



Institute for Health Metrics and Evaluation

Data Release Information Sheet

Data Summary

Dataset name: Nicaragua Salud Mesoamérica Initiative Third Follow-Up Household Survey 2022

Project name: Salud Mesoamérica Initiative Evaluation

Date of release: October 23, 2023

Summary: The Salud Mesoamérica Initiative (SMI) is a regional public-private partnership that brings together Mesoamerican governments, private foundations and bilateral and multilateral donors with the purpose of reducing health inequalities affecting the poorest 20 percent of the population in the region. Funding focuses on supply- and demand-side interventions, including evidence-based interventions, the expansion of proven and cost-effective healthcare packages, and the delivery of incentives for effective health services. One of its defining features is the application of a results-based financing (RBF) model that relies on performance measurement and enhanced transparency and accountability. The initiative focuses its resources on integrating key interventions aimed at reducing health inequalities that stem from the lack of access to quality reproductive, maternal, neonatal, and child health services (including immunization and nutrition services) for the poorest quintile of the population.

IHME serves as the independent evaluation partner for SMI. Surveys were conducted in both households and health facilities in order to assess coverage of health services, barriers to care, and population health outcomes, alongside health system infrastructure and service delivery components. In Nicaragua, baseline (2013), second operation (2017), and third operation (2022) data were collected at households and health facilities in intervention and comparison areas. The first operation (2014) data collection took place at health facilities in intervention areas only. Third operation measurements were also conducted in Belize, El Salvador, and Honduras.

The SMI household survey captures household characteristics, reported maternal and child health data for women 15-49 years of age and for children 0-59 months of age, and anthropometric measurements including height, weight, and hemoglobin concentration for children. Community data collection via household surveys permits the measurement of changes in health status, access to health care, and satisfaction with health care, as well as an array of data points which give context to these factors.

The SMI household census is used to capture the age and sex distribution of all of the usual members of all households in selected segments. Basic information including relationship to the head of the

household and marital status is also collected. Children aged 0-59 months who have one or more parent residing in the same household are linked to their mother and/or father by way of unique household member identification codes.

Data from the SMI household census are used to identify and select eligible households for the detailed interviews and the physical measurements module. The household survey is typically conducted within one month of the household census.

The SMI household survey includes three components: the Household Characteristics Questionnaire, the Maternal and Child Health Questionnaire, and the Physical Measurements Module.

The Household Characteristics Questionnaire (Module 1) collects information on the source of water, type of toilet facilities, exposure to secondhand smoke, ownership of various assets including durable goods, agricultural land, and livestock, and household expenses and sources of health care financing.

The Maternal and Child Health Questionnaire (Module 2) covers eligible women's background characteristics (including education, occupation, and exposure to media), access to health care, current health status, recent history of illness and associated medical expenses, fertility preferences, knowledge and use of contraceptive methods (including barriers to use), and exposure to health system interventions. Women who have been pregnant in the last five years answer questions about birth history; antenatal, delivery, and postpartum care; birth spacing; breastfeeding; and infant feeding practices.

Caretakers of children aged 0-5 years are asked detailed questions for each child under age 5 on topics such as child's current health status, recent history of illness including diarrhea, fever, and acute upper respiratory infection and associated medical expenses, child's exposure to health system interventions, immunization, and supplementation history.

The Physical Measurements Module (Module 3) captures weight, height/length, and hemoglobin concentrations of children aged 0-59 months. Portable scales and height rods were used for the anthropometric measurements and hemoglobin levels were assessed in the field using a portable HemoCue™ machine. Medically trained personnel (i.e., anthropometrists or professional nurses) performed all assessments.

In addition to the census and modules 1-3, the household survey includes the Dates (or *FECHAS*) module, which captures information about the disposition of households visited in the survey and what dates household visits were attempted.

Acknowledgements

Contributing organizations:

- Institute for Health Metrics and Evaluation (IHME)
- UNIMER

Funders:

- Bill & Melinda Gates Foundation
- Carlos Slim Foundation
- Global Affairs Canada
- Spanish Agency for International Development Cooperation
- Inter-American Development Bank.

