Rwanda - Demographic and Health Survey 2010

National Institute of Statistics of Rwanda (NISR)

Report generated on: September 11, 2017

Sampling

Sampling Procedure

The sample for the 2010 RDHS was designed to provide population and health indicator estimates for the country as a whole and for urban and rural areas in particular. Survey estimates are also reported for the provinces (South, West, North, and East) and for the City of Kigali. The results presented in this report show key indicators that correspond to these provinces and the City of Kigali.

A representative sample of 12,792 households was selected for the 2010 RDHS. The sample was selected in two stages. In the first stage, 492 villages (also known as clusters or enumeration areas) were selected with probability proportional to the village size. The village size is the number of households residing in the village. Then, a complete mapping and listing of all households existing in the selected villages was conducted. The resulting lists of households served as the sampling frame for the second stage of sample selection. Households were systematically selected from those lists for participation in the survey.

All women age 15-49 who were either permanent residents of the household or visitors present in the household on the night before the survey were eligible to be interviewed. In addition, in a subsample of half of all households selected for the survey, all men age 15-59 were eligible to be interviewed if they were either permanent residents or visitors present in the household on the night before the survey.

SAMPLING FRAME

The sampling frame used for the 2010 RDHS is the preparatory frame for the Rwanda General Population and Housing Census (RGPH), which will be conducted in 2012. Provided by the National Institute of Statistics of Rwanda (NISR), the sampling frame is a complete list of natural villages covering the entire country. Though it is preferable to work with a frame consisting of enumeration areas (EAs) because the natural villages are too variable in size, an EA frame is not available at the time of sampling design. The sampling frame that was available is the list of 14,837 natural villages, which contains the administrative characteristics for each village and village population. The village population comes from the national ID card project carried out in 2007-08, which may be under estimated compared with the population projection conducted in 2009 by NISR.

Rwanda's administrative units were reformed in 2006, so the country is currently divided into 5 provinces; 30 districts, 417 sectors, and 14,837 villages.The average village size is 610 residents, which is equivalent to 133 households. The sizes of the districts are quite homogeneous, varying from 2.7 percent to 4.4 percent. There is no urban-rural specification in the sampling frame because the urban-rural definition has not been released by the Ministry of Local Administration (MINALOC). It was expected that the urban-rural definition of the sampled villages will be determined during the data collection or in the office once the MINALOC releases the definition.

Response Rate

All of the 492 clusters selected for the sample were surveyed for the 2010 RDHS. A total of 12,792 households were selected, of which 12,570 households were identified and occupied at the time of the survey. Among these households, 12,540 completed the Household Questionnaire, yielding a response rate of nearly 100 percent.

In the 12,540 households surveyed, 13,790 women age 15-49 were identified as being eligible for the individual interview; interviews were completed with 13,671 of these women, yielding a response rate of 99.1 percent. Male interviews were conducted in every second household. A total of 6,414 men age 15-59 were identified in the subsample of households. Of these 6,414 men, 6,329 completed the individual interviews, yielding a response rate of 98.7 percent.

The response rates were slightly higher in rural areas for men, while for women they were almost the same in rural and urban areas.

Questionnaires

Overview

Three questionnaires were used for the 2010 RDHS: the Household Questionnaire, the Woman's Questionnaire, and the Man's Questionnaire. They are based on questionnaires developed by the worldwide Demographic and Health Surveys (DHS) program and on questionnaires used during the 2005 RDHS and 2007-08 RIDHS surveys. To reflect relevant issues in population and health in Rwanda, the questionnaires were adapted during a series of technical meetings with various stakeholders from government ministries and agencies, nongovernmental organizations, and international donors. The questionnaires were translated from English and French into Kinyarwanda.

