Liberia - Malaria Indicator Survey 2022

National Malaria Control Program of the Ministry of Health (MoH)

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Identification

SURVEY ID NUMBER
LBR_2022_MIS_v01_M

TITLE
Malaria Indicator Survey 2022

ABBREVIATION OR ACRONYM
MIS/ LMIS 2022

COUNTRY

Name	Country code
Liberia	LBR

STUDY TYPE
Malaria Indicator Survey [hh/mis]

SERIES INFORMATION
The 2022 Liberia Malaria Indicator Survey (2022 LMIS) is a follow-up to the 2009, 2011, and 2016 LMIS surveys. The survey, which involved a nationally representative sample of 4,500 households from 150 sample clusters, was designed to provide information on key malaria control indictors such as the proportion of households having at least one bed net and at least one insecticide-treated net (ITN), the proportions of children under age 5 and pregnant women who slept under an ITN the night before the survey, and the proportion of pregnant women who received intermittent preventive treatment (IPT) for malaria during their last pregnancy. Information was also collected on malaria prevalence among children under age 5 based on onsite malaria testing.

ABSTRACT
The 2022 Liberia Malaria Indicator Survey (LMIS) was implemented by the National Malaria Control Program (NMCP) in collaboration with the Liberia Institute of Statistics and Geo-Information Services (LISGIS) and with technical assistance from ICF. The U.S. President's Malaria Initiative (PMI) and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) provided financial support. Data collection took place from October 4 to December 13, 2022.

The primary objective of the 2022 LMIS was to provide up-to-date estimates of basic demographic and health indicators for malaria. Specifically, the LMIS collected information on vector control interventions such as mosquito nets, intermittent preventive treatment of malaria in pregnant women, and care seeking for and treatment of fever in children. Also, young children were tested for malaria infection and anemia.

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

KIND OF DATA
Sample survey data [ssd]

UNIT OF ANALYSIS
- Household
- Individual
- Woman age 15-49

Version

VERSION NOTES
The data dictionary was generated from hierarchical data that was downloaded from the The DHS Program website (http://dhsprogram.com).
- Contract Phase: DHS-VIII
- Recode Structure: DHS-VIII

Scope

NOTES

The 2022 Liberia Malaria Indicator Survey covers the following topics:

HOUSEHOLD
• Identification
• Usual members and visitors in the selected households
• Background information on each person listed, such as relationship to head of the household, age, sex, and marital status
• Characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, type of fuel used for cooking, number of rooms, ownership of livestock, possessions of durable goods, mosquito nets, and main material for the floor, roof and walls of the dwelling
• Mosquito nets

INDIVIDUAL WOMAN
• Identification
• Background characteristics (including age, education, and media exposure)
• Reproduction (birth history and child mortality)
• Pregnancy and intermittent preventive treatment
• Fever in children
• Malaria knowledge and beliefs

BIOMARKER
• Identification
• Hemoglobin measurement and malaria testing for children age 6 months to 4 years

FIELDWORKER
• Background information on each fieldworkers

Coverage

GEOGRAPHIC COVERAGE

National coverage

Producers and sponsors

PRIMARY INVESTIGATORS

Name	Affiliation
National Malaria Control Program of the Ministry of Health (MoH)	Government of Liberia

PRODUCERS

Name	Abbreviation	Affiliation	Role
Institute of Statistics and Geo-Information Services	LISGIS	Government of Liberia	Collaborated in the implementation of the survey
ICF		The DHS Program	Provided support and technical assistance in the implementation of the survey

FUNDING AGENCY/SPONSOR

Name	Abbreviation	Role
Government of Liberia	Govt. LBR	Financial support
United States Agency for International Development	USAID	Financial support
Global Fund to Fight AIDS, Tuberculosis and Malaria	GFATM	Financial support

Sampling

SAMPLING PROCEDURE
The LMIS followed a two-stage sample design and was intended to allow estimates of key indicators for the following domains:
• National level
• Urban and rural areas
• Geographical regions, consisting of the following groups of counties:
- Greater Monrovia
- North Western: Bomi, Grand Cape Mount, and Gbarpolu counties
- South Central: Montserrado (excluding Greater Monrovia district), Margibi, and Grand Bassa counties
- North Central: Bong, Nimba, and Lofa counties
- South Eastern A: River Cess, Sinoe, and Grand Gedeh counties
- South Eastern B: River Gee, Grand Kru, and Maryland counties

The first stage involved selecting sample points (clusters) consisting of enumeration areas (EAs) delineated within the sampling frame. A total of 150 clusters were randomly selected using probability proportional to size. Of these clusters, 70 were in urban areas and 80 in rural areas.