File Inventory

File Name	Description	Date Produced	Data structure
IHME_SMI_NIC_HHS_2022_C ENSUS_Y2023M08D17.CSV	Nicaragua census	August 17, 2023	Each row represents one household. Unique identifier: "segmento" + "numero_hogar"
IHME_SMI_NIC_HHS_2022_D ATE_Y2023M08D17.CSV	Nicaragua dates: 1 survey per household	August 17, 2023	Each row represents one household. Unique identifier: "segmento" + "nhogar"
IHME_SMI_NIC_HHS_2022_ MOD1_Y2023M08D17.CSV	Nicaragua household module 1: 1 survey per household	August 17, 2023	Each row represents one household. Unique identifier: "segmento" + "nhogar"
IHME_SMI_NIC_HHS_2022_ MOD2A_Y2023M08D17.CSV	Nicaragua household module 2a: 1 interview with every eligible woman aged 15-49 years in the household	August 17, 2023	Each row represents one household. Unique identifier: "segmento" + "nhogar" + "wom_id"

File Name	Description	Date Produced	Data structure
IHME_SMI_NIC_HHS_2022_C ENSUS_Y2023M08D17.CSV	Nicaragua census	August 17, 2023	Each row represents one household. Unique identifier: "segmento" + "numero_hogar"
IHME_SMI_NIC_HHS_2022_ MOD2B_Y2023M08D17.CSV	Nicaragua household module 2b: 1 interview per live birth in the last 5 years for each eligible woman aged 15-49 years in the household	August 17, 2023	Each row represents one delivery. Unique identifier: "segmento" + "nhogar" + "wom_id" + "loop_num"
IHME_SMI_NIC_HHS_2022_ MOD2C_Y2023M08D17.CSV	Nicaragua household module 2c: 1 interview with the mother/caregiver of each eligible child aged 0-59 months in the household	August 17, 2023	Each row represents one child. Unique identifier: "segmento" + "nhogar" + "child_id"
IHME_SMI_NIC_HHS_2022_ MOD3_Y2023M08D17.CSV	Nicaragua household module 3: 1 anthropometric measurement module per eligible child aged 0-59 months in the household	August 17, 2023	Each row represents one child. Unique identifier: "segmento" + "nhogar" + "child_id"
IHME_SMI_NIC_HHS_2022_C ODEBOOK_[MODULE NAME]_Y2023M08D17.CSV	Codebook (1 per data file)	August 17, 2023	
IHME_SMI_NIC_HHS_2022_ QUESTIONNAIRE_[MODULE NAME]_Y2023M08D17.PDF	Questionnaire (1 per data file)	August 17, 2023	
IHME_SMI_NIC_HHS_2022_D ATA_RELEASE_INFORMATIO N_SHEET_Y2023M08D17.PDF	Data Release Information Sheet	August 17, 2023	

Methodological statement

Data Collection

Data collection for the SMI-Nicaragua third operation measurement was conducted by UNIMER. All surveys were conducted using a computer-assisted personal interview (CAPI). The CAPI was programmed using SurveyCTO and installed onto touchscreen tablets. CAPI supports skip patterns, inter-question answer consistency, and data entry ranges. The aim of introducing CAPI to the field was to reduce survey time by prompting only relevant questions, maintain a logical answering pattern across different questions, decrease data entry errors, and permit rapid data verification.

Surveys were developed by IHME in collaboration with IDB and including input from relevant health authorities of the region.

Portable scales and stadiometers were used for the anthropometric measurements, and hemoglobin levels were assessed in the field using a portable HemoCue machine. Medically trained personnel (i.e., anthropometrists or professional nurses) performed all physical measurements.

The SMI-Nicaragua household census, which captures basic demographic characteristics of all usual household occupants, was carried out between August 4, 2022 and October 12, 2022 in the third operation measurement. Data collection for the SMI-Nicaragua household survey began on September 6, 2022 and was completed on November 5, 2022. To assure completeness of the sample, field staff were instructed to return to selected households up to three times (on different days, and at least once on a weekend) to complete the Household Characteristics Questionnaire, the Maternal and Child Health Questionnaire, and the Physical Measurements Module. Households that refused to participate or were absent at all three visits were substituted with randomly selected alternates.

