2022

Protective measures against COVID-19	Residence				Total
	Yaoundé/ Douala	Other urban	Total urban	Rural	
Availability of hand-washing devices/hand sanitizer dispenser	78.3	77.8	78.0	74.1	76.0
Wearing masks/face covers	89.3	81.5	84.5	65.3	74.6
Practicing social/physical distancing	17.3	25.7	22.5	21.0	21.8
Limited/no contact between health care providers and clients	5.3	8.3	7.1	3.7	5.4
No protective measures noted	5.7	9.7	8.2	15.0	11.7
Not aware of COVID-19/do not know of COVID-19	0.4	0.0	0.2	0.2	0.2
Other	2.0	0.7	1.2	0.5	0.8
Number of women who did not attend antenatal care	294	481	775	816	1,590

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

Percentage of women age 15–49 with a live birth in the 2 years preceding the survey who, during the pregnancy that resulted in the last live birth, received one or more doses of SP/Fansidar, received two or more doses of SP/Fansidar, and received three or more doses of SP/Fansidar, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage who received one or more doses of SP/Fansidar	Percentage who received two or more doses of SP/Fansidar	Percentage who received three or more doses of SP/Fansidar	Number of women with a live birth in the 2 years preceding the survey
Birth order				
1	83.6	69.6	49.7	702
2–3	81.9	65.4	43.3	1,027
4–5	*	*	*	17
Residence				
Yaoundé/Douala	89.9	72.3	50.3	300
Other urban	84.6	69.3	44.9	504
Total urban	86.6	70.4	46.9	804
Rural	79.0	64.3	44.9	941
Region				
Adamawa	82.2	68.9	47.7	130
Centre (excludes Yaoundé)	67.1	56.5	32.6	114
Douala	90.4	72.7	55.9	172
East	75.0	57.4	40.0	92
Far North	77.7	62.8	44.7	348
Littoral (excludes Douala)	89.1	70.9	45.0	38
North	72.3	59.3	41.8	252
North-West	96.3	87.1	69.1	83
West	93.8	71.4	37.0	213
South	71.1	52.5	29.9	55
South-West	93.5	82.5	68.5	120
Yaoundé	89.2	71.7	42.7	129
Education				
No education	70.2	58.4	39.0	413
Primary	81.9	68.8	42.2	452
1st secondary cycle	86.0	64.4	47.0	453
2nd secondary cycle	89.4	71.4	49.9	259
More than secondary	94.1	84.9	62.8	168
Wealth quintile				
Lowest	68.9	53.4	37.1	386
Second	80.3	67.0	45.1	390
Middle	85.2	67.5	44.3	347
Fourth	90.2	74.1	48.9	319
Highest	91.4	76.8	56.2	304
Total	82.5	67.1	45.8	1,746

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

MALARIA IN CHILDREN 4

Key Findings

- ***Fever prevalence:*** 31% of children under age 5 had a fever in the 2 weeks preceding the survey.
- ***Care seeking for fever:*** Advice or treatment was sought for 56% of children with a fever.
- ***Source of advice or treatment:*** Among children with a fever for whom advice or treatment was sought, 38% were taken to a public or parastatal medical sector facility, while 32% were taken to a private medical sector facility.
- ***Testing:*** 27% of children with a fever had blood taken from a finger or heel for testing.
- ***Type of antimalarial used:*** Among children with a fever who took antimalarial drugs, 46% received artemisinin-based combination therapy (ACT), the first-line treatment recommended in Cameroon.
- ***Malaria prevalence:*** 26% of children age 6–59 months tested positive for malaria according to a rapid diagnostic test.

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

4.1 CARE SEEKING FOR CHILDREN WITH FEVER

Care seeking for children under age 5 with a 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 care provider, health facility, or pharmacy.

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

Fever is one of the symptoms of malaria but also of other illnesses. Prompt fever management in children (within 24 to 48 hours) is crucial in reducing infant and child mortality.

To assess fever management in children under age 5, mothers of children with a fever in the 2 weeks prior to the interview were asked whether advice or treatment had been sought from a health care provider, health facility, or pharmacy.

The 2022 CMIS findings show that 31% of children under age 5 had a fever in the 2 weeks prior to the interview. Advice or treatment was sought for 56% of children with fever, and care seeking was timely (the same day or the day after fever onset) in 32% of cases (**Table 4.1**).

Among children with fever for whom advice or treatment was sought, 38% were taken to a public or parastatal medical sector facility and 32% to a private medical sector facility. Advice from other private sector sources was sought for 32% of children (**Table 4.4**).

Trends: Between 2018 and 2022, the percentage of children with fever for whom advice or treatment was sought decreased from 61% to 56%.

Patterns by background characteristics

- The percentage of children under age 5 with a fever in the 2 weeks prior to the interview decreases from 40% in the lowest wealth quintile to 23% in the highest wealth quintile.
- By region, the percentages of children with fever are highest in North (44%), Far North (41%), Adamawa (37%), and South (36%).
- The percentage of children with fever for whom advice or treatment was sought is higher in urban areas (60%) than in rural areas (53%).
- The percentage of children for whom advice or treatment was sought increases from 53% among those whose mothers have no education to 66% among those whose mothers have a higher education.
- Timeliness in seeking advice or treatment for children with fever varies according to mother's education. The percentage of children for whom advice or treatment was sought the same day or the following day increases from 28% among those whose mothers have no education to 44% among those whose mothers have a higher education.

4.2 Initial Actions and Response to Fever in Children

The survey included questions designed to assess parents' initial behavior and response to fever in children. Mothers of children under age 5 with a fever in the 2 weeks preceding the survey were asked whether they thought that the fever was a sign that the child might have contracted either COVID-19 or malaria, whether they did anything or treated the child without first seeking advice from a health professional, and, if so, what treatment or medication was given and its source.

For 7% of children with a fever in the 2 weeks preceding the survey, mothers thought that the fever might be a symptom of COVID-19, while for 81%, they thought that the fever might be a symptom of malaria (**Table 4.2**).

Approximately two out of three children (65%) with a fever received treatment or medication without advice being sought from a health care professional. Forty-two percent of these children were given medication or treatment purchased from a pharmacy or a health care facility, 25% were given medication or treatment purchased from a store or a market, 12% were given medication found at home, and 10% were given medication purchased from an itinerant drug seller. Use of other sources was marginal.

Patterns by background characteristics

- The percentage of children whose fever was thought to be a symptom of COVID-19 is 5% in urban areas and 8% in rural areas.
- The percentage of children whose fever was thought to be a symptom of COVID-19 is higher among those whose mothers have no education (9%) than among those whose mothers are in other education categories.
- The percentage of children whose fever was thought to be a symptom of malaria is 79% in urban areas and 83% in rural areas.
- The percentage of children with fever who were given medication or treatment without advice being sought from a health care professional increases from a low of 61% among those age 12–23 months to a high of 67% among those age 36–47 months.

- Treatment of fever without medical advice from a health care professional is more common in urban areas (69%) than in rural areas (62%).

- In urban areas, 53% of children whose fever was treated without medical advice received medication from a pharmacy or health facility, while 19% received medication from a store or market. In rural areas, these percentages were 33% and 29%, respectively. In rural areas, stores or markets, street vendors, and community health workers are the most frequent sources of medicines (29%, 12%, and 9%, respectively), whereas in urban areas they represent 19%, 9%, and 4%, respectively.

4.3 Main Reason for Not Seeking Advice or Treatment from a Health Care Facility for Fever in Children

In the survey, mothers who did not seek advice or treatment from a health care facility for their child's fever were asked why they did not do so. The two main reasons reported by women for not seeking treatment were that they lacked financial means (47%) and that they believed the child's condition was not serious (44%) (**Table 4.5**). Four percent of women cited distance to the health facility. Fear of COVID-19 contagion was seldom cited by respondents.

Patterns by background characteristics

- In rural areas, lack of financial means is the main reason given for not seeking care in a health facility (50%).

- In urban areas, the most common reason is the belief that the child's condition was not serious (48%); in Yaoundé/Douala, 56% of women cited this reason.

4.4 Protective Measures against COVID-19 in Health Care Facilities where Advice or Treatment Was Sought for Children with Fever

Mothers/carers who had sought advice or treatment at a health facility for children under age 5 with a fever in the 2 weeks preceding the survey were asked questions regarding protective measures against COVID-19 implemented in the facility.

Women most frequently reported that hand-washing or disinfecting devices were available (61%) and that health professionals wore a mask (55%). Physical distancing was reported by 17% of women. However, 22% of women did not notice any preventive measures in the facility (**Table 4.6**).

In rural areas, the most commonly reported protective measures are availability of hand-washing or disinfection devices (61%) and wearing of masks or face shields (48%). These two measures are also most frequently reported in urban areas, and 74% of women in Douala/Yaoundé cite wearing a mask or face shield.

4.5 Diagnostic Testing of Children with Fever

Diagnosis of malaria in children under age 5 with a 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

Malaria is diagnosed both clinically and biologically. Clinical diagnosis is based on fever or fever history. The fever may be acknowledged by parents (even if the child's temperature is normal at the time of the medical examination) or confirmed by a temperature reading (greater than or equal to 37.5°C axillary or 38°C rectal). In line with WHO recommendations, national malaria management guidelines recommend

that a parasitological confirmation test (microscopy or rapid diagnostic test [RDT]) be carried out in the event of fever before treatment is started. In all cases of fever, malaria is assumed and a confirmation test (microscopy or RDT) must be carried out.

In the 2022 CMIS, women with children under age 5 who had a fever in the 2 weeks prior to the interview were asked whether blood had been pricked from the child's finger or heel for malaria testing.

Overall, 27% of children with fever had a blood sample taken from their finger or heel for testing (27% in urban areas and 26% in rural areas). In addition, almost a third (32%) of children with fever were diagnosed with malaria by a health care provider (**Table 4.1**).

Among children diagnosed with malaria by a health care provider, the diagnosis was made before a blood test for 58% and after a blood test for 11%. Twenty-nine percent of children were diagnosed with malaria by a health care provider without a blood test (**Table 4.3**).

Diagnosis of malaria by a health care provider varies according to the child's gender, from 30% in boys to 35% in girls (**Table 4.1**).

4.6 Average Health Care Expenses for Children with Fever

The survey included questions to assess average health expenses incurred for a child's illness. The questions on expenses covered the costs of medication, diagnosis or consultation, transportation to the health care facility, and other miscellaneous expenses. The findings are presented in **Table 4.7** for children under age 5 with a fever in the 2 weeks prior to the survey for whom advice or treatment was sought in a public or private sector facility.

Overall, treatment was free of charge for 5% of children. Among children for whom expenses were incurred, the average cost was 9,107 CFA francs. Costs were highest for medicines (5,837 CFA francs on average) and diagnostic tests (1,487 CFA francs).

Patterns by background characteristics

- The percentage of children for whom treatment and services were free of charge is twice as high in rural areas as in urban areas (7% versus 3%).
- Average health care expenses for children with fever vary depending on place of residence. Average expenses were 7,052 CFA francs in rural areas and 10,202 CFA francs in urban areas, including an average of 12,622 CFA francs in Douala/Yaoundé.
- The average cost of transportation for children with a fever to and from the household is much higher in rural areas (534 CFA francs) than in urban areas (376 CFA francs).
- Average expenses are approximately twice as high for households in the highest wealth quintile (10,527 CFA francs) as for households in the lowest quintile (5,418 CFA francs).

4.7 Use of Recommended Antimalarials

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

Percentage of children under age 5 with a fever in the 2 weeks prior to the survey who took artemisinin-based combination therapy (ACT).

Sample: Children under age 5 with a fever in the 2 weeks prior to the survey who took any antimalarial drug

Treatment of uncomplicated malaria is based on the use of a combination of two antimalarial drugs, one of which is an artemisinin derivative (ACT). In Cameroon, the first-line ACT is artesunate/amodiaquine (AS/AQ), artemether-lumefantrine (AL), and dihydroartemisinic plus piperaquine phosphate (DHAP) and the second-line ACT is artesunate-pyronaridine (AS-PY). This treatment policy, adopted in 2006, was revised in 2019 to take into account new WHO recommendations.

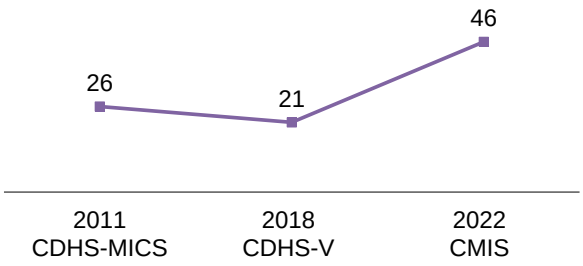
Free treatment for children under age 5 was instituted by the Minister of Public Health in 2011 for simple malaria and 2014 for severe malaria, particularly in public health facilities. The free treatment is based on AS/AQ or AL in eight out of 10 regions (excluding North and Far North). Artemether-lumefantrine has been distributed free of charge to children under age 5 in the North and Far North regions since 2016, thanks to the implementation of seasonal malaria chemoprevention.

According to the 2022 CMIS findings, 46% of children under age 5 with a fever in the 2 weeks prior to the interview who took antimalarials were treated with ACT. The other antimalarial drugs most frequently used were artemether injection (24%) and quinine (16% tablets and 5% injectables) (**Table 4.8**).

Trends: The percentage of children under age 5 with fever who were treated with ACT increased from 26% in 2011 to 46% in 2022 (**Figure 4.1**).

Figure 4.1 **Trends in ACT use by children under age 5**

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



Patterns by background characteristics

- The percentage of children under age 5 who were treated with ACT is higher in urban areas (54%) than in rural areas (40%).
- Sixty-seven percent of children from households in the highest wealth quintile were treated with ACT, as compared with 33% from households in the lowest quintile.
- The percentage of children treated with ACT increases from 35% among those whose mothers have no education to 56% among those whose mothers have an upper secondary education.
- The use of artemether injection is relatively higher in rural areas (26%) than in urban areas (20%).

4.8 Prevalence of Low Hemoglobin Levels in Children

Prevalence of low hemoglobin in children

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

Sample: Children age 6–59 months

Anemia, defined as a low level of hemoglobin in the blood, decreases the amount of oxygen reaching the tissues and organs of the body and reduces their capacity to function. Anemia in children is associated with impaired motor and cognitive development. The main causes of anemia in children are malaria and inadequate intake of iron, folate, vitamin B12, and other nutrients. Other causes of anemia include intestinal worms, hemoglobinopathy, and sickle cell disease. Although anemia is not specific to malaria, trends in anemia prevalence can reflect malaria morbidity, and they respond to changes in the coverage of malaria interventions (Korenromp et al. 2004).

Hemoglobin testing was carried out for 97% of eligible children age 6–59 months (**Table 4.9**), and 6% of these children had a hemoglobin level below 8 g/dl (**Table 4.10**).

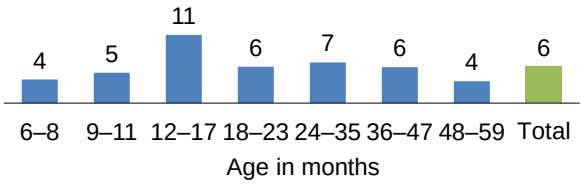
Trends: The percentage of children with a hemoglobin level below 8 g/dl has remained low over time (7% in 2018 and 6% in 2022).

Patterns by background characteristics

- The percentage of children with low hemoglobin levels varies with age, from a high of 11% among those age 12–17 months to a low of 4% among those age 6–8 months and 48–59 months (**Figure 4.2**).
- The percentage of children with a hemoglobin level below 8 g/dl ranges from 1% in the highest wealth quintile to 10% in the lowest quintile.
- The percentage of children with a hemoglobin level below 8 g/dl is higher in rural areas (8%) than in urban areas (3%).
- By region, the percentage of children with low hemoglobin levels is highest in South-West (11%) and Far North (10%) and lowest in North-West, West, and Douala (1%).

Figure 4.2 Low hemoglobin levels in children by age

Percentage of children age 6–59 months with hemoglobin lower than 8.0 g/dl



4.9 PREVALENCE OF MALARIA IN CHILDREN

Prevalence of malaria 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

Malaria is endemic in Cameroon. Those living in areas of high malaria transmission acquire partial immunity to the disease over time. However, many people, including children, can have malaria parasites in their blood without showing any signs of infection. Such asymptomatic infections not only contribute to further transmission of malaria but also increase the risk of anemia and other associated morbidity among infected individuals.

The season of the year in which data are collected is an important factor influencing malaria prevalence estimates. The country can be subdivided into three main zones, each comparatively influenced by climate modalities: the equatorial zone, the Sudano-Sahelian zone, and the Western Highlands zone. The risk of malaria transmission in Cameroon is generally highest during the main rainy season, from July to October (or November), in almost all regions.

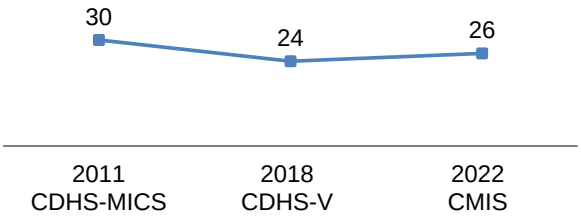
Children age 6–59 months were eligible for malaria testing using a rapid diagnostic test (RDT; specifically the ParaHIT P.f); 97% of eligible children were tested (**Table 4.9**). For more details on malaria screening procedures, please refer to Chapter 1.

The national prevalence of malaria among children age 6–59 months is 26% (**Table 4.11**).

Trends: Malaria parasite prevalence among children age 6–59 months decreased between 2011 and 2018, from 30% to 24%, and has since remained virtually stable. It should be noted that the 2022 CMIS was carried out from August 22 to December 1, 2022, during the main rainy season, a period of high malaria transmission. The 2018 CDHS-V was carried out from June to November 2018 for most regions (**Figure 4.3**).

Figure 4.3 Trends in malaria prevalence among children

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

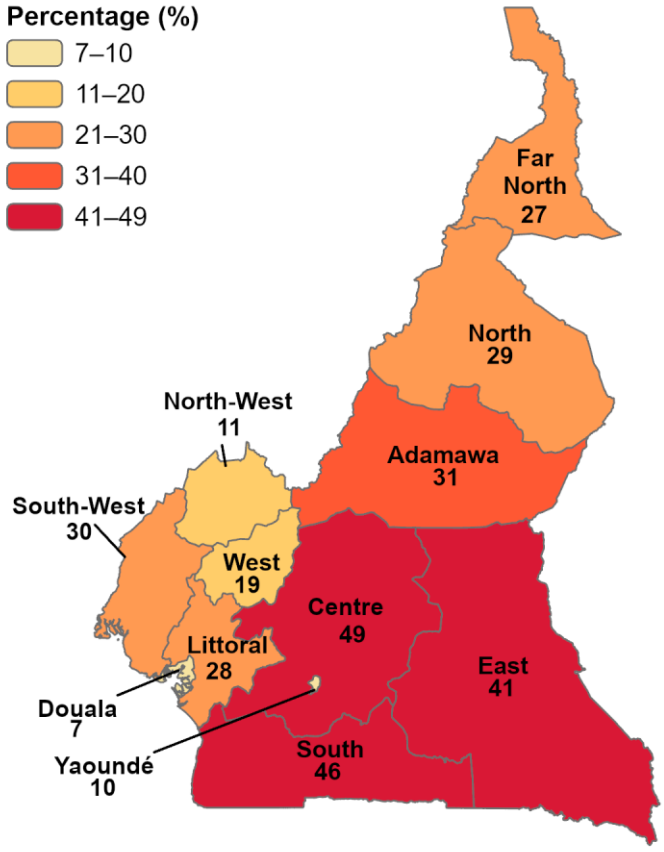


Patterns by background characteristics

- By region, the percentages of children testing positive for malaria are highest in Centre (49%), South (46%), and East (41%) and lowest in Douala (7%), Yaoundé (10%), and West (19%) (**Map 4.1**).

Map 4.1 Malaria prevalence in children by region

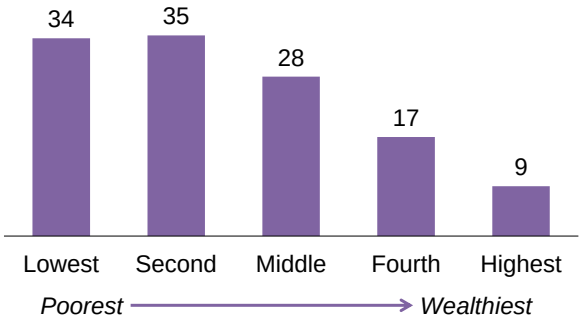
Percentage of children age 6–59 months with positive RDT malaria test results



- The percentage of children testing positive for malaria increases with age, from 10% among those age 6–8 months to 32% among those age 48–59 months.
- Malaria prevalence among children is twice as high in rural areas (34%) as in urban areas (16%).
- Malaria prevalence among children decreases from 34% in the lowest wealth quintile to 9% in the highest quintile (**Figure 4.4**).

Figure 4.4 **Prevalence of malaria in children by household wealth**

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



LIST OF TABLES

For detailed information on malaria in children, see the following tables:

- **Table 4.1 Prevalence, diagnosis, and prompt treatment of children with fever**
- **Table 4.2 Initial actions and response to fever in children**
- **Table 4.3 Timing of blood tests for malaria**
- **Table 4.4 Source of advice or treatment for children with fever**
- **Table 4.5 Main reason for not seeking care in a health facility for children with fever**
- **Table 4.6 Protective measures against COVID-19 at the health care facility or by health care professionals**
- **Table 4.7 Average expenditure (in CFA francs) for care of children with fever**
- **Table 4.8 Type of antimalarial drugs used**
- **Table 4.9 Coverage of testing for anemia and malaria in children**
- **Table 4.10 Hemoglobin <8.0 g/dl in children**
- **Table 4.11 Prevalence of malaria in children**

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

Percentage of children under age 5 with a fever in the 2 weeks preceding the survey, and among children under age 5 with fever, percentage for whom advice or treatment was sought, percentage for whom advice or treatment was sought the same or next day following the onset of fever, percentage who had blood taken from a finger or heel for testing, and percentage who were diagnosed with malaria by a health care provider, according to background characteristics, Cameroon MIS 2022

	Children under age 5		Children under age 5 with fever				
Background characteristic	Percentage with a fever in the 2 weeks preceding the survey	Number of children	Percentage for whom advice or treatment was sought[1]	Percentage for whom advice or treatment was sought the same or next day	Percentage who had blood taken from a finger or heel for testing	Percentage who were diagnosed with malaria by a health care provider	Number of children
Age in months							
<12	28.1	930	50.6	31.2	21.4	21.3	262
12–23	39.7	837	65.7	35.0	34.5	40.4	332
24–35	33.0	806	49.1	28.9	24.1	28.1	266
36–47	28.4	854	56.6	32.1	25.7	34.4	243
48–59	27.2	885	53.3	31.0	24.6	36.1	241
Sex							
Male	32.4	2,203	55.1	30.0	24.0	30.3	714
Female	29.8	2,109	56.2	33.9	29.3	34.8	629
Residence							
Yaoundé/Douala	20.7	711	54.4	31.0	22.2	23.7	147
Other urban	31.0	1,292	62.3	33.3	29.3	37.5	401
Total urban	27.4	2,002	60.2	32.7	27.4	33.8	549
Rural	34.4	2,309	52.5	31.2	25.9	31.4	795
Region							
Adamawa	37.4	303	42.0	26.2	22.3	25.9	113
Centre (excludes Yaoundé)	25.0	284	43.0	18.9	12.5	32.0	71
Douala	23.2	413	57.3	33.7	23.9	24.3	96
East	34.1	247	43.6	12.9	20.1	26.6	84
Far North	40.7	959	56.1	28.9	34.0	40.6	391
Littoral (excludes Douala)	22.5	95	(52.9)	(32.1)	(27.8)	(23.3)	21
North	44.3	565	62.5	45.1	22.5	33.9	250
North-West	13.3	217	(57.0)	(22.6)	(44.9)	(30.4)	29
West	21.9	543	59.8	34.1	20.2	28.0	119
South	36.1	126	48.6	28.6	20.6	24.8	45
South-West	27.6	263	77.3	48.6	42.7	33.5	73
Yaoundé	17.4	297	(49.1)	(25.8)	(19.1)	(22.6)	52
Mother's education							
No education	39.9	1,104	52.5	28.1	25.1	37.4	440
Primary	33.5	1,211	56.2	33.9	26.1	32.2	406
1st secondary cycle	25.5	1,056	52.6	28.8	25.7	26.5	269
2nd secondary cycle	24.3	569	63.1	35.7	30.6	34.2	138
More than secondary	24.5	371	65.8	43.7	31.4	23.9	91
Wealth quintile							
Lowest	39.5	999	48.6	29.2	22.2	28.5	395
Second	35.5	979	57.3	28.2	26.6	37.4	347
Middle	29.0	843	63.1	40.1	33.9	36.5	244
Fourth	24.6	780	51.6	30.0	24.0	25.4	192
Highest	23.3	710	62.6	35.6	28.6	33.4	165
Total	31.2	4,311	55.6	31.8	26.5	32.4	1,343

Note: Figures in parentheses are based on 25–49 unweighted cases.
[1] Includes advice or treatment from the following sources: public medical sector, private medical sector, community health worker, shop/market, and itinerant drug seller. Excludes advice or treatment from a traditional practitioner.

Table 4.2 Initial actions and response to child fever

Among children under age 5 with a fever in the 2 weeks preceding the survey, percentage whose mothers feared that fever might be a sign of COVID-19, percentage whose mothers feared that fever could be a sign of malaria, and percentage who were given medication or treatment without advice being sought from a health professional, and among children who were given medication or treatment without advice being sought from a health professional, percentage by each source of medication or treatment, according to background characteristics, Cameroon MIS 2022

Background Characteristic	Percentage whose mothers feared that fever might be a sign of COVID-19	Percentage whose mothers feared that fever could be a sign of malaria	Percentage who were given medication or treatment without advice being sought from a health professional	Number of children under age 5 with fever	Among children who were given medication or treatment without advice being sought from a health professional, percentage by each source of medication or treatment:							Number of children who were given medication or treatment without advice being sought from a health professional
					Respondent's home	Home-made	Pharmacy/ health facility	Community health worker	Shop/ market	Traditional practitioner	Itinerant drug seller	
Age in months												
<12	7.3	69.9	63.0	262	13.6	2.3	50.5	4.7	20.3	0.7	7.8	165
12–23	5.3	75.7	61.4	332	16.1	1.1	44.8	8.4	15.8	2.1	11.8	204
24–35	8.7	85.1	66.9	266	8.9	2.9	40.1	6.7	30.5	2.8	8.1	178
36–47	6.9	90.0	67.3	243	10.9	2.8	41.5	5.0	26.9	1.5	11.4	163
48–59	5.5	88.7	65.4	241	11.4	3.1	32.0	9.1	31.2	0.7	12.4	157
Sex												
Male	5.9	80.5	61.8	714	12.7	2.2	39.8	6.6	28.4	1.8	8.5	441
Female	7.7	82.3	67.8	629	11.9	2.6	44.2	7.1	20.6	1.4	12.2	426
Residence												
Yaoundé/ Douala	0.7	79.5	56.7	147	15.0	0.0	65.9	0.0	15.1	0.9	3.1	84
Other urban	7.2	78.8	73.0	401	10.7	2.9	49.7	5.5	19.5	1.6	10.1	293
Total urban	5.4	79.0	68.6	549	11.7	2.2	53.3	4.3	18.5	1.4	8.6	376
Rural	7.6	83.0	61.8	795	12.8	2.5	33.3	8.8	29.2	1.7	11.7	491
Region												
Adamawa	7.8	80.3	57.3	113	13.4	3.3	32.6	7.3	41.9	0.0	1.5	65
Centre (excludes Yaoundé)	8.5	85.3	70.2	71	34.0	9.2	33.6	1.5	8.5	3.1	10.0	50
Douala	0.0	77.2	53.1	96	(14.6)	(0.0)	(65.2)	(0.0)	(16.9)	(0.0)	(3.3)	51
East	10.4	83.6	66.8	84	13.3	3.7	35.3	8.7	21.4	4.0	13.7	56
Far North	8.6	83.4	68.5	391	10.3	0.2	37.2	8.4	33.9	2.6	7.3	268
Littoral (excludes Douala)	(1.2)	(67.2)	(64.3)	21	(18.3)	(2.2)	(53.3)	(2.2)	(14.5)	(3.5)	(5.9)	14
North	6.3	81.2	65.4	250	6.2	4.1	28.1	12.1	25.1	0.0	24.5	163
North-West	(2.3)	(86.8)	(56.0)	29	*	*	*	*	*	*	*	16
West	7.5	75.9	58.4	119	12.0	1.3	47.5	3.5	29.1	0.0	6.5	69
South	5.5	85.3	82.1	45	20.8	1.4	45.7	2.2	7.7	4.9	17.2	37
South-West	5.6	78.5	62.6	73	7.2	0.8	82.7	4.4	0.0	0.0	4.8	45
Yaoundé	(2.0)	(83.7)	(63.5)	52	(15.6)	(0.0)	(66.9)	(0.0)	(12.4)	(2.3)	(2.8)	33
Mother's education												
No education	8.9	84.9	56.8	440	8.8	1.1	29.0	11.2	36.1	1.9	11.9	250
Primary	7.2	81.7	72.7	406	12.9	4.1	35.9	6.9	26.5	1.0	12.8	295
1st secondary cycle	3.0	77.3	68.2	269	17.8	1.4	49.4	3.0	20.1	2.4	5.9	183
2nd secondary cycle	6.9	74.9	68.7	138	10.6	3.3	62.7	4.8	6.3	2.1	10.3	95
More than secondary	4.1	84.8	49.2	91	(9.2)	(0.0)	(80.3)	(2.2)	(4.5)	(0.0)	(3.8)	45
Wealth quintile												
Lowest	9.1	80.4	57.0	395	8.0	4.2	31.7	7.1	28.9	3.2	16.9	225
Second	4.1	85.7	71.0	347	14.1	2.1	31.0	10.1	32.8	0.4	9.6	247
Middle	11.7	79.8	65.6	244	17.0	2.3	39.0	7.7	24.4	1.3	8.3	160
Fourth	1.0	79.9	72.5	192	13.0	0.9	60.4	3.1	11.8	2.3	8.6	139
Highest	5.7	78.5	58.6	165	9.1	1.1	72.5	1.8	12.0	0.7	2.9	97
Total	6.7	81.4	64.6	1,343	12.3	2.4	42.0	6.8	24.6	1.6	10.3	868