A household listing operation was undertaken by LISGIS in all of the selected EAs from August to September 2022 using a tablet computer-based CSPro application. The updated lists of households served as a sampling frame for the selection of households in the second stage. In the second stage, 30 households per cluster were systematically selected, resulting in a total sample size of 4,500 households. In instances where EAs were large (greater than 300 households), segmentation was carried out; one segment at random was selected for the survey, and 30 households were selected systematically from the segment. GPS points were also collected during the listing operation in order to verify that the listing took place in the correct locations.

Because of the approximately equal sample size in each region, the sample was not self-weighting at the national level.

For further details on sample design, see Appendix A of the final report.

RESPONSE RATE
A total of 4,486 households were selected for the survey, of which 4,338 were occupied and 4,306 were successfully interviewed, yielding a response rate of 99%. In the interviewed households, 4,598 women age 15–49 were identified for individual interviews. Interviews were completed with 4,513 women, yielding a response rate of 98%.

WEIGHTING
A spreadsheet containing all sampling parameters and selection probabilities was constructed to facilitate the calculation of sampling weights. Household sampling weights and women's individual sampling weights were obtained by adjusting the above calculated weights to compensate for household nonresponse and individual nonresponse, respectively. These weights were further normalized so that the total number of unweighted cases was equal to the total number of weighted cases at the national level for both household weights and women's individual weights. The normalized weights are valid for estimation of proportions and means but not valid for estimation of totals.

Data collection

DATES OF DATA COLLECTION

Start	End
2022-10-04	2022-12-13

DATA COLLECTION MODE
Computer Assisted Personal Interview [capi]

DATA COLLECTION NOTES
Fieldworkers were grouped into 12 teams, each team consisting of one supervisor, two biomarker technicians, two interviewers, and one logistician (who was responsible for transporting microscopy slides from clusters to staining sites). Fieldwork began on October 4, 2022, in Montserrado. All 12 teams spent the first 10 days in Montserrado County and then moved to the remaining counties once all Montserrado County clusters were completed.

Data collection was completed on December 13, 2022. Over the course of data collection, field teams were closely monitored by six teams of LMIS coordinators, each consisting of one biomarker coordinator, one data quality coordinator, and one community coordinator. SyncCloud was used to upload data from the field in real time and to produce field check tables from the completed interviews sent to the central office, allowing remote monitoring of fieldwork by NMCP and ICF. Regular feedback was sent to the field teams.

Questionnaires

QUESTIONNAIRES

Three questionnaires were used in the 2022 LMIS: the Household Questionnaire, the Woman's Questionnaire, and the Biomarker Questionnaire. The questionnaires were based on The DHS Program's model questionnaires and were adapted to reflect the population and health issues relevant to Liberia. Country-specific topics included questions about the 2021 mass insecticide-treated net (ITN) distribution campaign, the acceptability of the new malaria vaccine, and mass drug administration (seasonal malaria chemoprevention for children). The questionnaires were prepared in English, with some text adapted to Liberian English. The Household and Woman's Questionnaires were programmed into tablet computers to allow for computer assisted personal interviewing (CAPI) for data collection purposes.

Data Processing

DATA EDITING

The processing of the 2022 LMIS data began immediately after the start of fieldwork. As data collection was ing completed in each cluster, all electronic data files were transferred via SyncCloud to the NMCP central office in Monrovia. Data files were registered and checked for inconsistencies, incompleteness, and outliers. e field teams were alerted of any inconsistencies and errors. Secondary editing carried out in the central office involved resolving inconsistencies and coding open-ended questions. Data entry and editing were carried out using the CSPro software package. Concurrent processing of the data offered a distinct advantage because it maximized the likelihood of the data being error-free and accurate. Secondary editing of the data was completed in January 2023.

Data Appraisal

ESTIMATES OF SAMPLING ERROR

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, and data entry errors. Although numerous efforts were made during the implementation of the 2022 Liberia Malaria Indicator Survey (2022 LMIS) 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 LMIS is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

A sampling error is usually measured in terms of the standard error for a particular statistic (mean, percentage, etc.), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95% of all possible samples of identical size and design.

If the sample of respondents had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the 2022 LMIS sample was the result of a multistage stratified design, and, consequently, it was necessary to use more complex formulas. The computer software used to calculate sampling errors for the 2022 LMIS is an SAS program. This program uses the Taylor linearization method of variance estimation for survey estimates that are means, proportions, or ratios.