Data collection teams, consisting of one supervisor and three to five interviewers were deployed to conduct the SMI household census and the SMI household survey. Supervisors were responsible for reviewing questionnaires for quality and consistency prior to departing to each segment.

The research protocol was approved by the Internal Review Board of the University of Washington. All data collection instruments and procedures were approved by the Ministry of Health of Nicaragua.

Sampling/Population

The study design for the SMI-Nicaragua household survey provides representative estimates of the coverage of key health interventions and indicators for a geographic area that approximates the lowest wealth quintile of the population of Nicaragua.

IDB identified intervention municipalities in Nicaragua in which to conduct the SMI household survey for the Initiative based on their high concentration of residents in the country's lowest wealth quintile; comparison municipalities with similar socioeconomic characteristics and ethnic composition were also identified. From these municipalities, a two-stage clustered random sample of eligible households was selected.

First-stage sample selection: census segments

The household survey uses a two-stage random sampling design in order to balance survey administration costs with the ability to make estimates representative of the population in the study area. For the SMI-Nicaragua household census, the primary sampling unit (PSU) from the 2005 Nicaragua Population Census is the *segmento censal* (census segment). A representative sample of these clusters (“segments”) was randomly selected from a sampling frame of all segments in SMI municipalities with probability proportional to size, where size is measured by the number of occupied households. Samples for intervention and comparison strata, and for baseline and follow-up rounds, were selected independently.

A set of alternate segments was selected using identical methodology, to be surveyed in the event that any of the selected segments could not be surveyed and needed to be replaced due to security concerns, community refusal of the study, or a high proportion of absent households. In Nicaragua in the third operation survey, the same community was found to have been selected twice in the sample, so a replacement segment was provided in the same municipality.

Second-stage sample selection

The SMI-Nicaragua household census is conducted in each of the randomly selected segments prior to the household survey in order to identify all eligible women and children for second-stage sampling. Interviewers visit every household in the segment and create a household roster capturing the age and sex distribution of household members.

Eligible households are systematically selected from the complete census listing for participation in the SMI-Nicaragua Household Survey. Thirty households are selected for participation, 25 households with at least one eligible child and five households with only eligible women. In order to ensure at least 30 complete interviews per segment, 10 backup households, eight with at least one eligible child and two with only eligible women, are selected at random in case of refusals or absent households.

All women aged 15-49 years who are members of the selected household are eligible to be interviewed, and all children aged 0-59 months who are members of the selected household are eligible for the physical measurement module. Any household head or other individual knowledgeable about household characteristics and expenditures is permitted to respond to the household characteristics module, while any primary caregiver of a child 0-59 months is eligible to inform for the child health interview module, regardless of sex or age.

Weighting

Survey weights reflect the three-stage cluster sampling design of the study. The primary sampling unit is referred to as the “segment.” The segment is censused, and 30 households with eligible participants selected at random. Within selected households, all women 15-49 years of age and all children 0-59 months of age are selected for participation in the survey. Design weights for households, women and children were calculated according to the inverse probability of selection of the unit. No post-stratification adjustments were made to the weights. Although cluster sampling can improve efficiency when the target population is spread out over a large area, the resultant sample consists of observations that are not completely independent of one another. Estimation using SMI survey data

should apply sampling weights in order to represent the population of the study area, and should account for intra-class correlation by specifying clusters and strata when calculating variance.

Imputed Variables and/or Constructed Variables – What was Imputed/Constructed and How

There are no imputed variables in the data. The constructed variables are labeled in the dictionary as “IHME Generated”.

There are ten major types of questions found in the data dictionary: select_multiple_item, select_multiple, select_one, calculate, calculate_here, integer, decimal, survey_weight, date and text. These question types are determined by the survey software program and can be grouped into the following categories:

- Check all that apply: The check all that apply questions are labeled as either select_multiple_item or select_multiple_summary. For select multiple questions, the select_multiple_summary represents the question as it appeared in the survey instrument, with all the possible responses as values. On the backend, the survey software generates a variable for each possible choice, with possible values 1 for selected and 0 for not selected. These system-generated variables are labeled select_multiple_item.
- Single response option: The single response options are labeled select_one.
- Text response: The text response is labeled text.
- Calculated or pre-populated variables: Any variable that is created by the survey software system, such as time it takes to complete the survey, is labeled as either calculate or calculate_here. For the purposes of this study, no birth dates or identifiable information is collected, but some internal survey calculations were done based on the date of birth to determine age in years. Other examples of pre-populated variables include geographic information piped into the survey from external census data.
- Numeric response: Numeric responses are labeled as either integer or decimal.
- Survey weights: The survey weights that were calculated for use in the construction of weighted estimates are labeled as survey_weight. These variables were created by IHME during analysis and were not present in the survey.
- Date response: Some date variables are labeled as date and are usually in the form YYYY/MM/DD unless indicated otherwise.