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 Timing of blood tests for malaria

Among children under age 5 who had a fever in the 2 weeks preceding the survey and who were diagnosed with malaria by a health care provider, percent distribution according to whether the provider said that the child had malaria before or after conducting a blood test or without conducting a blood test, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage of children who were told they had malaria: After blood test	Before blood test	No blood test performed	Don't know	Total	Number of children under age 5 with fever diagnosed with malaria by a health care provider
Age in months						
<12	12.5	52.1	33.3	2.0	100.0	56
12–23	12.2	61.2	25.1	1.6	100.0	134
24–35	11.2	56.3	24.6	7.9	100.0	75
36–47	12.2	60.3	27.6	0.0	100.0	83
48–59	7.7	54.7	37.6	0.0	100.0	87
Sex						
Male	7.7	57.9	32.2	2.2	100.0	216
Female	14.6	57.5	25.9	2.0	100.0	219
Residence						
Yaoundé/Douala	(0.0)	(73.8)	(26.2)	(0.0)	(100.0)	35
Other urban	17.1	49.7	29.4	3.9	100.0	150
Total urban	13.8	54.2	28.8	3.1	100.0	185
Rural	9.2	60.3	29.2	1.3	100.0	250
Region						
Adamawa	(13.1)	(65.1)	(21.8)	(0.0)	(100.0)	29
Centre (excludes Yaoundé)	(11.9)	(36.8)	(44.5)	(6.9)	(100.0)	23
Douala	*	*	*	*	*	23
East	(13.4)	(44.0)	(42.6)	(0.0)	(100.0)	22
Far North	5.4	66.4	23.8	4.5	100.0	158
Littoral (excludes Douala)	*	*	*	*	*	5
North	2.5	60.9	35.9	0.7	100.0	85
North-West	*	*	*	*	*	9
West	(9.5)	(56.1)	(34.4)	(0.0)	(100.0)	33
South	(0.0)	(73.8)	(26.2)	(0.0)	(100.0)	11
South-West	(76.3)	(0.0)	(23.7)	(0.0)	(100.0)	24
Yaoundé	*	*	*	*	*	12
Mother's education						
No education	8.9	56.7	30.1	4.3	100.0	165
Primary	6.5	61.9	30.0	1.6	100.0	131
1st secondary cycle	6.7	61.5	31.8	0.0	100.0	71
2nd secondary cycle	22.4	52.6	24.9	0.0	100.0	47
More than secondary	*	*	*	*	*	22
Wealth quintile						
Lowest	8.2	62.9	26.0	3.0	100.0	112
Second	6.1	54.2	36.4	3.3	100.0	130
Middle	9.8	62.1	28.1	0.0	100.0	89
Fourth	15.9	55.0	25.8	3.2	100.0	49
Highest	27.1	50.8	22.1	0.0	100.0	55
Total	11.2	57.7	29.0	2.1	100.0	435

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 4.4 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, Cameroon MIS 2022

	Percentage for whom advice or treatment was sought from each source:	
Source	Among children with fever	Among children with fever for whom advice or treatment was sought
Public sector	**21.2**	**37.5**
Government hospital	7.0	12.4
Subdivisional medical center/integrated health center/dispensary	14.0	24.8
Other public sector	0.5	0.9
Private sector	**18.3**	**32.4**
Private confessional hospital/clinic	3.1	5.6
Private lay/NGO hospital/clinic	1.3	2.2
Private confessional health center/dispensary	3.0	5.2
Private lay/NGO health center	1.6	2.8
Medical cabinet/clinic	1.1	1.9
Pharmacy	7.4	13.1
Other private medical sector	1.1	1.9
Other private sector	**17.9**	**31.6**
Community health worker	5.1	9.1
Shop/market	6.6	11.7
Traditional practitioner	1.3	2.3
Itinerant drug seller	5.4	9.6
Other	1.4	2.5
Number of children	1,343	758

Note: Advice or treatment for children with fever may have been sought from more than one source.
NGO = nongovernmental organization

Table 4.5 Main reason for not seeking care in a health facility for children with fever

Distribution of children under age 5 with a fever in the 2 weeks preceding the interview for whom advice or treatment in a health facility was not sought by main reason for not seeking advice or treatment, according to residence, Cameroon MIS 2022

Main reason for not seeking care in a health facility for children with fever	Residence				Total
	Yaoundé/ Douala	Other urban	Total urban	Rural	
Had no money	31.7	45.9	42.1	49.5	46.9
Facility too far	2.1	0.7	1.1	6.0	4.2
COVID concerns	0.0	0.4	0.3	0.0	0.1
Did not think health condition was serious	55.9	45.1	48.0	41.2	43.6
Other	8.7	4.2	5.4	1.4	2.8
Missing	1.6	3.7	3.1	1.9	2.3
Total	100.0	100.0	100.0	100.0	100.0
Number of children with fever for whom advice or treatment was not sought	79	218	297	536	833

Table 4.6 Protective measures against COVID-19 at the health care facility or by health care professionals

Percentage of children under age 5 with a fever in the 2 weeks preceding the survey for whom advice or treatment was sought at a health facility by protective measures against COVID-19, according to residence, Cameroon MIS 2022

Protective measures against COVID-19	Residence				Total
	Yaoundé/ Douala	Other urban	Total urban	Rural	
Availability of hand-washing devices/hand sanitizer dispenser	50.7	64.3	60.6	61.2	60.9
Wearing masks/face covers	73.8	58.6	62.8	48.0	55.3
Practicing social/physical distancing	11.6	18.5	16.6	17.8	17.2
Limited/no contact between health care providers and clients	4.1	9.8	8.2	4.1	6.1
No protective measures noted	12.5	25.0	21.6	23.3	22.4
Not aware of COVID-19/do not know of COVID-19	0.0	0.0	0.0	0.4	0.2
Other	1.6	0.6	0.9	4.4	2.6
Number of children	69	183	252	258	510

Table 4.7 Average expenditure (in CFA francs) for care of children with fever

Among children under age 5 with a fever in the 2 weeks preceding the survey for whom advice or treatment was sought in a public or private medical sector facility, percentage for whom specific care or services were obtained free of charge and average expenditure (in CFA francs) for specific care or services received, according to background characteristics, Cameroon MIS 2022

Background characteristic	Transport from household to the health facility and back			Consultation fees			Diagnostic test cost			Drug cost			Other cost			Total			Number of children with fever for whom advice or treatment was sought
	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	
Age in months																			
<6	(33.3)	(672)	(448)	(62.5)	(1,094)	(410)	(65.5)	(3,315)	(1,144)	(10.4)	(3,914)	(3,506)	(84.7)	(1,684)	(258)	(3.3)	(5,966)	(5,767)	27
6–11	43.4	887	502	53.4	1,007	469	59.3	2,720	784	10.3	6,921	6,205	85.2	1,209	179	6.3	8,115	7,557	68
12–23	31.3	733	502	39.7	1,757	1,059	45.0	3,311	1,820	5.7	6,921	6,525	85.1	1,882	280	4.2	9,621	9,122	153
24–35	45.2	576	296	29.7	1,558	1,040	43.1	2,355	1,259	8.5	5,065	4,434	82.0	3,916	568	6.7	8,145	7,597	91
36–47	41.2	845	467	36.8	1,344	803	33.9	2,556	1,586	3.6	6,496	6,037	86.2	2,565	266	6.2	9,765	9,159	87
48–59	48.2	1,000	501	59.2	2,820	1,117	46.2	3,241	1,706	4.6	6,747	6,351	87.7	2,820	274	3.6	10,319	9,949	84
Sex																			
Male	44.1	843	452	46.3	1,403	724	51.3	2,845	1,325	5.0	6,044	5,601	86.1	3,093	365	5.2	8,313	7,831	256
Female	35.7	727	461	41.0	1,879	1,095	40.5	2,982	1,652	8.1	6,659	6,075	84.3	1,784	261	5.1	9,904	9,389	254
Residence																			
Yaoundé/ Douala	31.7	707	462	42.8	2,223	1,209	56.4	4,688	1,909	0.0	9,229	8,967	89.6	1,256	74	2.8	12,991	12,622	69
Other urban	33.7	527	344	46.1	2,003	1,061	43.6	3,595	1,992	5.8	6,869	6,387	81.3	2,257	400	3.2	9,692	9,295	183
Total urban	33.2	576	376	45.2	2,064	1,101	47.1	3,831	1,969	4.2	7,533	7,090	83.6	2,145	311	3.1	10,599	10,202	252
Rural	46.6	1,031	534	42.2	1,277	721	44.8	2,015	1,018	8.8	5,137	4,616	86.7	2,641	315	7.0	7,599	7,052	258
Mother's education																			
No education	47.7	1,235	638	46.3	775	412	43.9	1,742	959	8.0	5,196	4,749	91.8	2,902	221	6.9	7,496	6,980	129
Primary	43.7	657	353	42.2	1,353	747	39.5	2,995	1,738	10.2	6,712	5,858	87.9	2,009	191	8.1	8,184	7,404	136
1st secondary cycle	38.4	643	385	41.5	3,098	1,759	50.2	3,450	1,659	2.9	6,462	6,169	76.8	2,592	532	3.0	10,831	10,504	116
2nd secondary cycle	34.9	731	475	43.9	1,455	814	54.8	3,226	1,456	6.8	6,649	6,151	87.4	3,502	436	2.3	9,547	9,332	74
More than secondary	(22.5)	(551)	(410)	(45.3)	(1,530)	(810)	(45.8)	(4,758)	(1,792)	(1.4)	(7,464)	(7,226)	(77.1)	(970)	(204)	(1.8)	(10,634)	(10,442)	55

Continued…

Table 4.7—*Continued*

Background characteristic	Transport from household to the health facility and back			Consultation fees			Diagnostic test cost			Drug cost			Other cost			Total			Number of children with fever for whom advice or treatment was sought
	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	Percentage free of charge	Average spending if not free[1]	Average spending for all	
Wealth quintile																			
Lowest	54.9	1,221	510	44.7	654	339	42.9	1,527	821	15.7	4,457	3,605	91.7	2,893	143	14.1	6,306	5,418	102
Second	51.1	1,131	553	44.4	1,101	613	41.7	1,975	1,142	3.6	5,374	5,181	85.0	2,804	420	2.8	7,820	7,574	118
Middle	35.5	541	345	40.2	2,220	1,313	45.4	1,930	904	2.9	4,879	4,706	79.4	1,528	305	1.8	7,713	7,573	112
Fourth	25.3	640	462	45.4	2,504	1,306	48.5	6,194	3,040	6.6	11,037	9,987	83.9	2,894	354	5.6	14,256	13,185	83
Highest	28.2	578	404	44.3	1,946	1,064	53.0	4,275	1,964	4.6	7,164	6,759	86.3	2,645	336	1.8	10,721	10,527	95
Total	40.0	780	456	43.7	1,655	908	45.9	2,919	1,487	6.5	6,347	5,837	85.2	2,372	313	5.1	9,107	8,606	510

Note: Figures in parentheses are based on 25–49 unweighted cases.
[1] Not including cases in which children received services or care free of charge

Table 4.8 Type 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, Cameroon MIS 2022

Background characteristic	Percentage of children who took:										Number of children with fever who took an anti-malarial drug
	Any ACT	SP/ Fansidar	Chloro-quine	Amodia-quine	Quinine pills	Quinine injection	Artesu-nate rectal	Artesu-nate injection	Artemether injection	Other anti-malarial	
Age in months											
<6	*	*	*	*	*	*	*	*	*	*	12
6–11	36.7	2.1	3.8	1.3	19.9	0.0	0.0	5.5	23.3	16.0	71
12–23	42.9	1.3	1.0	6.4	11.2	5.0	3.6	9.0	24.8	5.1	139
24–35	58.6	5.9	2.3	2.6	18.7	2.9	1.6	1.9	15.5	8.3	117
36–47	43.4	2.4	0.9	4.2	14.0	8.2	2.0	7.4	31.4	2.8	112
48–59	42.7	1.4	0.0	1.7	17.6	8.9	1.7	5.8	23.9	6.4	115
Sex											
Male	44.8	2.3	0.9	4.2	10.7	6.8	2.4	6.0	25.1	9.3	286
Female	46.6	2.9	2.2	2.6	20.6	3.7	1.6	5.9	21.9	5.2	280
Residence											
Yaoundé/Douala	(67.3)	(0.0)	(0.0)	(3.2)	(2.5)	(7.8)	(2.1)	(3.7)	(13.1)	(31.5)	50
Other urban	50.4	2.4	2.7	3.8	13.2	4.7	3.2	8.1	21.6	5.0	188
Total urban	54.0	1.9	2.1	3.7	11.0	5.3	3.0	7.2	19.8	10.6	238
Rural	39.7	3.0	1.0	3.2	19.0	5.2	1.3	5.0	26.2	4.8	328
Region											
Adamawa	24.8	0.0	1.5	2.3	18.0	1.2	4.2	13.4	36.7	1.8	46
Centre (excludes Yaoundé)	(49.3)	(0.0)	(1.7)	(0.0)	(15.4)	(3.7)	(5.4)	(8.9)	(19.5)	(5.3)	29
Douala	*	*	*	*	*	*	*	*	*	*	36
East	(15.1)	(0.0)	(6.5)	(1.0)	(20.6)	(6.5)	(5.4)	(8.0)	(34.8)	(27.7)	31
Far North	42.6	4.0	0.9	4.4	20.5	9.1	0.6	8.6	19.0	4.1	154
Littoral (excludes Douala)	*	*	*	*	*	*	*	*	*	*	10
North	38.0	6.3	1.6	6.7	12.0	0.0	0.0	3.4	40.0	2.7	131
North-West	*	*	*	*	*	*	*	*	*	*	15
West	(80.1)	(0.0)	(1.8)	(0.0)	(8.6)	(2.1)	(1.8)	(2.5)	(10.4)	(0.0)	43
South	20.8	0.0	1.8	4.2	41.8	7.1	6.0	4.4	23.2	8.6	22
South-West	(66.6)	(0.0)	(1.8)	(0.0)	(12.9)	(12.8)	(5.1)	(2.3)	(2.0)	(0.5)	34
Yaoundé	*	*	*	*	*	*	*	*	*	*	14
Mother's education											
No education	34.8	6.4	2.4	4.2	21.2	5.7	0.0	7.1	31.0	2.4	189
Primary	45.6	0.9	1.6	4.4	11.9	3.7	3.5	5.2	24.0	3.4	165
1st secondary cycle	49.3	0.0	0.0	2.4	18.5	6.7	1.6	3.8	24.2	13.5	102
2nd secondary cycle	56.0	1.4	1.2	1.5	11.0	9.4	3.8	7.5	11.3	7.0	64
More than secondary	(68.6)	(0.0)	(1.3)	(2.1)	(6.6)	(0.0)	(2.8)	(6.4)	(6.7)	(27.1)	47
Wealth quintile											
Lowest	33.1	5.2	0.7	5.1	16.5	2.0	0.0	7.3	32.8	3.0	145
Second	41.7	2.4	2.3	3.5	21.8	6.9	1.0	3.2	25.6	6.5	176
Middle	55.5	1.7	3.0	1.1	14.9	4.5	1.2	3.8	22.7	3.7	93
Fourth	44.8	0.4	0.0	5.4	10.5	8.0	7.6	10.9	19.3	11.4	73
Highest	67.2	1.1	0.8	1.2	5.8	5.9	3.5	7.3	6.6	17.2	79
Total	45.7	2.6	1.5	3.4	15.6	5.3	2.0	6.0	23.5	7.3	566

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

Table 4.9 Coverage of testing for anemia and malaria in children

Percentage of eligible children age 6–59 months who were tested for anemia and for malaria, according to background characteristics (unweighted), Cameroon MIS 2022

Background characteristic	Percentage tested for: Anemia	Malaria with RDT	Number of children
Age in months			
6–8	96.4	96.4	253
9–11	97.4	97.4	230
12–17	97.4	97.4	501
18–23	96.5	96.2	398
24–35	96.2	96.2	892
36–47	97.0	97.0	969
48–59	97.0	96.9	1,047
Sex			
Male	96.8	96.8	2,169
Female	96.9	96.8	2,121
Mother's interview status			
Interviewed	97.3	97.2	3,610
Not interviewed	94.4	94.4	680
Residence			
Yaoundé/Douala	88.7	88.7	515
Other urban	97.1	97.1	1,501
Total urban	94.9	94.9	2,016
Rural	98.5	98.4	2,274
Region			
Adamawa	97.6	97.6	419
Centre (excludes Yaoundé)	96.4	96.4	330
Douala	85.4	85.4	254
East	99.5	99.5	369
Far North	96.2	96.0	599
Littoral (excludes Douala)	96.8	96.8	190
North	99.7	99.5	575
North-West	98.1	98.1	259
West	97.3	97.3	443
South	99.0	99.0	298
South-West	99.0	99.0	293
Yaoundé	92.0	92.0	261
Mother's education[1]			
No education	97.7	97.5	895
Primary	98.4	98.4	1,058
1st secondary cycle	97.9	97.8	905
2nd secondary cycle	96.4	96.4	501
More than secondary	90.8	90.8	251
Wealth quintile			
Lowest	97.8	97.6	943
Second	98.8	98.8	1,046
Middle	97.4	97.4	895
Fourth	96.8	96.8	810
Highest	91.1	91.1	596
Total	96.8	96.8	4,290

RDT = rapid diagnostic test (ParaHIT P.f)
[1] Excludes children whose mothers were not interviewed.

Table 4.10 Hemoglobin <8.0 g/dl in children

Percentage of children age 6–59 months with hemoglobin lower than 8.0 g/dl, by background characteristics, Cameroon MIS 2022

Background characteristic	Hemoglobin <8.0 g/dl	Number of children
Age in months		
6–8	3.9	258
9–11	5.0	244
12–17	11.2	515
18–23	6.0	392
24–35	6.7	848
36–47	5.9	953
48–59	3.6	1,027
Sex		
Male	6.4	2,118
Female	5.5	2,119
Mother's interview status		
Interviewed	6.0	3,574
Not interviewed	5.7	664
Residence		
Yaoundé/Douala	1.5	580
Other urban	4.3	1,235
Total urban	3.4	1,815
Rural	7.9	2,422
Region		
Adamawa	8.2	284
Centre (excludes Yaoundé)	5.0	275
Douala	1.4	305
East	3.4	257
Far North	9.7	926
Littoral (excludes Douala)	5.5	92
North	8.9	568
North-West	1.0	224
West	1.3	576
South	5.4	141
South-West	11.0	315
Yaoundé	1.5	275
Mother's education		
No education	10.9	971
Primary	7.0	1,047
1st secondary cycle	2.9	855
2nd secondary cycle	2.3	420
More than secondary	0.4	281
Wealth quintile		
Lowest	10.3	996
Second	6.6	999
Middle	5.0	891
Fourth	4.3	742
Highest	1.3	609
Total	6.0	4,237

Note: Table is based on children who stayed in the household the night before the interview and who were tested for anemia. Hemoglobin levels are adjusted for altitude using CDC formulas (CDC 1998). Hemoglobin is measured in grams per deciliter (g/dl) using the HemoCue 201+ device.

[1] Includes children whose mothers are deceased

[2] For women who are not interviewed, information is taken from the Household Questionnaire. Excludes children whose mothers are not listed in the Household Questionnaire.

Table 4.11 Prevalence of malaria in children

Percentage of children age 6–59 months classified in a rapid diagnostic test (RDT) as having malaria, according to background characteristics, Cameroon MIS 2022

Background characteristic	RDT positive	Number of children
Age in months		
6–8	10.3	258
9–11	12.2	244
12–17	22.0	515
18–23	22.4	392
24–35	28.5	848
36–47	29.2	953
48–59	32.3	1,026
Sex		
Male	26.6	2,118
Female	25.7	2,118
Mother's interview status		
Interviewed	24.9	3,572
Not interviewed	33.0	664
Residence		
Yaoundé/Douala	8.4	580
Other urban	19.5	1,235
Total urban	15.9	1,815
Rural	33.8	2,421
Region		
Adamawa	31.2	284
Centre (excludes Yaoundé)	49.1	275
Douala	6.9	305
East	41.3	257
Far North	27.0	926
Littoral (excludes Douala)	27.6	92
North	28.5	567
North-West	11.0	224
West	18.8	576
South	45.7	141
South-West	30.4	315
Yaoundé	10.1	275
Mother's education		
No education	31.2	971
Primary	30.1	1,047
1st secondary cycle	23.6	854
2nd secondary cycle	12.9	420
More than secondary	5.5	281
Wealth quintile		
Lowest	34.1	995
Second	34.6	999
Middle	27.5	891
Fourth	17.1	742
Highest	8.6	609
Total	26.2	4,236

Note: The ParaHIT P.f was used to test for malaria.
[1] Includes children whose mothers are deceased
[2] For women who are not interviewed, information on education is taken from the Household Questionnaire. Excludes children whose mothers are not listed in the Household Questionnaire.

MALARIA BELIEFS AND EXPOSURE TO MALARIA MESSAGES

5

Key findings

Exposure to malaria messages:

- Approximately half of women age 15–49 (55%) recall seeing or hearing a message regarding malaria in the last 6 months.
- The most common sources of information mentioned by women who recalled seeing or hearing a malaria message in the last 6 months were a community health worker (31%), a parent/relative (30%), television (27%), and a health provider (23%).
- About half (46%) of women are aware of the presence of a community health worker in their village or neighborhood.

Knowledge of how to avoid malaria:

- Approximately 9 out of 10 women (92%) said that there are ways to avoid malaria. Among them, 93% mentioned sleeping under a mosquito net or insecticide-treated net.
- 48% of women believe that keeping the area around the house clean is the best way to avoid getting malaria. About one in seven women (14%) think that stagnant water should be covered to avoid getting malaria.

Community norms:

- 68% of women believe that most people in their community have adopted specific malaria-related behaviors.
- Approximately 4 out of 10 women (43%) agree that people in their community generally take their children to a health care provider on the same day or the day after the onset of fever.
- 66% of women agree that fever may be a symptom of malaria as well as a symptom of COVID-19.

Beliefs regarding COVID-19:

- Approximately half of women (51%) believe that people in their community are afraid to go to health facilities if they have a fever or possibly malaria for fear of being contaminated or diagnosed as infected with COVID-19.

This chapter assesses the extent to which malaria communication messages reach women age 15–49 and the channels through which women receive these messages. The chapter also provides data on women's basic knowledge of malaria treatment and prevention, their perceptions of susceptibility to malaria and its severity, and their confidence in changing behavior (that is, self-efficacy). In addition, it includes information on women's beliefs about COVID-19 and its impact on use of health care facilities.

5.1 EXPOSURE TO MALARIA MESSAGES

Exposure to communication messages

Percentage of women age 15–49 who recalled seeing or hearing a message regarding malaria through various sources in the last 6 months.

Sample: Women age 15–49

Social behavior change is key to the uptake of malaria control interventions. The target of Strategy 4.3.1 (Communication for Development), Pillar 4 of the National Strategic Plan for Malaria Control in Cameroon 2019–2023 is for 80% of the population, including specific populations, to use malaria control services and products by 2023. The strategy includes several interventions such as institutional communication, mass media campaigns, communication on the availability and use of malaria control services and products, and communications on compliance with malaria control guidelines targeting health care providers.

To assess coverage of malaria communication programs, women age 15–49 were asked whether they recalled having seen or heard messages about malaria prevention in the 6 months prior to the survey. Women who recalled having seen or heard messages were then asked about the source of the messages.

Overall, approximately one in two women age 15–49 (55%) recalled having seen or heard a message regarding malaria in the last 6 months (**Table 5.1.1**).

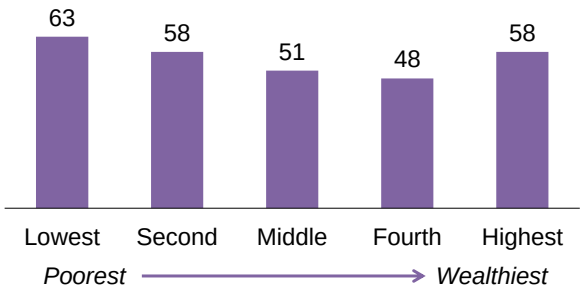
Among these women, 31% mentioned a community health worker as the main source of information, 30% mentioned a parent/relative, and 27% mentioned television. Health providers play an important role, with almost one in four women (23%) mentioning providers as their source of information. Eleven percent of women reported SMS as their source of information about malaria.

Patterns by background characteristics

- The percentage of women who recalled seeing or hearing a message regarding malaria in the last 6 months increases with age, from 48% among those age 15–19 to 62% among those age 45–49.
- The percentage of women who recalled having seen or heard a message regarding malaria is higher among those in the lowest wealth quintile (63%) than among those in the other wealth quintiles (48%–58%) (**Figure 5.1**).
- Women's level of exposure to messages about malaria varies with their level of education: it is very low among women with a 1st secondary cycle education (48%) and higher among women with no education (62%) and those with a higher education (67%). Regional variations are noteworthy, with the percentage of women who recalled seeing or hearing a message regarding malaria in the last 6 months ranging from 40% in Centre and South-West to 71% in Far North (**Map 5.1**).

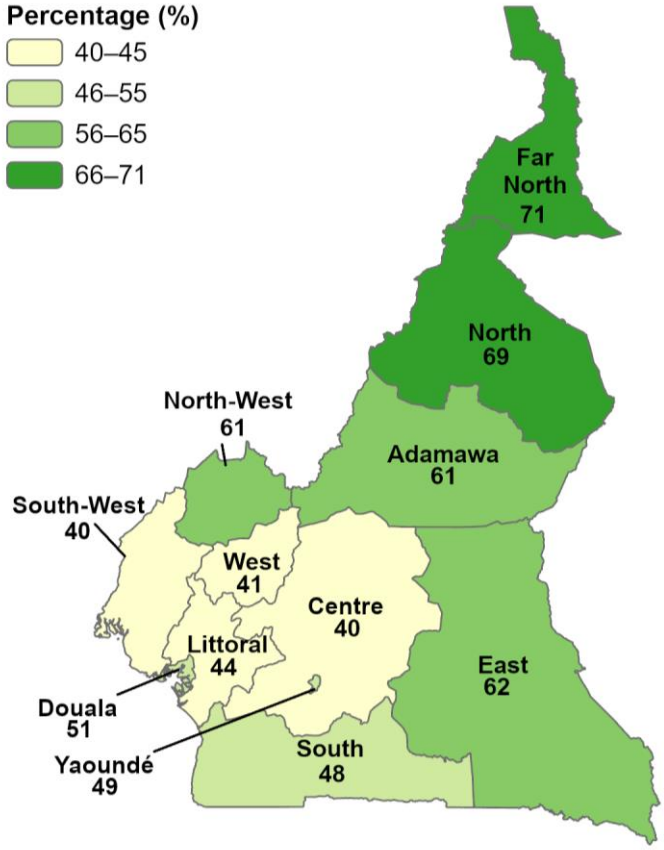
Figure 5.1 **Reach of behavior change communication messages by household wealth**

Percentage of women age 15–49 who saw or heard a message on malaria in the last 6 months



Map 5.1 Reach of behavior change communication messages by region

Percentage of women age 15–49 who saw or heard a message on malaria in the last 6 months



5.2 EXPOSURE TO SPECIFIC MALARIA MESSAGES

Table 5.1.2 shows findings regarding women's exposure to specific messages or information about malaria.

5.2.1 Exposure to Messages Recommending Visiting a Health Care Facility in the Event of Fever or Suspicion of Malaria

Approximately 4 out of 10 women (43%) recalled having received, seen, or heard a message recommending visiting a health care facility in the event of fever or suspicion of malaria.

Patterns by background characteristics

- The percentage of women who recalled seeing or hearing a message on visiting a health care facility in the case of fever or suspected malaria increases with age, from 35% among those age 15–19 to 48% among those age 40–44 and 45–49.
- The percentage of women exposed to this type of message is higher in rural areas (45%) than in urban areas (41%).
- The percentage of women who recalled seeing or hearing a message on visiting a health care facility in the event of fever or suspected malaria varies depending on the region surveyed, from 26% in Littoral (without Douala) to 60% in Far North.

5.2.2 Exposure to Messages about Free Medicines for Children with Malaria

In combating malaria, the Government of Cameroon officially implemented free of charge malaria treatment for children under age 5 for both uncomplicated and severe malaria in Executive Orders 0032/D/MINSANTE/CAB of January 24, 2011, and 0399/D/MINSANTE/CAB of June 18, 2014. In the survey, women age 15–49 were asked whether they had received, seen, or heard messages stipulating that children with malaria would receive free medication at a public health care facility or from a community health worker.

Approximately 6 out of 10 women age 15–49 (58%) said that they recalled having seen, received, or heard a message regarding free medication to treat malaria in children under age 5. Twenty-nine percent of women recalled having seen, received, or heard such a message in the past 12 months.

By region, the percentage of women who recalled having seen, received, or heard a message regarding free medication for children under age 5 with malaria in the last 12 months is lowest in South-West (13%) and East (16%) and highest in North (37%) and Far North (44%).

5.2.3 Knowledge of the Presence of a Community Health Worker in the Neighborhood/Village

Women were also asked if, in their village or neighborhood, they were aware of a community health officer or a person authorized by the Ministry of Health and tasked with giving health care advice and treatment for malaria free of charge in children under age 5. Less than half of women age 15–49 said that they were aware of such a health care officer (46%).

Patterns by background characteristics

- The percentage of women who are aware of the presence of a community health worker in their village or neighborhood is significantly higher in rural areas (62%) than in urban areas (33%).
- The percentage of women who are aware of the presence of a community health worker in their village or neighborhood decreases with increasing education, from 66% among those with no education to 22% among those with a higher education.
- The percentage of women who are aware of the presence of a community health worker in their village or neighborhood varies depending on the region: it is very low in Yaoundé (15%) and Douala (18%) and very high in North (74%) and Far North (82%).
- The percentage of women who are aware of the presence of a community health worker in their village or neighborhood also decreases with increasing wealth, from 76% in the lowest wealth quintile to 23% in the highest wealth quintile (**Table 5.1.2**).

