Zambia - Demographic and Health Survey 2013-2014

Central Statistical Office (CSO) - Government of Zambia, Ministry of Health - Government of Zambia

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Sampling

Sampling Procedure

The sample for the 2013-14 ZDHS was designed to provide estimates at the national and provincial levels, as well as for rural and urban areas within the provinces. This is the first time the ZDHS has been designed to provide estimates at such disaggregated levels for many of the survey indicators. The updated list of enumeration areas (EAs) for the 2010 Population and Housing Census provided the sampling frame for the survey. The frame comprises 25,631 EAs and 2,815,897 households. An EA is a convenient geographical area with an average size of 130 households or 600 people. For each EA, information is available on its location, type of residence (rural or urban), number of households, and total population. Each EA has a cartographical map with delimited boundaries and main landmarks of the area. A 2013-14 ZDHS cluster is essentially representative of an EA.

A representative sample of 18,052 households was drawn for the 2013-14 ZDHS. The survey used a two-stage stratified cluster sample design, with EAs (or clusters) selected during the first stage and households selected during the second stage. In the first stage, 722 EAs (305 in urban areas and 417 in rural areas) were selected with probability proportional to size. Zambia is now administratively divided into 10 provinces (Central, Copperbelt, Eastern, Luapula, Lusaka, Muchinga,2 Northern, North Western, Southern, and Western). Stratification was achieved by separating each province into urban and rural areas. Therefore, the 10 provinces were stratified into 20 sampling strata. In the second stage, a complete list of households served as the sampling frame in the selection of households for enumeration. An average of 25 households was selected in each EA. It was during the second stage of selection that a representative sample of 18,052 households was selected.

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

Response Rate

A total of 18,052 households were selected from 722 clusters, of which 16,258 were occupied at the time of the fieldwork. Of the occupied households, 15,920 were successfully interviewed, yielding a household response rate of 98 percent.

In the interviewed households, a total of 17,064 women age 15-49 were identified as eligible for individual interviews, and 96 percent of these women were successfully interviewed. A total of 16,209 men age 15-59 were identified as eligible for interviews, and 91 percent were successfully interviewed. Individual response rates were slightly lower in urban areas than in rural areas.

Questionnaires

Overview

Three questionnaires were used in the 2013-14 ZDHS: the Household Questionnaire, the Woman's Questionnaire, and the Man's Questionnaire. The three instruments were based on the questionnaires developed by the Demographic and Health Surveys Program and adapted to Zambia's specific data needs. The questionnaires were translated into seven major languages: Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, and Tonga. Questionnaires and field procedures were pretested prior to implementation of the main survey.

The Household Questionnaire was used to collect data such as:
• Age, sex, marital status, and education of all usual members and visitors
• Current school attendance and survivorship of parents among children under age 18
• Characteristics of the structural dwelling/housing unit
• Sanitation facilities and source of water
• Ownership of durable goods, land, and livestock
• Ownership and use of mosquito nets
The Household Questionnaire was also used to record biomarker data, including height and weight data for children and women and HIV and CD4 testing information for women and men. Data on age and sex of household members were used to identify the women and men eligible for individual interviews.

The Woman's Questionnaire was used to collect information from all women age 15-49.

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

Data Collection

Data Collection Dates

Start	End	Cycle
2013-08	2014-04	N/A

Data Collection Mode

Face-to-face [f2f]

DATA COLLECTION NOTES

Training of Field Staff
The CSO and MoH recruited and trained 306 participants. The MoH provided nurses, HIV counsellors, and laboratory technicians, while the CSO provided non-medical interviewers and data processing staff. Training on the survey methodology was conducted over a five-week period in May and June 2013 by resource personnel from the CDC, CSO, MoH, TDRC, UTH Virology, and UNZA Population Studies. Prior to the training of field staff, a two-week training workshop was conducted for resource personnel (training of trainers). Field staff were trained to serve as supervisors, field editors, and interviewers. The training course consisted of instruction on interviewing techniques and field procedures, a detailed review of questionnaire items, instruction and practice in weighing and measuring children, mock interviews between participants in the classroom, and practice interviews with real respondents in areas outside the 2013-14 ZDHS sample clusters. Field practice in rapid HIV testing, CD4 measurement, and DBS specimen preparation for HIV testing was also conducted. During this period, field editors and team supervisors were provided with additional training in methods of field editing, data quality control procedures, and fieldwork coordination. Twenty-four supervisors, 24 editors, 72 female interviewers, 48 HIV counsellors, 24 laboratory technicians, and 48 male interviewers made up the 24 data collection teams (each comprising 10 people) for the 2013-14 ZDHS.

Fieldwork
The survey was undertaken by 24 field teams. The 24 interviewing teams carrying out data collection each consisted of one supervisor (team leader), one field editor, three female interviewers, two male interviewers, two nurses/nurse counsellors, one laboratory technician, and one driver. Four senior staff members from the CSO, assisted by seven other staff members, coordinated supervision of fieldwork activities. Three staff members from UNZA assisted in field supervision and monitoring. In addition, two ICF International staff members conducted field supervision activities. To monitor implementation of the 2013-14 ZDHS biomarker components, laboratory staff from the TDRC and UTH Virology periodically supervised and monitored field laboratory technicians with respect to their compliance with survey biomarker procedures. Data collection took place over an eight-month period, from August 2013 to April 2014.