Known Data Quality Issues

- Visit disposition codes and visit dates in the Dates module are entered by the interviewer and some conflicting responses may exist between individual household visits and final disposition codes.
- Calculated age variables in modules 2C and 3 may represent a lag of up to a month when compared with age in months registered at the time of the household census.
- Additional household members added in Module 1 are sometimes duplicates of household members who were censused, then re-added by mistake.
- Continuous data (e.g., household expenditures) have not been cleaned or trimmed for outliers.

- There are data entry errors, specifically with the child roster IDs in Modules 2A and 2B, that were entered in the field. IHME had a thorough data verification process and communication system with the field team, although not all originally reported data may align throughout the census to the household.
- Ages in livebirth roster have not been reconciled or corrected except in some cases where the child is under age 5.
- Module 3 had a separate consent process for child anthropometric measurements and was sometimes refused even for children who have an interview module 2C. Refusals of module 3 are not always captured accurately in the dates module.
- Anemia screening by anthropometrists was according to a field conversion table for hemoglobin concentration by altitude, and in some cases recorded anemia status may vary from a standard clinical definition or may have been mis-recorded. Height measurement position may also be mis-recorded in some cases.
- Some households may be missing one or more modules due to refusal or tracking errors in the field.

Codebooks

Variable names, labels, and value coding can be found in the following files:

IHME_SMI_NIC_HHS_2022_CODEBOOK_CENSUS_Y2023M08D17.CSV – This codebook contains variable names pertaining to the census.

IHME_SMI_NIC_HHS_2022_CODEBOOK_DATE_Y2023M08D17.CSV – This codebook contains variable names pertaining to the dates module.

IHME_SMI_NIC_HHS_2022_CODEBOOK_MOD1_Y2023M08D17.CSV – This codebook contains variable names pertaining to module 1.

IHME_SMI_NIC_HHS_2022_CODEBOOK_MOD2A_Y2023M08D17.CSV – This codebook contains variable names pertaining to module 2a.

IHME_SMI_NIC_HHS_2022_CODEBOOK_MOD2B_Y2023M08D17.CSV – This codebook contains variable names pertaining to module 2b.

IHME_SMI_NIC_HHS_2022_CODEBOOK_MOD2C_Y2023M08D17.CSV – This codebook contains variable names pertaining to module 2c.

IHME_SMI_NIC_HHS_2022_CODEBOOK_MOD3_Y2023M08D17.CSV – This codebook contains variable names pertaining to module 3.

Public Use Dataset Notes

This is a public use dataset. The data have been de-identified. Variables determined to contain identifiable private information, or potentially identifiable private information, for health facilities, health workers, and/or other individuals have been removed in accordance with IHME's microdata

release protocol. The protocol's determination for variables that constitute identifiable private information is based primarily on HIPAA'S De-identification Standard.

Additional Information

The data dictionaries contain the most accurate list of variables asked in the survey. The PDF surveys produced do not reflect questions that were hidden from participants and interviewers after the initial survey was published for testing and piloting purposes.

No personally identifying information was collected for this study, however, this data was stripped of comments and information on who conducted the interview. Some variables in the dataset do not contain data, such as date of birth, because this information was not stored on the survey or sent to IHME. The date of birth was entered into the survey and an internal calculation was done to provide age.

Diacritics have been removed from the datasets and data dictionaries for Spanish-language survey content.

Terms and Conditions

<http://www.healthdata.org/about/terms-and-conditions>

Contact Information

To request further information about the Salud Mesoamérica Initiative (SMI), please contact IHME:

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These files may be updated periodically, so we appreciate hearing feedback or additional information about how these data are being used.