5.3 Knowledge on How to Avoid Malaria

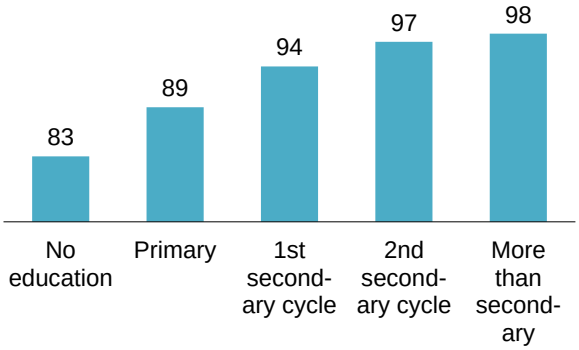
Better knowledge on how to avoid and prevent malaria, such as increasing the use of insecticide-treated nets (ITNs), is a foundational step toward changing behavior. Women age 15–49 was asked if there are ways to avoid getting malaria. Women who said that there are ways to avoid getting malaria were further asked to report specific ways to avoid malaria. Almost all women (92%) stated that there are ways to avoid getting malaria. Among those who said there are ways to avoid getting malaria, 93% cited sleeping under a mosquito net or ITN. Approximately half of women mentioned sanitation measures such as keeping the area around the home clean (48%), and 14% thought that covering stagnant water would limit the spread of mosquitoes and prevent malaria. Eleven percent each of women mentioned using insecticide spray in the house and taking preventive medication (**Table 5.2**).

Patterns by background characteristics

- Findings by region show that the percentages of women who are aware of how to avoid malaria are lowest in North (75%) and East (79%).
- The percentage of women stating that there are ways to avoid malaria increases with increasing education, from 83% among those with no education to 98% among those with a higher education (**Figure 5.2**).
- The percentage of women reporting that there are ways to avoid malaria ranges from 85% in the lowest wealth quintile to 96% in the highest quintile.

Figure 5.2 **Knowledge of how to avoid getting malaria by level of education**

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



5.4 PERCEIVED SUSCEPTIBILITY, SEVERITY, AND SELF-EFFICACY

Malaria risk

Risk involves the following components: the likelihood of a specific event occurring (perceived susceptibility) multiplied by the magnitude of consequences associated with that event (perceived severity) (Douglas 1986).

Self-efficacy

Self-efficacy refers to people's confidence in their ability to perform a specific behavior.

Sample: Women age 15–49

In the survey, a series of statements were read to capture respondents' perceptions of malaria susceptibility, their beliefs regarding the severity of the consequences of malaria, and their perceived self-efficacy to perform specific malaria-related behaviors. The findings are shown in **Table 5.3**.

5.4.1 Perceived Malaria Risk

Almost all women perceive that their families and communities are at risk for malaria (94%). The percentages of women who perceive that their families and communities are at risk are lowest in the South-West and North-West regions and Douala (92%) and highest in the North region (97%). Over 8 out of 10 women (85%) say that when a child has a fever, they fear it might be malaria. Approximately half of women (49%) disagree with the statement that people in their community contract malaria only during the rainy season.

5.4.2 Perceptions of Malaria Severity

Over 7 out of 10 women (72%) believe that the consequences of malaria are severe. Sixty-two percent of women disagree that only weak children can die from malaria, and 45% disagree that getting malaria is not a problem because it can be easily treated.

5.4.3 Perceptions of Self-efficacy

Almost all women say that they are confident in their ability to perform specific malaria-related behaviors. This includes 91% of women who agree that they can sleep under a mosquito net for the entire night when there are lots of mosquitoes and 86% of women who agree that they can sleep under a mosquito net for the entire night when there are few mosquitoes.

Patterns by background characteristics

- Perceptions of malaria severity vary by region: 96% of women in South-West believe that the consequences of malaria are severe, as compared with 44% of women in East.
- The percentage of women who disagree that only weak children can die from malaria increases from 56% among those with no education to 79% among those with a higher education.
- The percentage of women who disagree that people in the community contract malaria only during the rainy season is lower among those with no education (31%) than among those in other education categories (40%–69%).

5.5 Attitudes toward Malaria-related Behaviors and Perceptions of Community Norms

Attitudes refer to the judgments people form about a product, practice, or service. People who view a behavior favorably (such as use of insecticide-treated mosquito nets or antimalarials) are more likely to adopt good malaria-related behaviors. People's actions are often based on beliefs about whether a behavior will lead to positive (or desirable) or negative (or undesirable) outcomes. Individual behavior is strongly influenced by peers and the wider community. Social norms are beliefs about common behaviors and expected practices within a group. They may be relevant to malaria-related behaviors such as use of mosquito nets.

Women were asked whether they do not like sleeping under a mosquito net when the weather is too warm and whether it is best to start giving a child with a fever any medicine they have at home. If they disagreed with either statement, they were considered to have a favorable attitude towards specific malaria-related behaviors. Overall, 60% of women had a favorable attitude towards specific malaria behaviors (**Table 5.4**).

Beliefs about what others do and what others think we should do often guide our actions. These types of beliefs are called norms. Malaria control programs can influence behavior if they show certain behaviors as socially desirable or socially unacceptable. Sixty-eight percent of women believe that the majority of people in their community currently practice specific malaria-related behaviors. This includes women who agree that members of their community generally take their children to a health care provider the same day or the day after the onset of fever (43%) or who agree that community members who have a mosquito net generally sleep under a mosquito net every night (56%).

Fever is one of the most common symptoms of malaria and COVID-19. It might be that some people with a fever were reluctant to visit health facilities because if they tested positive for COVID-19, they might be quarantined. In the survey, women were asked whether they thought fever might be a symptom of malaria and also a symptom of COVID-19. Overall, 66% of women answered the question in the affirmative (**Table 5.4**).

Patterns by background characteristics

- The percentage of women with a favorable attitude towards specific malaria-related behaviors varies significantly by region, from 53% in Far North to 79% in North-West.
- The percentage of women with a favorable attitude towards specific malaria-related behaviors increases from 58% among those with no education to 65% among those with a higher education.
- Fifty-four percent of women in the lowest wealth quintile have a favorable attitude towards specific malaria-related behaviors, as compared with 62% of women in the highest quintile.

- The percentage of women who believe that most members of their community currently practice specific malaria-related behaviors is higher in rural areas than in urban areas (73% versus 65%) and varies significantly by region, from 52% in South-West to 91% in North.
- The percentage of women who believe that most community members currently practice specific malaria-related behaviors decreases with increasing education, from 76% among those with no education to 61% among those with a higher education.
- The percentage of women who think that fever might be a symptom of malaria and also a symptom of COVID-19 is higher in urban than rural areas (71% versus 60%), and the percentage varies significantly by region (from 45% in Far North to 84% in South-West).
- The percentage of women who believe that fever might be a symptom of malaria and also a symptom of COVID-19 increases significantly with increasing education, from 48% among those with no education to 86% among those with a higher education.
- Similarly, the percentage of women who believe that fever might be a symptom of malaria and also a symptom of COVID-19 increases from 51% in the lowest wealth quintile to 81% in the highest wealth quintile.

5.6 Beliefs about COVID-19 and Its Impact on the Use of Health Care Facilities

During the COVID-19 pandemic and even post-COVID-19, behavioral changes were observed among people with certain symptoms such as fever, flu, or a cold, resulting in a negative impact on the use of health care facilities. Clinical similarities between malaria and COVID-19 can lead to confusion in malaria-endemic locations such as Cameroon. Avoidance of treatment might be highly detrimental to individuals and the community. The population's knowledge of COVID-19 and misconceptions about its transmission can affect attitudes and behaviors regarding the pandemic.

In addition to being asked whether they thought that fever might be a symptom of malaria but also of COVID-19, women were asked whether they agreed or disagreed with the misconception that COVID-19 can be transmitted by mosquito bites and whether they believed that people in their community are afraid to go to health facilities in the event of fever or suspicion of malaria for fear of being contaminated or reported as infected with COVID-19.

As noted, 66% of women believe that fever can be a common symptom of malaria and COVID-19. One in four women (21%) believe that COVID-19 can be transmitted by mosquito bites, and 51% believe that people in their community are afraid to go to health facilities in the event of fever or suspicion of malaria for fear of being contaminated or reported as infected with COVID-19 (**Table 5.5**).

Patterns by background characteristics

- The percentage of women who believe that COVID-19 can be transmitted by mosquito bites is higher in rural areas (26%) than in urban areas (16%).
- On a regional level, the belief that COVID-19 can be transmitted by mosquito bites is most widespread in North (34%), Adamawa (31%), West (30%), and Littoral and Centre (26%).
- The percentage of women who feel that people in their community are afraid of going to health facilities in the event of fever or suspected malaria for fear of being contaminated or diagnosed with COVID-19 is higher in urban than rural areas (53% versus 48%).
- The percentage of women who believe that people in their community are afraid to go to health facilities in the event of fever or suspicion of malaria for fear of being contaminated or reported as

infected with COVID-19 is lower among those with no education (43%) than among those in other education categories (48%–57%).

List of Tables

For detailed information on malaria beliefs and exposure to malaria messages, see the following tables:

- **Table 5.1.1 Media exposure to malaria messages**
- **Table 5.1.2 Exposure to specific messages or information**
- **Table 5.2 Knowledge of ways to avoid malaria**
- **Table 5.3 Malaria susceptibility, severity, and self-efficacy**
- **Table 5.4 Attitudes toward malaria-related behaviors and perceptions of community norms**
- **Table 5.5 Beliefs about COVID-19 and its impact on use of health care facilities**

Table 5.1.1 Media exposure to malaria messages

Percentage of women age 15–49 who have seen or heard a malaria message in the last 6 months, and among those who have seen or heard a malaria message in the last 6 months, percentage who cite specific sources for malaria messages, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage who have seen or heard a malaria message in the last 6 months	Number of women	Sources of exposure to malaria messages in the past 6 months: Radio	Television	Poster/ billboard	Newspaper/ magazine	Leaflet/ brochure	Health care provider	Community health worker	Social media	SMS	Griot/crier	Community leader	Parent/ relative	Other	Don't remember	Number of women who have seen or heard a message in the last 6 months
Age																	
15–19	47.6	1,410	10.3	22.3	2.1	0.8	0.6	12.7	28.4	4.2	8.8	2.6	8.3	37.0	5.4	0.3	672
20–24	55.3	1,220	10.0	22.8	2.5	1.5	1.2	28.6	33.6	6.2	10.4	0.9	10.6	31.3	1.6	0.8	675
25–29	56.0	1,134	11.3	26.5	2.0	2.4	0.8	30.2	31.6	6.7	12.4	1.8	7.5	28.0	1.8	0.2	635
30–34	55.9	1,009	9.2	30.4	2.3	2.6	0.8	23.5	30.9	5.6	14.8	1.9	10.9	26.0	1.3	0.0	565
35–39	59.1	754	12.9	27.5	1.5	2.7	0.9	22.7	31.8	5.4	8.2	1.5	8.8	26.3	0.9	0.3	446
40–44	58.5	559	22.6	30.1	1.5	2.1	1.3	25.2	25.3	5.0	8.7	0.4	5.7	28.8	0.5	0.0	327
45–49	61.6	446	18.1	32.7	2.3	1.2	1.9	19.4	32.0	1.5	7.6	3.4	9.5	31.6	1.6	0.0	275
Residence																	
Yaoundé/Douala	49.9	1,566	14.5	53.8	2.6	3.0	1.0	19.1	8.2	12.6	20.8	0.0	1.4	13.8	3.1	0.4	782
Other urban	58.4	2,076	14.4	30.6	3.1	2.9	1.5	25.7	26.9	6.3	12.0	2.1	8.3	32.3	2.8	0.1	1,213
Total urban	54.8	3,642	14.4	39.7	2.9	3.0	1.3	23.1	19.6	8.8	15.5	1.3	5.6	25.0	2.9	0.2	1,995
Rural	55.3	2,890	9.7	10.2	1.0	0.4	0.6	23.7	44.7	0.9	4.3	2.3	13.0	36.5	1.1	0.4	1,599
Region																	
Adamawa	60.5	388	13.0	23.1	2.8	3.6	1.3	18.4	42.7	3.8	15.5	1.2	8.7	33.3	4.1	0.0	235
Centre (excludes Yaoundé)	39.9	418	16.4	39.0	2.4	2.9	0.5	24.4	8.9	4.2	23.2	0.0	3.1	13.6	1.4	0.2	167
Douala	50.6	876	16.1	50.9	0.4	3.2	0.5	21.9	10.3	11.9	16.9	0.0	0.3	13.5	3.8	0.7	444
East	62.2	329	7.9	26.1	6.2	0.9	1.1	30.1	28.6	4.0	3.5	0.0	14.8	33.0	5.0	0.0	204
Far North	71.2	1,186	11.2	8.8	0.8	0.4	0.0	11.9	50.6	1.9	0.1	5.7	21.9	55.7	0.7	0.0	844
Littoral (excludes Douala)	43.5	170	6.7	41.7	4.2	1.0	2.4	25.0	19.8	10.1	18.7	0.8	2.3	11.1	3.1	0.8	74
North	68.7	750	14.1	9.6	0.6	2.6	0.0	21.3	44.5	2.3	3.8	0.9	8.7	42.3	2.3	0.2	515
North-West	60.7	303	7.5	15.6	0.7	1.9	0.7	64.4	27.8	2.0	4.2	0.5	2.9	6.7	0.8	2.5	184
West	40.9	755	12.2	24.1	2.6	1.5	5.0	34.1	16.4	5.0	14.1	0.9	1.2	23.6	1.2	0.0	309
South	47.5	200	21.6	42.1	7.1	1.6	3.3	12.7	10.3	10.4	11.9	0.2	0.6	15.5	3.7	0.3	95
South-West	39.5	467	5.7	34.5	0.8	0.3	0.0	44.0	46.3	1.2	18.9	1.1	6.6	5.5	0.0	0.0	185
Yaoundé	49.0	690	12.3	57.6	5.5	2.8	1.5	15.4	5.5	13.6	25.9	0.0	2.7	14.2	2.2	0.0	338
Education																	
No education	62.2	1,280	5.9	4.9	0.4	0.1	0.0	19.2	50.9	0.2	0.7	2.0	17.6	47.3	0.5	0.2	796
Primary	52.7	1,634	11.3	12.3	1.2	0.3	0.2	23.3	35.7	1.3	2.6	2.8	11.0	40.7	0.7	0.1	862
1st secondary cycle	47.7	1,604	14.8	28.7	1.7	1.1	1.2	28.6	25.3	3.7	11.2	2.0	6.7	25.9	4.5	0.0	765
2nd secondary cycle	52.8	1,254	16.5	46.1	3.3	3.4	2.8	23.8	17.2	9.4	18.5	0.9	3.5	14.9	3.4	1.1	662
More than secondary	67.1	759	14.6	55.9	4.9	6.3	1.3	21.6	16.8	16.8	27.7	0.1	2.0	11.4	1.8	0.0	509
Wealth quintile																	
Lowest	63.1	1,146	7.0	1.5	0.4	0.0	0.0	15.4	57.5	0.1	0.5	3.4	18.5	47.6	1.1	0.1	723
Second	57.5	1,183	9.7	6.9	1.3	0.2	0.4	25.3	34.3	1.1	3.5	2.2	14.4	44.4	1.0	0.0	681
Middle	50.6	1,230	13.4	20.6	1.3	1.3	1.5	28.6	33.0	2.9	5.5	1.2	8.0	28.4	2.5	0.8	623
Fourth	47.7	1,453	12.6	40.0	4.1	2.0	1.4	26.8	19.4	5.5	14.7	0.9	3.5	19.0	4.2	0.3	693
Highest	57.5	1,520	17.7	56.2	2.9	5.0	1.5	22.0	13.3	14.2	24.5	1.1	1.6	14.7	1.8	0.2	874
Total	55.0	6,532	12.3	26.6	2.1	1.9	1.0	23.4	30.8	5.3	10.5	1.7	8.9	30.1	2.1	0.3	3,594

Table 5.1.2 Exposure to specific messages or information

Percentage of women age 15–49 who have seen, received, or heard messages about not delaying seeking advice or treatment at a health facility in the event of fever or suspected malaria in the past 6 months; percentage who have ever seen, received, or heard messages about free medicines for children under age 5 with malaria; percentage who have seen, received, or heard messages about free medicines for children under age 5 with malaria in the past 12 months; and percentage who acknowledge the existence of a community health worker in their village or neighborhood, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage who have seen, received, or heard messages about not delaying seeking advice or treatment at a health facility in the event of fever or suspected malaria in the past 6 months	Percentage who have ever seen, received, or heard messages about free medicines for children under age 5 with malaria	Percentage who have seen, received, or heard messages about free medicines for children under age 5 with malaria in the past 12 months	Percentage who acknowledge the existence of a community health worker in their village or neighborhood	Number of women
Age					
15–19	34.8	51.7	29.9	44.1	1,410
20–24	42.4	58.9	29.5	46.1	1,220
25–29	43.1	58.5	29.9	43.3	1,134
30–34	44.3	60.0	29.4	45.5	1,009
35–39	45.9	61.0	28.0	49.4	754
40–44	48.0	60.3	25.5	46.1	559
45–49	48.2	63.8	28.6	49.8	446
Residence					
Yaoundé/Douala	33.4	52.8	26.8	16.4	1,566
Other urban	46.2	61.1	28.9	45.3	2,076
Total urban	40.7	57.5	28.0	32.9	3,642
Rural	44.7	58.9	30.4	61.9	2,890
Region					
Adamawa	53.3	50.9	24.4	63.3	388
Centre (excludes Yaoundé)	28.3	56.4	27.9	29.4	418
Douala	33.2	52.6	26.0	17.5	876
East	48.4	47.0	16.0	36.1	329
Far North	60.3	82.5	43.8	82.3	1,186
Littoral (excludes Douala)	25.6	57.4	31.6	45.9	170
North	57.9	78.8	36.7	74.1	750
North-West	52.7	48.3	27.2	38.8	303
West	27.4	46.0	22.3	42.3	755
South	30.8	56.5	28.4	34.8	200
South-West	30.9	23.5	12.9	27.0	467
Yaoundé	33.7	53.1	27.7	15.1	690
Education					
No education	51.5	64.0	28.6	66.3	1,280
Primary	42.9	56.3	29.7	58.6	1,634
1st secondary cycle	36.6	55.7	28.8	40.3	1,604
2nd secondary cycle	37.6	57.9	29.3	29.5	1,254
More than secondary	46.7	57.9	28.7	21.5	759
Wealth quintile					
Lowest	53.1	70.5	35.0	76.1	1,146
Second	48.4	62.1	33.6	61.3	1,183
Middle	37.2	54.8	25.5	48.2	1,230
Fourth	34.8	50.5	25.7	30.6	1,453
Highest	41.3	55.8	27.3	23.2	1,520
Total	42.5	58.1	29.1	45.7	6,532

Table 5.2 Knowledge of ways to avoid malaria

Percentage of women age 15–49 who state there are ways to avoid getting malaria, and among women who state there are ways to avoid getting malaria, percentage reporting specific ways to avoid getting malaria, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage who state there are ways to avoid getting malaria	Number of women	Percentage who report specific ways to avoid getting malaria												Number of women who state there are ways to avoid getting malaria
			Sleep under mosquito net or ITN	Use mosquito repellent	Take preventive medication	Spray house with insecticide	Fill in stagnant water (puddles)	Keep surroundings clean	Put mosquito screen on windows	Take traditional medicine	Burn/use repellent plants	Burn/use repellent products other than plants	Other	Don't know	
Age															
15–19	91.1	1,410	92.6	7.7	10.4	9.6	14.0	48.0	4.6	5.3	5.7	8.1	3.1	0.3	1,285
20–24	90.9	1,220	94.8	9.9	11.7	12.2	15.5	48.3	2.5	4.4	4.4	8.0	3.5	0.2	1,109
25–29	91.1	1,134	93.5	11.1	10.9	12.3	15.4	49.7	5.0	4.7	4.9	6.4	2.9	0.4	1,033
30–34	90.9	1,009	93.9	11.6	10.8	11.7	12.3	50.0	4.0	6.0	3.8	8.7	3.0	0.2	918
35–39	93.6	754	92.8	10.8	11.5	9.0	16.0	45.4	3.3	5.0	4.1	7.7	3.5	0.2	705
40–44	91.8	559	93.5	8.4	12.6	11.7	13.8	44.0	1.5	7.0	5.8	11.9	1.9	0.4	513
45–49	93.0	446	89.7	10.3	10.6	11.2	13.3	49.3	2.4	9.3	9.3	10.4	6.5	0.4	415
Residence															
Yaoundé/ Douala	94.3	1,566	93.1	5.8	4.8	10.6	11.9	54.1	2.8	2.5	1.2	2.0	4.0	0.1	1,476
Other urban	92.4	2,076	94.7	11.0	11.6	15.0	20.8	54.3	3.7	5.5	4.2	8.1	2.7	0.3	1,918
Total urban	93.2	3,642	94.0	8.7	8.6	13.1	17.0	54.2	3.3	4.2	2.9	5.4	3.3	0.2	3,394
Rural	89.4	2,890	92.3	11.4	14.4	8.4	11.1	40.1	4.1	7.3	7.9	12.1	3.4	0.4	2,584
Region															
Adamawa	85.8	388	99.0	3.8	20.6	8.2	7.7	33.1	1.7	7.8	10.8	18.7	2.5	0.6	333
Centre (excludes Yaoundé)	86.4	418	89.5	5.4	6.0	7.0	17.2	54.4	2.2	8.5	0.5	2.0	5.3	0.3	361
Douala	95.6	876	91.5	4.9	4.0	12.6	11.6	51.7	1.1	2.1	0.8	1.4	4.5	0.1	838
East	79.1	329	95.3	6.3	4.9	11.0	24.5	53.1	1.5	4.7	3.2	3.7	2.1	0.2	260
Far North	99.3	1,186	95.1	23.1	17.8	14.6	2.0	32.2	8.3	6.7	11.9	11.3	2.2	0.1	1,178
Littoral (excludes Douala)	90.6	170	88.9	2.5	4.5	3.7	21.8	63.6	1.3	4.6	1.5	0.9	3.3	0.4	154
North	74.9	750	89.8	15.3	29.8	5.5	3.7	21.6	0.8	7.2	10.0	23.3	5.1	0.5	562
North-West	90.4	303	90.6	4.6	6.6	11.2	36.0	69.1	2.5	0.5	1.2	1.7	0.0	1.6	274
West	96.6	755	93.7	1.2	2.9	11.6	36.0	62.7	1.4	1.6	2.7	12.7	5.5	0.2	729
South	97.0	200	92.8	7.6	14.4	10.9	19.6	47.0	5.0	20.2	1.2	3.4	2.8	0.5	194
South-West	97.9	467	93.8	13.2	8.6	17.3	12.9	64.9	6.0	10.2	3.4	4.2	0.0	0.2	457
Yaoundé	92.6	690	95.3	6.9	5.7	8.1	12.4	57.1	5.0	3.2	1.8	2.7	3.3	0.1	639
Education															
No education	83.3	1,280	94.1	16.4	16.6	8.8	4.0	23.9	4.2	6.6	7.8	13.8	2.2	0.3	1,066
Primary	89.0	1,634	90.5	9.5	12.6	8.6	9.7	37.4	2.6	7.4	7.4	11.1	3.5	0.5	1,454
1st secondary cycle	93.7	1,604	91.8	6.6	8.9	7.9	15.2	51.2	3.5	6.0	4.2	7.8	4.3	0.4	1,504
2nd secondary cycle	96.6	1,254	95.7	8.1	9.0	13.9	24.3	67.6	2.9	3.4	2.8	3.4	3.7	0.2	1,211
More than secondary	97.9	759	96.6	10.9	8.3	21.2	21.1	65.9	6.1	2.9	2.4	3.9	1.7	0.0	743
Wealth quintile															
Lowest	84.6	1,146	93.7	20.8	21.7	9.6	2.9	25.5	4.2	7.8	13.6	14.1	3.4	0.4	969
Second	87.8	1,183	91.2	7.7	12.4	6.4	13.2	38.6	4.6	7.8	5.7	11.7	2.6	0.8	1,039
Middle	92.3	1,230	93.1	7.0	10.0	8.0	17.1	47.6	2.0	5.1	3.9	8.8	3.8	0.3	1,135
Fourth	94.6	1,453	94.8	7.1	5.7	12.2	18.9	58.5	2.4	3.7	1.6	5.7	3.3	0.2	1,375
Highest	96.1	1,520	93.2	9.2	9.1	16.8	16.8	60.5	5.0	4.4	3.2	4.1	3.4	0.0	1,460
Total	91.5	6,532	93.3	9.9	11.1	11.1	14.4	48.1	3.6	5.5	5.1	8.3	3.3	0.3	5,978

Table 5.3 Malaria susceptibility, severity, and self-efficacy

Percentage of women age 15–49 who express specific perceptions about malaria susceptibility, percentage who express specific perceptions about the severity of malaria, and percentage who express specific perceptions about self-efficacy, according to background characteristics, Cameroon MIS 2022

	Perceived susceptibility			Perceived severity			Perceived self-efficacy			
Background characteristic	Percentage who disagree that people in the community get malaria only during the rainy season	Percentage who agree that when a child has a fever, they almost always worry it might be malaria	Percentage who perceive that their families and communities are at risk from malaria[1]	Percentage who disagree that getting malaria is not a problem because it can be easily treated	Percentage who disagree that only weak children can die from malaria	Percentage who feel that the consequences of malaria are serious[2]	Percentage who agree that they can sleep under a mosquito net for the entire night when there are lots of mosquitoes	Percentage who agree that they can sleep under a mosquito net for the entire night when there are few mosquitoes	Percentage who are confident in their ability to perform specific malaria-related behaviors[3]	Number of women
Age										
15–19	45.3	79.2	90.3	45.8	62.2	73.3	91.3	84.2	93.7	1,410
20–24	49.6	85.7	94.2	46.9	66.1	76.0	89.8	85.0	92.9	1,220
25–29	48.5	86.7	94.4	45.2	62.6	72.1	89.4	83.4	92.2	1,134
30–34	50.2	87.8	95.5	44.7	60.7	71.6	92.8	87.5	94.1	1,009
35–39	52.0	85.7	95.7	43.2	61.1	71.8	92.4	86.7	94.8	754
40–44	48.9	87.7	95.4	42.4	54.5	67.0	91.8	87.0	93.4	559
45–49	52.3	87.6	96.7	38.6	58.9	69.8	92.8	88.4	95.5	446
Living children under age 5										
One or more	46.6	88.0	95.3	44.6	60.4	71.2	91.8	87.3	94.7	2,978
None	50.9	82.7	93.0	44.7	62.9	73.3	90.6	84.1	92.6	3,554
Residence										
Yaoundé/Douala	60.2	78.9	92.7	39.8	63.5	73.6	91.0	86.6	93.2	1,566
Other urban	51.7	85.5	94.0	46.7	64.9	74.3	92.0	84.6	94.0	2,076
Total urban	55.3	82.7	93.4	43.7	64.3	74.0	91.6	85.5	93.6	3,642
Rural	40.9	88.2	94.8	45.9	58.5	70.3	90.7	85.6	93.5	2,890
Region										
Adamawa	54.9	82.3	94.5	56.7	69.8	80.2	90.9	82.8	94.8	388
Centre (excludes Yaoundé)	56.0	85.6	95.1	36.9	50.7	62.0	93.7	86.7	95.9	418
Douala	58.1	76.0	92.1	38.8	64.6	76.1	90.8	86.5	92.4	876
East	47.2	86.6	95.6	31.0	33.2	44.3	93.6	88.3	95.0	329
Far North	18.3	91.2	93.5	45.5	56.0	70.4	96.8	92.7	99.1	1,186
Littoral (excludes Douala)	64.8	83.0	94.7	33.7	52.5	63.4	94.7	88.5	96.3	170
North	37.1	92.8	97.0	59.2	62.3	75.5	96.8	86.5	97.5	750
North-West	48.0	85.3	91.6	42.1	73.4	82.3	67.2	72.8	75.5	303
West	63.2	86.6	95.1	34.3	59.2	66.6	93.1	80.8	94.7	755
South	68.4	79.3	95.7	46.8	62.0	74.4	96.2	87.4	96.5	200
South-West	61.8	79.4	91.8	64.1	92.8	95.8	73.8	75.3	78.0	467
Yaoundé	62.7	82.7	93.4	40.9	62.1	70.5	91.3	86.7	94.2	690
Education										
No education	30.8	89.6	94.6	46.4	55.6	69.4	94.0	88.1	96.3	1,280
Primary	39.5	87.4	93.6	42.0	54.9	66.4	92.8	87.2	95.5	1,634
1st secondary cycle	53.0	85.4	94.9	40.5	59.6	69.7	90.4	82.4	92.0	1,604
2nd secondary cycle	62.2	80.2	93.1	46.6	69.3	78.1	88.6	84.9	91.9	1,254
More than secondary	69.3	79.9	93.6	53.2	79.0	86.3	88.8	85.4	90.8	759
Wealth quintile										
Lowest	28.5	91.1	95.2	49.3	56.3	71.3	94.9	91.7	97.9	1,146
Second	42.9	86.6	94.1	42.0	55.0	65.7	93.2	86.7	95.2	1,183
Middle	45.4	88.5	94.7	41.7	58.4	68.2	89.3	82.1	92.6	1,230
Fourth	59.6	82.1	93.2	45.6	64.2	75.0	91.0	85.0	92.8	1,453
Highest	61.9	79.5	93.3	44.8	71.5	79.2	88.5	83.2	90.4	1,520
Total	49.0	85.1	94.0	44.7	61.8	72.4	91.2	85.5	93.6	6,532

[1] Includes women who disagree that people in the community get malaria only during the rainy season or agree that when a child has a fever they almost always worry it might be malaria
[2] Includes women who disagree that getting malaria is not a problem because it can be easily treated or disagree that only weak children can die from malaria
[3] Includes women who agree that they can sleep under a mosquito net for the entire night when there are lots of mosquitoes or agree that they can sleep under a mosquito net for the entire night when there are few mosquitoes

Table 5.4 Attitudes toward malaria-related behaviors and perceptions of community norms

Percentage of women age 15–49 who express specific attitudes regarding malaria-related behaviors, percentage with favorable attitudes toward specific malaria-related behaviors, percentage who express specific perceptions regarding community norms, and percentage who believe the majority of people in their community currently practice specific malaria-related behaviors, according to background characteristics, Cameroon MIS 2022