The Household Questionnaire was used to list all the usual members and visitors in the selected households as well as to identify women and men eligible for individual interviews. Basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of household. For children under 18, survival status of the parents was determined. The Household Questionnaire also collected information on the following:
- Dwelling characteristics
- Utilization of health services and health expenditures for recent illness and injury
- Possession of iodized salt
- Possession and utilization of mosquito nets
- Height and weight of women and children
- Hemoglobin measurement of women and children
- Blood collection from women and children for rapid test and laboratory testing of malaria
- Blood collection from women and men for laboratory testing for HIV

The Woman's Questionnaire was used to collect information from all women age 15-49 and was organized by the following sections:
- Respondent background characteristics
- Reproduction, including a complete birth and death history of respondents' children and information on abortion
- Contraception
- Pregnancy and postnatal care
- Child's immunization, health, and nutrition
- Marriage and sexual activity
- Fertility preferences
- Husband's background and woman's work
- HIV/AIDS and other sexually transmitted infections
- Other health issues
- Adult mortality
- Relationship in the household

The Man's Questionnaire was administered to all men age 15-59 living in every other household in the RDHS sample. The Man's Questionnaire collected much of the same information as the Woman's Questionnaire but was shorter because it did not contain a detailed reproductive history or questions on maternal and child health or nutrition.

An instruction manual was also developed to support standardized data collection. All data collection instruments were pretested in June-July 2010. The observations and experiences gathered from the pretest were used to improve the instruments for the main survey data collection.

Data Collection

Data Collection Dates

Start	End	Cycle
2010-09-26	2011-03-10	N/A

Data Collection Mode

Face-to-face

DATA COLLECTION NOTES

Training and Fieldwork Data Collection

Thirty-eight women and men were trained from June 14-July 2, 2010, in the administration of the RDHS survey instruments, anthropometric measurement, hemoglobin testing, malaria testing, and blood drawing for HIV testing. Seven days of fieldwork were followed by one day of interviewer debriefing and examination. Pre-test fieldwork was conducted in 230 households in two rural and two urban villages outside of City of Kigali. The majority of pretest participants attended the main training and served as field editors and team leaders for the main survey.

NISR recruited and trained 117 participants, and at the end of the training it retained 105 to work as field personnel. The main training was conducted from August 16-September 14, 2010. The training consisted of instruction regarding interviewing techniques and field procedures, a detailed review of items on the questionnaires followed by tests, instruction and practice in weighing and measuring children, and mock interviews and role plays among participants in the classroom. Each of the fifteen data collection teams included a team leader, a field editor, three female interviewers, one male interviewer, and one biomarker staff member.

The main fieldwork was launched immediately upon the conclusion of field staff training. Each of the 15 teams was assigned to 2 of the 30 districts. Fieldwork supervision was conducted by NISR, NRL, and ICF International through regular visits to teams to review their work and monitor data quality. The UNICEF team also regularly visited the teams in the field. Additional contact between the central office and the teams was maintained through cell phones. Fieldwork was conducted from September 26, 2010, to March 10, 2011. Questionnaires and blood samples were regularly delivered to NISR headquarters.

Hemoglobin, Malaria and HIV Testing

In a subsample of one-half of all households selected for the Man’s Questionnaire, blood specimens were collected from women age 15-49 and children age 6-59 months for measurement of hemoglobin in the field. The specimens were tested for malaria in the field using the Rapid Diagnostic Test (RDT) and tested for malaria in the lab using the microscopic method. Additionally, in the same one-half of all households, blood specimens for HIV testing were collected from all women age 15-49 and men age 15-59 who consented to the test. The protocol for the blood specimen collection and testing for HIV was reviewed and approved by the Rwanda National Ethics Committee, the Institutional Review Board of ICF International, and the Centers for Disease Control and Prevention (CDC) in Atlanta.