Sampling errors tables are presented in Appendix B of the final report.

DATA APPRAISAL
Data Quality Tables

- Household age distribution
- Age distribution of eligible and interviewed women
- Age displacement at ages 14/15
- Age displacement at ages 49/50
- Live births by years preceding the survey
- Completeness of reporting
- Observation of mosquito nets
- Number of enumeration areas completed by month and region
- Positive rapid diagnostic test (RDT) results by month and region
- Concordance and discordance between rapid diagnostic test (RDT) and microscopy results
- Concordance and discordance between national and external quality control laboratories

See details of the data quality tables in Appendix C of the final report.

Access policy

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Data and Data Related Resources	The DHS Program	archive@dhsprogram.com

ACCESS CONDITIONS
Request Dataset Access
The following applies to DHS, MIS, AIS and SPA survey datasets (Surveys, GPS, and HIV).
To request dataset access, you must first be a registered user of the website. You must then create a new research project request. The request must include a project title and a description of the analysis you propose to perform with the data.

The requested data should only be used for the purpose of the research or study. To request the same or different data for another purpose, a new research project request should be submitted. The DHS Program will normally review all data requests within 24 hours (Monday - Friday) and provide notification if access has been granted or additional project information is needed before access can be granted.

DATASET ACCESS APPROVAL PROCESS
Access to DHS, MIS, AIS and SPA survey datasets (Surveys, HIV, and GPS) is requested and granted by country. This means that when approved, full access is granted to all unrestricted survey datasets for that country. Access to HIV and GIS datasets requires an online acknowledgment of the conditions of use.

Required Information
A dataset request must include contact information, a research project title, and a description of the analysis you propose to perform with the data.

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A few datasets are restricted and these are noted. Access to restricted datasets is requested online as with other datasets. An additional consent form is required for some datasets, and the form will be emailed to you upon authorization of your account. For other restricted surveys, permission must be granted by the appropriate implementing organizations, before The DHS Program can grant access. You will be emailed the information for contacting the implementing organizations. A few restricted surveys are authorized directly within The DHS Program, upon receipt of an email request.

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CITATION REQUIREMENTS
Recommended citations are available at https://www.dhsprogram.com/publications/Recommended-Citations.cfm

ACCESS AUTHORITY

Name	URL
The DHS Program	Link

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Metadata production

DDI DOCUMENT ID
DDI_LBR_2022_MIS_v01_M_WB

PRODUCERS

Name	Abbreviation	Affiliation	Role
Development Data Group	DECDG	The World Bank	Documentation of the DDI

DATE OF METADATA PRODUCTION
2023-12-11

DDI DOCUMENT VERSION
Version 01 (December 2023). Metadata in this DDI is excerpted from "Liberia Malaria Indicator Survey 2022" report.

Data Dictionary

Data file	Cases	Variables
RECH0.dta HOUSEHOLD - Household's basic data	4486	54
RECH1.dta HOUSEHOLD - Household Schedule	21500	31
RECH2.dta HOUSEHOLD - Household Characteristics	4306	108
RECH3.dta HOUSEHOLD - Survey specific Household variables	4306	12
RECH6.dta HOUSEHOLD - Children Height/Weight/Hemoglobin	3241	49
RECHML.dta HOUSEHOLD - Malaria: by Mosquito Bed Net	7117	20
RECHMH.dta HOUSEHOLD - Malaria: by Household Member	21500	42
REC01.dta WOMAN - Respondent's basic data	4598	47
REC11.dta WOMAN - Respondent's basic data (continued)	4513	72
REC21.dta WOMAN - Reproduction and Birth History	3230	26
REC23.dta WOMAN - Reproduction (continued)	4513	64
REC41.dta WOMAN - Maternity	1594	185
REC4A.dta WOMAN - Child's health	2722	138
REC44.dta WOMAN - Child's Height and Weight	2722	23
REC45.dta WOMAN - Woman's feeding practices and summary variables	4513	132
REC81.dta WOMAN - Characteristics of Interview	4513	15

RECSBC.dta WOMAN - Social behavior change communication - Malaria	4513	43
REC91.dta WOMAN - Country specific variables	4513	6
REC94.dta WOMAN - Country specific Maternity variables	1594	16
REC95.dta WOMAN - Country specific Health and Vaccination variables	2722	9
FWRECORD.dta Fieldworker record	65	41