	Attitudes towards malaria-related behaviors			Perceptions of community norms				
Background characteristic	Percentage who disagree that they do not like sleeping under a mosquito net when the weather is too warm	Percentage who disagree that when a child has a fever, it is best to start giving the child any medicine that you have at home	Percentage who have a favorable attitude toward specific malaria-behaviors[1]	Percentage who agree that people in the community usually take their children to a health care provider on the same day or the day after they develop a fever	Percentage who agree that people in the community who have a mosquito net usually sleep under a mosquito net every night	Percentage who believe the majority of people in their community currently practice specific malaria-related behaviors[2]	Percentage who believe that fever may be a symptom of malaria and also a symptom of COVID-19	Number of women
Age								
15–19	41.5	31.6	59.2	40.7	53.4	66.7	63.2	1,410
20–24	44.7	34.2	63.0	42.5	59.3	71.3	66.4	1,220
25–29	43.0	28.4	59.3	43.5	51.9	64.7	66.6	1,134
30–34	49.6	24.7	61.3	45.5	57.5	69.7	68.8	1,009
35–39	45.2	23.4	57.7	42.6	54.4	66.9	65.4	754
40–44	44.0	25.3	58.0	42.9	61.5	72.4	68.2	559
45–49	44.7	20.9	59.2	46.9	57.7	69.9	63.6	446
Living children under age 5								
One or more	46.9	27.9	61.4	43.6	59.5	69.6	63.9	2,978
None	42.5	28.6	58.8	42.7	53.0	67.4	67.7	3,554
Residence								
Yaoundé/Douala	44.6	24.1	58.5	40.4	44.5	61.4	76.2	1,566
Other urban	45.0	30.8	61.9	45.4	52.7	67.3	67.0	2,076
Total urban	44.8	27.9	60.5	43.3	49.2	64.8	70.9	3,642
Rural	44.0	28.7	59.4	42.9	64.5	73.0	59.7	2,890
Region								
Adamawa	50.6	37.8	65.0	58.0	77.9	87.5	60.6	388
Centre (excludes Yaoundé)	50.5	19.4	58.5	46.6	50.0	65.0	65.7	418
Douala	45.3	24.2	59.5	32.1	41.7	55.6	73.6	876
East	56.2	18.8	64.2	52.5	49.4	65.6	59.2	329
Far North	45.7	16.3	53.4	41.6	64.8	71.4	45.1	1,186
Littoral (excludes Douala)	40.0	20.5	53.9	47.6	55.1	70.8	71.4	170
North	41.0	31.7	57.2	59.5	83.2	91.2	52.5	750
North-West	21.6	70.2	78.6	28.4	45.1	58.3	83.3	303
West	44.3	28.2	58.0	33.2	55.2	66.6	76.5	755
South	43.8	20.7	54.9	28.9	39.1	54.6	70.2	200
South-West	44.9	52.3	76.0	37.6	36.2	51.6	83.7	467
Yaoundé	43.7	24.1	57.3	51.0	48.0	68.8	79.6	690
Education								
No education	48.4	21.0	57.7	49.4	68.8	75.8	48.3	1,280
Primary	42.5	28.2	59.3	42.9	63.3	72.5	59.2	1,634
1st secondary cycle	43.4	28.1	58.1	40.2	53.6	66.5	66.9	1,604
2nd secondary cycle	42.7	33.0	62.4	40.2	46.2	62.7	79.4	1,254
More than secondary	47.3	33.0	65.3	43.9	39.8	60.7	86.3	759
Wealth quintile								
Lowest	44.4	21.7	54.2	52.0	76.8	82.2	51.1	1,146
Second	45.9	28.7	61.1	39.9	57.0	67.5	51.1	1,183
Middle	42.0	32.0	60.9	38.8	58.6	69.4	63.5	1,230
Fourth	45.1	29.9	60.9	44.1	51.2	65.3	76.4	1,453
Highest	44.8	28.2	61.8	41.5	41.8	60.9	80.8	1,520
Total	44.5	28.2	60.0	43.1	56.0	68.4	66.0	6,532

[1] Includes women who disagree that they do not like sleeping under a mosquito net when the weather is too warm or disagree that when a child has a fever it is best to start by giving the child any medicine they have at home

[2] Includes women who agree that people in the community usually take their children to a health care provider on the same day or day after they develop a fever or agree that people in the community who have a mosquito net usually sleep under a mosquito net every night

Table 5.5 Beliefs about COVID-19 and its impact on use of health care facilities

Percentage of women age 15–49 who believe that fever can be a symptom of malaria and also a symptom of COVID-19, percentage who believe that COVID-19 can be transmitted through mosquito bites, and percentage who believe that people in their community are afraid to go to health facilities in the event of fever or suspected malaria for fear of being infected or diagnosed with COVID-19, according to background characteristics, Cameroon MIS 2022

Background characteristic	Percentage who believe that fever can be a symptom of malaria and also a symptom of COVID-19	Percentage who believe that COVID-19 can be transmitted through mosquito bites	Percentage who believe that people in their community are afraid to go to health facilities in the event of fever or suspected malaria for fear of being infected or diagnosed with COVID-19	Number of women
Age				
15–19	63.2	19.7	51.2	1,410
20–24	66.4	19.3	48.5	1,220
25–29	66.6	19.8	51.4	1,134
30–34	68.8	21.2	53.3	1,009
35–39	65.4	19.4	53.1	754
40–44	68.2	23.5	49.7	559
45–49	63.6	26.7	47.6	446
Living children under age 5				
One or more	63.9	21.8	51.1	2,978
None	67.7	19.6	50.7	3,554
Residence				
Yaoundé/Douala	76.2	15.6	53.1	1,566
Other urban	67.0	16.4	53.5	2,076
Total urban	70.9	16.1	53.3	3,642
Rural	59.7	26.4	47.8	2,890
Region				
Adamawa	60.6	30.7	44.0	388
Centre (excludes Yaoundé)	65.7	25.7	59.4	418
Douala	73.6	15.7	51.9	876
East	59.2	21.7	46.4	329
Far North	45.1	18.3	43.5	1,186
Littoral (excludes Douala)	71.4	25.7	66.5	170
North	52.5	33.5	49.2	750
North-West	83.3	8.6	39.0	303
West	76.5	29.8	49.0	755
South	70.2	14.5	66.8	200
South-West	83.7	3.1	64.8	467
Yaoundé	79.6	15.5	54.5	690
Education				
No education	48.3	26.3	43.4	1,280
Primary	59.2	27.0	47.7	1,634
1st secondary cycle	66.9	22.9	57.0	1,604
2nd secondary cycle	79.4	11.5	52.8	1,254
More than secondary	86.3	7.8	54.3	759
Wealth quintile				
Lowest	51.1	28.4	44.7	1,146
Second	51.1	25.3	47.5	1,183
Middle	63.5	24.9	49.6	1,230
Fourth	76.4	17.2	54.7	1,453
Highest	80.8	11.0	55.6	1,520
Total	66.0	20.6	50.9	6,532

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SAMPLING FRAME

Appendix A

A.1 INTRODUCTION

This section describes the survey's objectives, overall sample size, and areas of study. The 2022 Cameroon Malaria Indicator Survey (2022 CMIS) is a follow-up to the first CMIS performed in 2012 as well as the more recent 2018 Cameroon Demographic and Health Survey (CDHS-V). Its target was a national sample of approximately 6,580 ordinary households. All women age 15–49 and all children under age 5 who were permanent residents of the selected households or spent the night prior to the interview were eligible to be surveyed. The 2022 CMIS is a national sample survey designed to provide information on topics such as availability and use of insecticide-treated nets (ITNs), prophylactic and therapeutic use of antimalarials, diagnostic testing for malaria in children presenting with fever, and the prevalence of malaria among children under age 5 (based on a rapid diagnostic test carried out at home). The survey also provides information on women who were surveyed regarding exposure to malaria messages, malaria knowledge, perceptions regarding the risk and severity of the disease, self-sufficiency in adopting malaria behaviors, and behaviors and norms related to malaria. Hemoglobin testing was carried out during the survey to estimate the percentage of children under age 5 with anemia. The survey was designed to produce representative results for the country as a whole, urban and rural areas separately, the cities of Yaoundé and Douala jointly, other cities, and administrative regions (differentiating among the cities of Yaoundé and Douala, the Centre region excluding Yaoundé, and the Littoral region excluding Douala).

A.2 SAMPLING FRAME

The sampling frame selected for the 2022 CMIS included all enumeration areas (EAs) drawn in the mapping exercise for the fourth General Population and Housing Census (GPHC). This mapping exercise was carried out in 2017–18 by the Central Bureau of Population Censuses and Studies (BUCREP) as a prologue to the GPHC. BUCREP made available to the National Institute of Statistics (NIS) the digital file including 22,166 EAs established for the purposes of this census. Cameroon encompasses 10 administrative regions, of which Yaoundé and Douala are part: Douala is located in the Littoral region and Yaoundé in the Centre region. Each region includes departments (divisions), and each department is composed of arrondissements. A total of 58 departments and 360 arrondissements were included in the sampling frame.

Each arrondissement is subdivided into urban and rural EAs. An EA may include one locality or several localities, a village or neighborhood or several villages or neighborhoods, or a block or several blocks of the same neighborhood or village. Each EA includes identification data and size measurements matching the number of residential households recorded in the mapping exercise for the fourth GPHC.

Table A.1 shows the results from the sampling frame: 38% of households in Cameroon are located in the Far North region (14%) and in the cities of Douala (12%) and Yaoundé (12%). Just over half of all households are located in urban areas (56%). With the exception of Yaoundé and Douala (which are completely urban), the percentage of residential households located in urban areas ranges from 31% in North to 59% in Littoral (excluding Douala).

Table A.1 Distribution of households in the sampling frame by region and residence

Percentage of households by residence and region, Cameroon MIS 2022

Region	Percentage of households		
	Urban	Rural	Total
Adamawa	44.2	55.8	5.3
Center (excludes Yaoundé)	47.3	52.7	9.1
Douala	100.0	na	12.0
East	53.6	46.4	5.1
Far North	34.2	65.8	14.4
Littoral (excludes Douala)	58.6	41.4	3.7
North	31.2	68.8	10.0
North-West	36.2	63.8	8.9
West	50.4	49.6	9.9
South	40.2	59.8	4.2
South-West	49.9	50.1	5.8
Yaoundé	100.0	na	11.7
Cameroon	**56.0**	**44.0**	**100.0**

Source: Mapping work on the General Census of Population and Housing (GRPH) carried out in 2017–18 by the Central Bureau of Population Censuses and Studies (BUCREP)
na = Not applicable

In addition, the sampling frame includes a total of 22,166 EAs, of which 9,704 are in urban areas and 12,462 in rural areas. Average EA size is 202 households in urban areas and 123 households in rural areas, with an overall average of 158 households per EA (**Table A.2**).

Table A.2 Distribution of enumeration areas in the sampling frame

Distribution (in numbers) and average size (in households) of enumeration areas (EAs) by residence and region, Cameroon MIS 2022

Region	EA distribution			Average EA size		
	Urban	Rural	Total	Urban	Rural	Total
Adamawa	483	922	1,405	168	111	131
Center (excludes Yaoundé)	610	1,255	1,865	246	133	170
Douala	1,901	na	1,901	220	na	220
East	517	712	1,229	186	117	146
Far North	1,110	3,366	4,476	155	99	113
Littoral (excludes Douala)	359	299	658	209	177	194
North	603	1,800	2,403	180	133	145
North-West	616	1,276	1,892	184	156	165
West	910	1,461	2,371	192	118	146
South	270	547	817	219	161	180
South-West	480	824	1,304	209	122	154
Yaoundé	1,845	na	1,845	221	na	221
Cameroon	**9,704**	**12,462**	**22,166**	**202**	**123**	**158**

Source: Mapping work on the General Census of Population and Housing (GRPH) carried out in 2017 by the Central Bureau of Population Censuses and Studies (BUCREP)
na = Not applicable

A.3 Sample Design and Implementation

The sample for the 2022 CMIS was a random stratified sample selected in two stages. The primary sampling unit was the EA as defined during the mapping exercise for the fourth GPHC. The sample was distributed so as to ensure adequate representation of urban and rural locations as well as the 12 study areas: the regions of Adamawa, Centre (excluding Yaoundé), East, Far North, Littoral (excluding Douala), North, North-West, West, South, and South-West and the cities of Douala and Yaoundé. Each of the study areas other than Yaoundé and Douala were separated into urban and rural sampling layers; that is, each type of residence within the study area constituted a sampling layer. Thus, 22 sampling layers were created, and the sample was drawn independently from each layer. In the first stage, 470 EAs were drawn

with a percentage probability relative to their size (the number of households in the EA). Before EAs were delineated in the first stage, the sampling frame was organized according to area of study and place of residence (urban/rural) to form the sampling layer; EAs were then organized according to administrative units below the region (that is, departments and arrondissements). This activity introduced implicit stratification at the level of administrative units, with sample allocation proportional to the size of the corresponding administrative unit.

Once primary units were selected and prior to the main survey, a household count and a map update were carried out in each selected EA. The enumeration involved visiting each selected EA to draw a site map and a map of access to the EA, with a brief visit to each household to check its occupancy status, and recording the name of the head of the household and the household address in order to establish a complete list of households enumerated for each EA. This list of households was the base for the sampling frame in the second-stage household selection. Before enumerating households, large EAs of over 300 households were divided in segments, only one of which was kept in the sample. This last step was not considered to be a selection step, because the only purpose of the segmentation was to limit enumeration work within the EA. Thus, in the context of the 2022 MIS, a cluster was an EA or part of an EA in the case of very large EAs (over 300 households), only some of which were selected. In the second stage, for each of the clusters selected in the first stage, a fixed number of 14 households were selected in a systematic draw with equal probability from the lists established at the time of enumeration.

Table A.3 shows the distribution of the cluster sample by region and place of residence. In all, 470 EAs were selected, with 263 in urban areas and 207 in rural areas. In addition, 6,580 households were selected, including 3,598 in urban areas and 2,982 in rural areas.

Table A.3 Cluster and household sample distribution

Distribution (by number) of cluster sample and household sample by residence and region, Cameroon MIS 2022

	Cluster distribution			Household distribution		
Region	Urban	Rural	Total	Urban	Rural	Total
Adamawa	15	19	34	210	266	476
Center (excludes Yaoundé)	18	21	39	252	294	546
Douala	44	na	44	616	-	616
East	18	16	34	252	224	476
Far North	16	32	48	224	448	672
Littoral (excludes Douala)	19	13	32	266	182	448
North	12	28	40	168	392	560
North-West	18	23	41	252	322	574
West	21	21	42	294	294	588
South	13	20	33	182	280	462
South-West	20	20	40	280	280	560
Yaoundé	43	n/a	43	602	-	602
Cameroon	**263**	**207**	**470**	**3,598**	**2,982**	**6,580**

na = not applicable

According to the CDHS-V 2018, there were 1.16 women age 15–49 per household in urban areas and 1.19 in rural areas. The household response rate was 97% for urban areas and 98% for rural areas. The response rate to the Woman's Questionnaire was 98% for urban areas and 99% for rural areas. The anticipated number of women age 15–49 to be surveyed was approximately 7,425, including 3,977 in urban areas and 3,448 in rural areas (**Table A.4**). Also according to the CDHS-V 2018, there were 0.657 children age 6–59 months per household in urban areas and 0.997 in rural areas. The response rate among children for malaria rapid diagnostic testing was 97% in urban areas and 997% in rural areas. The anticipated number of children age 6–59 months to be tested with the malaria rapid diagnostic test was approximately 5,099, with 2,224 in urban areas and 2,875 in rural areas.

Table A.4 Anticipated number of women and children

Distribution of anticipated number of women age 15–49 and children age 6–59 months to be surveyed by residence and region, Cameroon MIS 2022

Region	Anticipated number of women age 15–49			Anticipated number of children age 6–59 months		
	Urban	Rural	Total	Urban	Rural	Total
Adamawa	232	308	540	130	257	387
Center (excludes Yaoundé)	278	339	617	156	283	439
Douala	681	na	681	381	na	381
East	278	259	537	156	216	372
Far North	248	517	765	138	432	570
Littoral (excludes Douala)	294	210	504	164	175	339
North	186	453	639	104	378	482
North-West	278	373	651	156	311	467
West	325	339	664	182	283	465
South	201	325	526	112	270	382
South-West	310	325	635	173	270	443
Yaoundé	666	n/a	666	372	n/a	372
Cameroon	**3,977**	**3,448**	**7,425**	**2,224**	**2,875**	**5,099**

na = not applicable

A.4 SELECTION PROBABILITY AND SAMPLING WEIGHTS

Given the sample's nonproportional distribution across regions and differences in response rates, weighting must be used in all analyses of 2022 CMIS data to ensure that the results are representative at both the national and domain levels. Since the 2022 CMIS sample was a two-stage stratified cluster sample, sampling weights were based on sampling probabilities computed separately for each sampling stage and for each cluster, where:

$P_{1hi:}$ first-stage sampling probability of the i^{th} cluster in layer h
$P_{2hi:}$ second-stage sampling probability within the i^{th} cluster (households)

Let a_h be the number of clusters drawn in layer h, M_{hi} the size measurement (number of households) according to the sampling frame in the i^{th} cluster, and $\sum M_{hi}$ the total size measurement in the layer. The probability of selecting the i^{th} cluster in layer h in the 2022 CMIS sample is computed as follows:

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

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

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

Let L_{hi} be the number of households in the household listing operation in cluster i of layer h, and let g_{hi} be the number of households selected in the cluster (sample size). The second stage's selection probability for each household in the cluster is computed as follows:

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

The overall selection probability of each household in cluster i of layer h in the 2022 CMIS is therefore the product of the two-stage selection probabilities:

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

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

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

A spreadsheet with all sampling parameters and selection probabilities was prepared to facilitate calculation of sampling weights. Survey weights were adjusted for household nonresponse and for individual nonresponse to obtain sampling weights for households and for women. Nonresponse was adjusted at the sampling layer level. Household sampling weights were multiplied by the reverse of household response rates by layer. For women's individual sampling weights, household sampling weights were multiplied by the reverse of women's individual response rates by layer. After adjusting for nonresponse, the sampling weights were normalized to obtain the final standard weights that appear in the data files. Weights were normalized at the national level so that the total number of unweighted cases was equal to the total number of weighted cases for households and for women. Standardization was performed by multiplying the sampling weight by the estimated total sampling fraction obtained from sampling the household weight and for women's weighting for the individual survey. Standardized weights are relative weights that are valid for estimating percentages, averages, ratios, and rates but not valid for estimations based on collective data or for estimating population totals.

A.5 INTERVIEWS AND RESULTS

Table A.5 shows detailed results from the household interviews and interviews with women. Using the number of households falling into specific response categories, the household response rate was computed as follows:

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

The response rate for women eligible to be surveyed is equal to the percentage of completed interviews. The overall response rate for women is taken from the household response rate and the female response rate. The results of the 2022 CMIS listed in **Table A.5** show that fewer women age 15–49 than anticipated were identified as being eligible for the individual survey and that 98% of the women identified were actually surveyed.

Table A.5 Sample implementation

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 region (unweighted), Cameroon MIS 2022

	Residence				Region												
Result	Yaoundé/ Douala	Other urban	Total urban	Rural	Adamawa	Centre (excludes Yaoundé)	Douala	East	Far North	Littoral (excludes Douala)	North	North-West	West	South	South-West	Yaoundé	Total
Selected households																	
Completed (C)	93.7	96.9	95.8	96.0	97.1	96.2	93.7	97.4	95.8	88.6	98.4	96.9	97.6	97.1	98.5	93.7	95.9
Household present but no competent respondent at home (HP)	0.9	0.1	0.4	0.1	0.0	0.2	0.8	0.0	0.0	0.4	0.2	0.0	0.0	0.2	0.0	1.0	0.3
Postponed (P)	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	0.2	0.0	0.0	0.0
Refused (R)	1.7	0.2	0.7	0.1	0.2	0.5	2.2	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.2	1.2	0.4
Dwelling not found (DNF)	0.0	0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.0	0.1
Household absent (HA)	0.8	0.7	0.7	1.5	1.1	1.4	0.6	0.7	2.8	3.1	0.0	0.5	0.2	0.9	0.0	1.0	1.0
Dwelling vacant/address not a dwelling (DV)	2.6	1.8	2.0	2.1	1.7	1.1	2.5	1.3	1.2	7.2	1.4	1.9	1.9	1.3	1.2	2.6	2.1
Dwelling destroyed (DD)	0.1	0.1	0.1	0.0	0.0	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.1
Other (O)	0.2	0.0	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.4	0.0	0.5	0.0	0.0	0.0	0.3	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
Number of sampled households	1,243	2,322	3,565	2,725	476	554	636	456	669	446	580	420	591	448	407	607	6,290
Household response rate (HRR)[1]	97.3	99.5	98.7	99.8	99.8	99.1	96.9	99.8	100.0	99.2	99.8	99.8	99.8	99.3	99.8	97.8	99.2
Eligible women																	
Completed (EWC)	94.7	99.3	97.8	98.9	98.8	98.6	92.4	98.5	99.6	98.6	99.6	98.2	99.2	99.5	99.4	97.4	98.3
Not at home (EWNH)	2.2	0.4	1.0	0.2	0.2	0.2	3.4	0.4	0.0	1.1	0.1	0.0	0.5	0.5	0.6	0.9	0.7
Postponed (EWP)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Refused (EWR)	1.7	0.1	0.6	0.2	0.5	0.4	2.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.4
Partly completed (EWPC)	0.2	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incapacitated (EWI)	1.1	0.1	0.4	0.6	0.5	0.8	1.5	0.7	0.3	0.3	0.0	1.3	0.3	0.0	0.0	0.7	0.5
Other (EWO)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	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
Number of women	1,253	2,586	3,839	2,808	587	490	669	455	774	349	781	388	641	438	491	584	6,647
Eligible women response rate (EWRR)[2]	94.7	99.3	97.8	98.9	98.8	98.6	92.4	98.5	99.6	98.6	99.6	98.2	99.2	99.5	99.4	97.4	98.3
Overall women response rate (OWRR)[3]	92.2	98.8	96.6	98.7	98.6	97.7	89.5	98.2	99.6	97.8	99.4	98.0	99.0	98.9	99.1	95.3	97.5

[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: nonsampling errors and sampling errors. Nonsampling errors are the results of mistakes made in implementing data collection and in 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, or incorrect data entry. Although numerous efforts were made during the implementation of the 2022 Cameroon Malaria Indicator Survey (2022 CMIS) to minimize this type of error, nonsampling 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 2022 CMIS is only one of many samples that could have been selected from the same population, using the same design and expected sample size. Each of these samples would yield results that differ somewhat from the results of the selected sample. Sampling errors are a measure of the variability among all possible samples. Although the exact degree of variability is unknown, it can be estimated from the survey results.

Sampling error is usually measured in terms of the standard error for a particular statistic (mean, percentage, and so on), 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 2022 CMIS sample was the result of a multistage stratified design, and, consequently, it was necessary to use more complex formulas. Sampling errors are computed via SAS programs developed by ICF. These programs use the Taylor linearization method to estimate variances for estimated means, proportions, and ratios. The Jackknife repeated replication method is used for variance estimation of more complex statistics such as fertility and mortality rates.

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

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

in which

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

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

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

Sampling errors for the 2022 CMIS 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, and for each region. For each variable, the type of statistic (mean, proportion, or rate) and the base population are given in **Table B.1**. **Tables B.2** through **B.16** 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 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 child had fever in last 2 weeks) can be interpreted as follows: the overall average from the national sample is 0.312, and its standard error is 0.012. Therefore, to obtain the 95% confidence limits, one adds and subtracts twice the standard error to the sample estimate, that is, $0.312 \pm 2 \times 0.012$. There is a high probability (95%) that the true proportion of children who had a fever in the last 2 weeks is between 0.287 and 0.336.

For the total sample, the value of the DEFT, averaged over all variables, is 2.18. This means that, due to multistage clustering of the sample, the average standard error is increased by a factor of 2.18 over that in an equivalent simple random sample.

Table B.1 List of selected variables for sampling errors, Cameroon MIS 2022

Variable	Estimate	Base population
	HOUSEHOLDS	
Ownership of at least one mosquito net	Proportion	Households
Average number of mosquito nets per household	Mean	Households
Ownership of at least one ITN	Proportion	Households
Average number of ITNs per household	Mean	Households
Ownership of at least one ITN for every two persons	Proportion	Households
	WOMEN	
Urban residence	Proportion	Women 15–49
No education	Proportion	Women 15–49
Secondary education or higher	Proportion	Women 15–49
Literate	Proportion	Women 15–49
4+ ANC visits	Proportion	Last birth of women 15–49 with live births in the last 2 years
8+ ANC visits	Proportion	Last birth of women 15–49 with live births in the last 2 years
Received 1+ doses of SP/Fansidar	Proportion	Last birth of women 15–49 with live births in the last 2 years
Received 2+ doses of SP/Fansidar	Proportion	Last birth of women 15–49 with live births in the last 2 years
Received 3+ doses of SP/Fansidar	Proportion	Last birth of women 15–49 with live births in the last 2 years
	CHILDREN	
Slept under any mosquito net last night	Proportion	Children under 5 in households
Slept under an ITN last night	Proportion	Children under 5 in households
Slept under an ITN last night in households with at least one ITN	Proportion	Children under 5 in households with at least one ITN
Had fever in last 2 weeks	Proportion	Children under 5 in women's birth history
Had blood taken from a finger or heel	Proportion	Children under 5 in women's birth history with a fever in the last 2 weeks
Sought care/treatment from a health facility	Proportion	Children under 5 with a fever in the last 2 weeks
Took ACT	Proportion	Child under 5 with a fever in the last 2 weeks who received any antimalarial drugs
Has anemia (hemoglobin <8.0 g/dl)	Proportion	Children 6–59 months tested for anemia
Has malaria (based on rapid test)	Proportion	Children 6–59 months tested for malaria (rapid test)
	PREGNANT WOMEN	
Slept under any mosquito net last night	Proportion	All pregnant women 15–49
Slept under an ITN last night	Proportion	All pregnant women 15–49
Slept under an ITN last night in households with at least one ITN	Proportion	Pregnant women 15–49 in households with at least one ITN

Table B.2 Sampling errors: Total sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.748	0.012	6,031	6,031	2.189	0.016	0.723	0.772
Average number of mosquito nets per household	2.212	0.077	6,031	6,031	2.915	0.035	2.059	2.366
Ownership of at least one ITN	0.723	0.013	6,031	6,031	2.278	0.018	0.697	0.749
Average number of ITNs per household	2.148	0.078	6,031	6,031	2.940	0.036	1.992	2.304
Ownership of at least one ITN for every two persons	0.485	0.016	5,990	5,987	2.542	0.034	0.452	0.518
WOMEN								
Urban residence	0.558	0.023	6,532	6,532	3.687	0.041	0.512	0.603
No education	0.196	0.015	6,532	6,532	3.011	0.075	0.166	0.226
Secondary education or higher	0.308	0.015	6,532	6,532	2.578	0.048	0.279	0.338
Literate	0.667	0.017	6,532	6,532	2.944	0.026	0.633	0.702
4+ ANC visits	0.646	0.020	1,740	1,746	1.757	0.031	0.606	0.687
8+ ANC visits	0.078	0.009	1,740	1,746	1.467	0.121	0.059	0.097
Received 1+ doses of SP/Fansidar	0.825	0.016	1,740	1,746	1.725	0.019	0.794	0.857
Received 2+ doses of SP/Fansidar	0.671	0.018	1,740	1,746	1.597	0.027	0.635	0.707
Received 3+ doses of SP/Fansidar	0.458	0.020	1,740	1,746	1.651	0.043	0.419	0.498
CHILDREN								
Slept under any mosquito net last night	0.589	0.018	4,741	4,890	2.546	0.031	0.553	0.626
Slept under an ITN last night	0.575	0.018	4,741	4,890	2.553	0.032	0.539	0.612
Slept under an ITN last night in households with at least one ITN	0.692	0.016	3,898	4,064	2.212	0.024	0.660	0.725
Had fever in last 2 weeks	0.312	0.012	4,342	4,311	1.772	0.040	0.287	0.336
Had blood taken from a finger or heel	0.265	0.024	1,344	1,343	1.986	0.090	0.217	0.313
Sought care/treatment from a health facility	0.556	0.026	1,344	1,343	1.919	0.047	0.504	0.608
Took ACT	0.457	0.030	574	566	1.456	0.066	0.397	0.518
Has anemia (hemoglobin <8.0 g/dl)	0.060	0.006	4,154	4,237	1.522	0.094	0.048	0.071
Has malaria (based on rapid test)	0.262	0.015	4,152	4,236	2.247	0.059	0.231	0.292
PREGNANT WOMEN								
Slept under any mosquito net last night	0.650	0.035	525	541	1.696	0.054	0.580	0.721
Slept under an ITN last night	0.628	0.036	525	541	1.682	0.057	0.557	0.699
Slept under an ITN last night in households with at least one ITN	0.788	0.035	410	431	1.722	0.044	0.718	0.857

