

# Uganda - Demographic and Health Survey 2006

**Uganda Bureau of Statistics (UBOS)**

Report generated on: June 16, 2017

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# Sampling

## Sampling Procedure

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The sample of the 2006 UDHS was designed to allow separate estimates at the national level and for urban and rural areas of the country. The sample design also allowed for specific indicators, such as contraceptive use, to be calculated for each of nine sub-national regions. Portions of the northern region were oversampled in order to provide estimates for two special areas of interest: Karamoja and internally displaced persons (IDP) camps. At the time of the survey there were 56 districts. This number later increased to 80. The following shows the 80 districts divided into the regional sampling strata:

- Central 1: Kalangala, Masaka, Mpigi, Rakai, Lyantonde, Sembabule, and Wakiso
- Central 2: Kayunga, Kiboga, Luwero, Nakaseke, Mubende, Mityana, Mukono, and Nakasongola
- Kampala: Kampala
- East Central: Bugiri, Busia, Iganga, Namutumba, Jinja, Kamuli, Kaliro, and Mayuge
- Eastern: Kaberamaido, Kapchorwa, Bukwa, Katakwi, Amuria, Kumi, Bukedea, Mbale, Bududa, Manafwa, Pallisa, Budaka, Sironko, Soroti, Tororo, and Butaleja
- North: Apac, Oyam, Gulu, Amuru, Kitgum, Lira, Amolatar, Dokolo, Pader, Kotido, Abim, Kaabong, Moroto, and Nakapiripirit (Estimates for this region include both settled and IDP populations.) Karamoja area: Kotido, Abim, Kaabong, Moroto, and Nakapiripirit IDP: IDP camps in Apac, Oyam, Gulu, Amuru, Kitgum, Lira, Amolatar, Dokolo and Pader districts
- West Nile: Adjumani, Arua, Koboko, Nyadri, Nebbi, and Yumbe
- Western: Bundibugyo, Hoima, Kabarole, Kamwenge, Kasese, Kibaale, Kyenjojo, Masindi, and Buliisa
- Southwest: Bushenyi, Kabale, Kanungu, Kisoro, Mbarara, Ibanda, Isingiro, Kiruhura, Ntungamo, and Rukungiri

A representative probability sample of 9,864 households was selected for the 2006 UDHS survey. The sample was selected in two stages. In the first stage, 321 clusters were selected from among a list of clusters sampled in the 2005-2006 Uganda National Household Survey (UBOS, 2006c). This matching of samples was conducted in order to allow for linking of 2006 UDHS health indicators to poverty data from the 2005-2006 UNHS. The clusters from the Uganda National Household Survey were in turn selected from the 2002 Census sample frame. For the UDHS 2006, an additional 17 clusters were selected from the 2002 Census frame in Karamoja in order to increase the sample size to allow for reporting of Karamoja-specific estimates in the UDHS. Finally, 30 IDP camps were selected from a list of camps compiled by the United Nations Office for the Coordination of Human Affairs (UN OCHA) as of July 2005, completing a total of 368 primary sampling units. Figure 1.1 shows the geographical distribution of the 368 clusters visited in the 2006 UDHS.

In the second stage, households in each cluster were selected based on a complete listing of households. In the 321 clusters that were included in the UNHS sample, the lists of households used were those generated during the UNHS listing operations April-August 2005. The UNHS sampled ten households per cluster. All ten were purposively included in the UDHS sample. An additional 15 to 20 households were randomly selected in each cluster. The 17 additional clusters in Karamoja were listed, and 27 households were selected in each cluster. The selected IDP camps were divided into segments because of their large size, and one segment selected in each camp. Then a listing operation was carried out in the selected segment, and 30 households were selected in each camp from the segment of the map that was listed. All women age 15-49 who were either permanent residents of the households in the 2006 UDHS sample or visitors present in the household on the night before the survey were eligible to be interviewed. In addition, in a sub-sample of one-third of all the households selected for the survey, all men age 15-54 were eligible to be interviewed if they were either permanent residents or visitors present in the household on the night before the survey. Indicators such as total fertility rate, childhood mortality rates, and the maternal mortality ratio require a larger sample size than other indicators. These indicators are all calculated from the data provided by female respondents only. For this reason, the number of male respondents required in the sample to obtain acceptable precision in estimates of desired indicators is lower than the number of female respondents.

Biomarkers collected in the UDHS included height and weight measurements for children under 6 years, women age 15-49, and men age 15-54; anaemia testing in children age 6 to 59 months old, women age 15-49, and men age 15-54; and dried blood spot collection for vitamin A testing in children age 6 to 59 months old and women age 15 to 49 years. All of these biomarkers were measured only in those households selected for the male interview—that is, one in three households.