Hemoglobin testing

The 2010 RDHS included anemia testing of children age 6 to 59 months and women age 15-49 in the same one-half of households that were selected for interviews of men. A consent statement was read to the eligible respondent or to the parent or responsible adult for children and young women age 15-17. This statement explained the purpose of the test, informed respondents that the results would be made available as soon as the test was completed, and requested permission for the test to be carried out.
Anemia levels were determined by measuring the level of hemoglobin in the blood (a decreased concentration of hemoglobin characterizes anemia). The concentration of hemoglobin in the blood was measured in the field using the HemoCue system. A special-purpose photometer is used to determine hemoglobin levels. A capillary blood sample is taken from the palm side of the end of a finger, punctured with a sterile, non-reusable, selfretractable lancet. The blood drop is collected in a HemoCue microcuvette, which serves as a measuring tool, and placed in the HemoCue photometer to determine the level of hemoglobin in the blood. A pamphlet was given to each respondent, explaining symptoms of anemia, prevention methods, and the individual results of the hemoglobin measurement of the respondent and any children for whom the respondent gave permission to be measured. Each person whose hemoglobin level was lower than the recommended cutoff point (testing severely anemic) was advised to visit a health facility for follow-up with a health professional.

Malaria testing

Malaria diagnostic tests, including a rapid diagnostic test (RDT) and a test using thick and thin blood smears, were given to eligible women and children in the 2010 RDHS. For the RDT for malaria, a drop of blood was obtained by a prick at the end of the finger, usually at the same time as anemia testing. First Response test kits were used according to manufacturer recommendations. The results of the malaria RDT were recorded in the Household Questionnaire, which allows linking with the characteristics of the respondents. Results from the RDTs were used to diagnose malaria and guide treatment of parasitemic children during the survey. The parent or guardian of children with a positive RDT was provided with written results, and children were given Coartem for treatment, according to the current malaria treatment guidelines. Women with a positive RDT were referred to the nearest health center for treatment.
Thin and thick blood smears were also collected from participants who agreed to malaria testing. Blood slides were stained with Giemsa stain prepared by the laboratory in advance of the fieldwork. Parasite densities were calculated by counting the number of asexual stage parasites/200 white blood cells (WBCs), assuming 6,000 WBCs/dl of blood. Blood smears were considered negative if no parasites were found after counting 200 fields.
An informed consent form was read to the eligible person or parent/responsible adult of the child or teenager age 15-18 . This consent form asks, first of all, for the authorization of the person before undertaking the test and then explains the objectives of the test, informing the individual taking the test or those responsible for children that the results would be communicated immediately after the test. For each eligible woman and child, a slide with thick and thin blood smears was prepared, transmitted, and stored for microscopic examination of malaria parasites at the NRL.

HIV testing

Women and men who were interviewed in the subsample of households selected for the men’s survey of the 2010 RDHS were asked to voluntarily provide blood for HIV testing. The HIV test is anonymous; that is, the results of the test were not linked to survey data until the individual respondent’s identifying information was destroyed by NISR. Therefore, the respondents’ HIV test results can never be linked to identifying data. For women and men willing to be tested, drops of blood were drawn and dried on filter paper. Only an identification number (barcode) drawn at random was assigned to each specimen. Since no information containing personal identification accompanied the samples, it was not possible to inform the respondents of the result of their test. Analysis of the samples for HIV was carried out at the NRL.
Information and educational brochures about HIV/AIDS prevention and the existing Voluntary Counseling and Testing (VCT) and Prevention of Mother-To-Child Transmission (PMTCT) sites were distributed to all households selected for the survey, whether these households were selected for testing or not. These brochures were prepared by TRAC-Plus and the Commission Nationale de Lutte contre le Sida (CNLS) or National AIDS Control Commission in close collaboration with NISR and were adapted to the population surveyed.

Data Processing

Data Editing

Data entry began on November 1, 2010, almost one month after the survey was launched in the field. Data were entered by a team of 15 data processing personnel recruited and trained for this task. They were assisted during these operations by 4 data verification and codification officers and 2 receptionists. Completed questionnaires were periodically brought in from the field to the National Institute of Statistics headquarters, where assigned agents checked them and coded the open-ended questions. Next, the questionnaires were sent to the data entry facility and the blood samples (DBS and malaria slides) were sent to the NRL to be screened for HIV. Data were entered using CSPro, a program developed jointly by the United States Census Bureau, the ORC Macro MEASURE DHS+ program, and Serpro S.A. Processing the data concurrently with data collection allowed for regular monitoring of teams' performance and data quality. Field check tables were regularly generated during data processing to check various data quality parameters. As a result, feedback was given on a regular basis, encouraging teams to continue their high quality work and to correct areas in need of improvement. Feedback was individually tailored to each team. Data entry, which included 100 percent double entry to minimize keying error and data editing, was completed on April 21, 2011. Data cleaning and finalization was completed on May 27, 2011.