Table B.3 Sampling errors: Urban sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.724	0.013	3,415	3,318	1.757	0.019	0.697	0.750
Average number of mosquito nets per household	1.973	0.088	3.415	3,318	2.689	0.044	1.797	2.148
Ownership of at least one ITN	0.688	0.015	3,415	3,318	1.927	0.022	0.657	0.719
Average number of ITNs per household	1.880	0.090	3,415	3,318	2.734	0.048	1.701	2.060
Ownership of at least one ITN for every two persons	0.450	0.017	3,394	3,296	2.039	0.039	0.415	0.485
WOMEN								
Urban residence	1.000	0.000	3,755	3,642	na	na	na	na
No education	0.108	0.018	3,755	3,642	3.505	0.164	0.072	0.143
Secondary education or higher	0.470	0.017	3,755	3,642	2.136	0.037	0.435	0.505
Literate	0.814	0.020	3,755	3,642	3.198	0.025	0.773	0.855
4+ ANC visits	0.745	0.026	834	804	1.706	0.035	0.693	0.797
8+ ANC visits	0.133	0.017	834	804	1.410	0.125	0.100	0.166
Received 1+ doses of SP/Fansidar	0.866	0.017	834	804	1.439	0.020	0.832	0.900
Received 2+ doses of SP/Fansidar	0.704	0.022	834	804	1.384	0.031	0.660	0.748
Received 3+ doses of SP/Fansidar	0.469	0.026	834	804	1.496	0.055	0.417	0.521
CHILDREN								
Slept under any mosquito net last night	0.580	0.024	2,242	2,184	2.319	0.042	0.532	0.629
Slept under an ITN last night	0.556	0.025	2,242	2,184	2.361	0.045	0.506	0.605
Slept under an ITN last night in households with at least one ITN	0.689	0.024	1,795	1,762	2.166	0.034	0.641	0.736
Had fever in last 2 weeks	0.274	0.014	2,115	2,002	1.471	0.052	0.245	0.302
Had blood taken from a finger or heel	0.274	0.030	570	549	1.621	0.111	0.213	0.334
Sought care/treatment from a health facility	0.602	0.035	570	549	1.703	0.058	0.532	0.672
Took ACT	0.540	0.043	245	238	1.343	0.079	0.454	0.625
Has anemia (hemoglobin <8.0 g/dl)	0.034	0.006	1,914	1,815	1.416	0.173	0.022	0.046
Has malaria (based on rapid test)	0.159	0.017	1,914	1,815	1.984	0.104	0.126	0.193
PREGNANT WOMEN								
Slept under any mosquito net last night	0.647	0.033	273	261	1.146	0.051	0.580	0.713
Slept under an ITN last night	0.600	0.036	273	261	1.205	0.060	0.529	0.672
Slept under an ITN last night in households with at least one ITN	0.796	0.033	199	197	1.141	0.041	0.730	0.861

Table B.4 Sampling errors: Rural sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.778	0.022	2,616	2,713	2.724	0.028	0.733	0.822
Average number of mosquito nets per household	2.505	0.136	2,616	2,713	3.200	0.054	2.234	2.777
Ownership of at least one ITN	0.765	0.023	2,616	2,713	2.758	0.030	0.720	0.811
Average number of ITNs per household	2.476	0.137	2,616	2,713	3.211	0.055	2.202	2.749
Ownership of at least one ITN for every two persons	0.528	0.030	2,596	2,692	3.055	0.057	0.468	0.588
WOMEN								
Urban residence	0.000	0.000	2,777	2,890	na	na	na	na
No education	0.307	0.025	2,777	2,890	2.842	0.081	0.257	0.357
Secondary education or higher	0.104	0.016	2,777	2,890	2.713	0.151	0.073	0.136
Literate	0.482	0.025	2,777	2,890	2.642	0.052	0.432	0.532
4+ ANC visits	0.562	0.030	906	941	1.795	0.053	0.503	0.621
8+ ANC visits	0.031	0.010	906	941	1.691	0.316	0.011	0.050
Received 1+ doses of SP/Fansidar	0.790	0.025	906	941	1.823	0.031	0.741	0.839
Received 2+ doses of SP/Fansidar	0.643	0.028	906	941	1.748	0.043	0.587	0.699
Received 3+ doses of SP/Fansidar	0.449	0.029	906	941	1.782	0.066	0.390	0.508
CHILDREN								
Slept under any mosquito net last night	0.597	0.027	2,499	2,706	2.712	0.045	0.544	0.650
Slept under an ITN last night	0.591	0.027	2,499	2,706	2.715	0.045	0.538	0.645
Slept under an ITN last night in households with at least one ITN	0.695	0.023	2,103	2,301	2.244	0.032	0.650	0.740
Had fever in last 2 weeks	0.344	0.020	2,227	2,309	1.940	0.057	0.305	0.383
Had blood taken from a finger or heel	0.259	0.034	774	795	2.175	0.132	0.191	0.328
Sought care/treatment from a health facility	0.525	0.035	774	795	1.939	0.066	0.455	0.594
Took ACT	0.397	0.043	329	328	1.587	0.108	0.311	0.483
Has anemia (hemoglobin <8.0 g/dl)	0.079	0.009	2,240	2,422	1.546	0.112	0.061	0.096
Has malaria (based on rapid test)	0.338	0.024	2,238	2,421	2.449	0.072	0.289	0.387
PREGNANT WOMEN								
Slept under any mosquito net last night	0.654	0.061	252	279	2.033	0.093	0.532	0.776
Slept under an ITN last night	0.653	0.061	252	279	2.031	0.093	0.531	0.775
Slept under an ITN last night in households with at least one ITN	0.781	0.058	211	234	2.023	0.074	0.665	0.896

Table B.5 Sampling errors: Adamawa sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.912	0.016	462	323	1.205	0.017	0.880	0.944
Average number of mosquito nets per household	2.987	0.103	462	323	1.152	0.035	2.780	3.193
Ownership of at least one ITN	0.910	0.016	462	323	1.181	0.017	0.879	0.941
Average number of ITNs per household	2.974	0.104	462	323	1.155	0.035	2.767	3.181
Ownership of at least one ITN for every two persons	0.648	0.028	461	321	1.270	0.044	0.591	0.704
WOMEN								
Urban residence	0.444	0.043	580	388	2.084	0.097	0.358	0.530
No education	0.381	0.053	580	388	2.629	0.139	0.275	0.487
Secondary education or higher	0.125	0.019	580	388	1.369	0.151	0.087	0.163
Literate	0.475	0.050	580	388	2.428	0.106	0.374	0.576
4+ ANC visits	0.518	0.040	187	130	1.084	0.077	0.439	0.598
8+ ANC visits	0.038	0.018	187	130	1.291	0.473	0.002	0.075
Received 1+ doses of SP/Fansidar	0.822	0.033	187	130	1.158	0.040	0.757	0.887
Received 2+ doses of SP/Fansidar	0.689	0.039	187	130	1.138	0.056	0.612	0.767
Received 3+ doses of SP/Fansidar	0.477	0.039	187	130	1.061	0.081	0.399	0.555
CHILDREN								
Slept under any mosquito net last night	0.626	0.047	473	337	2.088	0.074	0.533	0.719
Slept under an ITN last night	0.623	0.047	473	337	2.101	0.075	0.529	0.716
Slept under an ITN last night in households with at least one ITN	0.644	0.046	454	326	2.043	0.071	0.552	0.736
Had fever in last 2 weeks	0.374	0.031	444	303	1.342	0.082	0.312	0.436
Had blood taken from a finger or heel	0.223	0.039	166	113	1.193	0.173	0.145	0.300
Sought care/treatment from a health facility	0.420	0.045	166	113	1.177	0.108	0.329	0.510
Took ACT	0.248	0.064	66	46	1.186	0.256	0.121	0.375
Has anemia (hemoglobin <8.0 g/dl)	0.082	0.025	409	284	1.829	0.302	0.033	0.132
Has malaria (based on rapid test)	0.312	0.049	409	284	2.129	0.156	0.215	0.410
PREGNANT WOMEN								
Slept under any mosquito net last night	0.927	0.047	49	34	1.246	0.050	0.833	1.000
Slept under an ITN last night	0.927	0.047	49	34	1.246	0.050	0.833	1.000
Slept under an ITN last night in households with at least one ITN	0.942	0.039	48	34	1.153	0.042	0.863	1.000

Table B.6 Sampling errors: Centre (without Yaoundé) sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.595	0.030	533	475	1.409	0.050	0.535	0.655
Average number of mosquito nets per household	1.181	0.083	533	475	1.431	0.070	1.016	1.346
Ownership of at least one ITN	0.551	0.029	533	475	1.342	0.052	0.493	0.609
Average number of ITNs per household	1.065	0.081	533	475	1.444	0.076	0.903	1.227
Ownership of at least one ITN for every two persons	0.283	0.021	525	468	1.087	0.076	0.240	0.325
WOMEN								
Urban residence	0.488	0.047	483	418	2.061	0.096	0.394	0.581
No education	0.034	0.009	483	418	1.051	0.255	0.017	0.051
Secondary education or higher	0.322	0.038	483	418	1.796	0.119	0.246	0.399
Literate	0.802	0.035	483	418	1.947	0.044	0.732	0.873
4+ ANC visits	0.608	0.064	133	114	1.497	0.105	0.481	0.735
8+ ANC visits	0.087	0.039	133	114	1.599	0.450	0.009	0.166
Received 1+ doses of SP/Fansidar	0.671	0.047	133	114	1.151	0.070	0.577	0.765
Received 2+ doses of SP/Fansidar	0.565	0.053	133	114	1.223	0.093	0.460	0.671
Received 3+ doses of SP/Fansidar	0.326	0.038	133	114	0.941	0.118	0.249	0.402
CHILDREN								
Slept under any mosquito net last night	0.458	0.046	365	314	1.747	0.100	0.367	0.549
Slept under an ITN last night	0.421	0.044	365	314	1.704	0.105	0.332	0.509
Slept under an ITN last night in households with at least one ITN	0.646	0.038	239	204	1.239	0.059	0.569	0.723
Had fever in last 2 weeks	0.250	0.023	330	284	0.970	0.093	0.204	0.296
Had blood taken from a finger or heel	0.125	0.042	86	71	1.183	0.339	0.040	0.210
Sought care/treatment from a health facility	0.430	0.075	86	71	1.401	0.175	0.280	0.581
Took ACT	0.493	0.119	31	29	1.298	0.241	0.256	0.730
Has anemia (hemoglobin <8.0 g/dl)	0.050	0.017	318	275	1.422	0.347	0.015	0.085
Has malaria (based on rapid test)	0.491	0.043	318	275	1.524	0.087	0.406	0.577
PREGNANT WOMEN								
Slept under any mosquito net last night	0.401	0.086	40	38	1.090	0.213	0.230	0.572
Slept under an ITN last night	0.401	0.086	40	38	1.090	0.213	0.230	0.572
Slept under an ITN last night in households with at least one ITN	0.753	0.103	21	20	1.072	0.138	0.546	0.959

Table B.7 Sampling errors: Douala sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.721	0.026	596	779	1.411	0.036	0.669	0.773
Average number of mosquito nets per household	2.044	0.140	596	779	1.777	0.069	1.763	2.324
Ownership of at least one ITN	0.683	0.030	596	779	1.586	0.044	0.623	0.744
Average number of ITNs per household	1.923	0.142	596	779	1.822	0.074	1.639	2.207
Ownership of at least one ITN for every two persons	0.482	0.038	595	778	1.869	0.079	0.406	0.559
WOMEN								
Urban residence	1.000	0.000	618	876	na	na	na	na
No education	0.034	0.015	618	876	2.065	0.446	0.004	0.064
Secondary education or higher	0.585	0.026	618	876	1.331	0.045	0.532	0.638
Literate	0.923	0.018	618	876	1.700	0.020	0.887	0.960
4+ ANC visits	0.869	0.037	116	172	1.161	0.042	0.796	0.942
8+ ANC visits	0.215	0.036	116	172	0.939	0.167	0.143	0.287
Received 1+ doses of SP/Fansidar	0.904	0.034	116	172	1.253	0.038	0.835	0.973
Received 2+ doses of SP/Fansidar	0.727	0.056	116	172	1.349	0.077	0.615	0.839
Received 3+ doses of SP/Fansidar	0.559	0.072	116	172	1.547	0.128	0.416	0.703
CHILDREN								
Slept under any mosquito net last night	0.584	0.059	291	411	2.037	0.101	0.466	0.702
Slept under an ITN last night	0.555	0.061	291	411	2.079	0.109	0.434	0.677
Slept under an ITN last night in households with at least one ITN	0.666	0.060	240	343	1.964	0.090	0.547	0.786
Had fever in last 2 weeks	0.232	0.035	286	413	1.395	0.151	0.162	0.301
Had blood taken from a finger or heel	0.239	0.074	64	96	1.372	0.308	0.092	0.386
Sought care/treatment from a health facility	0.573	0.120	64	96	1.919	0.209	0.334	0.812
Took ACT	0.674	0.127	24	36	1.299	0.189	0.420	0.928
Has anemia (hemoglobin <8.0 g/dl)	0.014	0.009	217	305	1.094	0.618	-0.003	0.032
Has malaria (based on rapid test)	0.069	0.019	217	305	1.124	0.280	0.030	0.108
PREGNANT WOMEN								
Slept under any mosquito net last night	0.632	0.094	35	52	1.139	0.149	0.443	0.820
Slept under an ITN last night	0.583	0.100	35	52	1.180	0.171	0.383	0.783
Slept under an ITN last night in households with at least one ITN	0.739	0.092	26	41	1.051	0.125	0.555	0.924

Table B.8 Sampling errors: East sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.646	0.054	444	330	2.370	0.083	0.538	0.754
Average number of mosquito nets per household	1.584	0.175	444	330	2.253	0.111	1.234	1.935
Ownership of at least one ITN	0.641	0.054	444	330	2.363	0.084	0.533	0.749
Average number of ITNs per household	1.568	0.176	444	330	2.264	0.112	1.216	1.921
Ownership of at least one ITN for every two persons	0.400	0.042	434	322	1.784	0.105	0.316	0.484
WOMEN								
Urban residence	0.581	0.075	448	329	3.234	0.130	0.430	0.732
No education	0.310	0.084	448	329	3.860	0.273	0.141	0.479
Secondary education or higher	0.202	0.052	448	329	2.734	0.257	0.098	0.306
Literate	0.574	0.093	448	329	3.978	0.162	0.388	0.760
4+ ANC visits	0.524	0.055	141	92	1.307	0.105	0.413	0.634
8+ ANC visits	0.054	0.020	141	92	1.064	0.378	0.013	0.094
Received 1+ doses of SP/Fansidar	0.750	0.042	141	92	1.160	0.057	0.665	0.835
Received 2+ doses of SP/Fansidar	0.574	0.048	141	92	1.155	0.084	0.477	0.670
Received 3+ doses of SP/Fansidar	0.400	0.059	141	92	1.434	0.148	0.281	0.518
CHILDREN								
Slept under any mosquito net last night	0.418	0.034	397	280	1.381	0.082	0.349	0.486
Slept under an ITN last night	0.418	0.034	397	280	1.381	0.082	0.349	0.486
Slept under an ITN last night in households with at least one ITN	0.529	0.049	317	221	1.758	0.093	0.430	0.627
Had fever in last 2 weeks	0.341	0.032	352	247	1.256	0.093	0.278	0.405
Had blood taken from a finger or heel	0.201	0.052	115	84	1.386	0.259	0.097	0.304
Sought care/treatment from a health facility	0.436	0.068	115	84	1.459	0.156	0.300	0.571
Took ACT	0.151	0.082	49	31	1.582	0.541	-0.013	0.315
Has anemia (hemoglobin <8.0 g/dl)	0.034	0.015	367	257	1.546	0.429	0.005	0.064
Has malaria (based on rapid test)	0.413	0.053	367	257	2.048	0.128	0.308	0.519
PREGNANT WOMEN								
Slept under any mosquito net last night	0.606	0.078	44	32	1.045	0.128	0.451	0.762
Slept under an ITN last night	0.579	0.086	44	32	1.145	0.149	0.407	0.752
Slept under an ITN last night in households with at least one ITN	0.812	0.062	33	23	0.899	0.076	0.688	0.936

Table B.9 Sampling errors: Far North sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.973	0.009	641	989	1.479	0.010	0.955	0.992
Average number of mosquito nets per household	4.014	0.172	641	989	2.022	0.043	3.670	4.359
Ownership of at least one ITN	0.971	0.010	641	989	1.445	0.010	0.952	0.991
Average number of ITNs per household	4.011	0.173	641	989	2.029	0.043	3.664	4.357
Ownership of at least one ITN for every two persons	0.802	0.034	639	986	2.132	0.042	0.734	0.869
WOMEN								
Urban residence	0.318	0.060	771	1,186	3.576	0.189	0.198	0.438
No education	0.475	0.053	771	1,186	2.938	0.111	0.369	0.580
Secondary education or higher	0.063	0.015	771	1,186	1.704	0.237	0.033	0.092
Literate	0.337	0.031	771	1,186	1.824	0.092	0.275	0.399
4+ ANC visits	0.448	0.046	223	348	1.380	0.103	0.356	0.540
8+ ANC visits	0.016	0.008	223	348	0.959	0.505	0.000	0.032
Received 1+ doses of SP/Fansidar	0.777	0.048	223	348	1.718	0.062	0.681	0.873
Received 2+ doses of SP/Fansidar	0.628	0.047	223	348	1.441	0.074	0.534	0.721
Received 3+ doses of SP/Fansidar	0.447	0.029	223	348	0.873	0.065	0.388	0.505
CHILDREN								
Slept under any mosquito net last night	0.833	0.029	662	1,079	2.014	0.035	0.775	0.892
Slept under an ITN last night	0.833	0.029	662	1,079	2.014	0.035	0.775	0.892
Slept under an ITN last night in households with at least one ITN	0.847	0.026	650	1,061	1.839	0.031	0.795	0.899
Had fever in last 2 weeks	0.407	0.032	619	959	1.594	0.077	0.344	0.470
Had blood taken from a finger or heel	0.340	0.070	235	391	2.251	0.205	0.201	0.479
Sought care/treatment from a health facility	0.561	0.071	235	391	2.184	0.126	0.419	0.703
Took ACT	0.426	0.056	82	154	1.028	0.133	0.313	0.539
Has anemia (hemoglobin <8.0 g/dl)	0.097	0.015	576	926	1.220	0.155	0.067	0.127
Has malaria (based on rapid test)	0.270	0.034	575	926	1.811	0.124	0.203	0.337
PREGNANT WOMEN								
Slept under any mosquito net last night	0.914	0.043	67	108	1.250	0.047	0.828	1.000
Slept under an ITN last night	0.897	0.045	67	108	1.205	0.050	0.807	0.987
Slept under an ITN last night in households with at least one ITN	0.933	0.030	65	104	0.963	0.032	0.873	0.993

Table B.10 Sampling errors: Littoral (without Douala) sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.722	0.040	395	191	1.783	0.056	0.642	0.803
Average number of mosquito nets per household	1.892	0.154	395	191	1.786	0.081	1.584	2.200
Ownership of at least one ITN	0.706	0.040	395	191	1.735	0.056	0.626	0.786
Average number of ITNs per household	1.845	0.152	395	191	1.784	0.083	1.540	2.150
Ownership of at least one ITN for every two persons	0.463	0.035	393	190	1.394	0.076	0.393	0.534
WOMEN								
Urban residence	0.655	0.085	344	170	3.311	0.130	0.485	0.825
No education	0.050	0.017	344	170	1.452	0.342	0.016	0.084
Secondary education or higher	0.354	0.048	344	170	1.858	0.136	0.258	0.450
Literate	0.883	0.018	344	170	1.049	0.021	0.846	0.919
4+ ANC visits	0.826	0.049	79	38	1.153	0.060	0.727	0.925
8+ ANC visits	0.097	0.038	79	38	1.133	0.391	0.021	0.173
Received 1+ doses of SP/Fansidar	0.891	0.035	79	38	0.987	0.039	0.822	0.961
Received 2+ doses of SP/Fansidar	0.709	0.046	79	38	0.886	0.064	0.618	0.800
Received 3+ doses of SP/Fansidar	0.450	0.052	79	38	0.917	0.115	0.347	0.554
CHILDREN								
Slept under any mosquito net last night	0.619	0.067	211	107	1.990	0.108	0.486	0.753
Slept under an ITN last night	0.597	0.068	211	107	2.012	0.114	0.461	0.733
Slept under an ITN last night in households with at least one ITN	0.713	0.053	173	90	1.540	0.074	0.607	0.819
Had fever in last 2 weeks	0.225	0.034	193	95	1.127	0.151	0.157	0.293
Had blood taken from a finger or heel	0.278	0.050	46	21	0.745	0.179	0.179	0.378
Sought care/treatment from a health facility	0.529	0.090	46	21	1.215	0.171	0.348	0.710
Took ACT	0.561	0.125	22	10	1.157	0.223	0.310	0.812
Has anemia (hemoglobin <8.0 g/dl)	0.055	0.022	184	92	1.307	0.400	0.011	0.099
Has malaria (based on rapid test)	0.276	0.048	184	92	1.466	0.176	0.179	0.373
PREGNANT WOMEN								
Slept under any mosquito net last night	0.606	0.114	19	9	0.986	0.187	0.379	0.833
Slept under an ITN last night	0.606	0.114	19	9	0.986	0.187	0.379	0.833
Slept under an ITN last night in households with at least one ITN	0.641	0.115	18	9	0.988	0.179	0.411	0.871

Table B.11 Sampling errors: North sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.947	0.019	571	594	1.978	0.020	0.909	0.984
Average number of mosquito nets per household	3.530	0.162	571	594	1.926	0.046	3.206	3.854
Ownership of at least one ITN	0.944	0.020	571	594	2.023	0.021	0.905	0.983
Average number of ITNs per household	3.508	0.163	571	594	1.928	0.046	3.182	3.833
Ownership of at least one ITN for every two persons	0.757	0.045	570	593	2.502	0.059	0.667	0.847
WOMEN								
Urban residence	0.357	0.065	778	750	3.785	0.182	0.227	0.487
No education	0.419	0.036	778	750	2.029	0.086	0.347	0.491
Secondary education or higher	0.086	0.028	778	750	2.830	0.331	0.029	0.143
Literate	0.285	0.043	778	750	2.624	0.149	0.200	0.371
4+ ANC visits	0.562	0.044	263	252	1.452	0.079	0.473	0.651
8+ ANC visits	0.012	0.009	263	252	1.271	0.707	-0.005	0.029
Received 1+ doses of SP/Fansidar	0.723	0.050	263	252	1.795	0.069	0.624	0.822
Received 2+ doses of SP/Fansidar	0.593	0.045	263	252	1.499	0.077	0.502	0.684
Received 3+ doses of SP/Fansidar	0.418	0.048	263	252	1.575	0.115	0.322	0.514
CHILDREN								
Slept under any mosquito net last night	0.735	0.032	641	633	1.848	0.044	0.670	0.799
Slept under an ITN last night	0.727	0.031	641	633	1.739	0.042	0.665	0.788
Slept under an ITN last night in households with at least one ITN	0.741	0.030	620	620	1.692	0.040	0.682	0.801
Had fever in last 2 weeks	0.443	0.034	602	565	1.695	0.078	0.374	0.511
Had blood taken from a finger or heel	0.225	0.027	286	250	1.105	0.121	0.171	0.280
Sought care/treatment from a health facility	0.625	0.039	286	250	1.344	0.062	0.547	0.702
Took ACT	0.380	0.070	139	131	1.694	0.184	0.240	0.520
Has anemia (hemoglobin <8.0 g/dl)	0.089	0.013	573	568	1.105	0.147	0.063	0.116
Has malaria (based on rapid test)	0.285	0.035	572	567	1.875	0.124	0.214	0.356
PREGNANT WOMEN								
Slept under any mosquito net last night	0.792	0.103	76	72	2.198	0.130	0.586	0.998
Slept under an ITN last night	0.781	0.103	76	72	2.163	0.132	0.575	0.988
Slept under an ITN last night in households with at least one ITN	0.856	0.068	71	66	1.628	0.080	0.719	0.992

Table B.12 Sampling errors: North-West sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.655	0.051	407	339	2.149	0.077	0.554	0.757
Average number of mosquito nets per household	1.289	0.167	407	339	2.586	0.130	0.955	1.623
Ownership of at least one ITN	0.655	0.051	407	339	2.149	0.077	0.554	0.757
Average number of ITNs per household	1.289	0.167	407	339	2.586	0.130	0.955	1.623
Ownership of at least one ITN for every two persons	0.366	0.047	403	336	1.960	0.129	0.272	0.460
WOMEN								
Urban residence	0.416	0.104	381	303	4.103	0.250	0.208	0.623
No education	0.064	0.020	381	303	1.618	0.317	0.023	0.105
Secondary education or higher	0.272	0.047	381	303	2.065	0.173	0.178	0.367
Literate	0.663	0.060	381	303	2.469	0.090	0.544	0.783
4+ ANC visits	0.773	0.050	85	83	1.102	0.065	0.672	0.874
8+ ANC visits	0.132	0.030	85	83	0.813	0.227	0.072	0.193
Received 1+ doses of SP/Fansidar	0.963	0.022	85	83	1.066	0.023	0.919	1.007
Received 2+ doses of SP/Fansidar	0.871	0.061	85	83	1.656	0.070	0.750	0.992
Received 3+ doses of SP/Fansidar	0.691	0.083	85	83	1.643	0.120	0.525	0.857
CHILDREN								
Slept under any mosquito net last night	0.395	0.080	281	256	2.737	0.202	0.235	0.555
Slept under an ITN last night	0.395	0.080	281	256	2.737	0.202	0.235	0.555
Slept under an ITN last night in households with at least one ITN	0.567	0.068	200	179	1.940	0.120	0.431	0.704
Had fever in last 2 weeks	0.133	0.027	251	217	1.255	0.203	0.079	0.187
Had blood taken from a finger or heel	0.449	0.131	36	29	1.554	0.291	0.188	0.710
Sought care/treatment from a health facility	0.570	0.115	36	29	1.377	0.202	0.339	0.800
Took ACT	0.782	0.124	17	15	1.201	0.159	0.534	1.030
Has anemia (hemoglobin <8.0 g/dl)	0.010	0.006	254	224	0.935	0.588	-0.002	0.022
Has malaria (based on rapid test)	0.110	0.046	254	224	2.338	0.419	0.018	0.202
PREGNANT WOMEN								
Slept under any mosquito net last night	0.566	0.136	31	25	1.505	0.241	0.293	0.838
Slept under an ITN last night	0.566	0.136	31	25	1.505	0.241	0.293	0.838
Slept under an ITN last night in households with at least one ITN	0.768	0.147	19	19	1.477	0.192	0.473	1.000

Table B.13 Sampling errors: West sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.597	0.029	577	676	1.438	0.049	0.538	0.656
Average number of mosquito nets per household	1.472	0.134	577	676	1.930	0.091	1.203	1.741
Ownership of at least one ITN	0.587	0.029	577	676	1.408	0.049	0.530	0.645
Average number of ITNs per household	1.428	0.130	577	676	1.899	0.091	1.168	1.689
Ownership of at least one ITN for every two persons	0.288	0.041	572	669	2.147	0.141	0.207	0.370
WOMEN								
Urban residence	0.433	0.069	636	755	3.526	0.160	0.295	0.572
No education	0.038	0.013	636	755	1.717	0.342	0.012	0.064
Secondary education or higher	0.289	0.044	636	755	2.453	0.153	0.201	0.377
Literate	0.843	0.038	636	755	2.651	0.045	0.767	0.920
4+ ANC visits	0.761	0.036	174	213	1.120	0.048	0.688	0.834
8+ ANC visits	0.077	0.021	174	213	1.051	0.277	0.034	0.119
Received 1+ doses of SP/Fansidar	0.711	0.050	121	55	1.198	0.070	0.612	0.810
Received 2+ doses of SP/Fansidar	0.714	0.038	174	213	1.109	0.053	0.638	0.791
Received 3+ doses of SP/Fansidar	0.370	0.035	174	213	0.964	0.096	0.299	0.441
CHILDREN								
Slept under any mosquito net last night	0.335	0.036	484	630	1.669	0.107	0.263	0.407
Slept under an ITN last night	0.332	0.035	484	630	1.624	0.105	0.263	0.402
Slept under an ITN last night in households with at least one ITN	0.477	0.047	327	439	1.715	0.099	0.382	0.572
Had fever in last 2 weeks	0.219	0.030	446	543	1.554	0.139	0.158	0.280
Had blood taken from a finger or heel	0.202	0.052	97	119	1.270	0.257	0.098	0.307
Sought care/treatment from a health facility	0.598	0.034	97	119	0.684	0.057	0.530	0.667
Took ACT	0.801	0.053	42	43	0.843	0.066	0.696	0.906
Has anemia (hemoglobin <8.0 g/dl)	0.013	0.007	431	576	1.260	0.522	-0.001	0.027
Has malaria (based on rapid test)	0.188	0.056	431	576	2.996	0.300	0.075	0.301
PREGNANT WOMEN								
Slept under any mosquito net last night	0.285	0.085	55	81	1.387	0.299	0.115	0.456
Slept under an ITN last night	0.285	0.085	55	81	1.387	0.299	0.115	0.456
Slept under an ITN last night in households with at least one ITN	0.398	0.117	39	58	1.473	0.294	0.164	0.632

Table B.14 Sampling errors: South sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.702	0.029	435	202	1.336	0.042	0.643	0.760
Average number of mosquito nets per household	1.595	0.089	435	202	1.203	0.056	1.416	1.773
Ownership of at least one ITN	0.676	0.028	435	202	1.259	0.042	0.619	0.732
Average number of ITNs per household	1.547	0.090	435	202	1.197	0.058	1.368	1.726
Ownership of at least one ITN for every two persons	0.362	0.021	433	202	0.910	0.058	0.320	0.404
WOMEN								
Urban residence	0.509	0.054	436	200	2.256	0.106	0.401	0.617
No education	0.033	0.012	436	200	1.344	0.348	0.010	0.056
Secondary education or higher	0.367	0.039	436	200	1.669	0.105	0.290	0.444
Literate	0.883	0.021	436	200	1.351	0.024	0.842	0.925
4+ ANC visits	0.551	0.065	121	55	1.436	0.118	0.421	0.682
8+ ANC visits	0.053	0.021	121	55	1.036	0.400	0.011	0.095
Received 1+ doses of SP/Fansidar	0.711	0.050	121	55	1.198	0.070	0.612	0.810
Received 2+ doses of SP/Fansidar	0.525	0.063	121	55	1.391	0.121	0.398	0.652
Received 3+ doses of SP/Fansidar	0.299	0.061	121	55	1.463	0.205	0.176	0.421
CHILDREN								
Slept under any mosquito net last night	0.559	0.034	326	153	1.244	0.061	0.490	0.627
Slept under an ITN last night	0.532	0.035	326	153	1.253	0.065	0.463	0.602
Slept under an ITN last night in households with at least one ITN	0.720	0.044	229	113	1.480	0.061	0.631	0.808
Had fever in last 2 weeks	0.361	0.024	283	126	0.840	0.066	0.313	0.409
Had blood taken from a finger or heel	0.206	0.043	100	45	1.056	0.208	0.121	0.292
Sought care/treatment from a health facility	0.486	0.069	100	45	1.382	0.143	0.347	0.625
Took ACT	0.208	0.053	52	22	0.932	0.255	0.102	0.313
Has anemia (hemoglobin <8.0 g/dl)	0.054	0.014	295	141	1.089	0.265	0.026	0.083
Has malaria (based on rapid test)	0.457	0.032	295	141	1.096	0.070	0.393	0.520
PREGNANT WOMEN								
Slept under any mosquito net last night	0.552	0.094	44	19	1.237	0.170	0.364	0.739
Slept under an ITN last night	0.538	0.094	44	19	1.243	0.176	0.349	0.727
Slept under an ITN last night in households with at least one ITN	0.838	0.069	28	12	0.976	0.083	0.700	0.977