### COMPARABILITY OF THE 2006 UDHS SAMPLE WITH SAMPLES FROM PREVIOUS UDHS SURVEYS

The 2006 UDHS is the first UDHS to include the entire country in the sample. In previous surveys, it was necessary to exclude groups of districts because of security problems. In the 2000-2001 UDHS, areas making up the current districts of Amuru, Bundibugyo, Gulu, Kasese, Kitgum, and Pader were excluded from the sample. According to the 2002 Census, these areas comprise around 7 percent of the population of Uganda (UBOS 2006a). The 1995 UDHS excluded Kitgum and Pader, while the 1988/1989 UDHS excluded most of the Northern region.

To show trends using comparable data, the 2006 UDHS data were run without the districts that were excluded in previous surveys. For some key indicators, the report presents two estimates from the 2006 data: one covering the entire country, and a second covering the geographic area surveyed in the 2000-2001 UDHS. Differences between these two estimates are small, seldom exceeding one or two percentage points.

Because it was not possible to run every indicator twice, the report includes many comparisons between the 2000-2001 and 2006 surveys in which the 2006 data have not been adjusted. The report states explicitly when the 2006 data presented are adjusted; otherwise, the data are unadjusted. Comparisons that include unadjusted 2006 data should be interpreted with caution.

# Questionnaires

## Overview

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Three questionnaires were used for the 2006 UDHS, namely, the Household Questionnaire, the Women's Questionnaire, and the Men's Questionnaire. The contents of these questionnaires were based on the model questionnaires for the MEASURE DHS program. In consultation with technical institutions and local organizations, UBOS adapted these questionnaires to reflect population and health issues relevant in Uganda. The revised questionnaires were translated from English into six local languages, namely, Ateso/Karamojong, Luganda, Lugbara, Luo, Runyankole/Rukiga, and Runyoro/Rutoro. The questionnaires were pretested prior to their finalization in January and February of 2006.

a) The Household Questionnaire was used to list all the usual members and visitors in the selected households. The main purpose of the Household Questionnaire was to identify women and men who were eligible for the individual interview. 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. The Household Questionnaire also collected information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor of the house, ownership of various durable goods, and ownership and use of mosquito nets. Care and support services received by orphans and other vulnerable children and disability status of household members were also collected in the Household Questionnaires. Finally, the Household Questionnaire was used to document the respondents' decision as to whether to volunteer to give blood samples for vitamin A deficiency (VAD) testing as well as to record the height, weight, and haemoglobin measurements of women age 15-49 years, men age 15-54 years, and children age 6-59 months in those households selected for these measurements.

b) The Women's Questionnaire was used to collect information from all women age 15-49. These women were asked questions on the following 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 childbirth care
- Breastfeeding and infant feeding practices
- Vaccinations and childhood illnesses
- Marriage and sexual activity
- Woman's work and husband's background characteristics
- Awareness and behavior regarding AIDS and other sexually transmitted infections (STIs)
- Maternal mortality
- Domestic violence.

c) The Men's Questionnaire was administered to all men age 15-54 living in every third household in the 2006 UDHS 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, or maternal mortality.

# Data Collection

## Data Collection Dates

Start	End	Cycle
2006-04	2006-10	N/A

## Data Collection Mode

Face-to-face

### DATA COLLECTION NOTES

#### TRAINING OF FIELD STAFF

UBOS recruited and trained staff to serve as supervisors, field editors, male and female interviewers, field coordinators, and health technicians. They all participated in the main interviewer training held in Entebbe April 2-28. UBOS, Macro, and invited experts from government ministries led the four-week training that included lectures, presentations, practical demonstrations, and practice interviewing in small groups, as well as two days of field practice. Participants were shown brands of contraceptives, vitamin A and iron folate supplements, and common antimalaria drugs, and they were taught how to test salt for iodine using test kits provided by UNICEF. During the training, special attention was paid to identifying brands of mosquito nets. Information sheets with photos of net material and net labels developed by the Malaria Consortium were presented and distributed to the trainees. Samples of common brands of nets were also shown. Salt samples were also tested for their iodine levels. The health technicians received training in anthropometry, hemoglobin testing, and the collection of dried blood spot (DBS) samples from a finger prick for the vitamin A deficiency (VAD) testing.

#### COMMUNITY MOBILIZATION

Before and during fieldwork for the 2006 UDHS, a community mobilization programme was implemented by a multi-disciplinary team of members from the Uganda Bureau of Statistics, the Ministry of Health, and the Population Secretariat. The objective of the community mobilization was to sensitize the respondents regarding the survey, including key topics in the questionnaires and the issue of drawing blood in order to maximize participation. It was stressed that the blood sample was not for HIV-AIDS testing.

