

Zambia - Demographic and Health Survey 2007

Central Statistical Office (CSO)

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Sampling

Sampling Procedure

The sample for the 2007 ZDHS was designed to provide estimates of population and health indicators at the national and provincial levels. The sample design allowed for specific indicators, such as contraceptive use, to be calculated for each of the nine provinces (Central, Copperbelt, Eastern, Lusaka, Luapula, Northern, North-Western, Southern, and Western). The sampling frame used for the 2007 ZDHS was adopted from the Census of Population and Housing of the Republic of Zambia (CPH) conducted in 2000, provided by the CSO. The frame consists of 16,757 standard enumeration areas (SEA) created for the CPH 2000. A SEA is a convenient geographical area with an average size of 130 households or 600 people. A SEA contains information about its location, the type of residence, the number of households and the number of males and females in the population. Each SEA has a cartographical map, which delimits the boundaries and shows the main landmarks of the SEA.

A representative sample of 8,000 households was drawn for the 2007 ZDHS survey. The sample for ZDHS 2007 was a stratified sample selected in two stages from the CPH 2000 frame. Stratification was achieved by separating every province into urban and rural areas. Therefore, the nine provinces were stratified into 18 sampling strata. Samples were selected independently in every stratum by a two-stage selection. Implicit stratifications and proportional allocation was achieved at each of the lower geographical/administrative levels by sorting the sampling frame according to the geographical/administrative order and by using a probability proportional to size selection at the first-stage sampling.

In the first stage, 320 SEAs were selected with probability proportional to the SEA size. The household listing operation was conducted in all selected SEAs, with the resulting lists of households serving as the sampling frame for the selection of households in the second stage. Selected SEAs with more than 300 households were segmented, with only one segment selected for the survey with probability proportional to the segment size. Household listing was conducted only in the selected segment. Therefore, a ZDHS 2007 cluster is either an SEA or a segment of an SEA. In the second-stage selection, an average number of 25 households were selected in every cluster, by equal probability systematic sampling. A complete listing of households and a mapping exercise was carried out for each cluster in August 2006. All private households were listed. The listing excluded people living in institutional households (army barracks, hospitals, police camps, boarding schools, etc.). CSO listing enumerators were trained to use Global Positioning System (GPS) receivers to record the geographic coordinates of the 2007 ZDHS sample clusters.

All women age 15-49 and all men age 15-59 who were either permanent residents of the households in the 2007 ZDHS sample or visitors present in the household on the night before the survey were eligible to be interviewed. HIV testing was performed in each household among eligible women and men who consented to the test. In a sub-sample of one in every three households, syphilis testing was performed among eligible women and men who consented to the test. In addition, a subsample of one eligible woman in each household was randomly selected to be asked additional questions about domestic violence.

Response Rate

A total of 7,969 households were selected for the sample, of which 7,326 were occupied. The shortfall was largely due to households that were away for an extended period of the time and structures that were found to be vacant at the time of the interview. Of the 7,326 existing households, 7,164 were successfully interviewed, yielding a response rate of 98 percent.

In the interviewed households, a total of 7,408 women were identified, of whom 7,146 were successfully interviewed, yielding a response rate of 97 percent. With regard to the male survey results, 7,146 eligible men identified, of whom 6,500 were successfully interviewed, yielding a 91 percent response rate. The response rates are slightly lower in the urban than rural sample for women, and more markedly for men (88 percent compared with 94 percent).

The principal reason for non-response among eligible men was the failure to find individuals at home despite repeated visits to the household, followed by refusal to be interviewed. The substantially lower response rate for men reflects the more frequent and longer absence of men from the households.

Questionnaires

Overview

Three questionnaires were used for the 2007 ZDHS. They are the Household Questionnaire, the Women's Questionnaire, and the Men's Questionnaire. These questionnaires were based on questionnaires developed for the MEASURE DHS programme and were adapted to reflect the population and health issues relevant to Zambia at a series of meetings with various stakeholders from government ministries and agencies, non-governmental organizations, and international donors. In addition to English, the questionnaires were translated into seven major local languages, Nyanja, Bemba, Kaonde, Lunda, Lozi, Tonga, and Luvale.

The Household Questionnaire was used to list all the usual members and visitors of selected households. Some basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. For children under age 18, survival status of the parents was determined. If a child in the household had a parent who was sick for more than three consecutive months in the 12 months preceding the survey or had a parent who had died, additional questions related to support for orphans and vulnerable children were asked. Additionally, if an adult in the household was sick for three or more consecutive months in the 12 months preceding the survey or an adult in the household died, questions were asked related to support for sick people or people who had died. The Household Questionnaire was also used to identify women and men who were eligible for the individual interview. In addition, the Household Questionnaire collected information about the dwelling, such as the source of water; type of toilet facilities; materials used to construct the house; ownership of various durable goods; and ownership and use of mosquito nets. The Household Questionnaire was also used to record height and weight measurements for children age 5-59 months and women age 15-49 years. Additionally, the Household Questionnaire included questions on malaria prevention as well as the information on the consent of eligible household members for the HIV and syphilis testing.