Data Processing

Data Editing

All questionnaires for the 2013-14 ZDHS were returned to the CSO headquarters in Lusaka for data processing, which consisted of office editing, coding of open-ended questions, data entry, and editing of computer-identified errors. Data processing staff included two data processing supervisors, 24 data entry clerks, five office editors, four secondary editors, one questionnaire administrator, and one biomarker administrator.

The processing of the data began in September 2013, one month after data collection commenced, and continued concurrently with the fieldwork. This offered an advantage because data were consistently checked and feedback was given to field teams, thereby improving data quality. Before being sent to the data processing centre in Lusaka, completed questionnaires were edited in the field by the field editors and checked by the supervisors. At the processing centre, data were edited and coded by office editors. Data were then entered using the CSPro computer package. All data were entered twice for 100 percent verification. This double entry of data enabled easy comparisons and identification of errors and inconsistencies. Inconsistencies were resolved by tallying the data with the paper questionnaire entries. Further inconsistencies that were identified were resolved through secondary editing of the data. The data files (excluding HIV testing data) were finalised in June 2014 after data cleaning.

Data Appraisal

Estimates of Sampling Error

The estimates from a sample survey are affected by two types of errors: non-sampling errors and sampling errors. Non-sampling errors are the results of mistakes made in implementing data collection and 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 2014 Zambia DHS (ZDHS) to minimize this type of error, non-sampling 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 2014 ZDHS 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.

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 percent 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 2014 ZDHS sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use more complex formulae. Sampling errors are computed in either ISSA or SAS, using programs developed by ICF International. These programs use the Taylor linearization method of variance estimation for survey estimates that are means, proportions or 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.

Note: Detailed description of estimate of sampling error is presented in APPENDIX B of the survey report.

Other forms of Data Appraisal

Data Quality Tables
- Household age distribution
- Age distribution of eligible and interviewed women
- Age distribution of eligible and interviewed men
- Completeness of reporting
- Births by calendar years
- Reporting of age at death in days
- Reporting of age at death in months
- Nutritional status of children based on the NCHS/CDC/WHO International Reference Population
- Completeness of information on siblings
- Sibship size and sex ratio of siblingss

Note: See detailed tables in APPENDIX C of the report.

Related Materials

Questionnaires

2013 Zambia Demographic and Health Survey Household Questionnaire

Title	2013 Zambia Demographic and Health Survey Household Questionnaire
Author(s)	Central Statistical Office (CSO) Ministry of Health
Date	2013-06-15
Country	Zambia
Language	English
Filename	Zambia_2013-14_DHS_hh_questionnaire.pdf

2013 Zambia Demographic and Health Survey Woman's Questionnaire

Title	2013 Zambia Demographic and Health Survey Woman's Questionnaire
Author(s)	Central Statistical Office (CSO) Ministry of Health
Date	2013-06-15
Country	Zambia
Language	English
Filename	Zambia_2013-14_DHS_woman_questionnaire.pdf

2013 Zambia Demographic and Health Survey Man's Questionnaire

Title	2013 Zambia Demographic and Health Survey Man's Questionnaire
Author(s)	Central Statistical Office (CSO) Ministry of Health
Date	2013-06-15
Country	Zambia
Language	English
Filename	Zambia_2013-14_DHS_man_questionnaire.pdf

Reports

Zambia Demographic and Health Survey 2013-14 Report

Title	Zambia Demographic and Health Survey 2013-14 Report
Author(s)	Central Statistical Office, Lusaka, Zambia Ministry of Health, Lusaka, Zambia University of Zambia Teaching Hospital, Virology Laboratory, Lusaka, Zambia University of Zambia Department of Population Studies, Lusaka, Zambia Tropical Diseases Research Ce
Date	2015-03-01
Country	Zambia
Language	English

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Filename http://www.dhsprogram.com/pubs/pdf/FR304/FR304.pdf

Zambia 2013-14 Demographic and Health Survey, Key Findings

Title	Zambia 2013-14 Demographic and Health Survey, Key Findings
Author(s)	The DHS Program
Date	2015-03-01
Country	Zambia
Language	English
Description	This report summarizes the findings of the 2013-14 Zambia Demographic and Health Survey (ZDHS) carried out by the Central Statistical Office (CSO) in partnership with the Ministry of Health as well as the University Teaching Hospital (UTH)-Virology Laboratory, the Tropical Diseases Research Centre (TDRC), and the Department of Population Studies at the University of Zambia (UNZA) under the overall guidance of the National Steering Committee from August 2013 to April 2014.
Filename	http://www.dhsprogram.com/pubs/pdf/SR219/SR219.pdf

Fast Facts from The 2013-14 Zambia Demographic and Health Survey

Title	Fast Facts from The 2013-14 Zambia Demographic and Health Survey
Author(s)	The DHS Program
Date	2015-03-01
Country	Zambia
Language	English
Filename	http://www.dhsprogram.com/pubs/pdf/DM64/DM64.pdf