Seven groups of two officials were deployed to the districts. Before their arrivals, the Ministry of Health sent an advance letter requesting all District Directors of Health Services to identify the community mobilization coordinators for the respective districts. Together with the district coordinators and reporters from local media houses, the teams went to the sub-counties in which the enumeration areas (EAs) were located. At the sub-county, local officials were engaged to conduct community mobilization in the enumeration areas. The teams sent from the national level also visited a number of enumeration areas together with the local community mobilizers. In each EA, community mobilization was done one week before the data collection teams arrived. In Kampala city, additional sensitization was done through the use of Ministry of Health film vans that moved around the enumeration areas spreading out the message and providing a number of advocacy materials.

#### FIELDWORK

Fifteen data collection teams consisting of three female interviewers, one male interviewer, a supervisor, a field editor, a health technician, and a driver began fieldwork on May 5, 2006. Fieldwork was completed in the first week of October 2006. Fieldwork supervision was coordinated from UBOS headquarters; four regional coordinators routinely visited teams to review their work and monitor data quality. Additionally, the UBOS headquarters and the teams maintained close contact through field visits by senior staff and Macro International staff. Regular communication was also maintained through cell phones. Teams implemented community mobilization in the sampled clusters to raise awareness of the nature and purpose of the study. Fieldwork was carried out in five separate field trips. Between trips, all teams met in Kampala to discuss problems with fieldwork logistics or data collection and to receive feedback and training reinforcement from UBOS staff.

A regular schedule was established in order to retrieve questionnaires and blood samples from the field. Dried blood spot samples for VAD were dried overnight in light-proof boxes and then stored in portable refrigerators run on the vehicle batteries in order to prevent degradation of retinol binding protein (RBP) in the samples. Blood samples were brought in from the field and transported to the laboratory at the Biochemistry Department at Makerere University, where they were stored in a -20 C freezer until they were tested.

## Data Collectors

<b>Name</b>	<b>Abbreviation</b>	<b>Affiliation</b>
Uganda Bureau of Statistics	UBOS	

# Data Processing

## Data Editing

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The processing of the 2006 UDHS data began soon after the start of fieldwork. Completed questionnaires were returned periodically from the field to the UBOS data processing center, first in Entebbe and later in Kampala, where they were entered and edited by 15 data processing personnel who were specially trained for this task. The data processing personnel included a supervisor, a questionnaire administrator (who kept track of the questionnaires received from each cluster), an office editor, data entry operators, and a secondary editor. The concurrent processing of the data was an advantage since field check tables monitored various data quality parameters. As a result, the teams got specific feedback to improve performance. The data entry and editing phase of the survey was completed in mid-October 2006.



# Data Appraisal

## Estimates of Sampling Error

Sampling errors, on the other hand, can be evaluated statistically. The sample of respondents selected in the 2006 UDHS 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 2006 UDHS 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 2006 UDHS is the ISSA Sampling Error Module. This module used the Taylor linearization method of variance estimation for survey estimates that are means or proportions. The Jackknife repeated replication method is used for the square root of the variance.

The Jackknife repeated replication method derives estimates of complex rates from each of several replications of the parent sample, and calculates standard errors for these estimates using simple formulae. Each replication considers all but one clusters in the calculation of the estimates. Pseudo-independent replications are thus created. In the 2006 UDHS, there were 368 non-empty clusters. Hence, 368 replications were created.

In addition to the standard error, ISSA computes the design effect (DEFT) for each estimate, which is defined as the ratio between the standard error using the given sample design and the standard error that would result if a simple random sample had been used. A DEFT value of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. ISSA also computes the relative error and confidence limits for the estimates.

Sampling errors for the 2006 UDHS are calculated for selected variables considered to be of primary interest for the women's survey and for the men's survey. The results are presented in an appendix to the Final report for the country as a whole, for urban and rural areas, and for each of the nine sub-domains. 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.13 present the value of the statistic (R), its standard error (SE), the number of unweighted (N) and weighted (WN) 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 for a 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.

The confidence interval (e.g., as calculated for children ever born to women age 40-49) can be interpreted as follows: the overall average from the national sample is 7.318 and its standard error is 0.101. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e.,  $7.318 \pm 2 \times 0.101$ . There is a high probability (95 percent) that the true average number of children ever born to all women age 40 to 49 is between 7.116 and 7.519.

In general, the relative standard error for most estimates for the country as a whole is small, except for estimates of very small proportions. There are differentials in the relative standard error for the estimates of sub-populations. For example, for the variable contraceptive use for currently married women, the relative standard errors as a percent of the estimated mean for the whole country, for the urban areas and for the rural areas are 3.3 percent, 5.3 percent and 3.9 percent, respectively.