Table B.15 Sampling errors: South-West sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.616	0.066	401	435	2.701	0.107	0.485	0.748
Average number of mosquito nets per household	1.373	0.182	401	435	2.459	0.133	1.009	1.737
Ownership of at least one ITN	0.591	0.067	401	435	2.707	0.113	0.458	0.724
Average number of ITNs per household	1.327	0.185	401	435	2.486	0.140	0.956	1.698
Ownership of at least one ITN for every two persons	0.299	0.043	401	435	1.886	0.144	0.212	0.385
WOMEN								
Urban residence	0.423	0.069	488	467	3.099	0.164	0.284	0.562
No education	0.060	0.026	488	467	2.404	0.430	0.008	0.112
Secondary education or higher	0.461	0.052	488	467	2.291	0.112	0.358	0.565
Literate	0.890	0.038	488	467	2.652	0.042	0.815	0.966
4+ ANC visits	0.798	0.081	113	120	2.139	0.102	0.636	0.960
8+ ANC visits	0.113	0.047	113	120	1.565	0.415	0.019	0.206
Received 1+ doses of SP/Fansidar	0.935	0.028	113	120	1.188	0.030	0.880	0.990
Received 2+ doses of SP/Fansidar	0.825	0.060	113	120	1.667	0.073	0.705	0.945
Received 3+ doses of SP/Fansidar	0.685	0.109	113	120	2.487	0.159	0.467	0.903
CHILDREN								
Slept under any mosquito net last night	0.440	0.057	318	343	2.046	0.130	0.326	0.554
Slept under an ITN last night	0.425	0.060	318	343	2.172	0.142	0.304	0.546
Slept under an ITN last night in households with at least one ITN	0.607	0.051	249	240	1.633	0.083	0.506	0.708
Had fever in last 2 weeks	0.276	0.035	274	263	1.296	0.127	0.206	0.347
Had blood taken from a finger or heel	0.427	0.153	66	73	2.501	0.359	0.120	0.734
Sought care/treatment from a health facility	0.773	0.102	66	73	1.960	0.132	0.570	0.977
Took ACT	0.666	0.137	36	34	1.721	0.206	0.391	0.940
Has anemia (hemoglobin <8.0 g/dl)	0.110	0.030	290	315	1.655	0.278	0.049	0.170
Has malaria (based on rapid test)	0.304	0.073	290	315	2.680	0.238	0.159	0.449
PREGNANT WOMEN								
Slept under any mosquito net last night	0.502	0.113	22	20	1.033	0.225	0.276	0.727
Slept under an ITN last night	0.502	0.113	22	20	1.033	0.225	0.276	0.727
Slept under an ITN last night in households with at least one ITN	0.653	0.120	16	16	0.977	0.184	0.412	0.893

Table B.16 Sampling errors: Yaoundé sample, Cameroon MIS 2022

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
HOUSEHOLDS								
Ownership of at least one mosquito net	0.659	0.023	569	696	1.175	0.035	0.612	0.706
Average number of mosquito nets per household	1.317	0.088	569	696	1.551	0.066	1.142	1.492
Ownership of at least one ITN	0.559	0.027	569	696	1.315	0.049	0.504	0.614
Average number of ITNs per household	1.112	0.063	569	696	1.123	0.057	0.985	1.238
Ownership of at least one ITN for every two persons	0.311	0.023	564	688	1.201	0.075	0.264	0.358
WOMEN								
Urban residence	1.000	0.000	569	690	na	na	na	na
No education	0.027	0.010	569	690	1.522	0.386	0.006	0.047
Secondary education or higher	0.671	0.029	569	690	1.460	0.043	0.613	0.728
Literate	0.938	0.013	569	690	1.258	0.014	0.912	0.963
4+ ANC visits	0.875	0.033	105	129	1.029	0.038	0.809	0.942
8+ ANC visits	0.180	0.065	105	129	1.726	0.361	0.050	0.310
Received 1+ doses of SP/Fansidar	0.892	0.033	105	129	1.098	0.037	0.826	0.959
Received 2+ doses of SP/Fansidar	0.717	0.059	105	129	1.329	0.082	0.600	0.835
Received 3+ doses of SP/Fansidar	0.427	0.059	105	129	1.214	0.138	0.310	0.545
CHILDREN								
Slept under any mosquito net last night	0.554	0.044	292	346	1.503	0.079	0.466	0.641
Slept under an ITN last night	0.478	0.048	292	346	1.640	0.100	0.382	0.574
Slept under an ITN last night in households with at least one ITN	0.727	0.036	200	227	1.139	0.049	0.655	0.799
Had fever in last 2 weeks	0.174	0.027	262	297	1.147	0.155	0.120	0.228
Had blood taken from a finger or heel	0.191	0.061	47	52	1.050	0.318	0.070	0.313
Sought care/treatment from a health facility	0.491	0.080	47	52	1.083	0.163	0.331	0.650
Took ACT	0.673	0.144	14	14	1.110	0.214	0.384	0.962
Has anemia (hemoglobin <8.0 g/dl)	0.015	0.008	240	275	0.998	0.515	0.000	0.031
Has malaria (based on rapid test)	0.101	0.021	240	275	1.093	0.211	0.058	0.144
PREGNANT WOMEN								
Slept under any mosquito net last night	0.663	0.067	43	49	0.921	0.101	0.529	0.797
Slept under an ITN last night	0.540	0.079	43	49	1.031	0.147	0.382	0.699
Slept under an ITN last night in households with at least one ITN	0.893	0.058	26	30	0.931	0.064	0.778	1.000

DATA QUALITY TABLES

Appendix C

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), Cameroon MIS 2022

	Female		Male			Female		Male	
Age	Number	Percent	Number	Percent	Age	Number	Percent	Number	Percent
0	500	3.3	488	3.4	42	149	1.0	165	1.1
1	456	3.0	438	3.1	43	115	0.8	98	0.7
2	446	3.0	427	3.0	44	78	0.5	73	0.5
3	477	3.2	513	3.6	45	106	0.7	161	1.1
4	527	3.5	569	4.0	46	107	0.7	102	0.7
5	376	2.5	353	2.5	47	94	0.6	100	0.7
6	491	3.3	550	3.8	48	85	0.6	92	0.6
7	513	3.4	560	3.9	49	63	0.4	77	0.5
8	468	3.1	490	3.4	50	112	0.7	124	0.9
9	415	2.8	422	2.9	51	84	0.6	59	0.4
10	433	2.9	466	3.3	52	121	0.8	77	0.5
11	347	2.3	315	2.2	53	91	0.6	64	0.4
12	467	3.1	419	2.9	54	79	0.5	51	0.4
13	464	3.1	354	2.5	55	68	0.5	70	0.5
14	276	1.8	335	2.3	56	76	0.5	52	0.4
15	324	2.1	348	2.4	57	57	0.4	68	0.5
16	284	1.9	306	2.1	58	58	0.4	61	0.4
17	292	1.9	308	2.2	59	46	0.3	42	0.3
18	348	2.3	326	2.3	60	107	0.7	74	0.5
19	226	1.5	218	1.5	61	29	0.2	32	0.2
20	294	1.9	281	2.0	62	78	0.5	61	0.4
21	226	1.5	190	1.3	63	60	0.4	48	0.3
22	284	1.9	222	1.6	64	30	0.2	52	0.4
23	250	1.7	224	1.6	65	54	0.4	65	0.5
24	223	1.5	210	1.5	66	23	0.2	22	0.2
25	278	1.8	202	1.4	67	33	0.2	49	0.3
26	246	1.6	166	1.2	68	34	0.2	32	0.2
27	222	1.5	205	1.4	69	23	0.2	34	0.2
28	243	1.6	191	1.3	70	45	0.3	42	0.3
29	219	1.5	147	1.0	71	18	0.1	13	0.1
30	289	1.9	218	1.5	72	30	0.2	21	0.1
31	185	1.2	113	0.8	73	28	0.2	20	0.1
32	238	1.6	220	1.5	74	16	0.1	8	0.1
33	168	1.1	110	0.8	75	41	0.3	24	0.2
34	167	1.1	133	0.9	76	7	0.0	12	0.1
35	183	1.2	191	1.3	77	4	0.0	19	0.1
36	162	1.1	124	0.9	78	21	0.1	9	0.1
37	152	1.0	140	1.0	79	9	0.1	3	0.0
38	178	1.2	157	1.1	80+	123	0.8	93	0.6
39	101	0.7	105	0.7	Don't know	6	0.0	27	0.2
40	140	0.9	191	1.3					
41	103	0.7	89	0.6	Total	15,089	100.0	14,326	100.0

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

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10–54, number and percent distribution of interviewed women age 15–49, and percentage of eligible women who were interviewed (weighted), by 5-year age groups, Cameroon MIS 2022

Age group	Household population of women age 10–54	Interviewed women age 15–49		Percentage of eligible women interviewed
		Number	Percentage	
10–14	1,987	na	na	na
15–19	1,473	1,438	21.5	97.6
20–24	1,277	1,255	18.8	98.3
25–29	1,207	1,180	17.7	97.8
30–34	1,047	1,030	15.4	98.4
35–39	776	757	11.3	97.5
40–44	585	574	8.6	98.1
45–49	455	444	6.7	97.6
50–54	486	na	na	na
15–49	6,821	6,678	100.0	97.9
Ratios				
10–14 to 15–19	134.9	na	na	na
50–54 to 45–49	106.7	na	na	na

Note: The de facto population includes all residents and nonresidents 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 Age displacement at ages 14/15

Number of women and men age 12–18 listed in the household schedule by single-year age and age ratio 15/14, according to region (weighted), Cameroon MIS 2022

Region	Age							Total age 12–18	Age ratio (age 15/age 14)
	12	13	14	15	16	17	18		
				WOMEN					
Adamawa	34	38	8	10	18	32	21	161	117.7
Centre (excludes Yaoundé)	32	34	31	25	12	19	32	184	82.0
Douala	41	43	42	26	31	35	35	252	62.2
East	24	27	13	12	11	15	18	119	93.9
Far North	119	119	40	90	78	53	88	587	223.5
Littoral (excludes Douala)	10	10	9	8	10	7	11	65	86.3
North	61	60	46	49	35	35	44	329	108.5
North-West	10	20	18	13	6	13	17	98	72.7
West	88	58	35	47	37	35	40	340	134.6
South	12	12	7	9	8	7	9	64	131.5
South-West	18	33	32	26	25	19	14	167	80.3
Yaoundé	48	35	28	18	22	30	32	213	62.3
Total	495	490	309	333	291	299	361	2,579	107.8
				MEN					
Adamawa	28	32	19	15	15	18	20	146	82.1
Centre (excludes Yaoundé)	33	25	24	37	18	27	20	184	154.1
Douala	36	34	45	39	30	33	39	257	87.1
East	37	15	12	20	13	11	21	128	165.4
Far North	97	74	72	68	71	64	64	510	94.5
Littoral (excludes Douala)	13	8	10	12	9	7	9	67	115.0
North	50	50	31	42	38	30	42	283	134.8
North-West	15	25	17	18	16	15	16	121	106.2
West	57	54	34	39	50	46	44	324	113.9
South	16	8	11	17	11	20	11	93	152.5
South-West	18	15	31	24	26	27	22	162	77.7
Yaoundé	38	26	38	34	21	27	35	219	89.8
Total	436	365	344	365	316	323	343	2,492	106.1

Table C.4 Age displacement at ages 49/50

Number of women and men age 47–53 listed in the household schedule by single-year age and age ratio 50/49, according to region (weighted), Cameroon MIS 2022

Region	Age							Total age 47–53	Age ratio (age 50/age 49)
	47	48	49	50	51	52	53		
				WOMEN					
Adamawa	6	3	2	5	2	3	5	26	244.9
Centre (excludes Yaoundé)	7	8	6	11	6	11	6	54	176.9
Douala	13	10	7	18	6	21	8	84	244.6
East	1	2	4	4	6	2	2	22	110.9
Far North	24	16	10	13	13	24	15	115	130.0
Littoral (excludes Douala)	4	3	4	5	1	6	1	22	122.1
North	18	3	4	8	12	12	15	72	193.3
North-West	7	3	1	11	8	10	6	45	1,285.8
West	11	15	13	17	11	16	18	101	133.4
South	2	7	4	1	4	4	3	25	14.8
South-West	4	5	3	14	15	7	13	61	430.1
Yaoundé	3	13	7	11	6	10	11	60	162.3
Total	100	87	65	116	89	128	103	687	179.2
				MEN					
Adamawa	4	5	6	8	1	3	2	30	127.3
Centre (excludes Yaoundé)	5	4	8	12	16	12	7	65	147.3
Douala	15	18	6	23	10	4	10	86	365.5
East	7	1	2	4	6	3	1	25	169.5
Far North	24	24	12	10	9	20	14	113	80.4
Littoral (excludes Douala)	2	3	2	5	2	4	3	21	212.9
North	5	15	9	15	4	2	6	56	159.8
North-West	4	1	3	6	1	5	3	25	198.2
West	25	8	15	12	7	11	9	87	84.1
South	4	3	4	5	2	4	6	27	135.3
South-West	4	6	9	5	1	5	2	33	63.2
Yaoundé	9	10	3	26	4	14	5	71	950.4
Total	109	98	80	133	63	86	69	638	164.7

Table C.5 Live births by years preceding the survey

Number of live births, percentage with year and month of birth given, sex ratio at birth of live births, and ratio by years preceding the survey, according to living children, dead children, and total children (weighted), Cameroon MIS 2022

Years preceding survey	Number of live births			Percentage with year and month of birth given			Sex ratio at birth[1]			Ratio of years preceding survey[2]		
	Living children	Dead children	Total	Living children	Dead children	Total	Living children	Dead children	Total	Living children	Dead children	Total
0	930	19	949	99.9	100.0	99.9	97.3	263.8	99.2	na	na	na
1	837	31	868	99.3	100.0	99.3	95.3	106.6	95.7	96.4	117.4	97.0
2	806	34	840	99.6	100.0	99.6	97.4	104.5	97.7	95.4	111.6	95.9
3	854	30	884	99.8	100.0	99.8	125.2	83.2	123.5	101.0	93.6	100.7
4	885	29	914	97.5	97.2	97.5	109.9	91.5	109.3	130.5	107.7	129.7
5	501	25	527	100.0	98.6	99.9	106.5	310.9	111.5	113.4	170.1	115.2
0–4	4,311	143	4,455	99.2	99.4	99.2	104.5	109.2	104.6	na	na	na
5–9	501	25	527	100.0	98.6	99.9	106.5	310.9	111.5	na	na	na
All	4,813	168	4,981	99.3	99.3	99.3	104.7	125.7	105.3	na	na	na

na = not applicable

[1] $(B_m/B_f) \times 100$, where B_m and B_f are the numbers of male and female births, respectively

[2] $[2B_x/(B_{x-1}+B_{x+1})] \times 100$, where B_x is the number of births in year x preceding the survey

Table C.6 Completeness of reporting

Percentage of observations missing information for selected demographic and health questions (weighted), Cameroon MIS 2022

Subject	Reference group	Percentage with information missing	Number of cases
Date of birth of women	Women age 15–49		
Missing month but year reported		2.43	6,532
Missing year		0.04	6,532
Diarrhea in last 2 weeks	Living children age 0–59 months	0.00	4,269
Anemia	Living children age 6–59 months (from the Biomarker Questionnaire)	4.55	4,438
Malaria	Living children age 6–59 months (from the Biomarker Questionnaire)	3.73	4,438

Table C.7 Observation of mosquito nets

Percentage of all mosquito nets observed by the interviewers, according to background characteristics (weighted), Cameroon MIS 2022

Background characteristic	Percentage of mosquito nets observed by interviewers	Number of mosquito nets
Residence		
Yaoundé/Douala	85.8	2,509
Other urban	96.9	4,036
Rural	96.7	6,797
Region		
Adamawa	98.1	964
Centre (excludes Yaoundé)	93.8	561
Douala	87.3	1,593
East	98.6	524
Far North	99.6	3,972
Littoral (excludes Douala)	84.5	362
North	95.8	2,098
North-West	91.0	438
West	97.4	995
South	95.8	322
South-West	92.1	598
Yaoundé	83.1	916
Wealth quintile		
Lowest	98.8	3,522
Second	96.2	2,689
Middle	97.0	2,347
Fourth	92.3	2,368
Highest	87.2	2,416
Total	94.7	13,342

Table C.8 Number of enumeration areas completed by month and region

During the period of fieldwork, number of enumeration areas (EAs) completed by month, according to region, and percent distribution of EAs completed by month, Cameroon MIS 2022

Region	Month of fieldwork				Number of EAs
	August	September	October	November	
Adamawa	1	12	13	8	34
Centre (excludes Yaoundé)	1	18	12	8	39
Douala	1	5	17	21	44
East	1	6	15	10	33
Far North	4	26	11	6	47
Littoral (excludes Douala)	3	12	9	6	31
North	3	14	13	10	40
North-West	2	14	7	7	30
West	3	14	11	14	42
South	1	11	13	7	32
South-West	6	11	7	5	29
Yaoundé	3	14	13	12	43
Total number of EAs	29	157	141	114	444
Percent distribution	6.5	35.4	31.8	25.7	100.0

Note: EAs are classified by month according to the date by which the last Biomarker Questionnaire in the EA was completed.

Table C.9 Positive rapid diagnostic test (RDT) results by month and region

Among children age 6–59 months tested for malaria by RDT, percentage who tested positive by month of fieldwork, according to region, Cameroon MIS 2022

Region	Percentage of children classified as having malaria by month of fieldwork				Total percentage	Number of children
	August	September	October	November		
Adamawa	*	45.1	16.9	(13.8)	31.2	89
Centre (excludes Yaoundé)	64.5	47.4	47.4	(26.6)	49.1	135
Douala	(7.9)	4.6	6.8	(11.1)	6.9	21
East	(35.1)	33.9	42.0	55.9	41.3	106
Far North	19.1	29.4	27.6	*	27.0	250
Littoral (excludes Douala)	(31.7)	33.1	19.3	*	27.6	25
North	25.1	28.2	26.5	39.9	28.5	161
North-West	*	20.7	3.5	(20.9)	11.0	25
West	18.1	23.3	24.0	0.6	18.8	108
South	*	49.5	41.4	(45.9)	45.7	64
South-West	25.9	11.4	54.2	(20.5)	30.4	96
Yaoundé	(16.0)	6.8	10.0	(14.7)	10.1	28
Total	26.6	28.1	25.7	19.3	26.2	1,109

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.

PERSONS INVOLVED IN THE 2022 CAMEROON MALARIA INDICATOR SURVEY *Appendix* D

2022 Cameroon Malaria Indicator Survey Executive Management

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Appendix E

FORMATTING DATE: 7 August 2022
ENGLISH LANGUAGE: 7 August 2022

REPUBLIC OF CAMEROON
MINISTRY OF PUBLIC HEALTH
NATIONAL MALARIA PROGRAMME

NATIONAL INSTITUTE OF STATISTICS

2022 CAMEROON MALARIA INDICATOR SURVEY (2022 CMIS)
HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION

REGION _____

DIVISION _____

SUB-DIVISION _____

LOCALITY _____

NAME OF HOUSEHOLD HEAD _____

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

STRUCTURE NUMBER . . . . . | | | | |

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

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY
				MONTH
				YEAR 2022
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** 01 | LANGUAGE OF INTERVIEW** | | | NATIVE LANGUAGE OF RESPONDENT** | | | TRANSLATOR USED (YES = 1, NO = 2) |

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:
01 ENGLISH
02 FRANÇAIS
03 FUFULDE
04 PIDGIN
96 OTHER _____ (SPECIFY)

TEAM NUMBER | | |

TEAM SUPERVISOR
NAME _____
NUMBER | | | | |

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INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with the NATIONAL INSTITUTE OF STATISTICS. In collaboration with the MINISTRY OF PUBLIC HEALTH, we are conducting a survey about malaria all over Cameroon. The information we collect will help 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 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?

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 ASKING QUESTIONS 2-7 FOR EACH PERSON ASK QUESTIONS 7A-7C TO BE SURE THAT THE LISTING IS COMPLETE.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5
01			M F 1 2	Y N 1 2	Y N 1 2	IN YEARS	01	01
02			1 2	1 2	1 2		02	02
03			1 2	1 2	1 2		03	03
04			1 2	1 2	1 2		04	04
05			1 2	1 2	1 2		05	05
06			1 2	1 2	1 2		06	06
07			1 2	1 2	1 2		07	07
08			1 2	1 2	1 2		08	08
09			1 2	1 2	1 2		09	09
10			1 2	1 2	1 2		10	10

7A)	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
7B)	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
7C)	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
98 = DON'T KNOW

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	What is the main source of drinking water for members of your household?	**PIPED WATER** PIPED INTO DWELLING . . . . . 11 PIPED TO YARD/PLOT . . . . . 12 PIPED TO NEIGHBOR . . . . . 13 PUBLIC TAP/STANDPIPE . . . . . 14 TUBE WELL OR BOREHOLE . . . . . 21 **DUG WELL** PROTECTED WELL . . . . . 31 UNPROTECTED WELL . . . . . 32 **WATER FROM SPRING** PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 RAINWATER . . . . . 51 TANKER TRUCK . . . . . 61 CART WITH SMALL TANK . . . . . 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) . . . . . 81 BOTTLED WATER . . . . . 91 SACHET WATER . . . . . 92 OTHER _____ 96 (SPECIFY)	→ 105 → 103 → 103
102	What is the main source of water used by your household for other purposes such as cooking and handwashing?	**PIPED WATER** PIPED INTO DWELLING . . . . . 11 PIPED TO YARD/PLOT . . . . . 12 PIPED TO NEIGHBOR . . . . . 13 PUBLIC TAP/STANDPIPE . . . . . 14 TUBE WELL OR BOREHOLE . . . . . 21 **DUG WELL** PROTECTED WELL . . . . . 31 UNPROTECTED WELL . . . . . 32 **WATER FROM SPRING** PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 RAINWATER . . . . . 51 TANKER TRUCK . . . . . 61 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	What kind of toilet facility do members of your household usually use? IF NOT POSSIBLE TO DETERMINE, ASK PERMISSION TO OBSERVE THE FACILITY.	**FLUSH OR POUR FLUSH TOILET** FLUSH TO PIPED SEWER SYSTEM . . . . 11 FLUSH TO SEPTIC TANK . . . . . 12 FLUSH TO PIT LATRINE . . . . . 13 FLUSH TO SOMEWHERE ELSE . . . . . 14 FLUSH, DON'T KNOW WHERE . . . . . 15 **PIT LATRINE** VENTILATED IMPROVED PIT LATRINE . . 21 PIT LATRINE WITH SLAB . . . . . 22 PIT LATRINE WITHOUT SLAB/OPEN PIT . . 23 COMPOSTING TOILET . . . . . 31 BUCKET TOILET . . . . . 41 HANGING TOILET/HANGING LATRINE . . . . . 51 NO FACILITY/BUSH/FIELD . . . . . 61 OTHER _____ 96 (SPECIFY)	→ 109
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	Where is this toilet facility located?	IN OWN DWELLING . . . . . 1 IN OWN YARD/PLOT . . . . . 2 ELSEWHERE 3	
109	In your household, what type of cookstove is mainly used for cooking?	ELECTRIC STOVE . . . . . 01 SOLAR COOKER . . . . . 02 LIQUIFIED PETROLEUM GAS (LPG)/ COOKING GAS STOVE . . . . . 03 PIPED NATURAL GAS STOVE . . . . . 04 BIOGAS STOVE . . . . . 05 LIQUID FUEL STOVE . . . . . 06 MANUFACTURED SOLID FUEL STOVE . . . . 07 TRADITIONAL SOLID FUEL STOVE . . . . . 08 THREE STONE STOVE/OPEN FIRE . . . . . 09 NO FOOD COOKED IN HOUSEHOLD . . . . . 95 OTHER _____ 96 (SPECIFY)	→ 111 → 111
110	What type of fuel or energy source is used in this cookstove?	ALCOHOL/ETHANOL . . . . . 01 GASOLINE/DIESEL . . . . . 02 KEROSENE/PARAFFIN . . . . . 03 COAL/LIGNITE . . . . . 04 CHARCOAL . . . . . 05 WOOD . . . . . 06 STRAW/SHRUBS/GRASS . . . . . 07 AGRICULTURAL CROP . . . . . 08 ANIMAL DUNG/WASTE . . . . . 09 PROCESSED BIOMASS (PELLETS) OR WOODCHIPS . . . . . 10 GARBAGE/PLASTIC . . . . . 11 SAWDUST . . . . . 12 OTHER _____ 96 (SPECIFY)	

HOUSEHOLD CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
111	How many rooms in this household are used for sleeping?	ROOMS	
113	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?	a) COWS/BULLS	
	b) Other cattle?	b) OTHER CATTLE	
	c) Horses, donkeys, or mules?	c) HORSES/DONKEYS/MULES	
	d) Goats?	d) GOATS	
	e) Sheep?	e) SHEEP	
	f) Pig?	f) PIG	
	g) Chickens or other poultry?	g) CHICKENS/POULTRY	
114	Does any member of this household own any agricultural land?	YES . . . . . 1 NO 2	→ 116
115	How many hectares of agricultural land do members of this household own? IF 95 OR MORE, CIRCLE '950'. 1 HECTARE =10 000m^2=100mX100m	HECTARES . . . . 95 OR MORE HECTARES . . . . . 950 DON'T KNOW 998	

HOUSEHOLD CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
116	Does your household have:		YES	NO	
	a) Electricity?	a) ELECTRICITY	1	2	
	b) A radio?	b) RADIO	1	2	
	c) A television?	c) TELEVISION	1	2	
	d) A non-mobile telephone?	d) NON-MOBILE TELEPHONE	1	2	
	e) A desktop computer?	e) DESKTOP COMPUTER	1	2	
	f) A refrigerator/freezer?	f) REFRIGERATOR/FREEZER	1	2	
	g) A cooker?	g) COOKER	1	2	
	h) A gas stove?	h) GAS STOVE	1	2	
	i) An air conditioner?	i) AIR CONDITIONNER	1	2	
	j) A fan?	j) FAN	1	2	
	k) A CD/DVD player?	k) CD/DVD PLAYER	1	2	
	l) A grain mill ou mixer?	l) GRAIN MILL/MIXER	1	2	
	m) A modem/router unit for internet?	m) MODEM/ROUTER	1	2	
	n) A cable network / satellite dish?	n) CABLE/SATELLITE DISH	1	2	
	o) A generator?	o) GENERATOR	1	2	
	p) A solar panel?	p) SOLAR PANEL	1	2	
	q) A water pump?	q) WATER PUMP	1	2	
	r) A clock?	r) CLOCK	1	2	
117	Does any member of this household own:		YES	NO	
	a) A wrist watch?	a) WATCH	1	2	
	b) A mobile phone?	b) MOBILE PHONE	1	2	
	c) A bicycle?	c) BICYCLE	1	2	
	d) A motorcycle or motor scooter?	d) MOTORCYCLE/SCOOTER	1	2	
	e) An animal-drawn cart?	e) ANIMAL-DRAWN CART	1	2	
	f) A car or truck?	f) CAR/TRUCK	1	2	
	g) A boat with a motor?	g) BOAT WITH MOTOR	1	2	
	h) A laptop computer/?	h) LAPTOP COMPUTER	1	2	
	i) A tablet computer?	i) TABLET COMPUTER	1	2	
118	Does any member of this household have an account in a bank or other financial institution?	YES NO	1 2		
119	Does any member of this household use a mobile phone to make financial transactions such as sending or receiving money, paying bills, purchasing goods or services, or receiving wages?	YES NO	1 2		
120	Does your household have any mosquito nets?	YES NO	1 2		 → 132
121	How many mosquito nets does your household have? IF 7 OR MORE NETS, RECORD '7'.	NUMBER OF NETS	☐		

MOSQUITO NETS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	ASK THE RESPONDENT TO SHOW YOU ALL THE NETS IN THE HOUSEHOLD. OBSERVE AND ANSWER THE QUESTIONS FOR EACH NET, ONE BY ONE.		
122	ASSIGN EACH NET A SEQUENTIAL NUMBER AND RECORD THE NUMBER HERE.	NET NUMBER	
123	WAS THIS NET OBSERVED?	OBSERVED . . . . . 1 NOT OBSERVED 2	
124	How many months ago did your household get this mosquito net? IF LESS THAN ONE MONTH AGO, RECORD '00'.	MONTHS AGO . . . . . MORE THAN 36 MONTHS AGO . . . . . 95 NOT SURE 98	
125	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)** OLYSET NET . . . . . 11 OLYSET PLUS . . . . . 12 PERMANET . . . . . 13 DURANET . . . . . 14 YORKOOL . . . . . 15 DAWA PLUS . . . . . 16 INTERCEPTOR . . . . . 17 ROYAL SENTRY . . . . . 18 ROYAL GUARD . . . . . 19 MAGNET . . . . . 20 VEERALIN . . . . . 21 YAHE LLIN . . . . . 22 SAFI NET . . . . . 23 PANDA NET . . . . . 24 OTHER/DON'T KNOW BRAND (LLIN) . . 26 OTHER TYPE (NOT LLIN) . . . . . 96 DON'T KNOW TYPE 98	
126	Did you get the net through the 2015-2016 distribution campaign (6-7 years ago), the 2019-2021 distribution campaign (1-3 years ago), this year (2022) distribution campaign, during an antenatal care visit, or during an immunization visit?	YES, 2015-2016 CAMPAIGN . . . . . 1 YES, 2019-2021 CAMPAIGN . . . . . 2 YES, 2022 CAMPAIGN . . . . . 3 YES, ANC . . . . . 4 YES, IMMUNIZATION VISIT . . . . . 5 NO 6	→ 128
127	Where did you get the net?	PUBLIC HEALTH FACILITY . . . . . 01 PRIVATE HEALTH FACILITY . . . . . 02 PHARMACY . . . . . 03 SHOP/MARKET . . . . . 04 COMMUNITY HEALTH WORKEI . . . . . 05 RELIGIOUS INSTITUTION . . . . . 06 ASSOCIATION/NGO . . . . . 07 PARENT/FRIEND . . . . . 08 OTHER . . . . . 96 DON'T KNOW 98	
128	Did anyone sleep under this mosquito net last night?	YES . . . . . 1 NO . . . . . 2 NOT SURE 8	→ 130 → 131