The Women's Questionnaire was used to collect information from all women age 15-49. These women were asked questions on the following main topics:

- Background characteristics (education, residential history, media exposure, etc.)
- Birth history and childhood mortality
- Knowledge and use of family planning methods
- Fertility preferences
- Antenatal and delivery care
- Breastfeeding and infant feeding practices
- Vaccinations and childhood illnesses
- Marriage and sexual activity
- Women's work and husband's background characteristics
- Women's and children's nutritional status
- Malaria prevention and treatment
- Domestic violence
- Awareness and behaviour regarding HIV and other STIs
- Adult mortality including maternal mortality

The Men's Questionnaire was administered to all men age 15-59 in each household in the 2007 ZDHS sample. The Men's Questionnaire collected much of the same information found in the Women's Questionnaire, but was shorter because 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
2007-04	2007-10	N/A

Data Collection Mode

Face-to-face

DATA COLLECTION NOTES

TRAINING OF FIELD STAFF

CSO recruited and trained 122 people for the fieldwork to serve as supervisors, field editors, male and female interviewers, and reserve interviewers. Training of field staff for the main survey was conducted during February 2007. The training course consisted of instruction regarding interviewing techniques and field procedures, a detailed review of items on the questionnaires, 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 2007 ZDHS sample clusters. Field practice in syphilis testing and HIV DBS specimen collection 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. Twelve supervisors, 12 editors, 36 female interviewers, and 36 male interviewers were selected to make up 12 data collection teams for the 2007 ZDHS.

FIELDWORK

Twelve interviewing teams carried out data collection for the 2007 ZDHS. Each team consisted of one supervisor (team leader), one female field editor, one laboratory technician, three female interviewers, three male interviewers, and one driver. Seven senior staff members from CSO coordinated and supervised fieldwork activities. Three members of staff from UNZA assisted in the field supervision. In addition, three Macro staff members conducted field supervision. Data collection took place over a six-month period, from April 2007 to October 2007.

Data Processing

Data Editing

All questionnaires for the ZDHS were returned to the CSO in Lusaka for data processing, which consisted of office editing, coding of open-ended questions, data entry, and editing computer-identified errors. The data were processed by a team of 11 data entry clerks, four data editors, four data entry supervisors, and one administrator to receive and check the blood samples received from the field. Data entry and editing were accomplished using the CSPro software. The process of office editing and data processing was initiated in May 2007 and completed in November 2007.

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 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 Zambia Demographic and Health Survey 2007 (ZDHS 2007) 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 ZDHS 2007 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 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 ZDHS 2007 sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use more complex formulae. The computer software used to calculate sampling errors for the ZDHS 2007 is a Macro SAS procedure. This procedure used the Taylor linearization method of variance estimation for survey estimates that are means or proportions. The Jackknife repeated replication method is used for variance estimation of more complex statistics such as fertility and mortality rates.

Other forms of Data Appraisal

The following Data Quality Tables are available in APPENDIX C of the Final Report:

- 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

Related Materials

Questionnaires

Demographic and Health Survey 2007 - Questionnaire

Title Demographic and Health Survey 2007 - Questionnaire
 Author(s) Macro International Inc., Central Statistical Office, and Ministry of Health
 Date 2007-01-01
 Country Zambia
 Language English
 Filename Zambia_DHS_2007_questionnaire.pdf

Reports

Demographic and Health Survey 2007 - Final Report

Title Demographic and Health Survey 2007 - Final Report
 Author(s) Macro International Inc., Central Statistical Office, Ministry of Health, Tropical Diseases Research Centre, and University of Zambia
 Date 2009-03-01
 Country Zambia
 Language English
 Filename [http://www.dhsprogram.com/pubs/pdf/FR211/FR211\[revised-05-12-2009\].pdf](http://www.dhsprogram.com/pubs/pdf/FR211/FR211[revised-05-12-2009].pdf)

Demographic and Health Survey 2007 - Key Findings

Title Demographic and Health Survey 2007 - Key Findings
 Author(s) MEASURE DHS
 Date 2009-03-01
 Country Zambia
 Language English
 Filename <http://www.dhsprogram.com/pubs/pdf/SR157/SR157.pdf>

Demographic and Health Survey 2007 - Fact Sheet

Title Demographic and Health Survey 2007 - Fact Sheet
 Author(s) MEASURE DHS
 Date 2009-03-01
 Country Zambia
 Language English
 Filename <http://www.dhsprogram.com/pubs/pdf/HF29/HF29.pdf>