For the total sample, the value of the design effect (DEFT), averaged over all selected variables, is 1.305 which means that, due to multi-stage clustering of the sample, the average standard error is increased by a factor of 1.305 over that in an equivalent simple random sample.



## Related Materials

### Questionnaires

#### UDHS IV - Household Questionnaire

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Title	UDHS IV - Household Questionnaire
Author(s)	Uganda Bureau of Statistics (UBOS)
Date	2006-04-01
Country	Uganda
Language	English
Contributor(s)	Macro International Inc.
Description	<p>The Household Questionnaire was used to list all the usual members and visitors in the selected households. The main purpose of the Household Questionnaire was to identify women and men who were eligible for the individual interview. 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. The Household Questionnaire also collected information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor of the house, ownership of various durable goods, and ownership and use of mosquito nets. Care and support services received by orphans and other vulnerable children and disability status of household members were also collected in the Household Questionnaires. Finally, the Household Questionnaire was used to document the respondents' decision as to whether to volunteer to give blood samples for vitamin A deficiency (VAD) testing as well as to record the height, weight, and haemoglobin measurements of women age 15-49 years, men age 15-54 years, and children age 6-59 months in those households selected for these measurements.</p>
Filename	UGA_DHS_2006_Questionnaire_Household_En.pdf

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#### UDHS IV - Woman's Questionnaire

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Title	UDHS IV - Woman's Questionnaire
Author(s)	Uganda Bureau of Statistics (UBOS)
Date	2006-04-01
Country	Uganda
Language	English
Contributor(s)	Macro International Inc.
Description	<p>The Women's Questionnaire was used to collect information from all women age 15-49. These women were asked questions on the following topics:</p> <ul style="list-style-type: none"> <li>- Background characteristics (education, residential history, media exposure, etc.)</li> <li>- Birth history and childhood mortality</li> <li>- Knowledge and use of family planning methods</li> <li>- Fertility preferences</li> <li>- Antenatal and childbirth care</li> <li>- Breastfeeding and infant feeding practices</li> <li>- Vaccinations and childhood illnesses</li> <li>- Marriage and sexual activity</li> <li>- Woman's work and husband's background characteristics</li> <li>- Awareness and behavior regarding AIDS and other sexually transmitted infections (STIs)</li> <li>- Maternal mortality</li> <li>- Domestic violence.</li> </ul>
Filename	UGA_DHS_2006_Questionnaire_Woman_En.pdf

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#### UDHS IV - Man's Questionnaire

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Title	UDHS IV - Man's Questionnaire
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Author(s)	Uganda Bureau of Statistics (UBOS)
Date	2006-04-01
Country	Uganda
Language	English
Contributor(s)	Macro International Inc.
Description	The Men's Questionnaire was administered to all men age 15-54 living in every third household in the 2006 UDHS 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, or maternal mortality.
Filename	UGA_DHS_2006_Questionnaire_Man_En.pdf

## Reports

### Uganda Demographic and Health Survey 2006 - Final report

Title	Uganda Demographic and Health Survey 2006 - Final report
Author(s)	Uganda Bureau of Statistics (UBOS)
Date	2007-08-01
Country	Uganda
Language	English
Contributor(s)	Macro International Inc.
Description	The report presents the findings from the 2006 Uganda Demographic and Health Survey (UDHS) conducted by the Uganda Bureau of Statistics (UBOS). Macro International Inc. provided technical assistance and funding through MEASURE DHS, a USAID-funded project that assists developing countries to collect data on fertility, family planning, maternal and child health, and HIV/AIDS.
Filename	<a href="http://www.dhsprogram.com/pubs/pdf/FR194/FR194.pdf">http://www.dhsprogram.com/pubs/pdf/FR194/FR194.pdf</a>

### Uganda Demographic and Health Survey 2006 - Key Findings

Title	Uganda Demographic and Health Survey 2006 - Key Findings
Author(s)	Uganda Bureau of Statistics (UBOS)
Date	2007-08-01
Country	Uganda
Language	English
Contributor(s)	Macro International Inc.
Description	The report presents the findings from the 2006 Uganda Demographic and Health Survey (UDHS) conducted by the Uganda Bureau of Statistics (UBOS). Macro International Inc. provided technical assistance and funding through MEASURE DHS, a USAID-funded project that assists developing countries to collect data on fertility, family planning, maternal and child health, and HIV/AIDS.
Filename	<a href="http://www.dhsprogram.com/pubs/pdf/SR126/SR126.pdf">http://www.dhsprogram.com/pubs/pdf/SR126/SR126.pdf</a>