MOSQUITO NETS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
129	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM HOUSEHOLD SCHEDULE.	NAME _____ LINE NUMBER . . . . . [ ][ ] NAME _____ LINE NUMBER . . . . . [ ][ ] NAME _____ LINE NUMBER . . . . . [ ][ ] NAME _____ LINE NUMBER . . . . . [ ][ ]	→ 131
130	What was the main reason this net was not used last night?	DON'T LIKE NET SHAPE . . . . . 01 DON'T LIKE NET COLOR . . . . . 02 DON'T LIKE NET MATERIAL/FABRIC . . . . . 03 DON'T LIKE NET SIZE . . . . . 04 DON'T LIKE SMELL . . . . . ;05 UNABLE TO HANG NET . . . . . 06 SLEPT OUTDOORS . . . . . 07 USUAL USER DIDN'T SLEEP HERE LAST NIGHT . . . . . 08 NO MOSQUITOES/NO MALARIA . . . . . 09 EXTRA NET/SAVING FOR LATER . . . . . 10 OTHER _____ 96 (SPECIFY)	
131	GO BACK TO 122 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 132.		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
132	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 . . . . . 34 CARPET . . . . . 35 OTHER _____ 96 (SPECIFY)	
133	OBSERVE MAIN MATERIAL OF THE ROOF OF THE DWELLING. RECORD OBSERVATION.	**NATURAL ROOFING** NO ROOF . . . . . 11 THATCH/PALM LEAF . . . . . 12 SOD . . . . . 13 **RUDIMENTARY ROOFING** RUSTIC MAT . . . . . 21 PALM/BAMBOO . . . . . 22 WOOD PLANKS . . . . . 23 CARDBOARD . . . . . 24 **FINISHED ROOFING** METAL . . . . . 31 WOOD . . . . . 32 CALAMINE/CEMENT FIBER . . . . . 33 CERAMIC TILES . . . . . 34 CEMENT . . . . . 35 ROOFING SHINGLES . . . . . 36 OTHER _____ 96 (SPECIFY)	
134	OBSERVE MAIN MATERIAL OF THE EXTERIOR WALLS OF THE DWELLING. RECORD OBSERVATION.	**NATURAL WALLS** NO WALLS . . . . . 11 CANE/PALM/TRUNKS . . . . . 12 DIRT . . . . . 13 **RUDIMENTARY WALLS** BAMBOO WITH MUD . . . . . 21 STONE WITH MUD . . . . . 22 UNCOVERED ADOBE . . . . . 23 PLYWOOD . . . . . 24 CARDBOARD . . . . . 25 REUSED WOOD . . . . . 26 **FINISHED WALLS** CEMENT . . . . . 31 STONE WITH LIME/CEMENT . . . . . 32 BRICKS . . . . . 33 CEMENT BLOCKS . . . . . 34 COVERED ADOBE . . . . . 35 WOOD PLANKS/SHINGLES . . . . . 36 OTHER _____ 96 (SPECIFY)	

ADDITIONAL HOUSEHOLD CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
134a	OBSERVE THE COURTYARD AND IN THE VICINITY OF THE DWELLING. ARE THERE PUDDLES OR POINTS OF STAGNANT OR ALMOST STAGNANT WATER WITHIN A RADIUS OF ABOUT 100 METERS FROM THE DWELLING OF THE HOUSEHOLD? LOOK FOR SWAMP, LAKE, LAGOON, RIVER, POND, UNCOVERED WELL, SPRING, AND WATER TRAPPED IN DISCARDED CANS, PLANT POTS, TIRES, DUG-OUTS, ROOFS, TREE TRUNKS ETC.	STAGNANT WATER OBSERVED . . . . . 1 NO STAGNANT WATER OBSERVED 2	
134b	OBSERVE THE COURTYARD AND THE VICINITY OF THE DWELLING. ARE THERE BUSHES OR TREES WITHIN A RADIUS OF ABOUT 100 METERS FROM THE HOUSEHOLD DWELLING? RECORD OBSERVATION.	BUSHES / TREES OBSERVED . . . . . 1 NO BUSHES / TREES OBSERVED 2	
134c	How long does it take in minutes to go from your home to the nearest public healthcare facility?	MINUTES . . . . . ☐☐☐ DON'T KNOW 998	
134d	How long does it take in minutes to go from your home to the nearest private healthcare facility?	MINUTES . . . . . ☐☐☐ DON'T KNOW 998	
135	RECORD THE TIME.	HOURS . . . . . ☐☐ MINUTES . . . . . ☐☐	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT INTERVIEW:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

FORMATTING DATE: 7 August 2022
ENGLISH LANGUAGE: 7 August 2022

REPUBLIC OF CAMEROON
MINISTRY OF PUBLIC HEALTH
NATIONAL MALARIA PROGRAMME

NATIONAL INSTITUTE OF STATISTICS

2022 CAMEROON MALARIA INDICATOR SURVEY (CMIS 2022)
WOMAN'S QUESTIONNAIRE

IDENTIFICATION

REGION _____

DIVISION _____

SUB-DIVISION _____

LOCALITY _____

NAME OF HOUSEHOLD HEAD _____

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

STRUCTURE NUMBER . . . . . | | | | |

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

NAME AND LINE NUMBER OF WOMAN _____ | | |

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY
				MONTH
				YEAR 2022
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** 01 | LANGUAGE OF INTERVIEW** | | NATIVE LANGUAGE OF RESPONDENT** | | TRANSLATOR USED (YES = 1, NO = 2) |

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:
01 ENGLISH; 02 FRENCH; 03 FUFULDE; 04 PIDGIN; 96 OTHER _____ (SPECIFY)

TEAM NUMBER | |

TEAM SUPERVISOR
NAME _____
NUMBER | | | |

INTRODUCTION AND CONSENT

Hello. My name is _____. . I am working with the NATIONAL INSTITUTE OF STATISTICS. In collaboration with the MINISTRY OF PUBLIC HEALTH, we are conducting a survey about malaria all over CAMEROON. The information we collect will help 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, 1st secondary cycle, 2nd secondary cycle or or higher?	PRIMARY . . . . . 1 1ST SECONDARY CYCLE . . . . . 2 2ND SECONDARY CYCLE . . . . . 3 HIGHER 4	
106	What is the highest [GRADE/FORM/YEAR] you completed at that level? IF COMPLETED LESS THAN ONE YEAR AT THAT LEVEL, RECORD '00'.	[GRADE/FORM/YEAR] . . . . . ☐☐	

Codes for Q.106

LEVEL	PRIMARY	SECONDARY 1st Cycle	SECONDARY 2nd Cycle	HIGHER
CLASS/FORM/YEAR	LESS THAN 1YR. =0 SIL/Class1 =1 CP/CPS/class2 =2 CE1/Class3 =3 CE2/Class4 =4 CM1/Class5 =5 CM2/Class6 =6	LESS THAN 1YR. =0 6è/1ère A.T/Form 1 =1 5è/2è A.T./Form 2 =2 4è/3è A.T./Form 3 =3 3è/4è A.T./Form4 =4	LESS THAN 1YR. =0 2nde G ou T/Form 5 =1 1ère G ou T/Lower 6 =2 Terminale G ou T/Upper 6 =3	LESS THAN 1YR. =0 1è an/1st yr =1 2è an/2nd yr =2 3è an/3rd yr =3 4è an/4th yr + =4

SECTION 1. RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
107	CHECK 105: PRIMARY OR 1ST SECONDARY CYCLE OR 2ND SECONDARY CYCLE ☐	HIGHER ☐ →	110
108	Now I would like you to read this sentence to me. SHOW CARD TO RESPONDENT. IF RESPONDENT CANNOT READ WHOLE SENTENCE, PROBE: Can you read any part of the sentence to me?	CANNOT READ AT ALL . . . . . 1 ABLE TO READ ONLY PART OF THE SENTENCE . . . . . 2 ABLE TO READ WHOLE SENTENCE . . . . . 3 NO CARD WITH REQUIRED LANGUAGE _____ 4 (SPECIFY LANGUAGE) BLIND/VISUALLY IMPAIRED 5	
109	CHECK 108: CODE '2', '3' OR '4' CIRCLED ☐	CODE '1' OR '5' CIRCLED ☐ →	111
110	Do you read a newspaper or magazine at least once a week, less than once a week or not at all?	AT LEAST ONCE A WEEK . . . . . 1 LESS THAN ONCE A WEEK . . . . . 2 NOT AT ALL 3	
111	Do you listen to the radio at least once a week, less than once a week or not at all?	AT LEAST ONCE A WEEK . . . . . 1 LESS THAN ONCE A WEEK . . . . . 2 NOT AT ALL 3	
112	Do you watch television at least once a week, less than once a week or not at all?	AT LEAST ONCE A WEEK . . . . . 1 LESS THAN ONCE A WEEK . . . . . 2 NOT AT ALL 3	
113	Do you own a mobile phone?	YES . . . . . 1 NO 2	→ 115
114	Is your mobile phone a smart phone?	YES . . . . . 1 NO 2	
115	Have you ever used the Internet from any location on any device?	YES . . . . . 1 NO 2	→ 118
116	In the last 12 months, have you used the Internet? IF NECESSARY, PROBE FOR USE FROM ANY LOCATION, WITH ANY DEVICE.	YES . . . . . 1 NO 2	→ 118
117	During the last one month, how often did you use the Internet: almost every day, at least once a week, less than once a week, or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
118	What is your religion?	CATHOLIC . . . . . 1 PROTESTANT . . . . . 2 OTHER CHRISTIAN _____ 3 (SPECIFY) MUSLIM . . . . . 4 ANIMIST . . . . . 5 OTHER _____ 6 (SPECIFY) NONE 7	
119	What is your ethnic group? RECORD THE ETHNIICTY AND LEAVE THE CODING BOXES EMPTY FOR THE FOREIGNERS, RECORD « FOREIGN »	☐☐☐ _____ _____	

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 LIVE 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 ☐		→ 224
211	Now I'd like to ask you about your more recent births. How many births have you had from 2017 to 2022? RECORD NUMBER OF LIVE BIRTHS IN 2017-2022.	TOTAL IN 2017-2022 . . . . . ☐☐ NONE 00	→ 224

212 Now I would like to record the names of all your births in 2017-2022, whether still alive or not, starting with the most recent one you had.

RECORD IN 213 THE NAMES OF ALL THE BIRTHS BORN IN 2017-2022. RECORD TWINS AND TRIPLETS ON SEPARATE ROWS. IF THERE ARE MORE THAN 3 BIRTHS, USE AN ADDITIONAL QUESTIONNAIRE.

213	214	215	216	217	218	219 IF ALIVE:	220 IF ALIVE:	221 IF ALIVE:
What name was given to your (most recent/ previous) baby? RECORD NAME. BIRTH HISTORY NUMBER.	Is (NAME) a boy or a girl?	Was (NAME) a single birth, a twin, or a triplet? IF MULTIPLE PREGNANCY: COPY VALUE FOR 215 IN NEXT ROW(S).	On what day, month, and year was (NAME) born?	FOR ROW 01, ASK: Have you had any live births since the birth of (NAME OF MOST RECENT BIRTH), including any children who died after birth? AFTER ROW 01: IF 215=1 OR THIS IS THE LAST BIRTH OF A MULTIPLE PREGNANCY, ASK: Were there any other live births between (NAME) and (NAME OF FOLLOWING BIRTH), including any children who died after birth? IF 215 > 1 AND THIS IS NOT THE LAST BIRTH OF THE PREGNANCY, SKIP TO 213 IN	Is (NAME) still alive?	How old was (NAME) at (his/her) last birthday? RECORD AGE IN COMPLETED YEARS.	Is (NAME) living with you?	RECORD HOUSEHOLD LINE NUMBER OF CHILD. RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD.
01 NAME	BOY 1 GIRL 2	SING 1 TWINS 2 TRIP 3 NO. OF OUTCOMES	DAY MONTH YEAR	YES . . . . . 1 (ADD BIRTH) NO . . . . . 2 (GO TO 213 IN NEXT ROW)	YES 1 NO 2 (NEXT BIRTH)	AGE IN YEARS	YES 1 NO 2	HOUSEHOLD LINE NUMBER
02 NAME	BOY 1 GIRL 2	SING 1 TWINS 2 TRIP 3 NO. OF OUTCOMES	DAY MONTH YEAR	YES . . . . . 1 (ADD BIRTH) NO . . . . . 2 (GO TO 213 IN NEXT ROW)	YES 1 NO 2 (NEXT BIRTH)	AGE IN YEARS	YES 1 NO 2	HOUSEHOLD LINE NUMBER
03 NAME	BOY 1 GIRL 2	SING 1 TWINS 2 TRIP 3 NO. OF OUTCOMES	DAY MONTH YEAR	YES . . . . . 1 (ADD BIRTH) NO . . . . . 2 (GO TO 213 IN NEXT ROW)	YES 1 NO 2 (NEXT BIRTH)	AGE IN YEARS	YES 1 NO 2	HOUSEHOLD LINE NUMBER

217A	Did you have any other live births before the birth of (NAME) and during or after January 2017?	YES . . . . . 1 → ADD TO TABLE NO 2
217B	READ THE LIST OF LIVE BIRTHS IN ORDER TO THE RESPONDENT, STARTING FROM THE MOST RECENT BIRTH, AND ASK IF THEY ARE ALL THAT SHE HAS HAD IN OR SINCE JANUARY 2017, AND IF THEY ARE LISTED IN ORDER. DOES THE RESPONDENT AGREE? IF NOT, PROBE FOR THE CORRECT INFORMATION AND REVISE THE BIRTH HISTORY ACCORDINGLY. IF YES, PROCEED TO 218 ROW 1.	

SECTION 2. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
223	COMPARE 211 WITH NUMBER OF BIRTHS IN BIRTH HISTORY NUMBERS ARE THE SAME ☐ ↓ NUMBERS ARE DIFFERENT ☐ → (PROBE AND RECONCILE)		
224	Are you pregnant now?	YES . . . . . 1 NO . . . . . 2 UNSURE 8	→ 301
225	How many weeks or months pregnant are you? RECORD NUMBER OF COMPLETED WEEKS OR MONTHS.	WEEKS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐	

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	CHECK 216 AND 219: ONE OR MORE BIRTHS 0-35 MONTHS BEFORE THE SURVEY ☐ ↓ NO BIRTHS 0-35 MONTHS BEFORE THE SURVEY ☐ → 401		
302	RECORD THE NAME OF THE MOST RECENT BIRTH FROM 213, LINE 01:	MOST RECENT BIRTH NAME _____	
303	Now I would like to ask you some questions about your last pregnancy that resulted in a live birth. While you were pregnant with (NAME), did you see anyone for antenatal care for this pregnancy?	YES . . . . . 1 NO 2	→ 304
303a	What is the main reason you did not see anyone for antenatal care when you were pregnant with (NAME) ?	HAVE NO MONEY . . . . . 1 HEALTH FACILITY / HEALTHCARE PROVIDER TOO FAR . . . . . 2 FEAR OF CATCHING COVID . . . . . 3 DIDN'T KNOW THE IMPORTANCE . . . . . 4 OTHER REASON _____ 6 (SPECIFY)	→ 308
304	Whom did you see? Anyone else? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED.	**HEALTH PROFESSIONAL** DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B AUXILIARY MIDWIFE . . . . . C **OTHER PERSON** TRADITIONAL BIRTH ATTENDANT . . . . . D COMMUNITY / VILLAGE HEALTH WORKER . . E OTHER _____ X (SPECIFY)	

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

NO.	NAME OF CHILD _____	BIRTH HISTORY NUMBER	
305	Where did you receive antenatal care for this pregnancy? Anywhere else? PROBE TO IDENTIFY THE TYPE OF SOURCE. IF UNABLE TO DETERMINE IF PUBLIC, PRIVATE, OR NGO SECTOR, RECORD 'X' AND WRITE THE NAME OF THE PLACE(S).	**HOME** HER HOME . . . . . A OTHER HOME . . . . . B **PUBLIC MEDICAL SECTOR** PUBLIC HOSPITAL . . . . . C SUB-DIVISIONAL MEDICAL CENTER/ INTEGRATED HEALTH CENTER/ DISPENSARY . . . . . D OTHER PUBLIC MEDICAL SECTOR _____ E (SPECIFY) **PRIVATE MEDICAL SECTOR** CONFESSIONAL PRIVATE HOSPITAL/ CLINIC F PRIVATE LAY HOSPITAL/CLINIC . . . . . G CONFESSIONAL PRIVATE HEALTH CENTER/ DISPENSARY . . . . . H PRIVATE LAY HEALTH CENTER . . . . . I MEDICAL CABINET/CLINIC . . . . . J OTHER PRIVATE MEDICAL SECTOR _____ K (SPECIFY) OTHER _____ X (SPECIFY)	→ 305b
305a	What is the main reason you did not go to a health facility to receive antenatal care during this pregnancy?	HAVE NO MONEY . . . . . 1 HEALTH FACILITY TOO FAR . . . . . 2 FEAR OF CATCHING COVID . . . . . 3 DIDN'T KNOW THE IMPORTANCE . . . . . 4 OTHER REASON _____ 6 (SPECIFY)	→ 306
305b	What protective measures against COVID-19 have you noticed at the health facility or from the healthcare providers you recived the antenatal care from? Any other measures? RECORD ALL MENTIONED.	AVAILABILITY OF HAND WASHING DEVICES/ HAND SANITIZER DISPENSER . . . . . A WEARING MASKS/FACE COVERS . . . . . B PRACTICE SOCIAL/PHYSICAL DISTANCING . . C LIMITED/NO CONTACT BETWEEN HEALTH CARE PROVIDERS AND CLIENTS . . . . . D NO PROTECTIVE MEASURE NOTED . . . . . E NOT AWARE OF COVID-19/ DO NOT KNOW OF COVID-19 . . . . . F OTHER MEASURE _____ X (SPECIFY)	
306	How many weeks or months pregnant were you when you first received antenatal care for this pregnancy?	WEEKS . . . . . 1 MONTHS . . . . . 2 DON'T KNOW 998	
307	How many times did you receive antenatal care during this pregnancy?	NUMBER OF TIMES . . . . . . DON'T KNOW 98	

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

NO.	NAME OF CHILD _____	BIRTH HISTORY NUMBER	
308	During this pregnancy, did you take SP/Fansidar pills to keep you from getting malaria?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 311
309	How many times did you take the 3 SP/Fansidar pills during this pregnancy?	TIMES	
310	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	→ 401
311	What is the main reason you did not take SP/Fansidar pills to keep you from getting malaria during this pregnancy?	NO SP/FANSIDAR AVAILABLE . . . . . 01 DID NOT SEE A HEALTH CARE PROVIDER/ DID NOT GO TO A HEALTH FACILITY . . . . . 02 TOOK ANOTHER MODERN MALARIA DRUG . . 03 TOOK ANOTHER TRADITIONAL MALARIA DRUG 04 NOT AWARE HAD TO TAKE ANY . . . . . 05 FEAR OF SIDE EFFECTS . . . . . 06 HEALTH FACILITY TOO FAR . . . . . 07 HAD NO MONEY . . . . . 08 SP/FANSIDAR NOT GIVEN . . . . . 09 OTHER REASON _____ 96 (SPECIFY)	

SECTION 4. FEVER IN CHILDREN

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
401	CHECK 216, 218, AND 219 IN THE BIRTH HISTORY: ANY SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY? ONE OR MORE SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY ↓ NO SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY → 501		
402	Now I would like to ask some questions about the health of your children born in the last 5 years. (We will talk about each separately, starting with the youngest.)		
403	RECORD THE NAME AND BIRTH HISTORY NUMBER FROM 213 OF THE SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY, STARTING WITH THE LAST ONE. NAME OF CHILD _____ BIRTH HISTORY NUMBER		
404	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 416
404a	Did you fear that the fever might be a sign (NAME) may have COVID-19?	YES . . . . . 1 NO . . . . . 2 NOT AWARE OF COVID-19/DO NOT KNOW OF COVID-19 8	
404b	Did you fear that the fever might be a sign that (NOM) may have malaria?	YES . . . . . 1 NO 2	
404c	Did you do anything or give treatment to (NOM) on your own, without seeking advice from a health care professional?	YES . . . . . 1 NO 2	→ 405
404d	What type of treatment or medication did you first provide to (NOM) ?	MODERN MEDICINE . . . . . 1 TRADITIONAL MEDICINE/TREATMENT . . 2 PRAYER / INCANTATIONS . . . . . 3 OTHER _____ 6 (SPECIFY)	
404e	Where did you seek this treatment or medicine?	FROM RESPONDENT HOME . . . . . 01 HOME MADE . . . . . 02 PHARMACY/HEALTH FACILITY . . . . . 03 COMMUNITY HEALTH WORKER . . . . . 04 SHOP/MARKET . . . . . 05 TRADITIONAL PRACTITIONER . . . . . 06 ITINERANT DRUG SELLER . . . . . 07 OTHER _____ 96 (SPECIFY)	
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	
406	Were you told by a healthcare provider that (NAME) had malaria?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 407
406a	Did the healthcare provider tell you that (NAME) had malaria after performing a blood test, before performing a blood test or no blood test was performed to look for malaria?	AFTER BLOOD TEST . . . . . 1 BEFORE BLOOD TEST . . . . . 2 NO BLOOD TEST PERFORMED . . . . . 3 DON'T KNOW 8	
407	Did you seek advice or treatment for the illness from any source?	YES . . . . . 1 NO 2	→ 408a

SECTION 4. FEVER IN CHILDREN

NO.	NAME OF CHILD _____	BIRTH HISTORY NUMBER	

408 Where did you seek advice or treatment?

Anywhere else?

PROBE TO IDENTIFY THE TYPE OF SOURCE.

IF UNABLE TO DETERMINE IF PUBLIC, PRIVATE, OR NGO SECTOR, RECORD 'X' AND WRITE THE NAME OF THE PLACE(S).

PUBLIC MEDICAL SECTOR
- GOVERNMENT HOSPITAL . . . . . A
- SUB-DIVISIONAL MEDICAL CENTER/ INTEGRATED HEALTH CENTER/ DISPENSARY . . . . . B
- OTHER PUBLIC MEDICAL SECTOR _____ (SPECIFY) C

PRIVATE MEDICAL SECTOR
- PRIVATE CONFESSIONAL HOSPITAL/ CLINIC D
- PRIVATE LAY/NGO HOSPITAL/CLINIC . . . . . E
- PRIVATE CONFESSIONAL HEALTH CENTER/DISPENSARY . . . . . F
- PRIVATE LAY/NGO HEALTH CENTER . . . . . G
- MEDICAL CABINET/CLINIC . . . . . H
- PHARMACY I
- OTHER PRIVATE MEDICAL SECTOR _____ (SPECIFY) J

→ 408b

OTHER SOURCE
- COMMUNITY HEALTH WORKER . . . . . K
- SHOP L
- TRADITIONAL PRACTITIONER . . . . . M
- MARKET . . . . . N
- ITINERANT DRUG SELLER . . . . . O

OTHER _____ (SPECIFY) X

408a What is the main reason you did not go to a health facility for advice or treatment for this fever?

- HAVE NO MONEY 1
- HEALTH FACILITY TOO FAR 2
- FEAR OF CATCHING COVID 3
- DID NOT THINK HEALTH CONDITION WAS SERIOUS 4
- OTHER REASON _____ (SPECIFY) 6

→ 409

408b What protective measures against COVID-19 have you noticed at the health facility or from the healthcare providers you recived advice or treatment from?

Any other measures?

RECORD ALL MENTIONED.

- AVAILABILITY OF HAND WASHING DEVICES/ HAND SANITIZER DISPENSER . . . . . A
- WEARING MASKS/FACE COVERS . . . . . B
- PRACTICE SOCIAL/PHYSICAL DISTANCING . . C
- LIMITED/NO CONTACT BETWEEN HEALTH CARE PROVIDERS AND CLIENTS . . . . . D
- NO PROTECTIVE MEASURE NOTED . . . . . E
- NOT AWARE OF COVID-19/ DO NOT KNOW OF COVID-19 . . . . . F
- OTHER MEASURE _____ (SPECIFY) X

408c How much money was did you spend in FCFA at the health facility to receive advice or treatment for the (NAME)'s illness (NAME) on the following items:

IF THE TREATMENT AND SERVICE WAS FREE, RECORD '000000
IF THE RESPONDENT CANNOT ESTIMATE, RECORD '99998

1) Transport from the household to the health facility and back — 1) . . | | | | | | |
2) Consultation fees — 2) | | | | | | |
3) Diagnostic test cost — 3) | | | | | | |
4) Drug costs — 4) | | | | | | |
5) Other cost — 5) | | | | | | |

SECTION 4. FEVER IN CHILDREN

NO.			
	NAME OF CHILD _____	BIRTH HISTORY NUMBER	
409	CHECK 408: TWO OR MORE CODES CIRCLED ☐	ONLY ONE CODE CIRCLED ☐ → 411 NOT ASKED ☐ → 412	
410	Where did you first seek advice or treatment? USE LETTER CODE FROM 408.	FIRST PLACE	
411	How many days after the illness began did you first seek advice or treatment for (NAME)? IF THE SAME DAY RECORD '00'.	DAYS	
411a	Were you offered a COVID-19 test where you sought advice or treatment for this fever?	YES . . . . . 1 NO . . . . . 2 NOT AWARE OF COVID-19/DO NOT KNOW OF COVID-19 8	
412	At any time during the illness, did (NAME) take any medicine or treatment for the illness?	YES . . . . . 1 → 413 NO . . . . . 2 DON'T KNOW 8	
412a	What is the main reason (NAME) did not take any treatment or medication against the illness?	HAVE NO MONEY . . . . . 1 HEALTH FACILITY TOO FAR . . . . . 2 DID NOT THINK HEALTH CONDITION WAS SERIOUS . . . . . 3 OTHER REASON _____ (SPECIFY) 6	→ 416
413	What medicine or treatment did (NAME) take? Any other medicine or treatment? RECORD ALL MENTIONED. IF MEDICINE NOT KNOWN, ASK TO SEE THE PACKAGE OR PRESCRIPTION.	**ANTIMALARIAL MEDICINE** ARTEMISININ COMBINATION THERAPY (ACT) . . . . . A SP/FANSIDAR . . . . . B CHLOROQUINE . . . . . C AMODIAQUINE . . . . . D QUININE QUININE PILLS . . . . . E QUININE INJECTION/IV . . . . . F ARTESUNATE ARTESUNATE SUPPOSITORY . . . . . G ARTESUNATE INJECTION/IV . . . . . H ARTEMETHER INJECTION . . . . . I OTHER ANTIMALARIAL _____ (SPECIFY) J **ANTIBIOTIC MEDICINE** AMOXICILLIN . . . . . K COTRIMOXAZOLE . . . . . L OTHER PILL/SYRUP . . . . . M OTHER INJECTION/IV . . . . . N **OTHER MODERN MEDICINE** ASPIRIN . . . . . O PARACETAMOL/PANADOL/ ACETAMINOPHEN . . . . . P IBUPROFEN . . . . . Q OTHER MODERN _____ (SPECIFY) R **TRADITIONAL MEDICINE** TRADITIONAL TISANE . . . . . S PRAYER / INCANTATIONS . . . . . T OTHER TRADITIONAL _____ (SPECIFY) U OTHER _____ (SPECIFY) X DON'T KNOW . . . . . Z	

SECTION 4. FEVER IN CHILDREN

NO.	NAME OF CHILD _____ BIRTH HISTORY NUMBER	
414	CHECK 413: ARTEMISININ COMBINATION THERAPY ('A') GIVEN CODE 'A' CIRCLED CODE 'A' NOT CIRCLED → 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
416	CHECK 216 AND 218 IN BIRTH HISTORY: ANY MORE SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY? NO MORE SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY MORE SURVIVING CHILDREN BORN 0-59 MONTHS BEFORE THE SURVEY → 403	

SECTION 5. MALARIA KNOWLEDGE AND BELIEFS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	In the past six months, have you seen or heard any messages about malaria?	YES . . . . . 1 NO 2	→ 503
502	Where did you see or hear these messages? PROBE: Anywhere else? RECORD ALL MENTIONED.	RADIO . . . . . A TELEVISION . . . . . B POSTER/BILLBOARD . . . . . C NEWSPAPER/MAGAZINE . . . . . D LEAFLET/BROCHURE . . . . . E HEALTHCARE PROVIDER . . . . . F COMMUNITY HEALTH WORKER . . . . . G SOCIAL MEDIA (WHATSAPP, FACEBOOK,...) H SMS . . . . . I GRIOT / CRIER . . . . . J COMMUNITY LEADEF . . . . . K PARENT/RELATIVE . . . . . L OTHER _____ X (SPECIFY) DON'T REMEMBER . . . . . Z	
502a	In the past six months, have you seen, received or heard any messages or advice about not delaying seeking advice or treatment at a health facility when one has fever or thinks they might have malaria?	YES . . . . . 1 NO 2	
503	Are there ways to avoid getting malaria?	YES . . . . . 1 NO 2	→ 505
504	What are the things that people can do to prevent themselves from getting malaria? RECORD ALL MENTIONED.	SLEEP UNDER A MOSQUITO NET . . . . . A SLEEP UNDER AN INSECTICIDE-TREATED MOSQUITO NET . . . . . B USE MOSQUITO REPELLENT . . . . . C TAKE PREVENTATIVE MEDICATIONS . . . . D SPRAY HOUSE WITH INSECTICIDE . . . . . E FILL IN STAGNANT WATERS (PUDDLES) . . F KEEP SURROUNDINGS CLEAN . . . . . G PUT MOSQUITO SCREEN ON WINDOWS . . H TAKE TRADITIONAL MEDICINE . . . . . I BURN/USE REPPELLENT PLANTS . . . . . J BURN/USE REPELLENT PRODUCTS OTHER THAN PLANTS . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
505	Now I am going to read some statements and I would like you to tell me whether you agree or disagree with each statement. If you don't know, say, don't know. People in this community only get malaria during the rainy season. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
506	When a child has a fever, you almost always worry it might be malaria. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	