Data Appraisal

Estimates of Sampling Error

Sampling errors for the 2010 RDHS are calculated for selected variables considered to be of primary interest for women's surveys and for men's surveys, respectively. The results are presented in an appendix to the Final Report for the country as a whole, for the urban and the rural areas separately, and for each of the five provinces. For each variable, the type of statistic (mean, proportion, or rate) and the base population are given in Table B.1 of the Final Report. Tables B.2 to B.9 present the value of the statistic (R), its standard error (SE), the number of unweighted (N-UNWE) and weighted (N-WEIG) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits (R2SE), for each variable. The DEFT is considered undefined when the standard error considering simple random sample is zero (when the estimate is close to 0 or 1). In the case of the total fertility rate, the number of unweighted cases is not relevant, as there is no known unweighted value for woman-years of exposure to child-bearing.

Related Materials

Questionnaires

Rwanda Demographic and Health Survey 2010 - Questionnaires

Title	Rwanda Demographic and Health Survey 2010 - Questionnaires
Date	2010-01-01
Country	Rwanda
Language	English
Filename	RWA_2010_DHS_Questionnaire.pdf

Reports

Rwanda Demographic and Health Survey 2010 - Final Report

Title	Rwanda Demographic and Health Survey 2010 - Final Report
Author(s)	National Institute of Statistics of Rwanda, Ministry of Finance and Economic Planning, Ministry of Health, Kigali, Rwanda and MEASURE DHS, ICF International, Calverton, Maryland, USA
Date	2012-02-01
Country	Rwanda
Language	English
Filename	http://www.dhsprogram.com/pubs/pdf/FR259/FR259.pdf

Rwanda Demographic and Health Survey 2010 - Fact Sheet

Title	Rwanda Demographic and Health Survey 2010 - Fact Sheet
Author(s)	MEASURE DHS
Date	2012-02-01
Country	Rwanda
Language	English
Filename	http://www.dhsprogram.com/pubs/pdf/GF24/GF24.pdf

Rwanda Demographic and Health Survey 2010 - HIV Fact Sheet

Title	Rwanda Demographic and Health Survey 2010 - HIV Fact Sheet
Author(s)	MEASURE DHS
Date	2012-02-01
Country	Rwanda
Language	English
Description	HIV fact sheets are published for most countries that include HIV prevalence testing in their DHS or AIS surveys. HIV fact sheets show, in brochure format, the major HIV prevalence indicators, including prevalence by residence, sex, age, and education. Data are shown in charts, and accompanying by explanatory text.
Filename	http://www.dhsprogram.com/pubs/pdf/HF36/HF36.pdf

Rwanda Demographic and Health Survey 2010 - Key Findings

Title	Rwanda Demographic and Health Survey 2010 - Key Findings

Author(s)	MEASURE DHS
Date	2012-02-01
Country	Rwanda
Language	English
Filename	http://www.dhsprogram.com/pubs/pdf/SR187/SR187.pdf

Rwanda Demographic and Health Survey 2010 - Survey Presentations

Title	Rwanda Demographic and Health Survey 2010 - Survey Presentations
Author(s)	MEASURE DHS
Date	2012-02-01
Country	Rwanda
Language	English
Description	For most DHS surveys, PowerPoint presentations are prepared for the national seminar launching the final report. The PowerPoint presentations summarize the major findings for each chapter of the survey report, showing results at the national and sub national levels. Photographs have been removed for faster file download. Feel free to customize these presentations, as needed. If you do change any of the slides, be sure to double check the numbers with the survey final report.
Filename	http://www.dhsprogram.com/pubs/pdf/PPT20/PPT20.zip