SECTION 5. MALARIA KNOWLEDGE AND BELIEFS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
507	Getting malaria is not a problem because it can be easily treated. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
508	Only weak children can die from malaria. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
509	You can sleep under a mosquito net for the entire night when there are lots of mosquitoes. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
510	You can sleep under a mosquito net for the entire night when there are few mosquitoes Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
511	You do not like sleeping under a mosquito net when the weather is too warm. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
512	When a child has a fever, it is best to start by giving them any medicine you have at home. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
513	People in your community usually take their children to a health care provider or a community health worker on the same day or day after they develop a fever. Do you agree or disagree? IF RESPONDENT DOESN'T KNOW, PROBE: Would you say more than half or less than half of	AGREE/MORE THAN HALF . . . . . 1 DISAGREE/LESS THAN HALF . . . . . 2 DON'T KNOW/UNCERTAIN 8	
514	People in your community who have a mosquito net usually sleep under a mosquito net every night. Do you agree or disagree? IF RESPONDENT DOESN'T KNOW, PROBE: Would you say more than half or less than half of the community does this?	AGREE/MORE THAN HALF . . . . . 1 DISAGREE/LESS THAN HALF . . . . . 2 DON'T KNOW/UNCERTAIN 8	
515	Fever may be a symptom of malaria and also a symptom of COVID-19.. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	

SECTION 5. MALARIA KNOWLEDGE AND BELIEFS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
516	COVID-19 can be transmitted by mosquito bites. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
517	People in your community are afraid to go to health facilities when they have fever or when they think they might have malaria for fear of being infected with or being told they have COVID-19. Do you agree or disagree?	AGREE . . . . . 1 DISAGREE . . . . . 2 DON'T KNOW/UNCERTAIN 8	
518	Have you ever seen, received or heard a message that children under 5 years with malaria receive free medicines for malaria treatment at a public health facility or from a community health worker? IF YES, ASK : Was it in the last 12 months, or more than 1 ago?	YES, DURING LAST 12 MONTHS . . . . . 1 YES, MORE THAN 1 YEAR AGO . . . . . 2 NO 3	
519	In your village or neighborhood, do you know of a community health worker or a person recognized by the Ministry of Health who is responsible for giving health advice, distributing mosquito nets free of charge and administering malaria medicines free of charge to children under 5 years?	YES . . . . . 1 NO 2	
520	RECORD THE TIME.	HOURS . . . . . [ ][ ] MINUTES . . . . . [ ][ ]	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT INTERVIEW:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

FORMATTING DATE: 18 August 2022
ENGLISH LANGUAGE: 18 August 2022

REPUBLIC OF CAMEROON
MINISTRY OF PUBLIC HEALTH
NATIONAL MALARIA PROGRAMME

NATIONAL INSTITUTE OF STATISTICS

2022 CAMEROON MALARIA INDICATOR SURVEY (2022 CMIS)
BIOMARKER QUESTIONNAIRE

IDENTIFICATION

REGION _____

DIVISION _____

SUB-DIVISION _____

LOCALITY _____

NAME OF HOUSEHOLD HEAD _____

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

STRUCTURE NUMBER . . . . . | | | | |

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

BIOMARKER TECHNICIAN VISITS

	1	2	3	FINAL VISIT
DATE				DAY
BIOMARKER TECH. NAME				MONTH YEAR 2022
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS
TIME				

NOTES:

TOTAL ELIGIBLE CHILDREN

LANGUAGE OF QUESTIONNAIRE** 01 | LANGUAGE OF INTERVIEW** | | NATIVE LANGUAGE OF RESPONDENT** | | TRANSLATOR (YES = 1, NO = 2) |

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:
01 ENGLISH
02 FRANÇAIS
03 FUFULDE
04 PIDGIN
96 OTHER (SPECIFY)

TEAM NUMBER

TEAM SUPERVISOR NAME

NUMBER

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

101	CHECK CAPI OUTPUT FOR "LIST ELIGIBLE INDIVIDUALS/BIOMARKERS". RECORD THE LINE NUMBER AND NAME FOR ALL ELIGIBLE CHILDREN AGE 0-5 YEARS IN QUESTION 102 ON THIS PAGE AND SUBSEQUENT PAGES STARTING WITH THE FIRST ONE LISTED. IF MORE THAN THREE CHILDREN, USE ADDITIONAL QUESTIONNAIRE(S).		
	CHILD 1		SKIP
102	CHECK CAPI OUTPUT AND RECORD NAME AND LINE NUMBER OF CHILD.	NAME _____ LINE NUMBER	
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	
104	IF MOTHER INTERVIEWED: COPY CHILD'S AGE FROM BIRTH HISTORY. IF MOTHER NOT INTERVIEWED ASK: How old was (NAME) at (NAME)'s last birthday? COMPARE AND CORRECT 103 AND/OR 104 IF INCONSISTENT.	AGE IN COMPLETED YEARS	
105	CHECK 104: CHILD AGE 0-4 YEARS? YES ☐ NO ☐		→ 129
106	CHECK 103: IS THE CHILD AGE 0-5 MONTHS OR IS THE CHILD OLDER? OLDER ☐ AGE 0-5 MONTHS ☐		→ 129
107	RECORD NAME OF PARENT/RESPONSIBLE ADULT FOR THE CHILD.	NAME _____ LINE NUMBER	
108	ASK CONSENT FOR MALARIA AND ANEMIA TESTS FROM PARENT/RESPONSIBLE ADULT: As part of this survey, we are asking children all over the country to take a test to see if they have malaria and a test to see if they have anemia. Malaria is a serious illness caused by a parasite transmitted by a mosquito bite. Anemia is a serious health problem that usually results from poor nutrition, malaria and other infections, or chronic disease. This survey will assist the government to develop programs to prevent and treat malaria and anemia. We ask that all children age 6 months through 4 years take part in malaria and anemia testing. The tests require 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 malaria and anemia immediately, and the results 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 and anemia tests?		
109	CIRCLE THE CODE.	GRANTED . . . . . 1 REFUSED . . . . . 2 NOT PRESENT/OTHER 3	
110	SIGN NAME AND ENTER BIOMARKER TECHNICIAN NUMBER.	_____ (SIGN) BIOMARKER TECH.	

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 1		SKIP
111	IF CONSENT GRANTED, PREPARE EQUIPMENT AND SUPPLIES FOR THE TESTS AND PROCEED WITH THE TESTS.		
113	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	G/DL . . . . . ☐☐.☐ NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	
114	RECORD THE RESULT OF THE MALARIA RDT HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	POSITIVE . . . . . 1 NEGATIVE . . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	→ 126 → 128 → 126
115	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	
116	CHECK 115: ANY 'YES' CIRCLED? NO ☐ YES ☐		→ 118
117	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . . . 2 OTHER 6	→ 119
118	**SEVERE MALARIA REFERRAL** The malaria test shows that (NAME OF CHILD) has malaria. Your child also has symptoms of severe malaria. The malaria treatment I have will not help your child, and I cannot give you the medication. Your child is very ill and must be taken to a health facility right away. RECORD THE RESULT OF THE MALARIA RDT ON THE REFERRAL FORM.		→ 126
119	In the past 2 weeks has (NAME) taken or is (NAME) taking an ACT such as Artesunate-Amodiaquine, Artemether-Lumefantrine or Dihydroartemisinine + Piperaquine given by a doctor or health center to treat the malaria? VERIFY BY ASKING TO SEE TREATMENT.	YES . . . . . 1 NO 2	→ 121
120	**ALREADY TAKING ACT REFERRAL STATEMENT** You have told me that (NAME OF CHILD) had already received an ACT for malaria. Therefore, I cannot give you additional ACT. However, the test shows that he/she has malaria. If your child has a fever for 2 days after the last dose of ACT, you should take the child to the nearest health facility for further examination.		→ 128

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 1		SKIP
121	ASK CONSENT FOR MALARIA TREATMENT FROM PARENT/RESPONSIBLE ADULT: The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called Artesunate-Amodiaquine or Artemether-Lumefantrine. Artesunate-Amodiaquine or Artemether-Lumefantrine 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.		
122	CIRCLE THE APPROPRIATE CODE.	ACCEPTED MEDICINE . . . . . 1 REFUSED MEDICINE . . . . . 2 OTHER 6	→ 128
123	SIGN NAME AND ENTER BIOMARKER TECHNICIAN NUMBER.	_____ (SIGN) ☐☐☐☐ BIOMARKER TECH.	
124	CHECK 122: ACCEPTED MEDICINE? YES ☐ NO ☐		→ 128
125	PROVIDE DOSAGE INSTRUCTIONS TO PARENT/RESPONSIBLE ADULT.		

TREATMENT WITH ARTESUNATE-AMODIAQUINE (AA)

AGE	DAY 1	DAY 2	DAY 3
6-11 MONTHS	1 tablet AS- AQ (25 mg/67.5 mg)	1 tablet AS- AQ (25 mg/67.5 mg)	1 tablet AS- AQ (25 mg/67.5 mg)
12-59 MONTHS	1 tablet AS-AQ (50mg/135mg)	1 tablet AS-AQ (50mg/135mg)	1 tablet AS-AQ (50mg/135mg)

TREATMENT WITH ARTEMETHER-LUMEFANTRINE (AL)

AGE	DAY 1	DAY 2	DAY 3
6-11 MONTHS	1 tablet AL (20 mg/120 mg) twice-daily	1 tablet AL (20 mg/120 mg) twice-daily	1 tablet AL (20 mg/120 mg) twice-daily
12-59 MONTHS	2 tablets AL (20 mg/120 mg) twice-daily	2 tablets AL (20 mg/120 mg) twice-daily	2 tablets AL (20 mg/120 mg) twice-daily

TELL THE PARENT/RESPONSIBLE ADULT: If [NAME] has a high fever, fast or difficult breathing, is not able to drink or breastfeed, gets sicker or does not get better in 2 days, you should take him/her to a health professional for treatment right away. → 128

126	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . . . 2 OTHER 6	→ 128

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 1	SKIP
127	**SEVERE ANEMIA REFERRAL** 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. RECORD THE RESULT OF THE ANEMIA TEST ON THE REFERRAL FORM.	
128	TODAY'S DATE: DAY . . . . . [ ][ ] MONTH . . . . . [ ][ ] YEAR . . . . . [2][0][2][2]	
129	IF ANOTHER CHILD, GO TO 102 ON THE NEXT PAGE; IF NO MORE CHILDREN, END INTERVIEW.	

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 2		SKIP
102	CHECK CAPI OUTPUT AND RECORD NAME AND LINE NUMBER OF CHILD.	NAME _____ LINE NUMBER . . . . . ☐☐	
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 . . . . . ☐☐☐☐	
104	IF MOTHER INTERVIEWED: COPY CHILD'S AGE FROM BIRTH HISTORY. IF MOTHER NOT INTERVIEWED ASK: How old was (NAME) at (NAME)'s last birthday? COMPARE AND CORRECT 103 AND/OR 104 IF INCONSISTENT.	AGE IN COMPLETED YEARS ☐☐	
105	CHECK 104: CHILD AGE 0-4 YEARS? YES ☐ NO ☐		→ 129
106	CHECK 103: IS THE CHILD AGE 0-5 MONTHS OR IS THE CHILD OLDER? OLDER ☐ AGE 0-5 MONTHS ☐		→ 129
107	RECORD NAME OF PARENT/RESPONSIBLE ADULT FOR THE CHILD.	NAME _____ LINE NUMBER . . . . . ☐☐	
108	ASK CONSENT FOR MALARIA AND ANEMIA TESTS FROM PARENT/RESPONSIBLE ADULT: As part of this survey, we are asking children all over the country to take a test to see if they have malaria and a test to see if they have anemia. Malaria is a serious illness caused by a parasite transmitted by a mosquito bite. Anemia is a serious health problem that usually results from poor nutrition, malaria and other infections, or chronic disease. This survey will assist the government to develop programs to prevent and treat malaria and anemia. We ask that all children age 6 months through 4 years take part in malaria and anemia testing. The tests require 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 malaria and anemia immediately, and the results 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 and anemia tests?		
109	CIRCLE THE CODE.	GRANTED . . . . . 1 REFUSED . . . . . 2 NOT PRESENT/OTHER 3	
110	SIGN NAME AND ENTER BIOMARKER TECHNICIAN NUMBER.	_____ (SIGN) ☐☐☐☐ BIOMARKER TECH.	

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 2		SKIP
111	IF CONSENT GRANTED, PREPARE EQUIPMENT AND SUPPLIES FOR THE TESTS AND PROCEED WITH THE TESTS.		
113	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	G/DL . . . . . ☐☐.☐ NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	
114	RECORD THE RESULT OF THE MALARIA RDT HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	POSITIVE . . . . . 1 NEGATIVE . . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	→ 126 → 128 → 126
115	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	
116	CHECK 115: ANY 'YES' CIRCLED? NO ☐ YES ☐		→ 118
117	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . . . 2 OTHER 6	→ 119
118	**SEVERE MALARIA REFERRAL** The malaria test shows that (NAME OF CHILD) has malaria. Your child also has symptoms of severe malaria. The malaria treatment I have will not help your child, and I cannot give you the medication. Your child is very ill and must be taken to a health facility right away. RECORD THE RESULT OF THE MALARIA RDT ON THE REFERRAL FORM.		→ 126
119	In the past 2 weeks has (NAME) taken or is (NAME) taking an ACT such as Artesunate-Amodiaquine, Artemether-Lumefantrine or Dihydroartemisinine + Piperaquine given by a doctor or health center to treat the malaria? VERIFY BY ASKING TO SEE TREATMENT.	YES . . . . . 1 NO 2	→ 121
120	**ALREADY TAKING ACT REFERRAL STATEMENT** You have told me that (NAME OF CHILD) had already received an ACT for malaria. Therefore, I cannot give you additional ACT. However, the test shows that he/she has malaria. If your child has a fever for 2 days after the last dose of ACT, you should take the child to the nearest health facility for further examination.		→ 128

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 2		SKIP
121	ASK CONSENT FOR MALARIA TREATMENT FROM PARENT/RESPONSIBLE ADULT: The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called Artesunate-Amodiaquine or Artemether-Lumefantrine. Artesunate-Amodiaquine or Artemether-Lumefantrine 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.		
122	CIRCLE THE APPROPRIATE CODE.	ACCEPTED MEDICINE . . . . . 1 REFUSED MEDICINE . . . . . 2 OTHER 6	→ 128
123	SIGN NAME AND ENTER BIOMARKER TECHNICIAN NUMBER.	_____ (SIGN) ☐☐☐☐ BIOMARKER TECH.	
124	CHECK 122: ACCEPTED MEDICINE? YES ☐ NO ☐		→ 128
125	PROVIDE DOSAGE INSTRUCTIONS TO PARENT/RESPONSIBLE ADULT.		

TREATMENT WITH ARTESUNATE-AMODIAQUINE (AA)

AGE	DAY 1	DAY 2	DAY 3
6-11 MONTHS	1 tablet AS- AQ (25 mg/67.5 mg)	1 tablet AS- AQ (25 mg/67.5 mg)	1 tablet AS- AQ (25 mg/67.5 mg)
12-59 MONTHS	1 tablet AS-AQ (50mg/135mg)	1 tablet AS-AQ (50mg/135mg)	1 tablet AS-AQ (50mg/135mg)

TREATMENT WITH ARTEMETHER-LUMEFANTRINE (AL)

AGE	DAY 1	DAY 2	DAY 3
6-11 MONTHS	1 tablet AL (20 mg/120 mg) twice-daily	1 tablet AL (20 mg/120 mg) twice-daily	1 tablet AL (20 mg/120 mg) twice-daily
12-59 MONTHS	2 tablets AL (20 mg/120 mg) twice-daily	2 tablets AL (20 mg/120 mg) twice-daily	2 tablets AL (20 mg/120 mg) twice-daily

TELL THE PARENT/RESPONSIBLE ADULT: If [NAME] has a high fever, fast or difficult breathing, is not able to drink or breastfeed, gets sicker or does not get better in 2 days, you should take him/her to a health professional for treatment right away. → 128

126	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . . . 2 OTHER 6	→ 128

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 2	SKIP
127	**SEVERE ANEMIA REFERRAL** 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. RECORD THE RESULT OF THE ANEMIA TEST ON THE REFERRAL FORM.	
128	TODAY'S DATE: DAY . . . . . [ ][ ] MONTH . . . . . [ ][ ] YEAR 2022	
129	IF ANOTHER CHILD, GO TO 102 ON THE NEXT PAGE; IF NO MORE CHILDREN, END INTERVIEW.	

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 3		SKIP
102	CHECK CAPI OUTPUT AND RECORD NAME AND LINE NUMBER OF CHILD.	NAME _____ LINE NUMBER . . . . . ☐☐	
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 . . . . . ☐☐☐☐	
104	IF MOTHER INTERVIEWED: COPY CHILD'S AGE FROM BIRTH HISTORY. IF MOTHER NOT INTERVIEWED ASK: How old was (NAME) at (NAME)'s last birthday? COMPARE AND CORRECT 103 AND/OR 104 IF INCONSISTENT.	AGE IN COMPLETED YEARS ☐	
105	CHECK 104: CHILD AGE 0-4 YEARS? YES ☐ NO ☐		→ 129
106	CHECK 103: IS THE CHILD AGE 0-5 MONTHS OR IS THE CHILD OLDER? OLDER ☐ AGE 0-5 MONTHS ☐		→ 129
107	RECORD NAME OF PARENT/RESPONSIBLE ADULT FOR THE CHILD.	NAME _____ LINE NUMBER . . . . . ☐☐	
108	ASK CONSENT FOR MALARIA AND ANEMIA TESTS FROM PARENT/RESPONSIBLE ADULT: As part of this survey, we are asking children all over the country to take a test to see if they have malaria and a test to see if they have anemia. Malaria is a serious illness caused by a parasite transmitted by a mosquito bite. Anemia is a serious health problem that usually results from poor nutrition, malaria and other infections, or chronic disease. This survey will assist the government to develop programs to prevent and treat malaria and anemia. We ask that all children age 6 months through 4 years take part in malaria and anemia testing. The tests require 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 malaria and anemia immediately, and the results 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 and anemia tests?		
109	CIRCLE THE CODE.	GRANTED . . . . . 1 REFUSED . . . . . 2 NOT PRESENT/OTHER 3	→
110	SIGN NAME AND ENTER BIOMARKER TECHNICIAN NUMBER.	_____ (SIGN) ☐☐☐☐ BIOMARKER TECH.	

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 3		SKIP
111	IF CONSENT GRANTED, PREPARE EQUIPMENT AND SUPPLIES FOR THE TESTS AND PROCEED WITH THE TESTS.		
113	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	G/DL . . . . . ☐☐.☐ NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	
114	RECORD THE RESULT OF THE MALARIA RDT HERE AND IN THE ANEMIA AND MALARIA PAMPHLET.	POSITIVE . . . . . 1 NEGATIVE . . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	→ 126 → 128 → 126
115	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	
116	CHECK 115: ANY 'YES' CIRCLED? NO ☐ YES ☐		→ 118
117	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . . . 2 OTHER 6	→ 119
118	**SEVERE MALARIA REFERRAL** The malaria test shows that (NAME OF CHILD) has malaria. Your child also has symptoms of severe malaria. The malaria treatment I have will not help your child, and I cannot give you the medication. Your child is very ill and must be taken to a health facility right away. RECORD THE RESULT OF THE MALARIA RDT ON THE REFERRAL FORM.		→ 126
119	In the past 2 weeks has (NAME) taken or is (NAME) taking an ACT such as Artesunate-Amodiaquine, Artemether-Lumefantrine or Dihydroartemisinine + Piperaquine given by a doctor or health center to treat the malaria? VERIFY BY ASKING TO SEE TREATMENT.	YES . . . . . 1 NO 2	→ 121
120	**ALREADY TAKING ACT REFERRAL STATEMENT** You have told me that (NAME OF CHILD) had already received an ACT for malaria. Therefore, I cannot give you additional ACT. However, the test shows that he/she has malaria. If your child has a fever for 2 days after the last dose of ACT, you should take the child to the nearest health facility for further examination.		→ 128

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 3		SKIP
121	ASK CONSENT FOR MALARIA TREATMENT FROM PARENT/RESPONSIBLE ADULT: The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called Artesunate-Amodiaquine or Artemether-Lumefantrine. Artesunate-Amodiaquine or Artemether-Lumefantrine 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.		
122	CIRCLE THE APPROPRIATE CODE.	ACCEPTED MEDICINE . . . . . 1 REFUSED MEDICINE . . . . . 2 OTHER 6	→ 128
123	SIGN NAME AND ENTER BIOMARKER TECHNICIAN NUMBER.	_____ (SIGN) ☐☐☐☐ BIOMARKER TECH.	
124	CHECK 122: ACCEPTED MEDICINE? YES ☐ NO ☐		→ 128
125	PROVIDE DOSAGE INSTRUCTIONS TO PARENT/RESPONSIBLE ADULT.		

TREATMENT WITH ARTESUNATE-AMODIAQUINE (AA)

AGE	DAY 1	DAY 2	DAY 3
6-11 MONTHS	1 tablet AS- AQ (25 mg/67.5 mg)	1 tablet AS- AQ (25 mg/67.5 mg)	1 tablet AS- AQ (25 mg/67.5 mg)
12-59 MONTHS	1 tablet AS-AQ (50mg/135mg)	1 tablet AS-AQ (50mg/135mg)	1 tablet AS-AQ (50mg/135mg)

TREATMENT WITH ARTEMETHER-LUMEFANTRINE (AL)

AGE	DAY 1	DAY 2	DAY 3
6-11 MONTHS	1 tablet AL (20 mg/120 mg) twice-daily	1 tablet AL (20 mg/120 mg) twice-daily	1 tablet AL (20 mg/120 mg) twice-daily
12-59 MONTHS	2 tablets AL (20 mg/120 mg) twice-daily	2 tablets AL (20 mg/120 mg) twice-daily	2 tablets AL (20 mg/120 mg) twice-daily

TELL THE PARENT/RESPONSIBLE ADULT: If [NAME] has a high fever, fast or difficult breathing, is not able to drink or breastfeed, gets sicker or does not get better in 2 days, you should take him/her to a health professional for treatment right away. → 128

126	CHECK 113: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . . 1 8.0 G/DL OR ABOVE . . . . . 2 OTHER 6	→ 128

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 6 MONTHS TO 4 YEARS

	CHILD 3		SKIP
127	**SEVERE ANEMIA REFERRAL** 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. RECORD THE RESULT OF THE ANEMIA TEST ON THE REFERRAL FORM.		
128	TODAY'S DATE:	DAY . . . . . MONTH . . . . . YEAR 2022	
129	IF ANOTHER CHILD, GO TO 102 IN ADDITIONAL QUESTIONNAIRE; IF NO MORE CHILDREN, END INTERVIEW.		

[FIELDWORKER'S] OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING BIOMARKERS

SUPERVISOR'S OBSERVATIONS

13 Jun 2022

REPUBLIC OF CAMEROON
MINISTRY OF PUBLIC HEALTH
NATIONAL MALARIA PROGRAMME

NATIONAL INSTITUTE OF STATISTICS

2022 CAMEROON MALARIA INDICATOR SURVEY (CMIS 2022)
MODEL FIELDWORKER QUESTIONNAIRE

LANGUAGE OF QUESTIONNAIRE ENGLISH

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

INSTRUCTIONS

Information on all CMIS 2022 field workers is collected as part of the CMIS 2022 survey. Please fill out the questions below. The information you provide will be part of the survey data file; however, your name will be removed and will not be part of the data file. Thank you for providing the information needed.

102	In what REGION do you live?	ADAMAOUA . . . . . 01 CENTRE (EXCLUDES YAOUNDE) . . . . . 02 DOUALA . . . . . 03 EAST . . . . . 04 FAR NORTH . . . . . 05 LITTORAL (EXCLUDES DOUALA) . . . . . 06 NORTH . . . . . 07 NORDWEST . . . . . 08 WEST . . . . . 09 SOUTH . . . . . 10 SOUTWEST . . . . . 09 YAOUNDE 10	
103	Do you live in a city, town, or rural area?	CITY . . . . . 1 TOWN . . . . . 2 RURAL 3	
104	How old are you? RECORD AGE IN COMPLETED YEARS.	AGE . . . . . [ ][ ]	
105	Are you male or female?	MALE . . . . . 1 FEMALE 2	
106	What is your current marital status?	CURRENTLY MARRIED . . . . . 1 LIVING WITH A MAN/WOMAN . . . . . 2 WIDOWED . . . . . 3 DIVORCED . . . . . 4 SEPARATED . . . . . 5 NEVER MARRIED OR LIVED WITH A MAN/WOMAN 6	
107	How many living children do you have? INCLUDE ONLY CHILDREN WHO ARE YOUR BIOLOGICAL CHILDREN.	LIVING CHILDREN . . . . . [ ][ ]	
108	Have you ever had a child who died?	YES . . . . . 1 NO 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
109	Quel est le plus haut niveau d'études que vous avez atteint : primaire, secondaire 1er cycle, secondaire 2nd cycle ou supérieur ?	PRIMARY . . . . . 1 1ST SECONDARY CYCLE . . . . . 2 2ND SECONDARY CYCLE . . . . . 3 HIGHER 4	
110	What is the highest [GRADE/FORM/YEAR] you completed at that level? IF COMPLETED LESS THAN ONE YEAR AT THAT LEVEL, RECORD '00'.	[GRADE/FORM/YEAR]	

Codes for Q.110

LEVEL	PRIMARY	SECONDARY 1st Cycle	SECONDARY 2nd Cycle	HIGHER
CLASS/FORM/YEAR	LESS THAN 1YR. =0 SIL/Class1 =1 CP/CPS/class2 =2 CE1/Class3 =3 CE2/Class4 =4 CM1/Class5 =5 CM2/Class6/7 =6	LESS THAN 1YR. =0 6è/1ère A.T/Form 1 =1 5è/2è A.T./Form 2 =2 4è/3è A.T./Form 3 =3 3è/4è A.T./Form4 =4	LESS THAN 1YR. =0 2nde G ou T/Form 5 =1 1ère G ou T/Lower 6 =2 Terminale G ou T/Upper 6 =3	LESS THAN 1YR. =0 1è an/1st yr =1 2è an/2nd yr =2 3è an/3rd yr =3 4è an/4th yr + =4

110A	Have you ever received clinical, medical, or laboratory training or worked in healthcare?	YES . . . . . 1 NO 2	→ 111
110B	What is your current occupational category or qualification? For example, are you a registered nurse, doctor, or laboratory technician?	MEDICAL DOCTOR . . . . . 01 ASSISTANT MEDICAL OFFICER . . . . . 02 CLINICAL OFFICER . . . . . 03 ASSISTANT CLINICAL OFFICER . . . . . 04 REGISTERED NURSE/MIDWIFE . . . . . 05 ENROLLED NURSE/MIDWIFE . . . . . 06 NURSE ASSISTANT/ATTENDANT . . . . . 07 LABORATORY SCIENTIST . . . . . 08 LABORATORY TECHNOLOGIST . . . . . 09 LABORATORY TECHNICIAN . . . . . 10 LABORATORY ASSISTANT . . . . . 11 NO TECHNICAL QUALIFICATION . . . . . 95 OTHER _____ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
111	What is your religion?	CATHOLIC . . . . . 1 PROTESTANT . . . . . 2 OTHER CHRISTIAN _____ 3 (SPECIFY) MUSLIM . . . . . 4 ANIMIST . . . . . 5 OTHER _____ 6 (SPECIFY) NONE 7	
112	What is your ethnicity? RECORD THE ETHNIICTY AND LEAVE THE CODING BOXES BLANK FOR THE FOREIGNERS, RECORD « FOREIGN »	☐☐☐ _____ _____	
113	What languages can you speak? RECORD ALL LANGUAGES YOU CAN SPEAK.	ENGLISH . . . . . A FRENCH . . . . . B FULFULDE . . . . . C PIDGIN . . . . . D OTHER _____ X (SPECIFY)	
114	What is your mother tongue/native language (language spoken at home growing up)?	ENGLISH . . . . . 01 FRENCH . . . . . 02 FULFULDE . . . . . 03 PIDGIN . . . . . 04 OTHER _____ 96 (SPECIFY)	
115	Have you ever worked on: a) a DHS prior to this survey? b) an MIS prior to this survey? c) any other survey prior to this survey?	YES NO a) DHS . . . . . 1 2 b) MIS . . . . . 1 2 c) OTHER SURVEY 1 2	
116	Were you already working for NIS or NMCP at the time you were employed to work on this MIS?	YES, NIS . . . . . 1 YES, NMCP . . . . . 2 NO 3	→ 118
117	Are you a permanent or temporary employee of NIS or NMCP?	PERMANENT . . . . . 1 TEMPORARY 2	
118	If you have comments, please write them here.		

ADDITIONAL DHS PROGRAM RESOURCES

The DHS Program Website – Download free DHS reports, standard documentation, key indicator data, and training tools, and view announcements.	DHSprogram.com	
STATcompiler – Build custom tables, graphs, and maps with data from 90 countries and thousands of indicators.	Statcompiler.com	
DHS Program Mobile App – Access key DHS indicators for 90 countries on your mobile device (Apple, Android, or Windows).	Search DHS Program in your iTunes or Google Play store	
DHS Program User Forum – Post questions about DHS data and search our archive of FAQs.	userforum.DHSprogram.com	
Tutorial Videos – Watch interviews with experts and learn DHS basics, such as sampling and weighting, downloading datasets, and How to Read DHS Tables.	www.youtube.com/DHSProgram	
Datasets – Download DHS datasets for analysis.	DHSprogram.com/Data	
Spatial Data Repository – Download geographically linked health and demographic data for mapping in a geographic information system (GIS).	spatialdata.DHSprogram.com	
Learning Hub – Access online courses for independent learning and workshop participation, communities of practice, and other training resources.	Learning.DHSprogram.com	
GitHub – Open access to Stata, SPSS and R code for DHS indicators for public use.	Github.com/DHSprogram	
Social Media – Follow The DHS Program and join the conversation. Stay up to date through:	**Twitter** www.twitter.com/DHSprogram	
Facebook www.facebook.com/DHSprogram	**LinkedIn** www.linkedin.com/company/dhs-program	
YouTube www.youtube.com/DHSprogram	**Blog** Blog.DHSprogram.com	